همت مضاعف برای پاسداری از گنجینه حیات در سال تنوع زیستی

طرح بین‌المللی حفاظت از تالاب‌های ایران

اداره کل حفاظت محیط زیست
استان فارس

«حفظ تالاب‌ها، برای مردم، برای طبیعت»

# برنامه مدیریت جامع تالاب پریشان

تهیه شده با همکاری سازمان‌ها و جوامع محلی
تالاب پریشان
خرداد ۱۳۸۹

gef

UNDP

سازمان حفاظت از محیط زیست

Lake Parishan Management Plan

برنامه مدیریت جامع تالاب پریشان

Conservation of Iranian
Wetlands project

Fars DOE

# Lake Parishan Management Plan

"Saving Wetlands, for People, for Nature"

**Department of Environment**

**UNDP/GEF**

Approved Version
May 2010

gef

UNDP

Department of Environment

بسم الله الرحمن الرحیم

طرح مدیریت جامع تالاب پریشان
نسخه تصویب شده
خرداد ماه ۱۳۸۹

# چشم‌انداز ۲۵ ساله برای تالاب پریشان

**در ۲۵ سال آینده، تالاب پریشان دارای تنوع زیستی غنی، مناظر طبیعی زیبا و آب سالم بوده و بتواند در خدمت سلامت، معیشت و رفاه جوامع محلی باشد.**

## هدف کلی

**کاربرد رویکرد اکوسیستمی برای احیا و پایدارسازی تالاب پریشان برای استفاده جوامع کنونی و نسل‌های آینده**

طرح حفاظت از تالاب‌های ایران UNDP/GEF
با همکاری
اداره کل حفاظت محیط زیست استان فارس

LAKE PARISHAN

# INTEGRATED MANAGEMENT PLAN

## VISION

**In 25 years, Lake Parishan will have a rich biodiversity, beautiful landscape and high water quality, so that it can support a healthy and prosperous local community**

## GOAL

**To apply an ecosystem based approach for restoring and sustaining Lake Parishan for the benefit of the present and future generations**

**UNDP/GEF Conservation of Iranian Wetlands Project**
**In cooperation with**
**Lake Parishan Organizations and Local Communities**

Version: May 2010

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# INTEGRATED MANAGEMENT PLAN FOR LAKE PARISHAN

## Cover note

The UNDP/GEF/DOE Conservation of Iranian Wetlands Project is working with the province of Fars to develop an integrated management plan for Lake Parishan, based upon international best practice. The project's approach is that:

"Decision-makers and local communities will support sustainable management of wetlands if they are aware of values and functions of these sites and if they are involved in desgning and implementing their management plans"

The plan aims to help provincial and national agencies to address the current critical ecological situation of the Lake, as required by Article 67 of the 4th National Development Plan.

Three participatory workshops have so far been held for the development of this management plan. The first was held in Shiraz in February 2007 to initiate preparation of a first draft of the management plan, which was distributed among all the participants and stakeholders including Lake Parishan local communities and NGOs, provincial organizations and technical committees and project steering and technical committees; A second workshop was then arranged on May 2007 in Parishan to review the first draft, the Vision, Goal and objectives. After finalizing the first draft, the third workshop was held on 1112- November in Kazeroun to identify targets and priority actions to be undertaken and responsible sectors. In each of the workshops, more than 50 participants from local and provincial organizations and representatives of local communities actively participated in the discussions. Diverse information and views on the attributes, values and threats of the lake were shared by the different stakeholders during the first and second workshops, while the third workshop mainly focused on required actions.

According to the discussions of the third workshop and received comments, the management plan of Lake Parishan has been finalized. Three working groups have been established on "Biodiversity", "Sustainable management of Land and Water resources" and "public awareness" to plan the details and implementation of activities based on the management plan structure.

This Final version is a result of cooperation and discussions of the project steering committee, provincial coordination committee, organizations at national, provincial and local level at Fars and Kazeroun and also local communities and NGOs and has been approved by government on 30th of April 2009. A Monitoring Plan and Zoning plan for human activities for Lake are also added to the management plan as new annexes.Please note that this document will be open to revision based on comments of stakeholders.

The Conservation of Iranian Wetlands Project thanks all the stakeholders who have eagerly attended our workshops and have supported this project by participating in the discussions and giving useful comments for the management plan. We hope that implementation of this management plan would be a great step towards Article 67 of national program and application of ecosystem approach and sustainable and wise use of environmental resources in Lake Parishan basin.

**National Project Manager**
**May 2010**

May 2009

# INTEGRATED MANAGEMENT PLAN FOR LAKE PARISHAN

## 1. INTRODUCTION AND PURPOSE

### 1.1. Background

Lake Parishan, an Iranian Ramsar Site in Fars Province, is one of the two demonstration sites for the UNDP/GEF Conservation of Iranian Wetlands Project. It lies to the east of Kazeroun City and is part of the Arjan-Parishan Protected Area and is recognized by UNESCO as a Biosphere Reserve.

The project aims to demonstrate reduction of the major threats to the internationally important biodiversity of this wetland protected area through promoting ecosystem-based, integrated management. Such an approach is required because rapidly increasing development pressures are leading to a degradation of the Lake's resources. The existing regulatory approach to management is not adequately addressing the needs of local people, nor the damaging activities which are arising outside the protected area.

This Management Plan is intended to provide a long-term shared vision and approach for achieving the sustainable management of the wetland and its valuable ecosystem services. Specifically, it aims to support the engagement of local people towards a wise use of the wetland's resources, to encourage inter-sectoral cooperation to achieve agreed objectives, and to raise awareness of the importance of Lake Parishan.

This management plan has been developed mainly based on the outcomes of three workshop sessions held in Shiraz and Kazeroun during February to November 2007, involving representatives of the key stakeholder groups for the wetland. Additional inputs from local communities have been provided through participatory rural appraisal (PRA) sessions. The plan has been submitted for final consultation by all stakeholders and enhanced through their constructive comments. It is intended that this participatory approach will ensure a more active involvement of all stakeholders in the wetland management. This version of the management plan will be submitted to higher level provincial and national authorities for formal approval.

## 2. Methodology

A participatory strategic approach has been used to prepare the plan. Participation of stakehold-

ers ensures inclusion of the views, knowledge and interests of the involved parties in the planning. This aims to enhance the sustainability of the plan and increases the likelihood that stakeholders will support and participate in its implementation, particularly the local communities who are most directly dependent on the wetland. The management planning process requires identification of the values of, and threats to, the wetland, as well as the capacities of the main stakeholders. It then uses a participatory process to define a long-term vision for the Lake which can be supported by all stake-holders. The stakeholders then work to identify the main management objectives and actions that will deliver their common vision. This is the approach recommended by the Ramsar Convention for preparing a management plan for a wetland.

## 3. The process of developing the plan

A two day workshop session was first held in Shiraz in February 2007 to introduce the program for CIWP, and to share views and knowledge from different stakeholders, for the purpose of preparing the first draft of the management plan for Lake Parishan. This workshop was followed by a supplementary one in Kazeroun in May 2007 with strong contribution from the local communities around the wetland.

More than 50 participants from local and provincial organizations and representatives of local communities attended each of the workshops and actively participated in the discussions. Despite the lack of comprehensive documented information on the attributes of the wetland, this process provided a good source of diverse information of the values, threats and capacities, which have been included in the management plan.

The first draft management plan was widely distributed in June 2007 among all the stakeholders for their comments.

The comments received from different stakeholders on the first draft plan were carefully reviewed and used for preparing the second draft of the management plan which was shared with the stakeholders for review and comments in a second workshop session held in Kazeroun in November 2007. Based on the outcomes of the latter workshop, this version of the management plan was drafted for a final review and comments by the stakeholders. Upon receiving these comments, the final version of the management plan was prepared for approval and issue by the relevant provincial and national higher level authorities.

This strategic Management Plan will be supported by a 5-year Action Plan, describing the priority activities and responsibilities of each stakeholder group.

## 4. SITE DESCRIPTION AND EVALUATION

The general characteristics of Lake Parishan are summarized in Table 1 and are complemented by additional information in the subsequent sections.

### 4.1. Physical characteristics

The Lake is located about 15 km east of Kazeroun in a valley at the southern toe of the mountains locally known as Div kan. It is more or less a topographical depression which forms an elongated pan in between the shallow ridges in its eastern, southern and western sides. The area is located in the semi-arid part of Iran with short mild-temperate winters and long hot and dry summers. Precipitation regime of the area follows that of Mediterranean and major part of precipitation occurs during fall up to spring months. Summer months are generally dry.

The catchment area of the Lake is about 270,000 ha. The surface area of the water body changes seasonally according to the hydrological condition and generally varies between more than 2500 ha to almost 5000 ha but historical documents show that in some severe drought periods (1987) the entire lake has dried out. The average annual precipitation of the area is around 450 mm ranging in between 700220- mm/yr. The evaporation capacity in the area is high (on average 2470 mm per year) and ranges in between 16003350- mm/yr.

The Lake is recharged by different sources including ground water flows, precipitation and runoffs from surrounding areas. The geological formations in the north of the Lake are of limestone nature which is generally characterized by extensive fissures. This Karstic feature of northern limestone causes several springs to appear in the eastern and western sides of the Lake. Also, significant seepage flows directly enter the lake from the northern slopes.

**Table 1. Summary Characteristics of Lake Parishan**

| Attributes | Description |
|---|---|
| Name and alternatives | Lake Parishan, Famour Lake |
| Location | 29,30 N 51,47 E, 15 kms east of Kazeroon City |
| Area of the lake | varies between 25-52 sq km, wetland has dried out in some dry years |
| Area of the Catchment | 270 sq km |
| Elevation | 820 m. amsl |
| Administration status | Administrated by Kazeroon Environmental Conservation Office under jurisdiction of Fars Provincial Office of Environmental Conservation |
| Conservation status | Protected since 1972 (No hunting area) |
| International designations | Ramsar site, UNESCO Biosphere Reserve, |
| Land tenure | State owned |
| Land use | Water body / wetland, grazing lands, cultivated lands. |
| Main sources of water | Ground water from karstic sources + surface runoffs from the catchment area |
| Ramsar wetland Types | Riverine, Lacustrine , Palustrine, |
| Main ecological values | Diverse wetland habitats, internationally important populations of wintering waterbirds (records of 120,000 birds visited in 197080-s), Considerable numbers of breeding pairs of globally threatened Pelecanus crispus, Marmaronetta angustirostris, Phalacrocorax pygmaeus, 1 endemic fish species. |
| Products | Fish, waterbirds for hunting, reeds, fodder, medical herbs, aromatic and decorative flowers. |
| Functions | Biodiversity support, landscape, climatic moderation, pollutant removal and retention, |
| Services | Eco-tourism, recreation, education, training, research, cultural values, grazing yards, |
| Main vegetation types | Phragmites australis, Typha latifolia, Nasturtium officinale, Lemna marina, Lemna minor, Ceratophyllum demersum, Potamogeton pectinatus, Scirpus sp |
| Significant fauna species | Pelecanus crispus, Marmaronetta angustirostris, Phalacrocorax pygmaeus Grus grus, Francolinus francolinus, Cyprinion tenuiradius (Endemic), Testudo graeca zarudmyi, Mauremys caspica ventrimaculata |
| Main ecological changes | The area of the water body is fluctuating, but remained largely unchanged. Marginal lands around the water body have been partly encroached by farmers and are subject to land use conversion. Increasing ground water uptake in nearby wells is extracting wetland water resources and thus affecting its water balance. Wetland water quality is affected by contaminants from surrounding agricultural as well as settlement areas. Over harvesting fish resources has seriously affected the fish reserves of the wetland. Introduction of exotic fish species has caused domination of Carp species and probably has resulted in extinction of one native species. |

The Lake is generally a shallow water body with more or less impervious bed. When fully inundated, the depth of water in its deepest part is less than 5 meters. At low water level conditions, the depth of water in the lake is generally less than 2 meters.

The Lake does not have a natural outflow and its main source of water loss is through evaporation from water surface and consumption by vegetation cover. However large number of water wells (more than 800) have been excavated around the Lake and are exploiting significant volume of ground water for irrigation uses which otherwise would recharge the wetland. An old man-made

diversion channel in the southwestern part of the lake has been blocked by DOE.

### 4.2. Natural environment

Almost in all directions, the wetland is surrounded by agricultural farms, however further on the northern elevations there exists a semi-dry type of forest cover consisting mainly of scattered oak trees. Higher on the elevations, the coverage is more dense.

In the northwest and east of the Lake, considerable areas are covered by reed beds mainly consisting of Phragmites australis, and in south eastern part of the lake, a very restricted area is covered by Typha. Also scattered patches of reeds are existing in the south-eastern flats, and narrow stretches of reeds exist along the northern and southern boundaries of the Lake. All around the wetland boundaries in the south western flat, as well as in the eastern boundaries of the Lake, where the flats are only temporarily or intermittently inundated by the Lake's water, halophytes (consisting of mainly Tamarix, Salicornia, Aeluropus) replace the reed beds. In the deeper part of the Lake, where permanent inundation occurs, the wetland bed is covered by submerged Najas marina.

The water body of the Lake as well as different patterns of vegetation cover around and inside the lake provides diverse habitats which supports the rich biodiversity of the wetland. The Lake hosts significant number of migratory waterbirds which use it for wintering, feeding, breeding and stationing. The higher records of water birds population in the Lake exceed 120,000 (1970s and 1980s). In 7 out of 17 years of accessible records since 1990, the annual counts of water birds in Lake Parishan exceed the 20,000 Ramsar threshold for internationally important wetlands. Also Podiceps cristatus, Great Crested Grebe, Phalacrocorax pygmaeus Pygmy Cormorant, Anser anser, Greylag Goose, Oxyura leucocephala White-headed Duck, Larus ridibundus Black-Headed Gull,Tadorna ferruginea Ruddy Shelduck have been recorded in numbers which exceed 1% of their bio-geographical population.

At least five threatened species are usually present in the lake, and occasionally in noticeable population. These are Pelecanus crispus, Marmaronetta angustirostris, Aythya nyroca, Oxyura leucocephala, and Aquila heliaca.

In addition to the water birds, fishes in the lake are an important constituent of the food chain on which water birds and quite a number of local people survive. Several fish species are using the wetland. An endemic species "Cyprinion tenuiradius" is only rarely observed.

A species of Otter Lutra lutra is still present in the Lake, however its population seems to be very low.

A habitat classification map recently prepared for Lake Parishan is displayed in Figure 1(In the end).

### 4.3. Human environment and administrative structure

Eighteen villages with a total population of 2500 households (2006 census) are located around the wetland. Most of these rural households are farmer families and depend, for their survival, on their crop production. There are about 5000 hectares of agricultural lands around the wetland. Farming practices include production of winter cereals (wheat and barley), and summer crops (sunflower, corn, melons, small vegetables, etc). An increasing trend is observed towards crop production under plastic covers for pre-matured cash vegetables (cucumber, tomato, melons, …). This is particularly true for the farming practices in the northern villages of the Lake. Production of leaf vegetable is also a common practice in several villages around the wetland.

All of the summer crops and major part of winter cereals are produced in irrigated farms, while rain-fed wheat and barley is produced in dry-farming areas around the wetland. Water for irrigation is supplied from spring flows or groundwater wells. These are at the same time the main sources of water supply to the wetland. This reveals that a very strong and growing competition potentially exists between the wetland's sustainability and survival of the rural population which calls for a very careful management.

Fishing, grazing and reed harvesting are other reasons for interactions between the rural population and the wetland. Particularly traditional fishing practices has already imposed a heavy pressure on the fish resources of the Lake.

The wetland is designated, since 1976, as a Ramsar site and a UNESCO Biosphere Reserve. Parishan is part of the Arjan-Parishan Protected Area since 1974. Within this context, the entire catchment of the Parishan Lake is considered as a protected area. The Environmental Conservation Office of Kazeroun, under the direction of Fars Provincial Environmental Conservation Directorate Office is responsible for protection of the Parishan Lake and its catchment area, as well as the protected areas of Arjan-Parishan which is beyond the Parishan Lake catchment area but is located within the political boundaries of Kazeroun city. An environmental protection station in the western corner of the Lake with very limited man-power capacities, disused equipment and poor instrumental facilities is assigned to undertake the protection observations/commitments.

### 4.4. Values

Different values were identified and listed during the workshop sessions in Shiraz and Kazeroun. Most of these values are those directly attributed to the wetland, its functions and the services it provides. This implies that if such values are going to be maintained, the wetland and its functions need to be sustained.

**Table 2. Values identified for Lake Parishan**

| Value | Description |
|---|---|
| Bio-diversity values | The wetland provides diverse ecological values in term of different habitats, floral and faunal species it supports. |
| Source of water supply | Although the Lake is not directly used as a source of water supply, it has a controlling effect on the ground water level in the surrounding aquifers. |
| Grazing for domestic animals | Shallow water and reed beds in the lake provides suitable grazing habitat for buffalos and cows. Pasturelands around the wetland are well used for grazing domestic animals (sheep, cow and horse) |
| Aqua-culture and fish harvesting | The Lake is an important source and has considerable potential for natural or artificial fish production. |
| Source of medicinal herbs | The vegetation cover in the wetland and its surrounding area include species of medical, aromatic, and /or decorative value. |
| Potential source for hunting birds | Presently hunting is prohibited in the protected area. However under a wise use management system, the wetland could provide a good source for sport or commercial hunting of water birds |
| Landscape and Ecotourism | The attractive landscape of the lake and its surrounding area is an outstanding feature for ecotourism and recreational purposes. |
| Climatic moderation | Several ecological and climatological indications prove the significant effect of the wetland on climatic moderation in the Lake area. |
| Pollutant removal and retention | A considerable volume of inflowing pollutants (nutrients and pesticide residues) are either absorbed in the wetland's bed material or digested by its diverse floral species. |
| Research and training | A huge potential for practical research and training exists in Lake Parishan and its surrounding environment which would be very attractive for research centers. |

## 4.5. Threats

The main threats to the wetland identified by workshop participants are listed below. These are classified into two categories of External and Internal threats. External threats are those arising outside the wetland but have influence on it. Internal threats occur inside the wetland area.

**Table 3. Main threats to the Lake Parishan**

| Threats | Description |
|---|---|
| **External** | |
| Pollution of the Lake by agricultural activities (chemical fertilizers, pesticides, etc.) | The lake is surrounded by agricultural lands for which considerable amount of chemicals (fertilizers and pesticides/herbicides are used annually. The residual chemicals inflowing into the Lake through runoff and/or seepage flows is a significant source of pollution of the Lake. |
| Pollution of the Lake by residential communities (sewerages, garbages, etc…) | Eighteen villages are located within short distances around the lake. Sewage is collected in unprotected septic holes and garbage is not well managed and left in open spaces. Both are sources of pollution of the Lake through seepage, surface runoff or displacement by wind. |
| Farmer's competition with wetland in use of spring flows and ground water resources | Irrigated agriculture is the main user of spring flows and ground water resources which are the main sources of water supply to the Lake. Irrigation uses are increasing, resulting in a reduced supply to the Lake. |
| Under-plastic cultivation around the wetland | Cultivation under plastic cover is increasingly expanding to produce off-season vegetables. Following the harvest of the crops, the farmers carelessly leave the used plastics on the farm which causes several environmental impacts. |
| Conversion of habitats immediately adjacent to the wetland | In several instances, pasture lands around the wetland which used to be grazing habitat for geese are converted into farmlands. |
| Contamination and disturbance by visitors to the wetland | In certain occasions, considerable numbers of local people visit the wetland and its surroundings for recreation. They usually leave their garbage in place and cause serious contamination. |
| Over-grazing in the watershed | Watershed vegetation is usually overgrazed by nomads and local herders. This accelerates erosion inflows into the Lake. |
| Climatic change (global) | Temperature is gradually rising due to greenhouse process. This causes increasing evaporation and transpiration and imposes more pressure on the Lake's water resources. |
| **Internal** | |
| Agricultural encroachment into the wetland area | In the south-western and southern parts of the wetland farmers have converted lands for farming. This is one of the main disputes between DOE and local people that needs to be solved in a reasonable way. |
| Over harvesting of fish | The Lake is under a great pressure due to over-harvesting of fish which has dramatically reduced its diversity and reserves. |
| Non-sustainable waterbird hunting | Despite being prohibited, hunting of water birds in their breeding season occurs which is an unsustainable practice. |
| Introduction of exotic species (fish) | To support fish reserves of the Lake, Shilat has introduced Carp larvae and this seems to have affected its species diversity. |
| Disturbance of wildlife by motor-boat traffic (Noise, fuel leaks, etc.) | Motor boats are frequently used by local people for transport, fishing and for recreation, and by DOE guards for protection purposes. During the breeding season this is a threat to breeding birds, and is a major source of disturbance throughout the year. Leakage of fuel and oil causes water pollution. |
| Burning reeds | Local hunters occasionally burn the reeds to force the birds to fly. Sometimes local people put fire to reed beds just to show their dissatisfaction of the controlling procedures of DOE. |

## 5. STAKEHOLDER ANALYSIS

Several national, provincial and local governmental and non-governmental organizations as well as local communities have influences on the management of Lake Parishan and thus are considered as its stakeholders. The following table indicates the organizations and communities which are identified as main stakeholders to Lake Parishan. The table also indicates the nature of the impacts each stakeholder has on the wetland.

**Table 4. Main Stakeholders in Lake Parishan Management**

| Organization | | Areas of influence / impacts |
|---|---|---|
| **Local level** | | |
| 1 | Kazeroon Office of Governor | Inter-sectoral coordination at local level;<br>Strong inclination to conserve the Lake |
| 2 | Kazeroon EC Office | Wetland management (protection);<br>Management of the protected areas around the Lake;<br>Support local NGOs |
| 3 | Kazeroon JA Office | Rationing for agro-chemicals;<br>Rural services for agricultural extension;<br>Rural services for animal husbandry. |
| 4 | Kazeroon Natural Resource Office | Rangeland management at local level,<br>Management of government owned lands |
| 5 | Kazeroon Nomad Affairs Office | Nomads' affair management at local level. |
| 6 | Kazeroon Veterinary Office | Control of animal diseases including poultry and birds |
| 7 | Kazeroon water resources office | Controls and monitors water resources issues (spring flows and water well operations). |
| 8 | Kazeroon office of Cultural Heritage, Tourism and Handicrafts | Benefits from the eco-tourism services of the wetland;<br>Has incentive and potential to support the wetlands tourism services;<br>Has potential to support handicraft industry development at rural level. |
| 9 | Farmers | Benefit from micro-climate effects and rich soils;<br>Casual encroachment into the wetland area (conflicts);<br>Use of chemicals at farm level (release of residuals into the wetland);<br>Conversion of terrestrial feeding/grazing areas for water birds;<br>Diversion of spring flows for irrigation and other uses;<br>Over extracting ground water from the wells around the wetland;<br>Contaminating wetlands' surrounding areas by plastic–covered farms. |
| 10 | Local communities, settlements | Main beneficiaries from the ecosystem services provided by the wetland;<br>Main supporting groups for sustaining the lake;<br>Discharging sewage and wastes into the wetland;<br>Rural physical development (affecting naturalness around the wetland);<br>Influence on political sources. |
| 11 | Fishers | Beneficiaries from fishing;<br>Over-harvesting fish from the Lake. |
| 12 | Boat users | Beneficiaries from water transport and recreational facilities;<br>Disturb the wetland tranquility and, oil contamination. |
| 13 | Buffalo herders | Grazing buffalo in the wetland, harvesting reeds. |
| 14 | Hunters | Hunting water birds. |
| 15 | Visitors | Beneficiaries from the landscape and biodiversity values<br>Waste residues around the wetland. |
| 16 | Local universities | Benefit from the wetland for research. |
| 17 | Kazeroon H&S Office | Health services to rural people through Health Houses at villages |

**Table 4.(cont'd) Main Stakeholders in Lake Parishan Management**

| Organization | | Areas of influence / impacts |
|---|---|---|
| **Local level** | | |
| 18 | Local NGOs | Facilitating communicating with local people;<br>Strong inclination and support for sustaining the Lake |
| 19 | Rural Islamic Councils | Facilitating communication with wetland stakeholders;<br>Influence on political sources |
| Provincial level (with policy of national Ministries) | | |
| 1 | Fars Province Governor | High level management and decision making,<br>Inter-sectoral coordination for provincial level plans and programs (Provincial MPO) |
| 2 | Fars Province Environment Conservation Directorate Office | Provincial headquarter for wetland management<br>Preparation and implementation of management plans<br>Technical support to wetland management<br>Financial support to wetland management<br>Administrative support to wetland management<br>Provincial support to environmental NGOs |
| 3 | Fars Province Jihad Agriculture Organization | Provincial headquarter for planning agriculture, animal husbandry and veterinary plans and activities<br>Provincial headquarter for agro-chemical management<br>Provincial headquarter for agr. extension, research and education supports<br>Provincial support to nomadic affairs management<br>Provincial support for and property and land use of agricultural lands |
| 4 | Fars Province Fishery Department | Provincial support for fishery and aquaculture activities, introduction of species and/or propagation of fish larvae |
| 5 | Fars Province Natural Resources, Forestry and Rangeland Department | Provincial support for rangeland management,<br>Provincial support for reforestation,<br>Provincial support for management of the government owned lands. |
| 6 | Fars Province Water Authority | Provincial level decision maker on water resources plans and programmes<br>Water right allocation from rivers and springs<br>Issuing license for water well construction and water withdrawal<br>Water flow measurements (surface and ground water)<br>Water quality measurements<br>Wetland water level measurement (Lake Parishan and ground waters) |
| 7 | Fars Province Cooperation Department | Provincial supports and promotion for establishing cooperation for rural development. |
| 8 | Fars Province Health and Sanitation Directorate | Provincial level decision-maker on rural health and sanitation plans and programs |
| 9 | Fars Province C.H. and Tourism Organization | Provincial level decision-making on cultural heritage and tourism |
| 10 | Universities | Conduct research program |

# 6. MANAGEMENT PLAN

## 6.1. Approach

A participatory strategic approach is being used to prepare this ecosystem based management plan. It is based on existing studies and seeks to achieve the common Vision through the engagement, consultation and collaboration of key stakeholders.

The proposed Ecosystem Approach applied to this management plan is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is the primary framework for action under the Convention on

Biological Diversity and comprises 12 principles. All around the world, the ecosystem approach is increasingly being adopted as a framework for the management of protected areas.

## 6.2. Road Map

The Road Map for preparing the management plan is indicated in the Figure 1. It depicts the structure which has been followed for preparing the plan. As indicated the present document referred to as "Management Plan" will focus on developing a higher level strategy for the management of Lake Parishan and would include Vision, Goal, Strategic objectives and the list of priority Actions. Upon finalization and ratification of this Management Plan, a 5-year operational Action Plan will be launched, detailing the individual projects to be undertaken by relevant stakeholder groups.

The key elements of the Management Plan are a shared Vision for what Lake Parishan should be like in 25 years time, a common Goal for achieving that vision and a number of Objectives (with measureable Targets) that can be implemented through action of the key stakeholders.

## 6.3. Vision, Goal and Strategic objectives

### 6.3.1. A 25 year Vision for Lake Parishan

A very important outcome of the workshops was the strong wish expressed by all the participants (without exception) to sustain the wetland as a natural heritage for the benefit of local and national communities (current and future generations). They insisted on the necessity to protect the wetland against any threat or mis-management which might result in its degradation. The different aspirations of the stakeholders were combined to derive the following long term Vision

**25 -Year Vision for Lake Parishan**

**In 25 years, Lake Parishan will have a rich biodiversity, beautiful landscape and high water quality, so that it can support a healthy and prosperous local community**

### 6.3.2. Overall Management Goal

Participants at the first inter-sectoral workshop session in Shiraz (Feb. 2007), suggested the following over-arching Goal for the management plan. This Goal was confirmed in the second workshop of November 2007 without significant change:

**GOAL**

**To apply an ecosystem based approach for restoring and sustaining Lake Parishan for the benefit of present and future generations**

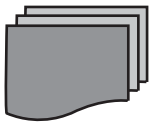
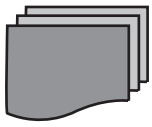
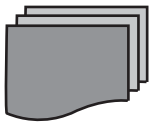
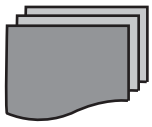
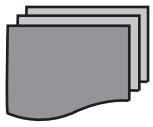
## MANAGEMENT PLAN ROAD-MAP

**Management Plan**
**(Strategic document)**
**Vision**
**Goal**
**Strategic Objectives**

| Objective 1 | Objective 2 | Objective 3 | Objective 4 | Objective 5 |
|---|---|---|---|---|
| Targets List of action | Targets List of action | Targets List of action | Targets List of action | Targets List of action |

**Governance arrangements**

**Action Plan**
**(Operational document)**

| Objective 1 Projects | Objective 2 Projects | Objective 3 Projects | Objective 4 Projects | Objective 5 Projects |
|---|---|---|---|---|
|  |  |  |  |  |

**Funding arrangements / Budget**
**Zoning Plan (Annex)**
**Monitoring Plan (Annex)**

Application of the ecosystem approach to the management of Lake Parishan involves the following main considerations:

- The management objectives should be set for the long-term, but must recognize that change is inevitable (particular attention must be given to the issues of climate change). People should be at the heart of setting the objectives.
- The Lake should be managed in the context of its catchment, since upstream activities throughout the basin will have impacts on the Lake. The impacts of management activities on adjacent ecosystems must also be carefully considered.
- Management should be decentralized to the lowest appropriate level. Management must involve all key stakeholder groups, particularly local communities, both at planning and implementation stages.
- The conservation of ecosystem structure and functioning to maintain the ecosystem services (Values) provided by the Lake should be a top priority. An appropriate balance needs to be set between the conservation and sustainable use of the Lake's natural resources, based upon the capacity of the system.
- Management should take account of the economic context - reducing market distortions that might damage ecosystem functioning, and supporting activities for sustainable use and biodiversity conservation.
- Management should be evidence-based (including traditional local knowledge).
- Management will not succeed unless people are aware of the values provided by the Lake, and the threats to it. Raising public awareness must therefore be given high priority. Similarly, those responsible for management will need to develop the required capacity to carry out their work.

### 6.3.3. Strategic Objectives

The following were identified as the high level strategic objectives for the management of Lake Parishan, derived through the workshop discussions:

### 1- To restore, improve and conserve the biodiversity values of the Lake

This objective aims to improve and restore the Lake's biodiversity through conservation of the habitats and enhancing their functions. It focuses specifically on improving habitats for nationally and internationally important water birds, endemic fish species and restoring otter population in the Lake. It is considered that successful management for these key species will assure the

conservation of the wider biodiversity values of the Lake. To achieve these, the threatening factors need to be identified and appropriately mitigated so that degradation of the Lake's sensitive habitats and over exploitation of its resources is stopped. Mapping of the Lake and zoning its different habitats along with raising awareness among stakeholders and enforcing more effective conservation measures are crucial for this purpose.

### 2- To enhance the supply and improve the quality of water in the Lake to safeguard its values

The existence of the Lake as well as its hydrological and ecological functioning depends primarily on the availability and quality of water. While certain changes in the water level as well as in its chemical properties due to rainfall and evaporation) are natural phenomena, both attributes are subject to increasing impacts due to human activities. Careful management of water supply to the Lake as well as cautious control in the use of agricultural chemicals and sewage flows would be among the most important requirements of the Lake's management.

### 3- To improve land use in and around the Lake

Workshops discussions revealed that there are disputes between some local farmers and KECO on the boundary between agricultural lands and the Wetland. This has substantially affected the sustainability of the wetland management and calls for rapid resolution. The process would require a review of the existing documents on land use and land ownership, and an exercise on identification, mapping and marking of the natural boundaries of the wetland.

In order to improve water quality, landscape and visitor satisfaction, there is also a need to establish and maintain appropriate buffer areas around the lake. Such an area should be defined and appropriate activities zoned. Issues such as access for ecotourism and recreation and the use of agrochemicals should be carefully considered. Furthermore, the condition of the Lake depends greatly on the condition of the watershed, since this affects water quality and quantity. Measures to control overgrazing and erosion should be implemented.

### 4- To enhance resources and promote wise use of the Lake to improve villager's livelihoods;

Some of the Lakes' resources (eg the fishery) have already been seriously affected by over-harvesting by the local communities and inadequate managerial procedures / facilities to conserve them. Experiences worldwide indicate that sustainability of the wetlands depends primarily on the extent the local communities are active in its management.

Local communities should therefore be fully engaged in the conservation and management of

the Lake so that its natural functions and resources provide sustainable benefits to the local communities. Consequently, local communities also need to be careful in not over-harvesting the resources. This would require a change in the present approach of the management system towards enabling and supporting wise use of the wetland's resources by the communities.

### 5- To raise public awareness and enhance opportunities provided by the Lake for education and research;

An effective tool for sustaining the Lake is to raise public awareness on the values of and threats to the wetland, including the significant role it plays for livelihood of the local communities, and the way human activities can sustain or otherwise adversely affect its functionality. Public awareness can also effectively introduce the wetland to the national and international communities and decision-makers and thus invite new grounds and resources for enhancing its management. This can also act as a resource for additional economical benefits to the local people and improve their sensitivity in better sustaining the wetland.

The tables below present the priority management issues that are required to be addressed in order to meet the overall Goal for Lake Parishan. The tables are arranged according to the main objectives resulting from the workshop discussions. For each priority issue, the 25 year (long-term) and 5 Year (short-term) Targets are defined, and a series of priority actions are identified along with the lead agencies to take responsibilities for undertaking the actions specified. The following keys refer to the responsible organizations:

AgB Agricultural Bank
DOE Department of Environmental Conservation of Iran;
FCD Fars Province Department of Cooperatives
FCHT Fars Provincial Cultural Heritage and Tourism Organization;
FCO Fars Province Climatological Organization
FECO Fars Province Environmental Conservation Office;
FFD Fars Province Fishery Department;
FGO Fars Province Governmental Office;
FHF Fars Province Housing Foundation
FHO Fars Provincial Health Organization;
FJAO Fars Province Jihad Agriculture Organization;
FM Fars Province Media
FNRD Fars Province Natural Resource Department;
FRTO Fars Province Road and Transportation Department
FRWA Fars Regional Water Authority;
FIMO Fars Industry and Mine Organization
JS Judiciary System
KCHT Kazeroun Office of Cultural Heritage, Handicrafts and Tourism

KECO Kazeroon Environmental Conservation Office;
KGO Kazeroon Government Office;
KHO Kazeroun Office of Health and Sanitation
KJAMO Kazeroon Jihad Agriculture Management Office;
KNRO Kazeroon Natural Resources Office;
KOC Kazeroon Office of Cooperatives
KWA Kazeroun Office of Water Affairs
KVO Kazeroun Veterinary Office
LC Local Communities
VICs Village Islamic Councils

**Objective 1: To restore, improve and conserve the biodiversity values of Lake Parishan**

| Priority Issues | Targets | Priority actions | Responsible agent (R) Partner agent (P) |
|---|---|---|---|
| Globally important water birds (Pelecanus crispus, Phalacrocorax pygmaeus, Marmaronetta angustirostris, Oxyura leucocephala, Aythya nyroca) | 25 years: Birds population increases to level of mid 1970s. In the past: 2000 white headed duck including 200 breading<br><br>5 years: Keep the breeding population equal to or above 200005-average…. | 1.1 Zoning of the wetland in terms of different habitats/ human activities<br>1.2 Protecting the breeding habitats (including grazing exclosure trials)<br>1.3 Prevent illegal shooting<br>1.4 Reduce disturbance by motor boats<br>1.5 Enhance monitoring programs (waterfowl counts and ringing)<br>1.6 Identify further threats to be addressed for mitigation<br>1.7 Raise awareness of the local communities of the sensitivity of the species, and prepare species management guidelines<br>1.8 Enhance enforcement of legislation<br>1.9 Establish monitoring the habitats | R: - FECO (KECO)<br>P:<br>- LC (Fishermen, Hunters, Reed harvesters,etc)<br>- NGOs<br>- Universities<br>- FCHT<br>- Media,<br>- JS |
| Endemic fish<br>Barbus luteus<br>Cyprinion tenuiradius | 25 years: Fish population increases to level of 1976 (to be determined)<br><br>5 years: Keep the stock equal or above 200005- (To be quantified) | 2.1 Assess status of endemic fishes<br>2.2 Control fish harvesting (particularly in the breeding seasons) and introduce selective fishing methods<br>2.3 Control introduction of exotic fish species<br>2.4 Design and implement a restoration plan<br>2.5 Restrict fish harvesting for certain period for restoring fish stock<br>2.6 Identify alternative livelihood for fishermen<br>2.7 Investigate biology of endemic species and their inter-relation with exotic species<br>2.8 Investigate the impacts from water quality, water depth, motorboats, etc on fish stocks, growth and reproduction.<br>2.9 Establish a Gene Bank<br>2.10 Establish a Data Bank<br>2.11 Raise awareness of the local fishermen on sensitivities of the Lake's fish species.<br>2.12 Enhance and enforce legislations | R: - FFD<br>P:<br>- LC (Fishers)<br>- NGOs<br>- Universities<br>- FM,<br>- JS |
| Otter population Lutra lutra | 25 years: Restore population to level of 1990 (To be determined)<br><br>5 years: Keep the population equal or above 200005- average (to be determined) | 3.1 Investigate the present status of the otter population<br>3.2 Investigate further threats to otters to be addressed for mitigation<br>3.3 Prevent/reduce trapping in fishing nets<br>3.4 Promote research and an action plan for sustaining the otter population<br>3.5 Raise awareness of the local communities for taking care of otters<br>3.6 Enhance and enforce legislation | R:<br>- FECO<br>- KECO<br>P:<br>- LC<br>- NGOs<br>- Universities<br>- FCHT<br>- FFDFM,<br>- JS |

**Objective 1: (cont'd) To restore, improve and conserve the biodiversity values of Lake Parishan**

| Priority Issues | Targets | Priority actions | Responsible agent (R) Partner agent (P) |
|---|---|---|---|
| Reed beds | 25 years:<br>Restore natural reed beds to the level of 1990s<br><br>5 years:<br>Prevent degradation of existing reed beds | 4.1 Define and protect the wetland boundaries<br>4.2 Investigate and map the present reed beds of the Lake and historical changes<br>4.3 Investigate the inter-relations of water level and reed growth/density<br>4.4 Control over-harvesting / overgrazing of reeds<br>4.5 Enhance and enforce the legislation<br>4.6 Raise awareness of local communities of reedbed management, including the effects of burning<br>4.7 Investigate possibilities for expanding Typha beds | R: FECO, KECO<br>P: - FNRD<br>- FRWA<br>- KGO<br>- NGOs<br>- LC (Graziers)<br>- Universities<br>- FCHT<br>- FM<br>- JS |
| Landscapes | 25 years:<br>Improvement in landscape quality<br><br>5 years:<br>No further degradation of landscape quality | 5.1 Prepare a Master Zoning Plan for new developments around the wetland<br>5.2 Establish waste and garbage management in villages around the wetland, and by visitors<br>5.3 Restore forest and rangelands around the wetland<br>5.4 Teach farmers for proper use of plastics in their farming practices<br>5.5 Control inappropriate changes to land use around the wetland through application of EIA and SEIA to all major developments | R:<br>- FECO<br>- KECO<br>P: - FNRD<br>- FJAO<br>- KGO<br>- LCFCHTO<br>- FRTD<br>- FM<br>- JS |

**Objective 2: To Enhance the supply and improve the quality of water in Lake Parishan to safeguard its values**

| Priority Issues | Targets | Priority actions | Responsible agent |
|---|---|---|---|
| Wetland's Water Balance | 25 years:<br>Water level (10 year average) not less than 19952005-average<br><br>5 years:<br>No increase in water abstraction from ground or surface water resources compared to 2007 levels. | 1.1 Determine water inflow required for sustaining the wetland<br>1.2 Prevent unauthorized abstraction from water resources<br>1.3 Monitor water flows into the wetland<br>1.4 Improve monitoring facilities and instruments and enhance accuracy in monitoring water level fluctuation of the Lake<br>1.5 Control volume of water withdrawn from water wells<br>1.6 Train the farmers for enhancing on-farm water management and improve irrigation efficiency<br>1.7 Periodically examine the status of the Lake's water balance<br>1.8 Stop installation of new wells until additional source of water is assured.<br>1.9 Improve the instruments in Parishan climatological station and enhance the accuracy of observations<br>1.10 Investigate possibilities for importing (diverting) water from adjacent basins | R:<br>- FRWA<br>P:<br>- FECO<br>- FJAO (KJAO)<br>- FCO<br>- KGO<br>- LC<br>- Universities<br>- JS |
| Wetland's Water Quality | 25 years:<br>Water quality is within the DOE thresholds<br><br>5 years:<br>No increase in chemical concentration in water compared to 2007 levels | 2.1 Control the use of agro-chemicals in the farms around the wetland<br>2.2 Regularly monitor water quality of the Lake<br>2.3 Regularly monitor water quality of the springs and wells<br>2.4 Determine thresholds for Lake's water quality<br>2.5 Assign a buffer zone for agricultural lands around the Lake<br>2.6 Control motor boats for fuel leakages<br>2.7 Raise farmers awareness of the impacts of agrochemicals on Lake's water quality<br>2.8 Investigate the impacts from rural sewages in Lake's water quality | R:<br>- FECO<br>P:<br>- FJAO(KJAO)<br>- FRWA(KWA)<br>- LCNGOs<br>- Universities<br>- FM<br>- KGO<br>- FIMO<br>- JS |

**Objective 3: To improve land use in and around the Lake**

| Priority Issues | Targets | Priority actions | Responsible agent |
|---|---|---|---|
| Disputes on encroachment into the Lake's boundaries | 25 years:<br>Boundaries are respected and no encroachment occurs<br><br>5 years:<br>Disputes are resolved, boundaries are mapped, marked and protected | 1.1 Investigate and map the boundaries of the Lake,<br>1.2 Mark the boundaries of the Lake;<br>1.3 Prepare the cadastral map of the lands around the wetland<br>1.4 Discuss and resolve the claims from the local communities<br>1.5 Control land use conversion of national lands in and around the wetland | R:<br>- FECO(KECO)<br>P:<br>- FNRD<br>- FJAO<br>- LC<br>- Claimant Farmers<br>- KGO<br>- JS |
| Catchment management | 25 years:<br>Catchment management plans are implemented successfully<br><br>5 years:<br>Plans and designs for catchment management are prepared and one demonstration project established for watershed management | 2.1 Conduct studies for preparing a plan for protecting the Lake's catchment against erosion<br>2.2 Implement pilot programs for protecting the catchment | R:<br>- FNRD(KNRO)<br>P:<br>- FRWA (KWA)<br>- FECO<br>- LC<br>- Universities |

**Objective 4: To enhance resources and promote wise use of the Lake to improve villager's livelihoods**

| Priority Issues | Targets | Priority actions | Responsible agent |
|---|---|---|---|
| Local management by rural communities to be more participatory | 5 years:<br>The establishment of an equitably represented local management committee. | 1.1 Hold joint sessions of VICs of all villages and determine the need for committee(s) (with project representation)<br>1.2 Encourage local leaders, educated people and rural women to join committees.<br>1.3 Compile Terms of Reference(s) for Local Committee(s)<br>1.4 Keep local people aware of the Lake's condition and all activities related to the project.<br>1.5 Finally, establish a local management committee for 18 villages. | R: VICs<br>P:<br>- KECO<br>- FFD<br>- KGONGOs<br>- LC<br>- Universities<br>- FCD<br>- Local Committees |
| Provide infrastructures for pollution control and environmental improvement (Rural sanitation) | 25 years:<br>All villages have waste management and sewage collection system<br><br>5 years:<br>An agreed plan is developed for each village for environmental management. | 2.1 Prepare joint village plans and implement programs for garbage control.<br>2.2 Prepare plan and implement program for waste water management at villages around the wetland.<br>2.3 Agree and control water systems to provide clean domestic water.<br>2.4 Provide access to gas pipe (to reduce use of other fuels).<br>2.5 Revise and in future make village development plans that respond to local knowledge and control polluting activities. | R: - KGO<br>- Shiraz University of Medical Science)<br>P: - KECO<br>- KWA<br>- LV(VICs)<br>- LC<br>- Gas Office<br>- NGOs<br>- Universities<br>- KVO<br>- Local Committees<br>- FHF |
| Establish a sustainable fishery | 25 years:<br>Restore the fish harvest to a sustainable level of at least 250 tons per annum<br><br>5 years:<br>Establish fishery cooperative, no-take zones and codes of practice | 3.1 Establish a fishery Cooperative and certification scheme<br>3.2 Establish a plan to restore the fishery, agreed by the Cooperative<br>3.3 Establish no-take zones and codes of practice<br>3.4 Annual monitoring and reporting of fish stocks and catch<br>3.5 Training programmes for fishermen | R: - FFD<br>P: - KECO<br>- LC<br>- Universities<br>- KVO<br>- VIC<br>- FCD |
| Improve efficiency of animal husbandry | 25 years:<br>Develop capacity for sustainable animal husbandry<br><br>5 years:<br>prepare and start implementing plans for developing efficient animal husbandry | 3.1 Investigate potentials and feasibility for animal husbandry development around the wetland including forage crop production and if feasible prepare a plan<br>3.2 Change husbandry system to be more eco-friendly<br>3.3 Visit demonstration successful and eco-friendly animal husbandry compounds in comparable regions<br>3.4 Support water buffalo husbandry in appropriate parts of the wetland<br>3.5 Training for pasture and rangeland management with integrated systems.<br>3.6. Seek DOE and Natural Resources agreement on giving loan to villagers' activities. | R:<br>- KJAO<br>- Local Committees<br>P: - KECO<br>- FNRD<br>- LC<br>- KVO<br>- VIC<br>- FCD<br>- Banks |

**Objective 4 (Cont'd): To enhance resources and promote wise use of the Lake to improve villager's livelihoods**

| Priority Issues | Targets | Priority actions | Responsible agent |
|---|---|---|---|
| Organic agriculture | 25 years:<br>Organic local produce sold in market.<br>5 years: Environmental packaging/branding for local products. | 4.1 FFS & IPM site visit for local farmers;<br>4.2 Extension and Training;<br>4.3 Study new ways for cultivation (Livestock fertilizers, biological ways to face with pests) and training (IPM) ;<br>4.4 Investigate and train efficient farm practices;<br>4.5 Improve processing and packaging of off-season vegetable products;<br>4.6 Facilitate training and encourage organic crop production in and around the Lake;<br>4.7 Facilitate funds to farmers for utilizing more organic systems. | R:<br>- FJAO (KJAO)<br>- FECO (KECO)<br>- Local Committees<br>P:<br>- LC<br>- NGOs<br>- Universities<br>- FCD<br>- Banks |
| Alternative livelihood projects | 25 years:<br>10% of rural houses in 5 selected villages are equipped as guesthouses<br><br>5 years:<br>5 alternative projects are piloted | 5.1 Encourage eco-Tourism<br>5.2 Train rural youth as tourist leaders<br>5.3 Tourism permission for villages<br>5.4 Improve conditions of access roads to provide easy access to villages<br>5.5 Equip rural houses as guesthouses<br>5.6 Parking and rural tourist equipment<br>5.7 Identify 5 alternative income projects within 2 years. | R: - KGO<br>- FCHT(KCHT)<br>- LC<br>P:<br>- KECO<br>- FFD<br>- KNRO<br>- KJAMO<br>- FCHT<br>- LC<br>- NGOs<br>- Universities<br>- VIC<br>- FCD<br>- KOC<br>- Banks |
| Conservation & restoration of existing resources | 25 years:<br>-All villages are covered by priority protective infrastructure facilities (i.e. fire station),<br>- Each village has a community resources management plan<br><br>5 years:<br>Priority protective plans prepared;<br>- One village selected and prepared as a demonstration village for sound environmental management. | 6.1 Prepare community based plans for protective rural infrastructure facilities (i.e. fire station, …)<br>6.2 Improve local fire control / management.<br>6.3 Improved water system management.<br>6.4 Work with local Environment and Natural Resources Aids<br>6.5 Train local people as above<br>6.6 Give rangelands, watershed management and reforestation plans to local community | R:<br>- KGO<br>- Local Committees<br>P:<br>- NGOs<br>- KECO<br>- FFD<br>- KNRD<br>- KWA<br>- FCD (KOC)<br>- VICFHF<br>- KOC<br>- Banks |

## Objective 5: To raise public awareness and enhance opportunities provided by the Lake for education and research

| Priority Issues | Targets | Priority actions | Responsible agent |
|---|---|---|---|
| Improve awareness of local rural population | 25 years: More than 50% of the rural population are aware of the wetlands' sensitivities and basic requirement<br><br>5 years:<br>- Publishing 3000 Bruchures to be distributed in related ceremonies<br>- At least 5 movies, publications, media events per year about wetland values, threats, and management, etc.<br>- Preparing Reports on wetland needs and related projects | 1.1 Assess awareness levels and gaps of local people knowledge of the values and threats and attributes of Lake Parishan wetland.<br>1.2 Prepare and implement plan for raising local awareness<br>1.3 Hold annual Festivals to celebrate the Lake<br>1.4 Provide media with awareness materials and filming opportunities on:<br>- wetland attributes, and requirements;<br>- threats, their origins and impacts<br>- instructions for remediation and protection<br>- Environmentally friendly farming practices and rural management<br>- Rural sustainable livelihood<br>- Etc<br>1.5 Prepare simple brochures ,bulletins, booklets and films<br>1.6 Awareness workshops in schools, and other local target audiences.<br>1.7 Conduct needs assessment for the above. | R:<br>- KECO<br>- Village Committees<br><br>P: - FECO<br>- FFD<br>- FNRD<br>- KJAMO<br>- KOC<br>- KCHT<br>- NGOs<br>- LCs<br>- Media<br>- Fars Education Organiztions<br>- VIC's<br>- CIWP |
| Raise awareness of local and provincial officials | 25 years:<br>Responsible officials implementing required management actions with support of their superiors<br><br>5 years<br>- workshops or training courses for responsibles from environment, water, agriculture and fisheries sectors<br>- Key Provincial officials have at least had one site visit to the Lake | 2.1 Assess awareness levels and gaps of the government experts and decision maker's knowledge of the values and threats and attributes of Lake Parishan wetland<br>2.2 Prepare a plan for raising awareness among these audiences including :<br>- Prepare and distribute reports, booklets and bulletins to introduce the Wetland, its key attributes, values, threats and management needs.<br>- Organize workshops to discuss and to introduce the Lake and management responsibilities to the key technicians from different relevant organizations including universities<br>- On occasions (Festivals, Wetland days, Workshops), invite key provincial technicians, managers, decisions makers and academicians for a short introductory visit to the site;<br>- Organize a web site and provide as much information as possible on the wetland, its physical attributes, functions, values, threats, management needs, etc.<br>2.3 Invite and support university students (MSc and PhD) for conducting research works on different attributes of the wetland | R: - KECO<br><br>P: - FECO<br>- FFD<br>- FNRD<br>- KJAMO<br>- Fars Governors<br>- Universities<br>- NGOs<br>- KCHT<br>- LCs<br>- Media<br>- CIWP |
| Raise awareness of general publics | | 3.1 Prepare a plan and adopt a wide range advertisement of the Lakes attributes to attract eco-tourists<br>3.2 Prepare brochures and signboards about the Lake<br>3.3 Send posters about the Lake to hotels in nearby towns and cities<br>3.4 Improve visitor and interpretation facilities at the Lake. | R: - FECO<br>P: - FCHT<br>- Media<br>- Fars Education - Organization<br>- Universities<br>- NGOs<br>- VICs<br>- CIWP |

## 7. GOVERNANCE AND IMPLEMENTATION MECHANISMS

The following provisions are considered to be essential for finalization, enforcement and implementation of the present Management Plan.

1. Inter-sectoral coordination of key stakeholders, and strong engagement of local communities;
2. Strong support for implementation from decision-makers;
3. Provide financial resources.
4. Supervise the implementation of the Plan through a management committee (see paragraph 44-4-) and provide monitoring and evaluation system

### 7.1. Inter-sectoral coordination

The adaptive participatory approach (through series of workshop sessions) was determined to be an appropriate approach for developing the management plan. To facilitate better involvement of the stakeholders in continuing participation in the detailed planning and implementation processes, three working groups were organized to address the following issues:

- Biodiversity working group;
- Water management and land use working group
- Public participation and livelihoods working group.

These working groups will have an inter-sectoral structure and representatives of different stakeholders (provincial and local level) as well as representatives from relevant local communities and NGOs will be among their formal members. The working groups will report to the provincial Local Management Committee, which is itself inter-sectoral.

The main operational document for Implementation will be the 5-Year Action Plan. This will comprise a portfolio of the projects described in the previous section of this management plan, including timelines, responsibilities and budgets.

### 7.2. Ensuring decision-maker support for implementation of the plan

The Lake Parishan management plan is an inter-sectoral document in which different organizations will participate in responsibilities. Therefore, it would require a strong support for being properly implemented otherwise unbalanced activities in different sectors may hamper the anticipated outcomes to be achieved. To facilitate such supports, the plan needs to be formally approved by high level provincial and national authorities before it is formally issued for being implemented by relevant organizations. Also, to expedite the approval process, the plan should be straightforward and would include minimum provisions required. The diagram below describes the process to be

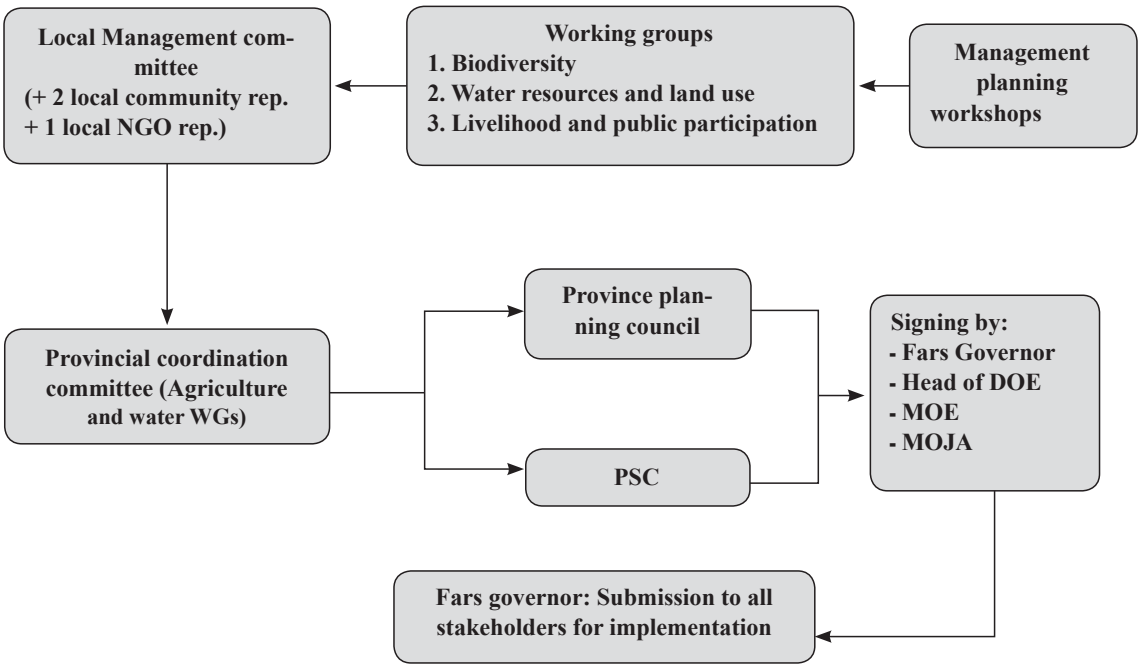
followed for obtaining approval of the plan.

### 7.3. Financial resources

Three different processes were discussed for the provision of financial resources for implementation of the management plan as follows:

A. One particular national budget to be allocated to provincial organizations;

B. One particular provincial budget to be allocated to provincial organizations;




**Governance process for approval and enforcement of the plan for implementation**

C. To provide new budgetary source to be directly allocate to each organization.

Discussion in the group led to proposing alternative “B” as the most appropriate approach since it better fits with the general governmental political inclinations towards allowing more power for making decisions to the Provincial Government Offices.

The budget for the management plan will be defined for the 5 Year Action Plan. Each activity in the portfolio of projects will have a defined budget and lead organization. When combined, these will result in an overall annual and 5 year budget.

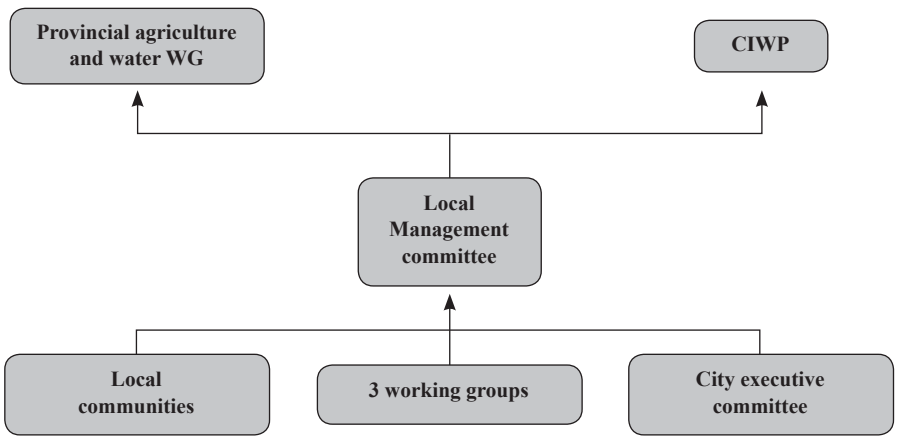
### 7.4. Monitoring and evaluation

The responsible body (ies) for monitoring and evaluation of implementation of the management

plan should meet the following characteristics.

- To be familiar with development process and objectives of the plan
- To be able to control implementation and its results at local level
- To have access to information of different stakeholders
- To be authorized for formal announcement of the results of M & E
- To have the capacity to provide technical recommendations and amendments to the plan

The provincial technical committee was proposed to be the main body for M&E process. However, local communities, Kazeroun Town Committee, and working groups should also be able to comment on the outcomes of the plan. These would act as sub-groups of the technical committee as indicated below.




**Process of M & E of LP management plan**

Based on this process, in addition to the technical committee at provincial level, 3 other provincial and local groups will be fully involved monitoring and evaluation of the MP. Regarding the results of M&E, the identified tasks will be prioritized and categorized. The issues that need to be technically revised will be sent to PCO of CIWP and the other executive issues will be revised by provincial working groups in order to prevent any overlaps.

It is proposed that the Local Management Committee will prepare an annual report on the implementation of the plan, starting at the end of 2009 A major review of the plan will be undertaken, with external advisors as appropriate, once every five years. However, the first major review shall be made at the end of 2010, before the end of the CIWP and to make adjustments based upon early findings.

## 8. FURTHER STEPS

The next steps to develop and finalize the management plan and launch its implementation are:

To distribute, as soon as possible, this draft plan among all the key stakeholders including members of Technical Committee asking for their comments / proposals for finalizing the plan;

To Review the plan against comments received and incorporate the results of baseline studies of the Lake, and developing zonation plans.

To Send the final plan for approval by coordination committee and formal issue and enforcement by a high level provincial (i.e. Provincial Governor) and national authorities (DOE, MOJA, MOE) for signing off (see diagram above).

At the same time as the Management Plan is being finalised and approved, the 5 Year Action Plan (portfolio of projects) will also be finalised by the Working Groups for sign-off by the technical committee.

Implementation of the Action Plan will begin during 2009, as soon as the Management Plan has received formal approval.

# Conservation of Iranian Wetlands Project

# Annexes

Department of Environment

## Table of contents

# Annex 1:
## Lake Parishan Monitoring Plan

### I. Introduction to Wetland Monitoring

Wetland management in Iran has received more and more attention in recent years. In many instances this effort is being held back by a lack of relevant information on the nature of issues facing management, the cause of the problem and the effectiveness of management procedures and actions in resolving the problem. Effective monitoring programmes can help overcome such shortcomings. Monitoring is the systematic collection of data or information over time in order to ascertain the extent of compliance with a predetermined standard or position. An effective monitoring programme is not necessarily complex or expensive. Effectiveness is gauged by the relevance and timeliness of the data or information collected. Simple approaches to monitoring can be effective if they are well designed. However, even a well designed monitoring programme could have little value if the information that is collected is not utilized or does not influence the management process for that locality or site. Ideally, the locality or site will be subject to an interactive and holistic management plan that provides the means of responding to the information obtained from the monitoring programme. This can be termed an “adaptable management cycle” .

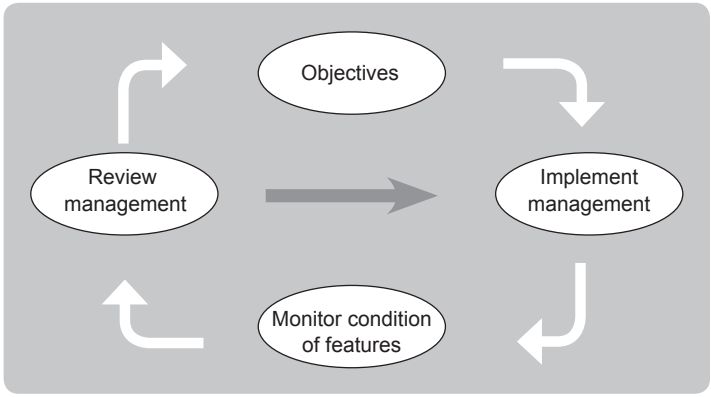



**Figure 1: The adaptable management cycle**

Essentially, monitoring provides the means of measuring the output of the management procedure - that is, it provides the means of measuring the (observed) state of the environment and the extent to which it may have been altered. Ideally, a monitoring programme should be established before a particular management activity is implemented, or at a minimum, baseline information should be available. If monitoring is conducted before a particular management decision is taken it is essential that the information collected is then used to influence the management activities.

The key to a useful monitoring programme is good design. Monitoring programmes that are data

rich and information poor are not effective management tools and this is further reduced if the programme provides misleading information. Ideally the development of a monitoring programme should be a straightforward and cooperative process between managers (who make decisions), scientists (who provide expert advice and interpret data), and other relevant stakeholders such as local community members (who often have excellent knowledge of local conditions).

## II. A Framework for designing a Monitoring Plan

The present Monitoring Plan was drafted based on results of the Wetland Monitoring Workshop which was held from 3 – 5 May 2008 in Shiraz. In total, 45 persons attended, and there was a good representation from government agencies, NGOs, local communities and universities.

The methodology for drafting a Monitoring Plan was based on drafting monitoring protocols for each selected indicator. Monitoring protocols were based on the concept of establishing a monitoring cycle. In order to be able to manage wetlands successfully, wetland managers need to have their information needs met, and provided to them in a form that is useful. It also needs to be updated regularly, as last year's information – for example – may no longer be applicable, and lead to a wrong decision. This process of acquiring tailored information about wetlands, and periodically updating this is termed the wetland monitoring cycle (see Figure 2).

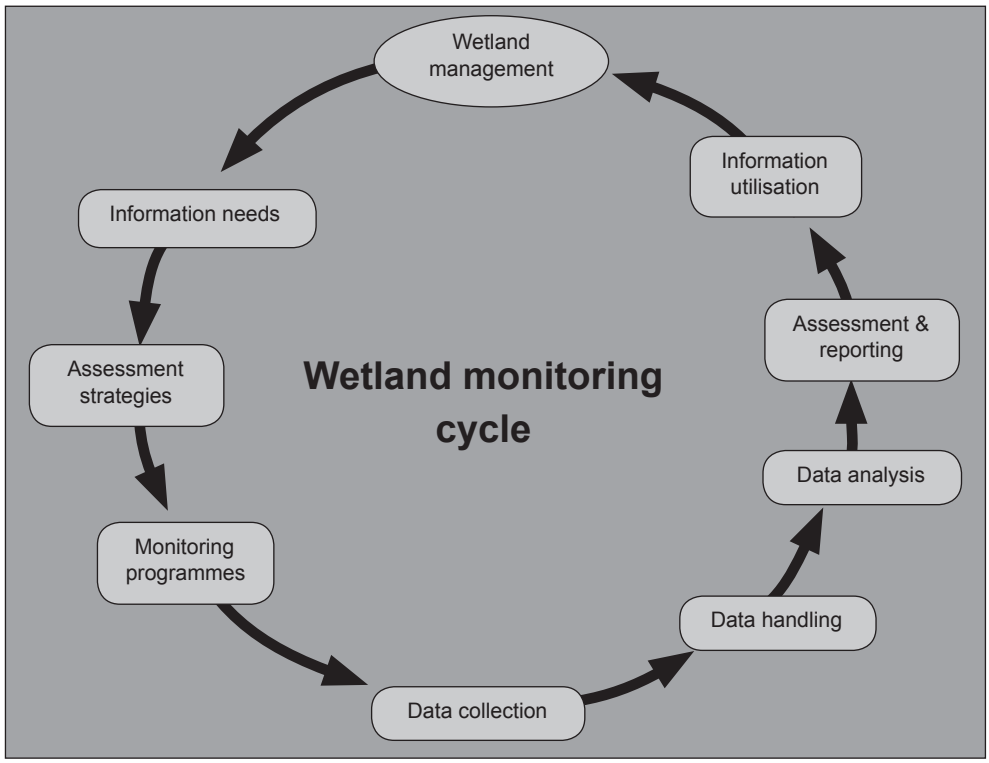



**Figure 2. Wetland monitoring cycle**

The approach used was to develop monitoring protocols for the various hydrological, biodiversity and socio-economic indicators, and together these protocols form the basis of the monitoring plan. These protocols were developed jointly by key stakeholders. The process of drafting protocols for the main parameters / key indicators made significant progress during the mentioned workshop, and most protocols were completed in draft form. These protocols together comprise the Monitoring Plan, which in turn will form an integral part of the Management Plan.

## III. Monitoring Plan for Lake Parishan

In total seven protocols were prepared for biological aspects of Lake Parishan, two protocols were prepared for water monitoring aspects and six protocols were prepared for monitoring the socio-economic aspects. Tables 1 to 3 summarize these protocols. All monitoring protocols are included in Annex I and address the following aspects:

1) Water
   1-1) Water Quality
   1-2) Water Quantity
   1-3) Land conflict

2) Biodiversity
   2-1) Waterfowl
   2-2) Fish
   2-3) Reedbeds
   2-4) Otter
   2-5) Submerged Vegetation
   2-6) Macrobenthos
   2-7) Phytoplankton
   2-8) Landscape

3) Socio-economic
   3-1) Livelihoods (eg.Tourism)
   3-2) Agriculture
   3-3) Animal Husbandry
   3-4) Awareness
   3-5) Public Participation
   3-6) Infrastructure Development
   3-7) Resources (eg.Fisheries)

As a result the Monitoring Plan for Lake Parishan should have the following components:

## A) Biological Monitoring

According to the Lake Parishan Management Plan, biological aspects of Lake Parishan which need to be monitored are: Waterfowl, endemic fish, reedbeds, otter as well as landscape aspects.. However, because of their importance and emphasis of the participants in the Monitoring Workshop (Shiraz, May 2008), phytoplankton, macrobenthos and submerged vegetation were added as additional aspects of biodiversity and thus proposed for monitoring. One option is to merge monitoring of the latter to fish or water quality monitoring programmes.

To monitor biodiversity of Lake Parishan, monitoring stations need to be identified on a map, inside the water body of the lake (for phytoplankton, submerged vegetation, macrobenthos, and fish), along the periphery of the lake (for waterfowl, reedbeds, and otter) in shallower areas, along rivers and channels.

Monitoring needs to be conducted **seasonally** for phytoplankton and macrobenthos, **twice a year** for waterfowl (breeding and wintering seasons) and **annually** for submerged vegetation, fish and otter. Reedbeds need to be monitored at least every two years.

**DOE Fars/Kazeroon** will be directly in charge of monitoring the biological diversity of the lake, but Shilat Fars will collaborate in monitoring of fish and other aquatic studies (phytoplanktons, macrobenthos, submerged vegetation). For monitoring of reedbeds, otter and waterfowl, the local communities from around Lake Parishan will be the main partner of the lead agency with support from NGOs and universities.

**DOE Fars** will be responsible for producing a comprehensive annual report on the status of Lake Parishan based on annual and seasonal reports. Every five years an analytical report will be produced to provide inputs to the overall Management Plan.

Monitoring data need to be stored in a Database in **DoE Fars/ DoE Headquarters**.

## B) Water and Sediment Monitoring

Water and sediment quality as well as water quantity need to be monitored in springs, groundwater, and Lake Parishan itself.

Monitoring needs to be conducted in the following locations:
a) In all the springs around the Lake that discharge directly into it; namely Ghale narenji, Abpelek, Absiru, Jamshidi, Polabguineh, etc. with two stations at each major spring (one at source and the other at the entry point to the lake).
b) Monitoring water quality and quantity needs to continue in wells already included in the monitoring programme of the Water Authority (30 wells).
c) In the Lake, sampling stations for monitoring water quality need to be identified inside the lake (six to ten stations). For monitoring water quantity (water level) one station (existing station or another one on the northern side of the lake) would be enough.

Water quality of the lake needs to be monitored **seasonally**, whereas sediment quality needs to be monitored once or **twice a year** (spring and/or autumn).

For springs, water quantity (gauge readings) needs to be done on a **daily** basis and flow assessment on a **monthly** basis. For the lake, water balance (water level) is monitored on a **daily** basis and groundwater on a **monthly** basis.

Water quantity in springs will be monitored by **Water Authority in Fars** (flow measurements + daily gauge readings), groundwater and the lake water will be also be monitored by the Water Authority. Water quality monitoring of the springs and the Lake will be the responsibility of **DoE Kazeroon/Fars**. The same organizations who are in charge of monitoring will also report.

DoE Fars should gather all the necessary data from the Water Authority and prepare a comprehensive annual report on water quantity and quality of Lake Parishan. Every five years an analytical report needs to be prepared on water quality and quantity to provide inputs into the Management Plan.

It is recommended that the existing Database remains in Water Authority Fars with DoE Fars having access to it. DoE Fars/Kazeroon needs to establish a new Database for water quality monitoring of the Lake, preferably in Kazeroon.

### C) Monitoring Socio-economic aspects:

Indicators that were considered in drafting socio-economic monitoring protocols were as follows:
a) Livelihoods (eg.Tourism)

b) Awareness and capacity
c) Animal husbandry
d) Agriculture
e) Participatory Management
f) Infrastructure development
g) Resources (eg.Fisheries)

These indicators need to be monitored in 18 villages depending on where the activity is taking place. Monitoring should take place annually except for tourism and infrastructure development which need to be monitored on a daily (tourism) or continual (infrastructure) basis. Reporting needs to be conducted annually. Monitoring will be conducted by Local community organizations with support from the Governors office. Reporting will be handled by the Governors Office through Bakhshdaris (sub-districts) based on data gathered by the Local Community Organizations in the field. All socio-economic data could be stored in the Database held in the Governors Office

The above results could be summarized in tables 1 to 3 as follows below.

**Table 1 – Biological Monitoring programme**

| Biological Objectives | Parameters | Locations for sampling | Timing of sampling | Lead Agency (Monitor + Report) | Time of reporting | Storage of data | Budget required (annual) - Total - Government - CIWP |
|---|---|---|---|---|---|---|---|
| Waterfowl namely birds of international importance | • Total numbers<br>• Number wintering<br>• Number breeding (# of nests) | The whole lake and surrounding agricultural fields that are used by geese and crane | Baseline: Every 2 months<br><br>Monitor: Twice a year (wintering + breeding seasons) | DoE Fars | Biannual | Database in DoE Fars | |
| Endemic fish namely Cyprinion tenuiradius and Barbus luteus | • Number<br>• Size<br>• Sex<br>• Distribution | Incoming rivers, channels and inside the lake | Baseline: Seasonally<br><br>Monitor: Annual | Shilat Fars | Annual | Database in Shilat Fars* | |
| Reedbeds | • Density<br>• Diversity<br>• Distribution<br>• Quality (health) | All around the lake and the patches of reedbeds inside the lake | Baseline: once a year<br><br>Monitor: Every 25- years (depending on the speed of change) | DoE Fars/ Kazeroon | Annual | Database in DoE Fars | |
| Otter | • Absence/ presence<br>• Breeding/feeding habitats<br>• Causes of death | All around shores of the lake + rivers and channels | Baseline: monthly<br><br>Monitor: Annual | DoE Fars/ Kazeroon | Annual | Database in DoE Fars | |
| Landscape | • Land use<br>• Land cover | Immediate catchment around the lake | Baseline<br><br>Monitor: Every 25- years based on the speed of development | Governors Office | Every 25- years | Database in Governors Office* | |
| Phytoplankton | • Density<br>• Diversity<br>• Distribution<br>• Harmful species | In pre-selected stations inside the lake | Seasonally | DoE Fars + Shilat Fars | Annual | Database in DoE Fars | |
| Submerged vegetation | • Presence/ absence of rare species<br>• Density<br>• Diversity | In shallow but permanently wet areas of the lake | Annually (Spring) | DoE Fars + Shilat Fars | Annual | Database in Shilat/ DoE Fars | |
| Macro-benthos | • Diversity<br>• Density | In pre-selected stations in the lake | Seasonally | DoE Fars + Shilat Fars | Annual | Database in Shilat/ DoE Fars | |

**Table 2. Water and Sediment Monitoring programme**

| Water Quality | Parameters | Locations for sampling | Timing of sampling | Lead Agency (Monitor + Report) | Time of reporting | Storage of data | Budget required (annual) - Total - Government - CIWP |
|---|---|---|---|---|---|---|---|
| Springs<br><br>Rivers | Salinity<br>pH<br>EC<br>Cations<br>Anions<br><br>In addition to the above:<br>DO<br>BOD<br>COD<br>Hardness<br>Turbidity<br>Dissolved nutrients<br><br>Contaminants such as:<br>- Heavy metals<br>- Pesticides<br>- Bacteria | - At source of five major springs: Ghale narenji, Abpelek, Absiru, Jamshidi, and Polabguineh.<br><br>- At mouth of the two main rivers entering the Lake | Seasonal | Water Authority.<br><br>Any additional stations by DoE Fars or Kazeroon | Annual | Fars Water Authority | |
| Lake | Physical parameters such as: temperature, turbidity, depth of penetration of light, hardnesss<br><br>Chemical parameters such as: salinity, EC, pH, cations and anions<br><br>Biological parameters such as: DO, BOD5, COD<br>Bacterial counts<br>Dissolved nutrients<br>Phytoplanktons<br>Benthose | Sampling stations (10) inside the lake. | Seasonal | Water Authority.<br><br>Any additional stations by DoE Fars or Kazeroon | Annual | DoE Kazeroon or Fars | |
| Groundwater | • EC<br>• Chlor<br><br>New ones:<br>• Dissolved nutrients<br>• Bacteria<br>• Pesticides<br>• Heavy metals | Wells already being sampled by the Water Authority (30 wells). | Monthly for existing parameters, seasonally for the rest of the parameters | Water Authority.<br><br>Any additional stations by DoE Fars or Kazeroon | Annual | Fars Water Authority | |
| Sediment | • Pesticides<br>• Heavy Metals<br>• PAHs<br>• Diversity / density of benthos | Six new stations | Twice a year (end of spring and end of autumn) | DOE | Annual | DOE Kazeroon/ Fars | |

**Table 2. (cont'd) Water and Sediment Monitoring programme**

| Water Quantity | Parameters | Locations for sampling | Timing of sampling | Lead Agency (Monitor + Report) | Time of reporting | Storage of data | Budget required (annual) - Total - Government - CIWP |
|---|---|---|---|---|---|---|---|
| Springs | • Water level<br>• Flow | Ten springs: At source<br>23- new stations to be added at entry points to the lake | Daily (gauge readings)<br>Monthly (flow) | DoE Kazeroon (gauge reading)<br>Water Authority (flow) | Annually | Water Authority in Fars | |
| Lake | • Water level | One station (already existing one with improvements or a new one) | Daily | Water Authority (daily measurements) | Annually | Water Authority in Fars in collaboration with DoE Kazeroon | |
| Groundwater | • Water level | Existing locations in about 30 wells | Monthly | Water Authority | Annually | Water Authority in Fars | |
| Land Conflict | • Number of claims | All around the Lake especially shallower areas where water moves in and out rapidly | Seasonal | DoE Kazeroon | Annually | Governors Office | |

**Table 3. Socio-economic Monitoring programme**

| Objectives of Management Plan | Parameters | Locations for sampling | Timing of sampling | Lead Agency (Monitor + Report) | Partner Org. | Time of Reporting | Storage of data | Budget required (annual) - Total - Government - CIWP |
|---|---|---|---|---|---|---|---|---|
| SL: Tourism | Number, diversity and quality of local tour operators | All 18 villages | Seasonal | Lake Parishan Local Community Org. – tourism sub-group (if established) | Tourism Organization | Annual | Database in Governors Office / Tourism Organization | |
| Awareness | Number and diversity of awareness raising networks or initiatives on wetlands | Local, Provincial National levels | Seasonal | Lake Parishan Local Community Org.- biodiversity sub-group (if established) | DoE Fars/ Kazeroon Public Relations | Annual | Database in DoE Fars/ Kazeroon Public Relations | |
| Agriculture | Area under cultivation<br><br>Type of crops<br><br>Crop prices in the market | In target villages based on type of target crops and pilot farms | Biannual | Lake Parishan Local Community Org. (eg. farmers) | MoAJ | Annual | Database in Governors Office | |
| Animal husbandry | Number of livestock and types per village<br><br>Livestock and product prices at market | In all villages around Parishan Lake (especially those involved in animal husbandry, past/present/ future) | Biannual | Lake Parishan Local Community Org. (eg. livestock breeders) | MoAJ | Annual | Database in Governors Office | |
| Fisheries | Tons of fish captured per season, by species, by size<br><br>Fishing methods and number of fisherman days<br><br>% fish sold at market (vs subsistence) | In all villages around Parishan Lake (especially those involved in fishing activities, past/ present/future) | Weekly | Lake Parishan Local Community Org. (eg.fishermen) | Shilat | Annual | Database in Governors Office | |
| Participatory Planning | Number of projects using a participatory approach | Local + Provincial levels | Annual | Lake Parishan Local Community Org. | Governors Office | Annual | Database in Governors Office | |
| Infrastructure development | Number and quality of existing infrastructures (waste water, solid waste recycling emergency centers, schools, libraries, etc) | All 18 villages | Seasonal | Lake Parishan Local Community Org. | Governors Office | Annual | Database in Governors Office | |

## IV. Implementation Measures:

- **Team Work:** Monitoring is a collaborative effort. When one organization is responsible it means that this organization is in charge of planning and achieving results but close collaboration of other key organizations is critical to successful implementation of the monitoring plan. Successful implementation of this Monitoring Plan requires close collaboration and good coordination between DoE, Water Authority, Shilat at provincial levels as well as MoAJ, DoE Kazeroon, local communities and NGOs at local level (with strong support from the Gorvernor's Office).

- **Data Storage:** To avoid putting extra burden on any particular organization for monitoring, all responsible organizations need to follow up their routine monitoring work with the condition to make the data available to other key stakeholder organizations. Databases need to be established in the agencies involved in monitoring, and mechanisms developed for data sharing, preferably through the internet. A central database is to be established at DoE, who will be responsible for revising the Management Plan based on the monitoring data..

- **Methodologies/Procedures:** A good monitoring plan will produce good data and will help in taking informed management decisions. It is necessary that all procedures for monitoring are developed in details and published in each responsible organization. CIWP could provide funding (external expertise and advice) on revising these procedures and standardizing them. Also CIWP could support some of the key baseline studies.

- **Funding:** As monitoring programmes are costly, each responsible organization will provide its own funding (through national and provincial budgets), however, funding for expert advice, training, equipment and establishing databases may be available through CIWP.

- **Reporting:** A single integrated monitoring report should be produced annually by DoE Fars which would summarize all the results obtained from monitoring to be used as a key source for giving feedback to the Management Plan. This should be an annual monitoring report entitled "State of the Environment of Lake Parishan in Year XXXX" that summarises monitoring results at site level. It should be made widely available in hard copy and on the web. The first report should be prepared for early 2009 based on monitoring that was done in 2008.

- **Capacity Building:** In general it seems that the expertise for monitoring is adequate except training needs for use of new equipment or new techniques. However, the number of experts

available is far below the required level and there needs to be a comprehensive training programme for implementing the Monitoring Plan. CIWP could help in this regard especially with involving local communities in monitoring efforts. Also, capacity for engaging local communities and interpretation of data needs to be acquired by DoE Kazeroon.

### - Mitigating risks associated with implementation of the Monitoring Plan

Risks associated with implementation of the Monitoring Plan fall into two main categories: those that hamper implementation of the monitoring, and those risks posed to the environment by implementing monitoring. These risks, plus ways for mitigating these, are provided in Table below.

| No. | Risks | Mitigation approach |
|---|---|---|
| **Risks hampering monitoring** | | |
| 1 | Sudden climatic changes (extreme hot and cold seasons) | Be prepared for general trends of climatic changes at local, regional, national and global levels by sharing experience and exchanging information |
| 2 | Lack of budget (lack of equipment, insufficient personnel/ experts) | Be prepared by preparing proposals beforehand to ask provincial and national government for necessary budgets (for example, assess the needs for new equipment and personnel and include them in the budget proposals) |
| 3 | Lack of participatory approach (lack of cooperation between various stakeholders, misinformation from officials, misinformation from local communities) | 1. Get necessary training for using participatory approach in decision-making to open up new opportunities for collaboration between agencies and various stakeholders (hold multi-stakeholder meetings) |
| 4 | High turnover rate of officials | Document as much as possible and openly share documents between officials in the same organization to facilitate the integration of new officials into the process |
| 5 | Local communities not available in certain seasons | Train more than just a limited number (including volunteers from NGOs or CBOs) |
| 6 | Unreliable data (no quality control) | Seek expert advice at national and international levels for quality control (revising the existing procedures) |
| 7 | Delay in implementation of monitoring (or in producing monitoring reports) | Establish a monitoring team within DoE and provide necessary training (assign responsibilities) and make sure An Integrated Monitoring Report is produced every year – starting in 2009. |
| **Risks posed to the environment by the monitoring** | | |
| 1 | Monitoring activities result in disturbance to sensitive wildlife (e.g. waterbird breeding colonies) or habitats. | Do not closely approach breeding colonies or roosting areas, but monitor from a distance. Avoid making unnecessary noise, do not wear brightly coloured clothing or use brightly coloured equipment. Avoid making sudden movements near wildlife. Limit the number of samples or sampling points. Do not move through sensitive habitats but around them as much as possible. |
| 2 | Accidental introduction of exotic species or diseases. | Observe hygiene when handling wildlife (e.g. use gloves, clean trays), and when entering sensitive areas. |

# Annex 2:
## TOR for Lake Parishan Local Management Committee, Provincial Coordination Committee and Secretariate

**Local Management Committee**

The Lake Parishan Local Management Committee has primary responsibility for driving and overseeing implementation and further development of the management plan. It is chaired by the Governor of Kazeroon.

Membership

- Kazeroon Governor (Chairman)
- DOE-Kazeroon (Secretary)
- DOE-Fars
- Representatives of Village Islamic Councils (5 representatives)
- NGOs (3 Representatives)
- Water and Power Authority
- Jihad Agriculture Organization
- Natural Resources Department
- Shilat (Fishery Department)
- Cultural Heritage & Tourism Org.
- Industry and Mines
- Roads and Transportation
- Rural Cooperatives Org
- Health Organisation
- Rural Water and Sewerage Organisation
- Judiciary
- University of Kazeroon
- Other organisations may be invited to attend by the Chairman

**The TOR of the local management committee is as follows:**

1. Supervision / monitoring the implementation of the Management Plan
2. Review and updating of the management plan each year
3. Evaluation of performance

4. Preparing annual implementation plan
5. Preparing annual implementation report
6. Facilitating inter-sectoral coordination and conflict resolution
7. Planning and coordination for financial provisions with provincial committee
8. Establishment of specialized working groups
9. Collaboration with the Provincial Coordination Committee (Water & Agriculture)

During the first year of implementation, meetings will be held every 2 months. Thereafter, they may be held each quarter.

**Secretariat**

The Secretariat will be provided by DOE-Kazeroon, according to the following TOR

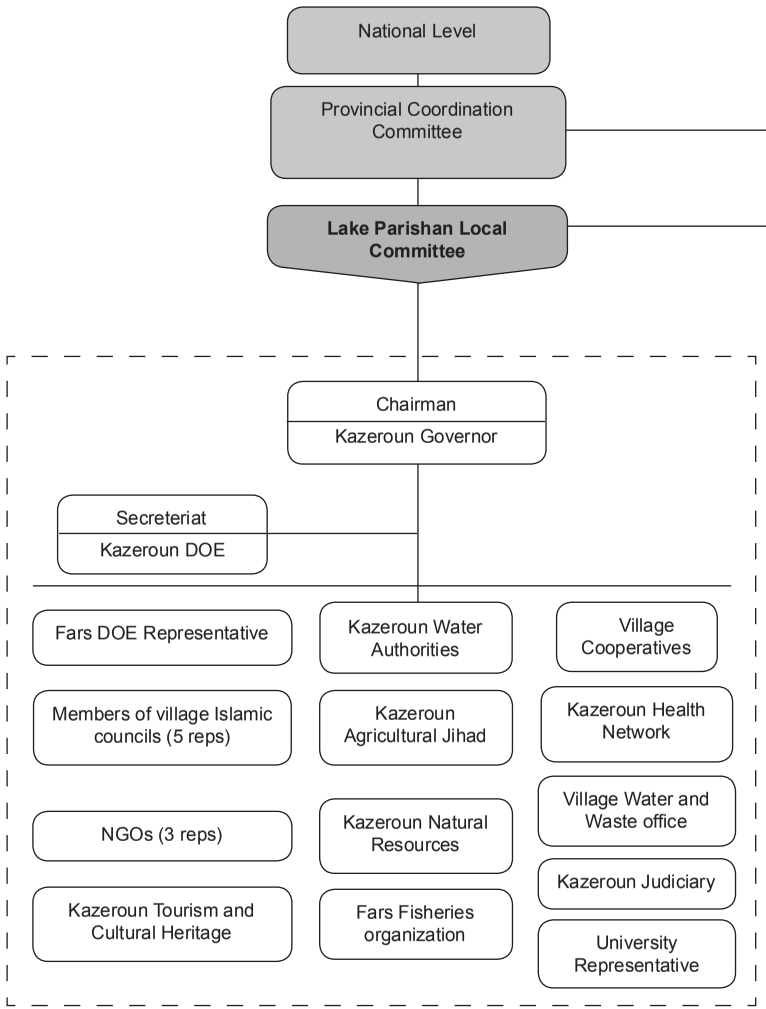
1. Organizing the office of the Secretariat
2. Preparing agendas, proposals and minutes for meetings of the Local Management Committee
3. Supporting implementation of management actions
4. Effectively supporting the research and monitoring works on the Wetland
5. Establishing a monitoring / supervisory system on the wetland management
6. Facilitating communication with and among stakeholders, particularly local communities
7. Dissemination of information (newsletters, brochures, web site etc)
8. Raising awareness of the public and of decision-makers
9. Prepare annual plans and reports for approval

**Provincial Coordination Committee**

The existing Fars Provincial Committee on Water and Agriculture will coordinate province-level inputs to the management plan according to the following TOR:

1. To support the integration of management plan activities into the provincial organisations
2. To review progress and constraints in inter-sectoral coordination
3. To ensure provincial co-financing for the Management Plan is planned and delivered on time.
4. To endorse the annual work plans from the Local Management Committee, and to approve the previous year's annual report
5. To review activities and threats at the demonstration site, and advise on appropriate actions
6. To undertake a 5 year review of performance of implementation of the management plan.

## Lake Parishan Local Committee Structure




## TOR of Parishan Management Committees

**TOR of Provincial Coordination Committee**

1. To support the integration of management plan activities into the provincial organisations
2. To review progress and constraints in inter-sectoral coordination
3. To ensure provincial co-financing for the Management Plan is planned and delivered on time.
4. To endorse the annual work plans from the Local Management Committee, and to approve the previous year's annual report
5. To review activities and threats at the demonstration site, and advise on appropriate actions
6. To undertake a 5 year review of performance of implementation of the management plan.

**TOR for Lake Parishan Local Committee**

**The TOR of the local management committee:**

1. Supervision / monitoring the implementation of the Management Plan
2. Review and updating of the management plan each year
3. Evaluation of performance
4. Preparing annual implementation plan
5. Preparing annual implementation report
6. Facilitating inter-sectoral coordination and conflict resolution
7. Planning and coordination for financial provisions with provincial committee
8. Establishment of specialized working groups
9. Collaboration with the Provincial Coordination Committee (Water & Agriculture)

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1. Organizing the office of the Secretariat
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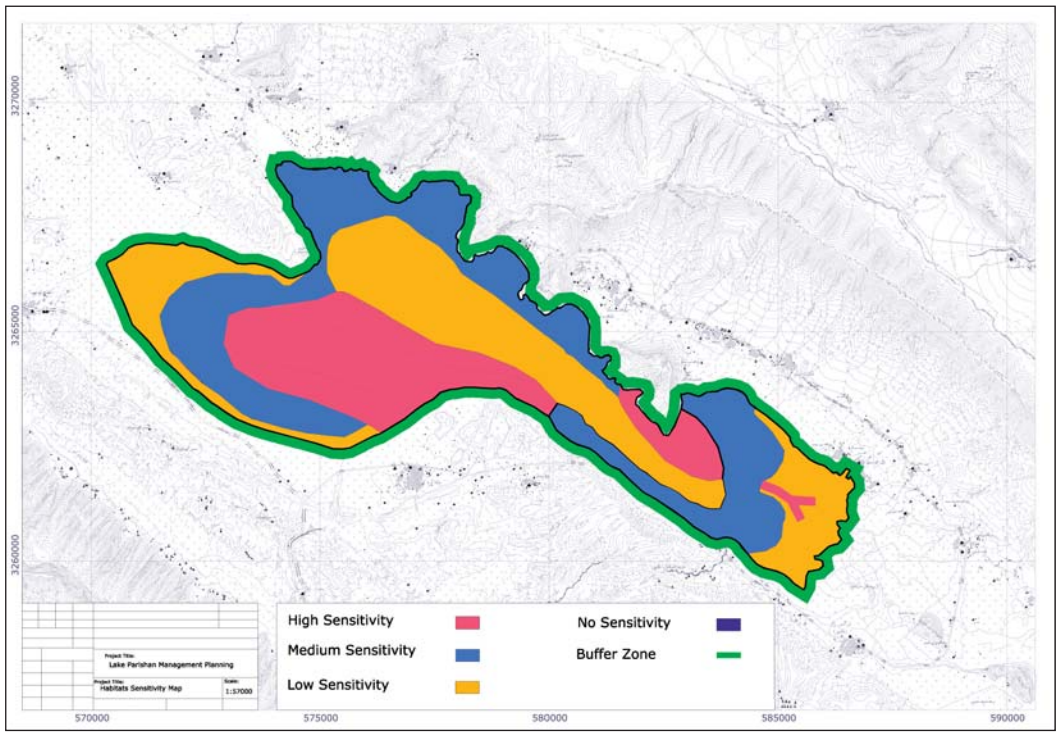
4. Effectively supporting the research and monitoring works on the Wetland
5. Establishing a monitoring / supervisory system on the wetland management
6. Facilitating communication with and among stakeholders, particularly local communities
7. Dissemination of information (newsletters, brochures, web site etc)
8. Raising awareness of the public and of decision-makers
9. Prepare annual plans and reports for approval

# Annex 3:
## Zoning map and table of biodiversity sensitive zones of lake Parishan




**Preliminary list of human activities for Lake Parishan, showing which are allowed in each sensitivity zone.**

| Zone | Permitted activities (in accordance with Codes of Conduct) | Not permitted activities |
|---|---|---|
| High sensitivity | Research and monitoring (by approval by DOE)<br>Conservation management | All other activities |
| Medium sensitivity | As above, plus<br>Fishing (by permit)<br>Reed harvesting<br>Nature tours (by permit)<br>Nature photography (by permit) | All other activities |
| Low sensitivity | As above, plus<br>Grazing<br>Boating for leisure (by permit)<br>Recreational angling (by permit)<br>Hunting (by permit)<br>Low impact tourism | All other activities |
| Buffer area | As above, plus<br>Bicycling, horse-riding, hiking,<br>Low impact recreation<br>Low impact agriculture | All other activities |