

In the name of God

Department of Environment of Islamic Republic of Iran

Bushehr Provincial Bureau



Helleh Wetland Integrated Management Plan

October 2016

Prepared by participation of governmental organizations and local
communities

Helleh Wetland Integrated Management Plan

Vision

Helleh is a beautiful wetland with adequate water rich biodiversity and healthy ecosystems that all stakeholders, particularly local communities has active participation in its protection and have a healthy and sustainable life together.

Goal

To establish targeted ecosystem management based on integrated resource management approach.

UNDP Conservation of Iranian Wetlands Project in cooperation with Helleh Wetland Governmental Organizations and local communities

Version: October 2016

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Foreword:

Wetlands are the most unique and most productive ecosystems that have always been neglected. Beside this valuable habitat the biodiversity conservation in the region play an important role in improving the livelihoods of local communities. Services that wetlands provide to the people and biodiversity of a region are such as improvement of water and soil quality, preventing floods, providing habitats for wildlife and natural attractions for ecotourism. America's wetlands annual tourism revenue is estimated around \$ 925 billion US Dollars. That's only function of wetlands sufficient to the attention of politicians and planners, particularly in developing countries to pay attention to protect these treasures. Islamic Republic of Iran is one of those countries that also has a variety of wetlands that has the capability to use existing capacity in order to stable operation of these areas. This god given wealth requires optimal management and protection.

Our country as one of the Ramsar Convention members is required to improve the status of wetlands, especially wetlands that have been destroyed due to the unstable operation. In this regard, Conservation of Iranian Wetlands Project deploy environmental management started with the Change approach in Iranian wetland management, with the aim of procedural integrity in the management of wetlands will be alternative replaced asymmetric cross-sectional and relevant decisions. In other word the use of local knowledge is another expected goals of the project were achieved at pilot sites.

Helleh wetland management plan was developed during the consultative workshops in the presence of representatives of stakeholders of Helleh wetland in 2015 edited and finally in Feb 2015 in state Planning Council meeting as a multi-sectoral document has been approved.

Here it is necessary to say thanks to Bushehr Governor for full support, participation of the concerned executive agencies, managers and senior

Devices, and responsible presence of the General Director and experts of Department of Environment of Bushehr province, experts of the Secretariat of the Helleh wetland in Bushehr, habitats and areas office especially Wetland section in DOE organization, As well as collaborator of conservation of Iranian Wetlands which with all power In preparation, modification and completion of the program cooperated. It is also plenty of thanks to spacious a lively presence of stakeholders, beneficiaries, Regional elite, elite, members of non-governmental organizations, Cultural activists, social, political and journalists.

It is hoped that the implementation of Helleh wetland management plan sought to have beneficial results and the continuation of cooperation between local communities and the concerned executive agencies, projected targets in the present application may be fulfilled.

1- Introduction: Helleh wetland is one of the most important wetlands in Iran which is located near Bushehr city. The wetlands have been considered in the past in Iran and were tied with the culture of local communities. The formation of the Ramsar Convention as the oldest international treaty, with emphasis on the protection of nature in the world, especially wetlands, in 1971 in Ramsar, the more important aspects of the legal protection of these habitats became more highlighted. According to the DOE report (Department of Environment of Iran), Out of the 42 identified types of wetland by the Ramsar Convention in the world, except for one type of wetland rest are found in Iran that represent the diversity of Iranian wetlands. Currently we have registered about 24 wetland types of Iran in Ramsar convention. Due to the importance of wetlands in the country, wetlands protection plan of Islamic Republic of Iran in cooperation with the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) has started to manage and protect important wetlands in the Country since 2005.

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 the Helleh wetland.

This integrated management plan has been developed mainly based on outcomes of four workshop sessions held in Bushehr city and Helleh protected area during Feb 2015 involving representatives of the key stakeholder groups for the wetland. Additional inputs from local people communities have been provided through participatory rural appraisal sessions. The plan has been submitted for final consultation by all the 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 program will be submitted to the higher level provincial and national authorities for formal approval.

The idea of this plan with necessary need of department of environment to Change the attitudes on management of wetland habitats and with the aim of expanding ecosystem management in wetlands ecosystems.

“If decision-makers and local communities are aware of wetland values and benefits of protected areas and be involved in wetland management ecosystem process will support the sustainable management of this precious habitats.”

Helleh wetland is one of the most important wetland of the country which in the phase of expansion and generalization of achievements Helleh wetland Protection Plan, management planning begins. This program, in collaboration with the Environmental Protection Agency,(Office of habitat and areas conservation and Iran wetlands protection plan), Department of Environmental Protection of Bushehr Province and in partnership with stakeholders has been developed.

The Aim of Helleh Wetland Management Plan:

The aim of Helleh wetland management plan for implementing solutions within the framework of an integrated management system for watershed-based ecosystem management to reduce the major threats that affect the stability of the functions of wetlands.

In the framework of managing a long-term vision for the state of wetlands and protected area management and functions defined values and roadmap to achieve this vision has been determined.

This application manages in particular the participation of local people and encouraging them to wise use of wetland resources and increasing inter-sect oral partnerships in order to achieve common goals and raising awareness of the importance of wetlands and protected area special emphasis.

The Process of Developing Wetland Management Plan

In order to exchange views and information among the various stakeholders and develop a first draft management plan Helleh wetland between the years of 93 and 94, with the participation of all stakeholders four thinking workshops in the management of wetlands and protected area was established. In this workshop, While wetland values, issues and problems in the continuity of its operations there As well as facilities and areas for improvement and improve the quality of its management's discussion was made available. During the workshops based on the identified problems, the ways were also discussed to address these problems and the appropriate ways to implement these solutions and achieve objectives were exchanged.

The present document is the management plan compiled based on the workshops held with the participation of all stakeholders. The document has been approved in the Planning and Development Council of the province.

Thus the program will be implemented for a period of 5 years and at the end of 5-year period the plan will be revised based on the information obtained through the monitoring.

2- Helleh Wetland Characteristics:

2-1- Introduction of Wetlands and Helleh Protected Area

History:

The history of establishing protected areas is refer to the formation of Helleh wetland. Prior to 1342, except for a few small streams in the current location of the wetland is no territory on topographic maps seen. According to residents of nearby villages Helleh region, since 1342 due to the diversion of helleh river divided in to two branches called as the south and north branches in the East part of Khoreband Village and the south branch before reaching the sea in agricultural lands and adjacent salt marshes spread and led to the creation of wetlands covered with wetland vegetation.

Helleh protected area covers an area of 46783 ha with geographic coordinates "24 '38 ° 50 to" 23'56 ° 50 'east longitude, and "24 '03 ° 29 to" 50 '16 ° 29 north latitudes. This area in 1355 by the Department of Environment of Iran declared as a protected area under the management of Dept of Environment of Bushehr province.

The Geographical Situation of Helleh Protected Area

From the North: from the koreband village toward the west along the map road after going through the gahleh sokhteh, Askeri, Mohrezi villages till Hamood village.

From the West: from the Hamood village toward the south along the map road after going through rostemi village till Ferake village along the west part of Helleh river till Ferake estuary Sticking to the Persian Gulf.

From the South: from Levee along the sea water and mainland toward the south till shief island Including all wetlands, and marshes and from the sheif island to straight line supposed east and west till ruin sheif island.

From the East: from the ruin shief toward the north along the map road till Koreband village.



Fig 1: Satellite images of Helleh wetland and Helleh protected areas in 2015

The Geographical Situation of Helleh Wetland



Fig 2: Location of Helleh wetland in Bushehr Province

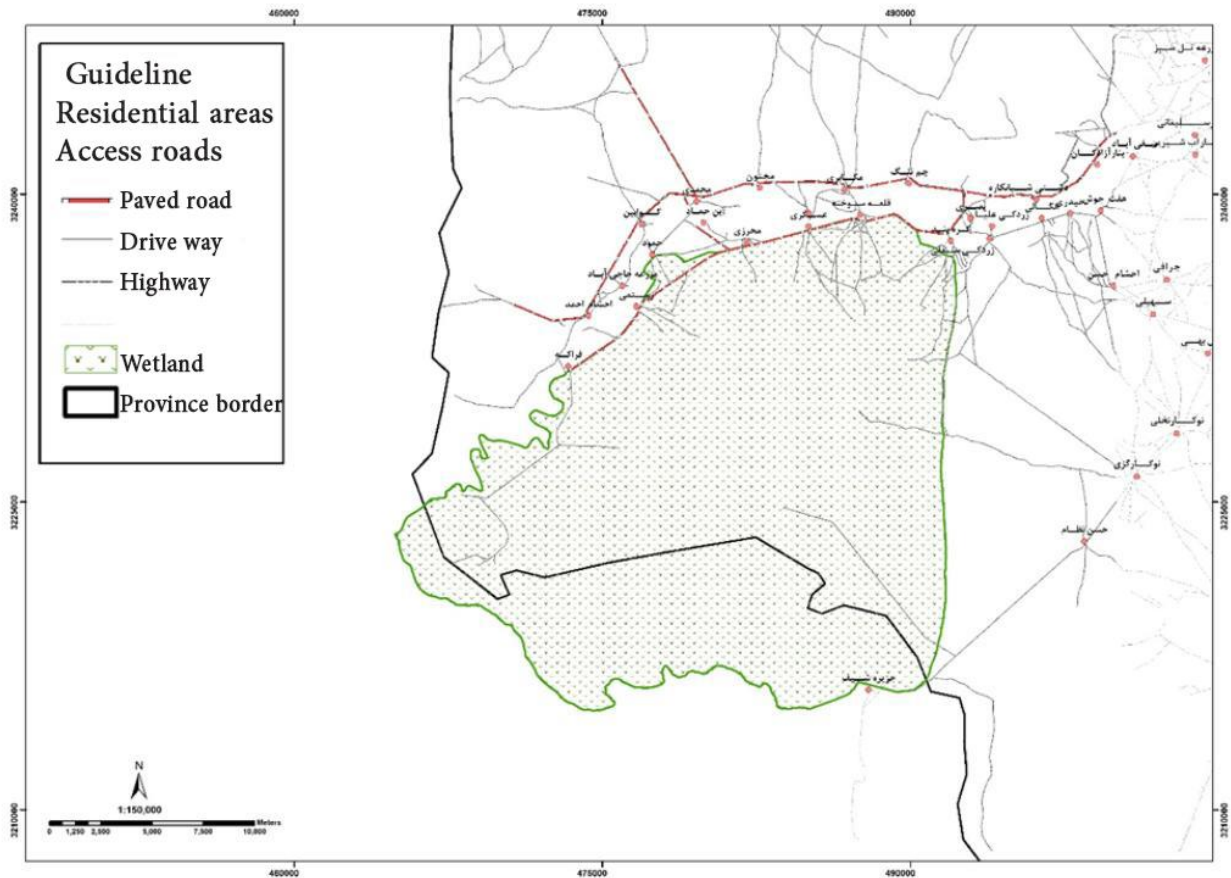


Fig 3: Map of location of settlements in Helleh protected area

Weather and Climate:

The Helleh wetland is located in the low-lying part of Bushehr province in class 8-0 meters height, and in fact it is alluvial plain of the river that comes from the Zagros Mountains. The climate of the area due to low height and low geographical width, is warm with low rain. However, due to significant exposure to sea, in many cases the air humidity is too high. Helleh protected area is dry 7 months of the year with no rain. Dry period continues from April till November and intensifies in the months of July and August. The average annual relative humidity is 65 percent. Average annual precipitation is 279 mm.

The highest average rainfall in the period of January 2015 is about 92 mm with about 59 percent annual rainfall. The average annual temperature is 25 °

C and July is the hottest month of year and the average daily temperature is 31 centigrade and the coldest month is January during which the average daily temperature is about 14 degrees Centigrade. Total annual evaporation in Bushehr station is estimated to be about 1,700 mm, the prevailing wind direction in all seasons from Northwest moderate 29 knots have been reported.

Water Resources:

The main source of providing water to the Helleh wetland and protected area is the Helleh river. Helleh River is a permanent river located in northeast of Khoreband village divided in to northern and southern branches. North Branch after numerous twists and turns finally enters the sea but the southern branch before reaching to the sea, spreads in the salt marshes nearby sea and forms the wetland and finally overflow water enters into the sea.

Helleh river basin area is around 9850 square kilometers, with maximum instantaneous flow rate of 1231/7 cubic meters per second in 1984, and a minimum of 22.1 cubic meters per second in 1985, its average monthly discharge over a period of 14 years (1984-2008)

32.56 cubic meters per second and the annual discharge of 1026/8 million cubic meters have been estimated. Chart one shows the variable of water flow in hydrometric station of Kolol which is the nearest station to the wetland area (About 20 km above the bifurcation of the Helleh River). As can be seen in the upstream harvest and reduced rainfall, River volume has decreased substantially.

The Rehees Ali Delvari dam was put into operation on 2005. The impact of the construction and operation of the Rehees Ali Delvari dam is clear on the Hydrographic curve of Helleh wetland. Also developing of palm trees And increased water withdrawals from Shapur and Dalaki rivers, and another reason to reduce volume of river in Kolol station. Rainfall surveys in the area shows that drought and lack of rainfall involved in reducing the volume of

water, but in recent years the reduced volume rate of water were more than the rainfalls.

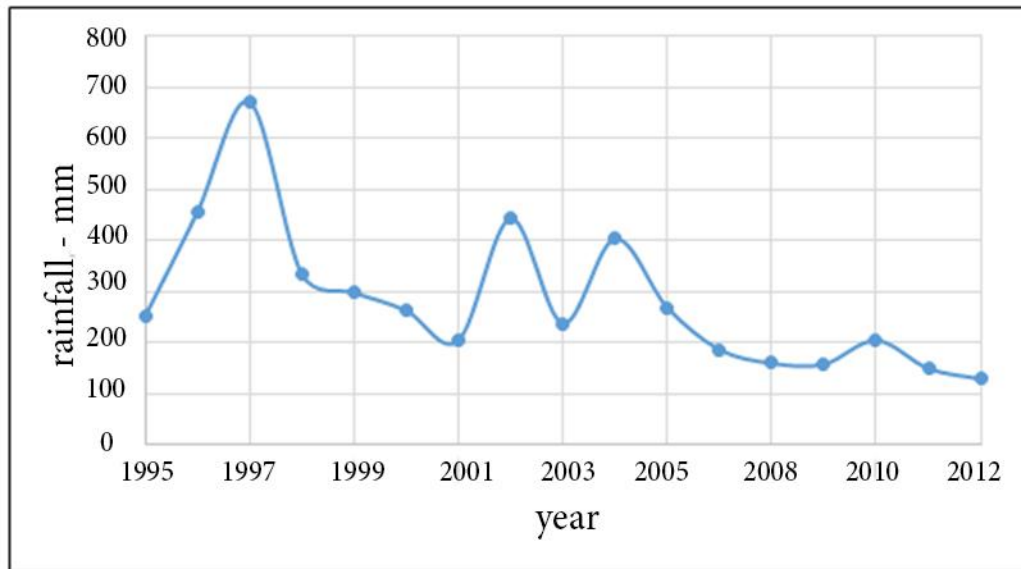


Fig 4- volume of water changes over time in the station Kolol

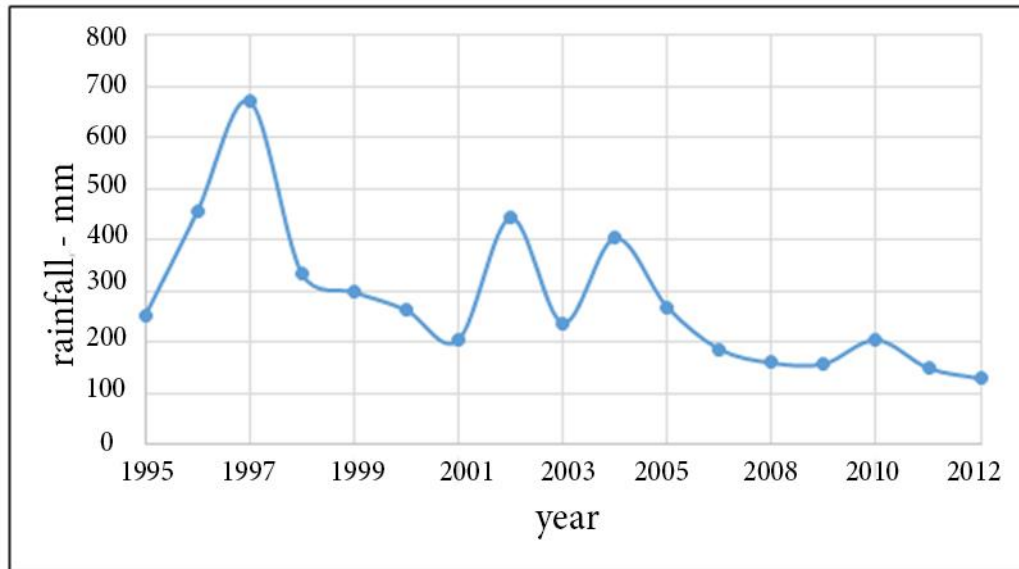


Fig 5- Precipitation changes over time in Bushehr station

2-2- Rivers that are causing the formation of Helleh wetland:

Helleh River is formed from the connection of Dalaki and Shapour rivers in 10 km of west north of Borazjan city.

The main source of Shapur River is the northeast basin of the Kazeroon city, which is freshwater but some part of this river water After connecting with Salt River Shekastian and pass through numerous twists and turns and connect to its another branch on the plains of Borazjan and in the West of Dorudgah village join to Dalaki River .

Dalaki River is the source of fresh water which from the northwest of Parishan highlands and fed from the Arjan southern Plains. The river on its way to the sea with several salted branches including Salt River of Jehde, Farashband River, Siahrood river and one branch of Kmarj field mixed and therefore its quality become inappropriate. This river in the northern part of Sarqanāt village enter the Borazjan plains and in this way entered to the many Sulfur springs and at a distance of 1.5 kilometers in the West of Dorudgah

village connected to the Shapur River and jointly creates great and permanent Helleh river.

Shapur River:

This river and its tributaries with the name of Ranjan originated from the highlands which are located between Parishan Lake and Arjan plain, receive the Sasan lime spring and along the North-East and South-West flows and enter to the kazeroon plain and pass through the western plain of Kazeroon then from the Bushkan downstream, Serabsher and Shekastian branches, on the mountainous area Acceded and along the south and southwest flows and after receiving branches of fresh and salt in the chrome area enters to the kheshet plains.

From this point onwards the river flows from north to south and while crossing the northern parts kheshet plain and watered about 2230 hectares of palm groves and desert land. Then enter the mountain path and after passing through a tortuous path and connect several branches near the villages of teal and Milk enter the Borazjan plains

And in the downstream river by the diversion dam of Sa'dabad and Shabankareh creek and watered about 3075 hectares of palm groves and desert land of Shabankareh and about 15 kilometers from the Shabankareh diversion dam connected to the Dalaki river and finally d together constitute the Helleh River.

Dalaki River:

Dalaki River tributary is known as the fresh water and originated from the north east of Parishan lake mountains and west of Arjan plain and in order to south northern and flow on a mountain path. This river is located nearby Mosgan village and it passes from the narrow Strait and from the west enter to the jereh plain. Fresh water river while crossing the Jereh plains and irrigated about 4370 hectares of lowland of the area. At the end of the Salt Plains of Jreh and Farashband watercourse joined them and from the area of

the river till the river sources in mountain road along the East to the West with the distance of 80 km long flow.

Siahroud river that originates from Dadin lime springs Plain and has the enough and permanent volume of water at the end of Dadin plain joined to the Daleki river, In fact, it constitutes the Summer volume of the water in the area. Dalaki River near Qurban Abad Enter a mountain path and then connected to the two flooded branches and one too salty branch nearby Sarqanāt village enters to the Borazjan plains. In this place by using a temporary Gabion Dam, needed water for irrigation of about 5340 hectares of palm groves and land sliding plains, diverted and distributed by Haj Mehdi creek and Sarqanāt.

In the distance between the Gabion Dam till Dalaki River to the junction of Shapur , water of some Sulfur springs from the eastern slopes of Borazjan plains entered to the Dalake river.

Helleh River:

In the below figure(6) shown - A map of the catchment and two branches of Dalaki and Shapur rivers,

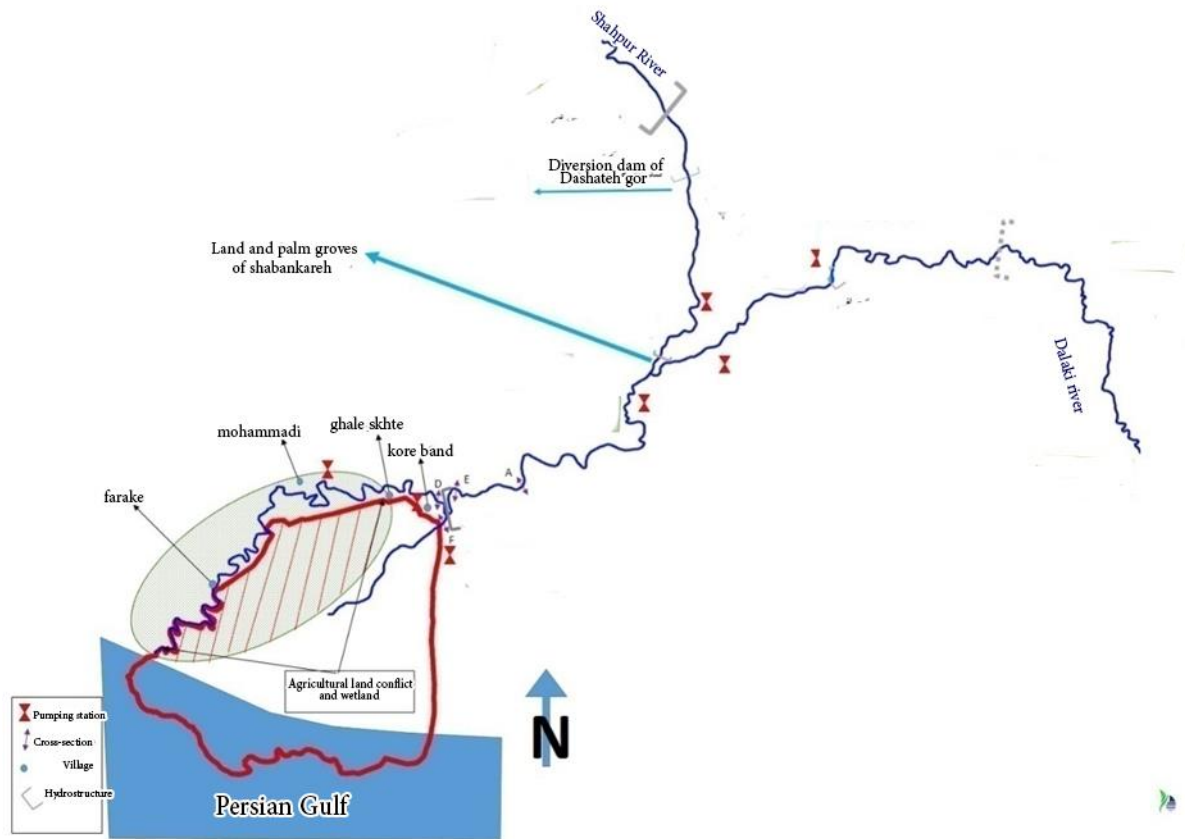


Fig 6: Shows a map of the river basin and the two branches Dalaki and Shapur and the position of the upstream irrigation plains.

Hydrographic of Helleh Wetland:

The area of Helleh Wetland that is covered by water, the depth of water and the water table is quite variable. As can be seen in the three-dimensional image provided in below, the topography of the area is very flat. Also due to sedimentation of Helleh river and the slope of the Southern branch of Helleh river, which released water to wetlands, wetted areas as well as suitable range for growth of perennial plants is variable. The approximate range of the wetland in the below picture is highlighted in green.

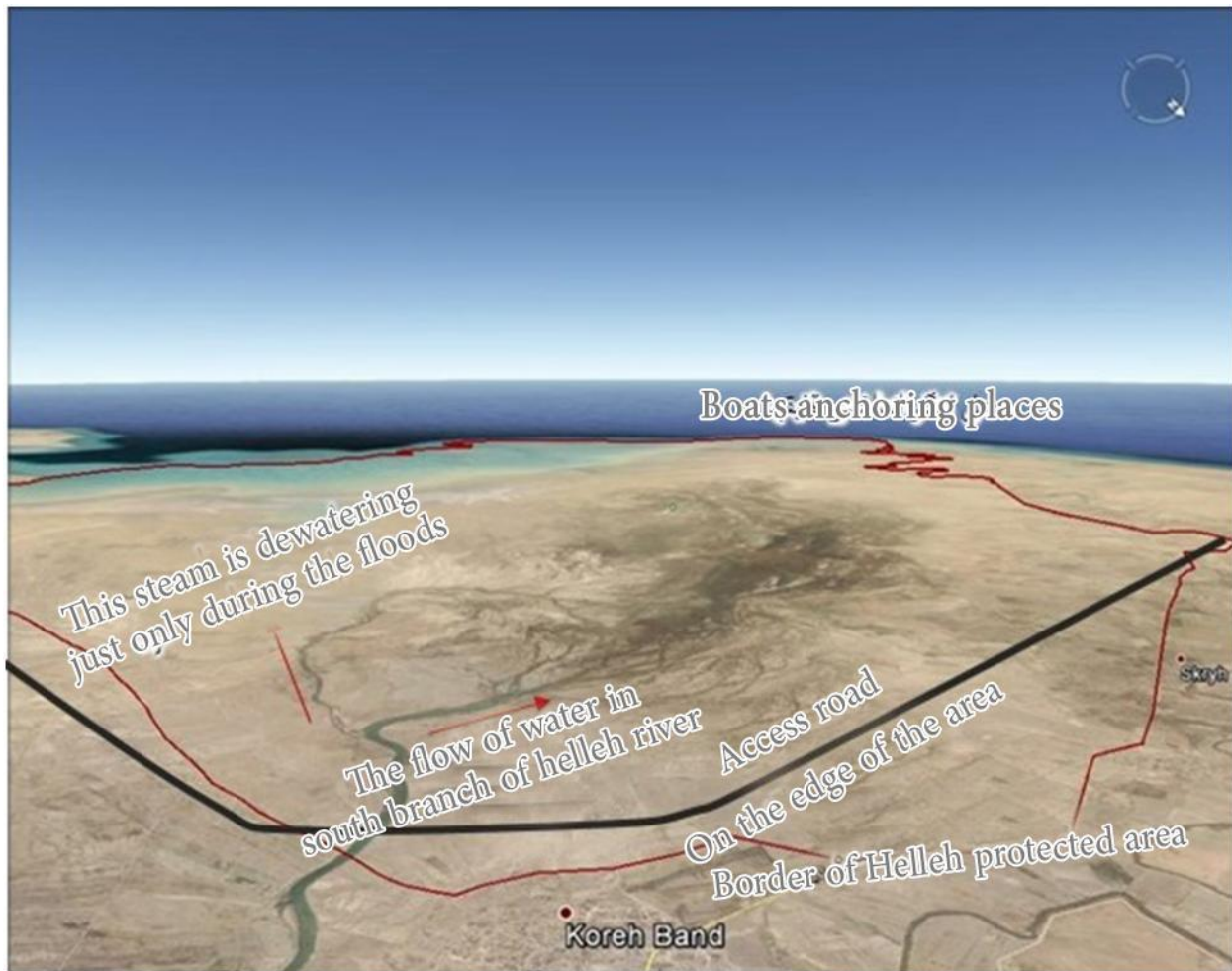


Fig 7: Three-dimensional view of the Helleh River and wetland

2-3- The Habitats of Helleh River:

Helleh wetland protected area is located in plain areas and paved part of the Persian Gulf coast which consists of tidal, water and land areas.

Helleh wetland habitat within a protected area is located in the coastal lowlands and the coastal strip after the tidal area. The level of these habitats compare with the amount of water varies in different years and in wet years used to cover about 20,000 hectares of the Helleh Protected area. Tidal habitats with special ecological conditions are located between water and land and devoid of vegetation and are composed of sandy loam and clay land.

The tidal section that is frequently under the influence of sea water is the bird habitat.

Reverie habitat in both the northern and southern branches of the Helleh river are low slope and a gentle stream of water and aquatic plants is also very good habitat for wildlife and wet-friendly plants in its margin and it is suitable for spawning and breeding birds, nesting and breeding. Some species of mammals and birds as a very favorable environment.

Helleh marine habitats protected area in the Southern branch part of the protected area, Tape type with the 2 meter depth and located in tidal zones of the Persian Gulf, which is a part of the valuable marine habitat is the area of Bushehr city. These areas covered from the north part of shieff island till the river input, in the meantime estuaries are also included radiating from the sea. The maritime sector with particular saltwater ecosystem in Helleh has increased the importance of Helleh protected area, since the marine ecosystem are suitable habitat for a variety of waterfowl especially marine waterfowl birds, is also are very good habitat for a variety of aquatic such as The fish, sea snakes and marine mammals. Since these habitats are located in the vicinity of tidal coastal areas, and according to tidal fluctuation the food material from the coastal areas transfer to the sea areas and absorb the marine fishes. A River habitat in both the northern and southern branches of the Helleh wetland due to the low slope of the river and the gentle flow of water and also aquatic plants and Wet-friendly and on the sidelines of that there is a habitat which is very good for wildlife, for nesting and breeding birds and breeding and spawning fish and some species of mammals is a very favorable environment. The river corridor is at the entrance to the Persian Gulf, For anchoring boats and fishing launches In terms of entering freshwater to saltwater sea and create specific environmental conditions, Part of the delta of the Helleh river is a suitable environment for the growth and development of benthos and fry fishes, and due to that, waterfowl and other aquatic animals can be seen in abundance in this section. South Branch of Helleh river after a short distance from the embranchment helleh wetland form,

which this branch of the river is also very favorable habitat for a variety of waterfowl and fish.

Terrestrial habitats of the Helleh protected area constitutes the bulk habitat of the area with a variety of animal species, especially mammals and endemic species in this area It is more than any other habitat. This habitat is composed of 3 parts: Agricultural land, saline lands with poor coverage, farmlands and pasture land which is located between agricultural land, wetland and the sea, That due to the dry-friendly vegetation as well as halophytes in wetlands on damp shelter is a very good refuge and habitat for mammals and birds.



Fig8: Examples of Existing Habitats

The major indices and precious fauna of the region are:

Mammals:

The uniformity of helleh habitats caused that the number of mammal species to be limited in the area. Lack of natural special features and flatness the area which is affected by the relatively long warm seasons and finally affected the mammals range in the area and the presence of nocturnal underground of mammals groups have been justified.

The most important mammal species are: jackal (*Canes aurous*), common fox (*Vulpes vulpes*), wolves (*Canis lupus*) hyena (*Hyaena hyaena*) wild pig (boar) (*Sus scrofa*), wild cat catus (*f. Silvestris felis*) , the hare (*Lepus capensis*).

The Birds of Helleh Wetland and Helleh River:

The physical characteristics of Helleh wetland is having permanent freshwater and appropriate nutrition, despite low deep waters and rich and biologically rich area suitable refuges for a large number of migratory birds and waders respectively.

Order Insectivorous (*Hemiechinus hypomelas*):

Iranian Hedgehog (*Branet hedgehog*)

Order Bats:

Bats are distributed in the Helleh protected area and in parts of drought ,marshes and tamarisk trees. From the bats order 5 family of bats is observed in the helleh region Which can be mention the name of a mouse tail bats families, horseshoe, nose piece, normal and free-tailed bats.

Order Rodents:

Balochi gerbil (*Gerbillus nanus*) Indian gerbil (*Tatera indica*) Great feet bruce (*laculus blanfordi*) Porcupine (*Hystrix indica*).

Birds:

Birds as one of the most important life species in the area have a great impact on the valuation of habitats. Ecological relation and population dynamics of birds, particularly migratory species, and waders birds are the ecological criteria for the diagnosis of the environmental conditions in the areas.

Helleh protected area is the diverse and unique collection of different habitats for terrestrial birds, fresh water wetland, river and estuarine, Helle estuaries and intertidal mud pan, and wading birds.

Terrestrial Birds:

Helleh protected area with a collection of wetland and terrestrial ecosystems mainly located in the plain and smooth area. The absence of significant natural habitats side effects and effectiveness of habitats, Colima area of terrestrial habitats has led to uniformity, and dependence of residents on

subsistence farming and agricultural products – dry farming, the presence of livestock in the area and vehicles traffic has created an friendly environmental restrictions for birds. Availability of feed bed and temperate weather in autumn and winter the presence of migratory birds in the region will increase dramatically.

Francolin is the native bird of the area, having suitable habitat around farms area, Shrub lands and adjacent to the wetland habitats have desired population in the area.

Sandgrouse family is also in proportion of each season used to benefit The plain and agricultural land habitats. Houbara Bustard is another huge species of birds that used to migrate during winter every year. The population of this bird compare with the neighboring habitats, Which is the less secure Increased can be seen in group of 10-15 individuals.

In plain and agricultural lands habitats, and in growing seasons of products, the large number of Geese and cranes used to get benefit through this condition.

Hunting Birds of the region such as barbary falcon, eagle, common buzzard, a vulture, falcon and hawk In compliance with the presence of migratory birds in different category, Desirably present in the area and use in an appropriate from the food sources in the region.

The Birds of Wetland and River of the Helleh Region:

Helleh protected area is one of the most important habitat for migratory waterfowl and waders birds in southern part of Iran.

Physical characteristics of Helleh wetland is permanent presence of fresh water, marshes, as well as a large part of the forest vegetation, and other aquatic plants, which created a suitable place for feeding and overwintering of migratory birds. Helleh wetland is a Suitable feeding area, appropriate and rich nutrition, shallow waters and adequate shelter, which the biologically rich of the area is based largely on the same resources. Which every year is the host to a large number of migratory birds, waterfowl and waders birds.

wide variety of ducks such as Gadwall duck, shoveler, pintail, wigeon Teal, northern pintail, green head, Geese and common shelduck are the largest presence in the region.

Significant population of gray geese migrate to this area, the extent of their distribution, particularly during feeding time can be seen in neighboring and agricultural field habitats.

Some threatened species Such as the marbled duck, goose, white forehead, small white forehead goose, gray pelicans, flamingos and cranes have been observed in these regions.

Different kind of plover, Eggert, Spoonbill bird, wood stork are the birds of Helleh protected area and wetland. In the river section of the helleh protected area can be seen swallows river, collared pratincole and different kind of kingfisher.

The Birds of the Inter-Tidal and Offshore Nearby Helleh Wetland:

In the maritime sector, particularly in inter-tidal (mudflat) Due to widespread food sources and security a large group of birds in small and large social groups are found. The most abundant species observed in the Helleh wetland is the common cormorant that every year thousands of them live in this region and the little black head and Silver Gull are the populated species in the region. Different kinds of plover, common shelduck, crab plover and oyster plover, flamingos and a variety of Eggert seen In different parts of the wetland, especially during low tide water.

Table 1- Annual Statistics of some National and International Importance Birds in the second half of 2015 in Bushehr Province

Serial	English name	Number
1	Short-toed Eagle	2
2	Pallid harrier	12
3	Red kite	8
4	Lesser Kestrel	200
5	Black francolin	60
6	Quail	20
7	Houbara bustard	30
8	pratincole	20
9	Pin-tailed sandgrouse	30
10	Black-bellied sandgrouse	1500
11	Woodpigeon	400
12	Turtle dove	1000
13	Little owl	8
14	Barn owl	11
15	Cinereous bunting	700

Table2- Summary Results of the Census of Waterfowl Birds in Helleh Protected Area during different years(2012-2014)

Site name	Number of species in 2012	Number of species in 2013	Number of species in 2014	Number of counted birds in 2012	Number of counted birds in 2013	Number of counted birds in 2014
Helleh protected area	50	36	42	18905	16345	16015

Aquatic Species:

Helleh Aquatic habitats are divided in two parts, a standing and current water with salt and fresh water quality with the biological status and the presence of different species of fish in this environment is different.

In addition, The aquatic species is considered an important source of nutrition for birds and other aquatic animals and also they will attract waterfowl and other fish eater birds and provide a major part of the protein needed for human societies and various food industries are important. Therefore plays an important economic and ecological role in the ecosystem chain in the wetland.

According to the surveys, there are about 200 fishermen with licensed used to go for fishing and earning money through fishing activities. An average catch of each one is about 100 to 150 kg per day.

Reptiles and Amphibians:

Oder Tortoise:

Fars pond tortoise (*Mauremy caspica ventrimaculata*), Spur-thighed tortoise *graeca zarudnyi* (*Testudo*

Order lizards:

Feisty agama (*Trapelus agilis*) Gray ogama (*acuteltus phyrnicephalus*) Lizards
Khardm Mesopotamia *Urumastyx loricatus*

Order Snakes:

2-4- Importance of Tourism:

Helleh wetland due to its habitat diversity for birds and other animal species has a great tourism potential. Currently fishing and watching wildlife in the wetland have increased its importance in the area

2-5- Helleh Wetland Management:

Helleh wetland is protected by Department of Environment of Bushehr province and fixed security checkpoints in the region. This wetland area since 1354 has been declared safe and protected area.

2-6- Economic, Social and legal Status:

According to the results and data obtained, the economy and income sources of people around the wetland are defined based on agricultural projects (Wheat, barley and canola), livestock (cattle, light and heavy) and horticulture (Groves). The water needed for agricultural activities supplies from the both north and south branches of helleh river after the basri dam. thats why the agriculture in the region is tied to helleh wetland. On the other hand the reeds surrounding wetland are used for feeding livestock. Although in recent years significant reducing the amount of rainfall has severely reduced the amount of product in the area and reduced quality of products and the volatility and disruption of the family income which resulted in increasing the migration of young people to find jobs in industrial centers of the Bushehr province. But in recent years based on the census conducted, the number of people who are living in the area has been declining by reducing sources of revenue.

Social and cultural characteristics of the area depend on adherence of bushehr city culture.

Within the region in terms of population according to the latest population census of 2006 and 2011 in most indices (total population, number of households, number of household, etc.) is reduced. Migration of the young population to the nearby towns for work and study deemed common, and in many cases they do not return to the village.

The most important factors in reducing the population and permanent and seasonal migration of rural population, In the last two census periods, from 2006 to 2011 contains natural factors such as continuous droughts in recent years, economic factors, including divided land in to smaller parts agricultural land, increasing production costs, fluctuations in selling prices of products on the market, the rapid rise of inflation and increased cost of living, Inheritance laws in the division of larger land into smaller pieces of land and the subsequent lack of economic justified and investing in smaller pieces, welfare and social factors such as continued higher education, employ staff jobs in cities, benefit from better facilities and municipal services.

According to the latest population trend by comparing the population of the region has faced with negative growth trend of -2/1 percent.

The entire populations of villages around wetland area are above 3121 people, which was to include 792 households (2011).

Koreband , Muhammadi and Govabin villages have the largest population and Frakh, Haj Ahmed Haggai and asham ahamd have the lowest population in the area.

In terms of Legal occupation of some part lands of helleh protected area located in rural areas created problems between farmers and the Department of Environmental of Bushehr Province, which with the participation of relevant people and organizations the unauthorized change of use of agricultural land to wetland by adopting measures to mitigate the social effects.

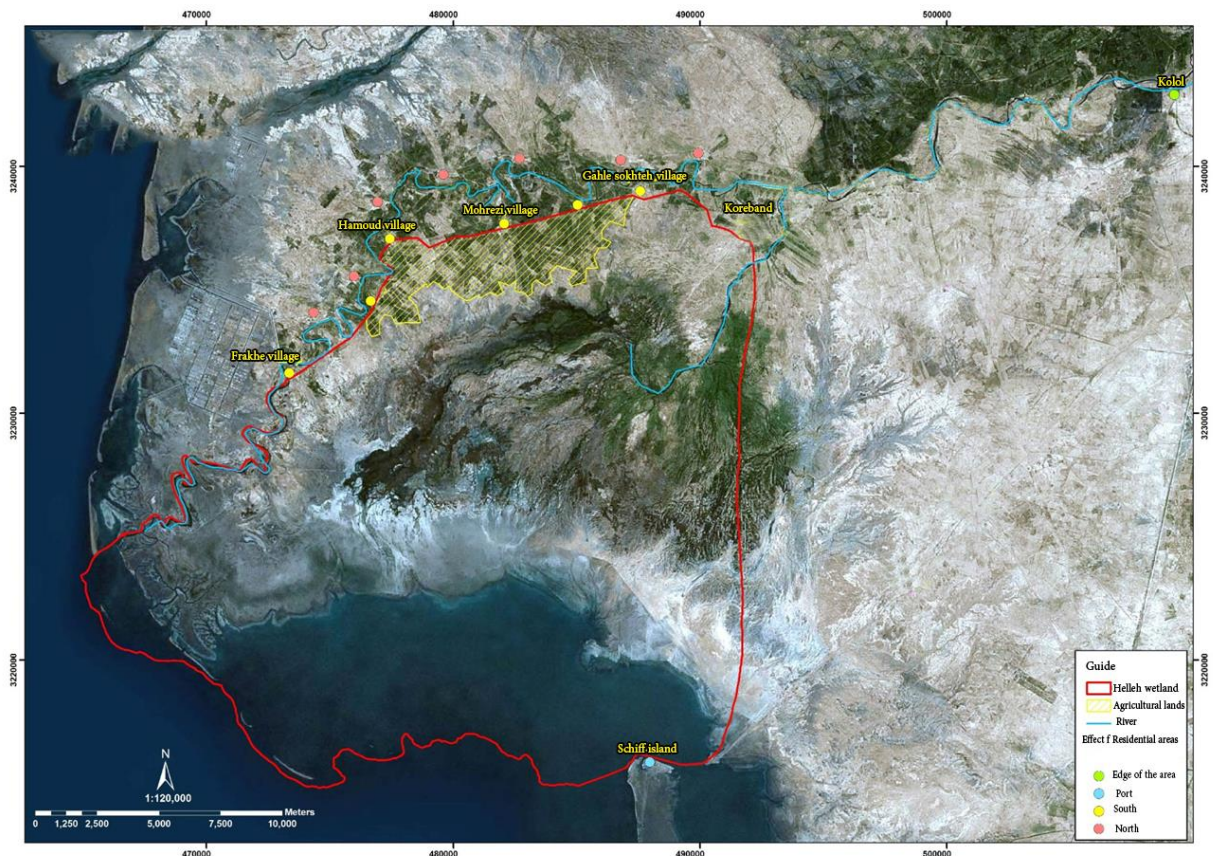


Fig 9: Map of the Agricultural lands on the edge of the wetland

2-7- Source of Environmental Pollution:

Sources of pollution in Helleh protected areain order of priority (according to the result of studies and surveys) are:

1. Transportation of upstream agriculture wastewater (fertilizers and pesticides used in palm groves and ...)

2. Industrial wastewater riverbank of Dalaki and Shapur (heavy metals, toxins)
3. Urban and rural wastewater in riverbank (residential, urban)
4. pollutants from the villages along the protected area (household waste and livestock)

Table3- Summary Characteristics of Helleh Wetland

Attributes	Description
Location	"24 '38 N 50 '16 ° E 10 kms west north of Bushehr city
Area of the wetland	Varies between 20000-22000 hectares, wetland has dried out in some dry years
Elevation	0-10 meters
Administration status	Administrated by Koreband environmental conservation office under jurisdiction of Department of Environment of Bushehr Province
Conservation status	Protected since 1976
International designations	Is underway to be record in Ramsar Convention
Land tenure	Government and private
Main source of water	Helleh river
Main ecological values	Diverse wetland habitats, internationally important populations of wintering waterbirds (last record of 160000 birds visited in 2014)
Functions of the helleh wetland	Biodiversity support , Ecotourism, environmentally, economically and agricultural
Wetland products	Reeds and fodder for livestock, waterbirds for hunting, and fish
Current services in the fields of ecotourism and recreation	No any action has been taken till now.
Main vegetation types	Straw ,Mesquite and Tamarisk
Important fauna species	Kingfishers, Eggert, lunar, Coker, Kestrel, wild cats, wild boar, fox, rabbit and Mongoose
Main ecological changes	In some years the drought has caused much of the wetland to get dry and another changes is destruction and seizure of illegally of land.



Fig 10-A views of Helleh Wetland in the summer of 2014

Table 4- Functions and Values of Helleh Wetland

Biodiversity of plant species	Suitable habitat for wetland birds	Presence of winter birds
Conservation of habitats of indigenous animal species	Linking two ecosystems	Ecotourism
To Prevent soil erosion	Guidance and control seasonal floods	Grazing livestock
Carbon storage	Scientific and cultural values	Beneficiary
High value food and mineral	Develop of Handicrafts	

Fig 5- Helleh Wetland Problems and Threats

Ecological	Management	Social	Water resources
Illegal hunting and fishing	Lack of comprehensive management plan	land use change	Accumulation of river sediments during the flood times on the way entrance to the wetland
Loss of biodiversity	Lack of sectional coordination relating to the management of wetlands	Drawn fire of agricultural land intentional and unintentional to the Helleh wetland.	Redirect the river current from the main branch
Wildlife mortality due to road construction	Lack of law enforcement	Territorial conflicts	Failure to release environmental water requirement by stakeholders and Upstream dam
----- ---	Lack of Environmental human resources	Increased the area under cultivation and water use in the basin	Entrance of polluted water to the wetland.
----- ---	Lack of adequate training for local communities		Inappropriate methods of irrigation and agriculture
----- --	-----	-----	Drought
----- ---	-----	-----	Upstream dam construction
----- --	-----	-----	releasing the poluted drainge of palm tree to the Helleh wetland

2-8- Helleh Wetland Stakeholders:

Table 6- Stakeholders and Range of Impacts on Helleh Wetland

Stakeholders names	Range of impact
Governor Governor Governor	The role of government Allotment of budget Coordination among the organizations in case of Sustainable development in the region
Local communities (farmers, Livestock , fishermen)	Agricultural activities Grazing Fishing Exploitation of river water
Department of Environment provincial office of Bushehr	Protection of wetlands And natural and human environment, protection of plant species Preservation of species and biodiversity
Cultural Heritage and Tourism	Native support, introduce of Helleh wetland as a tourist destination and spread Culture Tourism
Water Authorities	Observe and suppliers Helleh require water Basin Wetland Resource Development Wetland and watercourse river training Determine the extent of privacy and wetlands and river bed Exploitation of water resources management
Fishery	Protection of native species of fish Support the development of aquaculture activities.
Education	A training session for students in Helleh area, survey the Culture and a model of tourism for family and finally entertainment.
Department of Urban Development	Installation of road signs for wildlife conservation Guard rail within and adjacent wetland creation
Natural resources Watershed Agriculture Veterinary	Boundaries between national land resources and agricultural lands Management of water resources Education and training on agriculture and irrigation techniques Soil and sand dune fixation Soil and water conservation Transfer of land Introduction and advice on Pesticides and chemical fertilizers
Non-governmental organizations	Linking between the governmental agencies and local communities. Promote public awareness of local communities. The cooperation of local communities to protect the natural resources. relationship between people and government officials, community awareness and education
Universities, research organizations	Scientific research work. Held up the scientific camp, According to the related headlines.

3- Management Plan:

3-1- The Approach:

The general approach for codification of wetland management plan needed cooperation and participation of all stakeholders to use expertise and local knowledge to achieve an ecosystem management structure, By defining a common vision and overall goal and agree on the principles of actions needed to achieve this goal.

Comprehensive and integrated ecosystem management approach to manage (integrated) water and soil resources, and also biological resources wisely watershed for the operation of these resources by all stakeholders and existing communities, and sustainable use of these resources for future generations, now the ecosystem approach as a framework for the management of protected areas has been widely accepted worldwide and can be implemented.

3-2- Helleh Wetland Vision:

One of the important achievements of collective consultation and dialogue groups concerned in Consultative workshops is Consensus and public desire for enduring the need to protect permanently wetlands As a natural heritage against the various threats Which is now located in front of the wetland.

Vision

Helleh wetland is a beautiful wetland with adequate water and rich biodiversity and healthy ecosystems that all stakeholders, particularly local communities has active participation in its protection and have healthy and sustainable lives beside eachother.

3-3- Goal:

According to the results of discussions and dialogues with others, to achieve a defined vision requires the establishment of an environmental management structure will be defined as general purpose plan.

Goal:

According to the results of discussions and dialogues team achieve the vision defined requires the establishment of an environmental management structure which defined as the overall goal.

3-4- Strategic Objectives:

The actions needed to achieve the overall goal of ecosystem management program in the framework of the strategic objectives defined as below. In the Tables 7 to 9 the list are provided.

- Restoration and conservation of ecosystems and biodiversity in wetlands and protected areas and exploiting their resources wisely.
- Sustainable Management of Water and Soil Resources.
- Increase public awareness and strengthen public participation and sustainable livelihoods communities.

Table 7- Strategic Goal-1- Restoration and Conservation of Ecosystems and Biodiversity in Wetlands and Protected Areas and exploiting their Resources wisely.

Main topics	Target	Priority actions	Responsible organization and Partner institution(DOE , The Department of natural Resources, Department of UrbanDevelopment, Local communities, Fishery, NGOs , The environment, and Justice
The environmental resources of wetland	Long - term	Protection and exploitation of biological resources is done according to the plan on a sustainable basis.	<ol style="list-style-type: none"> 1. Create a database of fauna and flora species of the area. 2. corrective actions to reduce the negative impacts of Bushehr Ganaveh road construction on wildlife and local communities in the helleh area. 3. prevention and control unauthorized exploitation of wetland resources. 4. Develop and implement conservation programs and sustainable use of biological resources in the helleh wetland. 5. to create a gene Bank 6. Develop and implement a control program overgrazing and hunting with the participation of local communities and other stakeholders. 7. identify the index threatened species and develop and implement their protection.
	Short - term	Conservation and sustainable utilization of wetland will be done within a year and in next 3 years at least 15 percent of that will take place.	
Physical protection of wetlands	Long - term	Much is known about wetlands and protected by modern equipment and monitored and managed by participation of local communities.	<ol style="list-style-type: none"> 1. Create environmental monitoring stations in the villages of Frakh and Moherzy (by attracting local environmental guards). 2. zoning of wetland and determination of the administrative regulations. 3. Preparing Digital maps of the area by using the satellite images and aerial photos.

Main topics	Target	Priority actions	Responsible organization and Partner institution(DOE , The Department of natural Resources, Department of UrbanDevelopment, Local communities, Fishery, NGOs , The environment, and Justice
Restoration of natural areas	Short - term	Identify zones with high sensitivity and 50% of the helleh wetland is equipped with monitoring equipment.	<ul style="list-style-type: none"> 4. Installation of monitoring equipment in the wetland. 5. Develop and implement wetland monitoring program in partnership with local communities and other stakeholders.
	Long - term	Lands changed in privacy of Helleh wetland have been restored.	<ul style="list-style-type: none"> 1. Control of fires in Helleh wetland.
	Short - term	Land ownership 100 percent is precise.	<ul style="list-style-type: none"> 2. Conduct an audit and determine the capacity of grazing pastures. 3. Monitor and prevent the development of agriculture in wetland areas 4. Studies and preparation of detailed maps of land use in the area. 5. Restore native plant species.

Main topics	Target	Priority actions	Responsible organization and Partner institution(DOE , The Department of natural Resources, Department of UrbanDevelopment, Local communities, Fishery, NGOs , The environment, and Justice
Natural causes (risk management)			
	Long - term Short - term	Necessary infrastructure has been created to deal with risks and natural disasters. Risk management plan for helleh wetland prepared and 10% of the priority measures have been implemented	1. studies and mapping the risk of droughts and floods and, if necessary and justified offers studies plans on seeding clouds and artificial rain. 2. Formed a Crisis Management Working Group on helleh wetland with representatives of the relevant departments. 3. studies on climate change and its impact on wetlands.



Fig 10: The view of Helleh Wetland in the summer of 2014

8-2- Stakeholders around the Helleh Wetland:

Table 6- Main Stakeholders and their Area of impacts on helleh wetland

Name of Stakeholders	Area of impacts/ influence
Local Governor	The role of government. Budget allocation. Coordination among organizations. Sustainable development in the region.
Local communities (farmers, animal husbandry, fishermen)	Agricultural activities. Grazing. watering- trough (destiny). Fishing. Exploitation of water from the helleh river.
Environment	Protection of wetlands. And natural and human environment, protection of plant species. Preservation of species and biodiversity
Cultural Heritage and tourism	Gary native support. Introducing Helleh wetland as a tourist destination. To spread tourism culture.
Regional Water of Bushehr city	Observe and suppliers Helleh wetland water rights. Basin Wetland Resource Development. Wetland and watercourse river training. Determine the extent of privacy and wetlands and river bed. Management of exploitation of water resources.
Fisheries	Protection of native species of fishes. Support the development of aquaculture activities.
Education	A training session for students. Cultural issues, Tourism pattern for the family, and entertainment issues.

Department of Urban Development	<p>Installation of guide stands for wildlife conservation.</p> <p>Creation of Guard rail within and adjacent to the Helleh wetland.</p>
Natural resources	<p>Boundaries between national and agricultural lands.</p>
Watershed	<p>Management of water resources exploitation.</p>
Agriculture	<p>Training on agriculture and irrigation techniques.</p>
Veterinary	<p>Soil and sand dune fixation.</p> <p>Soil and water conservation.</p> <p>Land Assignment.</p> <p>An Introduction and advice on pesticides and chemical fertilizers.</p>
Non-governmental organizations	<p>Linking government agencies and local communities.</p> <p>Promote public awareness of local communities.</p> <p>The cooperation of local communities to protect the natural resources.</p> <p>Relationship between people and officials, community education and wareness.</p>
Universities and research organizations	<p>Scientific research work.</p> <p>Scientific camp according to the related course of line or headlines.</p>

PREPARED

Continued Strategic Objective 2: Sustainable Management of water and soil resources in Helleh wetland catchment Area

Reorganization and consolidation of agricultural land and wetlands.

Implementation of the sustainable agricultural model in the basin and prevent manipulation lands and national land use change in the Helleh wetland in next 20 years.

Determining the territorial breakdown(National, Agricultural and Wetlands) From each other in order to prevent manipulation and changes in land use in some rural villages such as (Khoreband-ferakee-ghalesokhteh-Askeri-Moherezi-rostemi and hemood) in next 3 years.

1. The implementation of the sustainable agriculture model in the basin area around the wetland with priority of villages around the Helleh wetland.

2. Modify the cropping pattern according to the soil and water condition (no change in the current pattern to the plam trees)

3. Forming a working group to resolve property disputes and land use area.

4. Mapping of agricultural land and wetlands and survey other mapping required.

5. Construction of a fire station in the village of Koreband with special equipment (Lodder- water cannons).

PREL

Table (9) Strategic Objective 3: Increase Public Awareness, Strengthening public participation and sustainable livelihood

The main topics	Goals	Priority actions	Responsible and partner organizations
Sustainable Livelihoods	Sustainable livelihood plans of local communities for next 2 years and implement at least 10 percent of their projects, and finally full implement the sustainable livelihood programs of local communities in the Helleh wetland in next 3 and 20 years.	<ol style="list-style-type: none"> 1. Develop and implement a sustainable livelihood programs for local communities. 2. tourism and ecotourism projects 3. promote agriculture, livestock and environmentally sustainable fishing 4. The assignment facility to local communities in order to introduce sustainable livelihoods. 5. Create jobs for unemployed local communities associated with Helleh wetland protection. 	Tourism and Cultural Heritage. Local government. Secretariat of Helleh ecosystem management. (planning department) .Fisheries environment: natural resources. local communities. Justice. the land of jihad: Regional Water . Environment. Bank of Agriculture: Agriculture-Fisheries M: Bureau of Labor and Social Affairs of prosperity: agriculture and the environment, cultural heritage
Involvement of local communities	<p>Coordinate and participation of 20% of local communities in wetland management projects in next 3 years.</p> <p>Comprehensive participation of local communities and all stakeholders</p>	<ol style="list-style-type: none"> 1. Surveys and surveys of local communities to participate in projects related to helleh wetland. 2. Awareness about the advantages / benefits associated with wetland projects for local communities. 3. Reinforce active NGOs 	Tourism and Cultural Heritage. Local government. Secretariat of Helleh ecosystem management. (planning department) .Fisheries environment: natural resources. local communities. Justice. the land of jihad: Regional

The main topics	Goals	Priority actions	Responsible and partner organizations
Increase public awareness	Helleh wetland management in next 20 years.	<p>associated with Helleh wetlands.</p> <p>4. participation of local communities for continuous presence in wetland management meeting and regional development.</p> <p>5. Increase the number of collaborators environment by prioritizing villages around the Helleh wetland.</p>	<p>Water . Environment. Bank of Agriculture: Agriculture-Fisheries M: Bureau of Labor and Social Affairs of prosperity: agriculture and the environment, cultural heritage</p>
	Full realization(100) percent Training and awareness plans in ecosystem management of helleh wetland for all stakeholders in next 20 years.	<p>1.Develop and implement training programs, information and capacity building on the subject of Helleh wetland for target groups.</p> <p>2. Printed books, brochures, design software, animation, games, competitions and festivals, seminars and conferences on wetland values and threats.</p> <p>3. Information dissemination through the mass media, document, produced teaser, subtitles, news stories on the subject of Helleh wetland</p> <p>4. Construction of comprehensive school on the edge of the Helleh wetland environment.</p>	<p>Tourism and Cultural Heritage. Local government. Secretariat of Helleh ecosystem management. (planning department) .Fisheries environment: natural resources. local communities. Justice. the land of jihad: Regional Water . Environment. Bank of Agriculture: Agriculture-Fisheries M: Bureau of Labor and Social Affairs of prosperity: agriculture and the environment, cultural heritage</p>

PREFINAL

4- Mechanisms of Implementation of the Management Plan:

Mechanisms of implementation of the management plan

To complete the plan and in the field who are working with the organization to host the Gadgets should also be taken and an organizational structure intersectoral and a trustee institution such as the governor's responsibility to be in charge of whole plan.

The consultation was conducted and according to the organizational positions will be determined that at least three structural levels is needed which Depending on the circumstances, each will have different functions. The organizational structure at the provincial level, organizational structure at the city level and organizational structure at the local level which formed the different levels of enforcement mechanisms for management of Helleh wetland.

The Provincial Structure:

Table (10) Major Provincial Organizational Structures

The Supreme Council of water in the province	<ul style="list-style-type: none"> • water consumption management in the basin • Planning for water supply
Provincial Administrative Council	<ul style="list-style-type: none"> • modification or amendment in administrative and political structures • coordination between departments
General Teaching Council	<ul style="list-style-type: none"> • Notification through the mass media and non-governmental organizations • education programs
Municipal Security Council	Approval of security considerations in order to protect the public interest
State Planning Council	<ul style="list-style-type: none"> • Approve related Plan • financing plans
Water Task Force on Agriculture and Natural Resources	<ul style="list-style-type: none"> • supply planning, water distribution and consumption in related sectors • conservation and exploitation of natural resources and the environment
Provincial Disaster Management Coordination Committee of drought and climate change	<ul style="list-style-type: none"> • Natural disaster management (flood, fire) • Review, develop and manage strategies to mitigate the effects of drought and climate change and natural disasters
Employment and Investment Council	<ul style="list-style-type: none"> • Planning for employment of residents around the basin.
Working group of environmental impact assessment projects	<ul style="list-style-type: none"> • review and decide on implementation of environmental effective projects.
National Land Conservation Council of Natural Resources	<ul style="list-style-type: none"> • deal with unauthorized possession of national lands under the management of natural resources
The Working Group on Infrastructure	<ul style="list-style-type: none"> • approval of infrastructure on average projects.
Staff preservation of the national territory and prevent illegal construction	<ul style="list-style-type: none"> • deal with the phenomenon of land-grabbing and illegal possession of national lands
Committee to protect the rights of the treasury	<ul style="list-style-type: none"> • prevent of illegal land occupation

The Proposed Structure at the Provincial Level:

In summing up opinions, it was suggested that the above-mentioned working group with the following modifications as provincial-level working group and the highest authority of the Province undertake corresponding obligations.

The Helleh Wetland Management Committee will be formed at the provincial level and the tasks for the workshop include:

- 1-Help to handle integrate the activities and management programs in provincial organs.
2. Reviewing the progress and obstacles of inter-sectoral coordination.
3. Ensure timely provincial budget for program planning and management.
4. Approval of the annual work programs by the local executive committee and approval of annual report.
5. Monitoring the activities and extend the existing and appropriate solutions.
6. 5-year assessment of the implementation of the management plan.

These working groups will work with the following composition in Bushehr province.

Committee Chairman Deputy of Bushehr Governor (Civil or Planning)

Committee Secretary (General director of Department of Environment of Bushehr Province)

Natural Resources and watershed representative

Regional Water representative

Land Affairs representative

Agriculture representative
Representative Islamic Councils concerned villages
Universities and research centers representative
Representative of local communities
NGO representative
Justice representative
Representative of governments
Representative river basin management

The Following Components Necessity also will invite to the meetings:

Representative of the Ministry of Roads and City Planning
Water and sewage company representative (rural-urban)
Representative of the Ministry of Cooperatives, Labor and Social Affairs
Law enforcement representative
Representative of the Housing Foundation
Representative Fisheries Organization
Representative of Industry, Mine and Trade
Ministry of Education
Representative of the cultural heritage and tourism
Representative Veterinary Office
Representative of health
IRIB representative

**The City Structure level:
Table (11) City Major Organizational Structures**

Disaster Management Coordinating Committee	Disasters: floods, earthquakes, fires, droughts
Water Resources Protection Committee of Bushehr city	<ol style="list-style-type: none"> 1-prevent unauthorized wells 2. Meters installed on agricultural wells 3. Prevent emission of pollutants in the wetland.
Bushehr city planning committee	<ol style="list-style-type: none"> 1-funding projects related 2. Supervising the implementation of projects
Working group on protection of public lands	<ol style="list-style-type: none"> 1-preventing land degradation state 2-preventing illegal land use change.
Working group of employment and investment	<ol style="list-style-type: none"> (1) Review the investment project 2. Reviewing tourism projects
NGO Working Group	Consultation on plans and projects
Security council city	Security issues and political decision-making and action in all city issues.

The Proposed Structure in the City:

In the field of investigation and a proposed organizational structures in the city following conclusion was approved.

Working groups of Helleh integrated management plan will be formed in the Bushsher city and tasks for this Working Group included:

1. To control and monitor the implementation of a comprehensive management plan.
2. Reviewed and update annually management program.
3. Assessment of the implementation of the program.
4. Preparation of annual program.
5. Preparation of reporting annual run.
6. Facilitate coordination between departments and resolving conflicts.
7. Provincial coordination plan and budget for funding.
8. Establishment of expert panel.
9. cooperation with Provincial Coordination (Water and Agriculture).
10. Follow up needed funding for maintain and revival of Helleh wetland.

This working group will work with the following composition in city:

Representative of Department of environment of Bushehr city .

Representative of natural resources and watershed.

Governor representative.

Regional Water Company representative

Islamic councils and local communities representative

Justice representative city

Roads and Urban Development representative of the city

NGO representative
Representative of the Border
Power Office representative city
Intelligence representative
Red Crescent Society representative
Law enforcement representative

The following components are also of necessity will be invited in meetings.

Representative of local communities
NGO representative
Representative of governments
Education Department representative
Representative of the cultural heritage and tourism
Representative Veterinary Office
Health Department representative
IRIB representative

Local Committee for management of wetland

In order to efficiently manage and coordinate resource base and human activities in the basin in line with ecosystem management and implementation of a comprehensive management plan for the basin, local committees will be formed as follows. The committee is made up of stakeholders which ranging impact on Helleh wetland and a joint is formed between stakeholder management of wetlands. In case if the discussions and decisions of the in National Committee of Helleh wetland management requires coordination between provincial legislation and if necessary, through coordination with the Secretariat issue placed on the agenda of the provincial committee. Committee meetings quarterly (four times a year) is formed and if needed will also increase the number of meetings.

Specialized working groups of the local Committee on Helleh Wetland Management:

In order to efficiently manage and coordinate resource base and human activities in the field of environmental management purposes and implementation of a comprehensive management plan for the basin, Local committees will be formed as follows. The committee is made up of stakeholders ranging impact on wetland and jointly manage wetlands are formed between the stakeholders. If the discussions and decisions of the local Committee for management And, if necessary, through coordination with the Secretariat issue placed on the agenda of the provincial committee. Committee meetings usually formed quarterly (four times a year) and if needed will also increase the number of meetings.

Specialized working groups of the local Committee on Helleh Wetland Management:

To perform the technical and expertise activities related to the implementation of environmental management programs four expert panel titled "Management of water resources and agriculture and land", "biodiversity" and "sustainable livelihoods and awareness" will work the working groups formed under the auspices of the ;Local Committee for management of Helleh wetland and their meetings are held periodically. In fact Specialized Committees with the participation of local experts in different fields to survey the technical and expert management practices and decision-making and preparation program offers specialized executive for the local committee wetland management. Each expert panel should be based on the type of activity and its specialized working group and wetland management by the local committee and working group members and their Secretariat (the permanent members of the devices wetland management committees) and for a specified period to be determined. As well as relevant experts in the specialized agencies must be a member of the

working group for a specified period and introduce to the Secretary of the Working Group of the device in meetings for its fixed representative to attend. Executive regulations of the expert panel also prepared by the Secretary and members of the working group And with the agreement of all members of the local committee submits its final approval.

Members of the Local Committee on Wetland Management:

Permanent members:

Representatives of the governor of the city, the Department of Environmental Protection, Jihad Agriculture Organization, Department of Natural Resources, the Department of Cooperatives, Labour and Social Welfare, Regional Water Company, the General Administration of Cultural Heritage and Tourism, the Islamic Council villages surrounding the pond, Dhyaryha, Maximum of 3 representatives), representatives of the local community (maximum 3 representatives from among dignitaries and active local community) NGOs (maximum 2 representatives), departments of environmental protection, natural resources, agriculture, water affairs and sanitation in rural areas, rural cooperatives.

Non-permanent members:

Representatives Health Network, the judiciary, universities and research centers representative (the subject matter), Department of Cultural Heritage, Tourism and Handicrafts, Rural Water and Wastewater Affairs, representative of the Agricultural Bank, Department of Fisheries, representative local exploitation (with respect to the subject matter).

* In terms of necessity local wetland management committee of permanent or non-permanent membership in other devices invites

from other organizations according to subject matter to participate in the meeting.

Local Committee Wetland Management Duties:

- Capacity building to enhance participation in local community
- meetings in order to build capacity and create interaction between members
- Developing an annual action plan
- implementation of annual action plan with regard to the priority measures
- offering views of the management plan is revised and updated annually
- Preparation of annual administrative report and submit it to the higher level management
- Facilitate Cross-sectoral coordination and conflict resolution
- Keep track of Credits and administrative approvals
- providing specialized fields of activity groups and benefit from expert opinions.

The Process of Ratification and Implementation of Helleh Wetland Ecosystem Management Program:

Environmental management program is a multi-sectoral program in which different groups of stakeholders have roles and responsibilities accordingly. So to ensure the program is implemented will require strong support from the relevant authorities, otherwise unbalanced and uncoordinated actions and cooperation between the relevant parties can shock progress and achieve program goals. For the provision of such support, it is necessary to be sign by the high officials of Bushehr province such as Governor to endorse and the national authorities and to implement the relevant notified. The following mechanism to finalize the management plan, approved,

communicated and critical stage of its implementation has been detected.

Set multi-sectoral program, taking into consideration the views of all relevant groups, including local communities.

There should be a strong sanction for operational programs through:

Council approved a management plan approved plan of the province and national level (if applicable should be done during provincial trips Cabinet).

Coordination in order to form Helleh wetland management structure, define the duties and how this structure with other institutions and establishment of administrative and financial mechanisms to implement wetland management plan.

Supply adequate financing resources.

Implementation of priority actions by the relevant program management and local communities and exposure Program is on the agenda planning management.

Monitor the implementation of the plan through the establishment of the Local Committee for wetland management and monitoring and evaluation of program results.

5. Supply Funding Resources for Implementation of Wetland Integrated Management Plan:

6. Monitoring and Evaluation:

Monitoring it means collecting data and information about the achievements of the implementation of a comprehensive management plan on condition and management of Helleh wetland. Continuous and systematic study and report on various occasions to management system for information on workflow and possible improvements on wetland management plan and the status of the wetland is major part of monitoring purposes. Monitoring to evaluate, identify problems and obstacles, knowing the progress of the activities, knowledge of project progress the need to review and helps to review the executive action. Since the beginning of the project the monitoring started it continues during the project process. Helleh wetland monitoring program is intended to continue offered separately.

Table 12- Biological Monitoring Programme

Biological objective	Parameters	Locations for sampling	Timing of sampling	Lead agency (monitor+report)	Time of reporting	Storage of data
The native birds of helleh wetland.black francolin,Dead sea sparrow,red-wattled lapwing	Total population - breeding colony	North part of the Rostami village East part of Hasan Nehzam region West part of FrakhRegion	Spring breeding and total population of every February	Doe of Bushehr	Every 6 months	In the Helleh wetland management Secretariat of DOE of Bushehr
Migratory birds Geese, flamingos, ducks, green heron, Eggert, kingfishers, common shelduck Dorna, coot, marbled duck	Population	North part of Rostemi village East part of hassan Nehzam Region West part of FrakhRegion	In the month of February	Doe of Bushehr	Annual	In the Helleh wetland management Secretariat of DOE of Bushehr
Native in land and marine fish, carp, eel, turtle Mullet, snappers,sea breams	Number / size distribution and genus	Basri dam where the Helleh River entrance to the Helleh wetland	Seasonally	Fisheries company of Bushehr	Seasonally and annual	In the Helleh wetland management Secretariat of DOE of Bushehr
plant species, Tamarisk, Reed, Sedge	The coverage area and density per unit area	North part of Rostemi village East part of Hassan Nehzam Region West part of Frakh Region	In the month of March	Natural resources of Bushehr	Annual rotation	In the Helleh wetland management Secretariat of DOE of Bushehr
Mammals Forest Cat wild boar,	The number and distribution	The total forest area of Helleh wetland	Every July and December	Doe of Bushehr	Every 6 months	In the Helleh wetland management Secretariat of DOE of Bushehr

Table 13- Socio-Economic Monitoring Programme

Subject	Parameters	Locations for sampling	Timing of sampling	Lead agency (monitor+report)	Time of reporting	Storage of data	The annual budget (USD)
Sustainable Tourism	-Tourism infrastructure -The visitors	-Cultural Heritage and Tourism -Environment	-Every six months .-every six months.	-Cultural Heritage org. -Dept of Environment	-Once a year -Once a year	-- Dept of Environment (Wetland Secretariat)	-
Sustainable Livelihoods	-The number of employees related to wetland conservation -The disposition of disputed land area -The facility was handed over to sustainable livelihoods	-Angali rural district and northern Helleh river. -Department of Natural Resources and Watershed Management – Justice. -Banks and inhabitants of the villages of the region.	-Every six months - Every six months - Every six months.	-Sheriffdom -Department of Natural Resources and watershed County / Jihad and the Department of Labor	-Once a year -Once a year -Once a year	-- Dept of Environment (Wetland Secretariat.	-

Subject	Parameters	Locations for sampling	Timing of sampling	Lead agency (monitor+report)	Time of reporting	Storage of data	The annual budget (USD)
Involvement of local communities	-The number of projects implemented with the participation of local communities -The number of active NGOs associated with wetlands	-Environment -Environment	- every six monhts. -annual	-Dept of environment -Dept of environment	-Once a year -Once a year	-- Dept of Environment (Wetland Secretariat.	-
Public awareness	-The number of education and awareness activities -The number of comprehensive environmental schools -The knowledge of authorities and local communities	-Broadcasting, Environment, Training Centers. -Kareband village. The relevant departments and related local communities.	-monthly. -Annually. - every six months.	-Environmental Education -Environmental Education -Environment	-Annual. -Annual. -Annual	--- Dept of Environment (Wetland Secretariat.	-

Table 14: Soil and water resources monitoring program

Water quantity	Water flow (The volume of water)	1-Jehreyeh 2-Bala- saad abad-3- pool kholol4- Basri dam5- coastal road(enterence to helleh wetland.)6- sargahnat7- mohammadi village.	Monthly (except in time of flooding)	-Regional water of Bushehr	- Every 3 months. (end of season).	- Database in Regional Water company of Bushehr and Wetlands Management Secretariat
water quality	PH-COD- BOD-DO-EC ,salinity, curve of turbidity - cation-anion -Nitrat- phosphate- ammonia - nitrate- Sulphat- TSS-IDs-Ts total coliform. Groundwater	1-Raeas ali dam2- saadabad3-- pool kholol4- Basri dam5- coastal road(enterence to helleh wetland.)6- sargahnat7- mohammadi village. 8-junction wetland to the sea. Wetland range.	- Monthly. - Monthly	- 1-Dept of Environment 2. The regional water of Bushehr 1-Dept of Environment	- Every 3 months. (end of season). -Annual.	--- Dept of Environment (Wetland Secretariat).

		1-sargenat2-kholol bridge3-basri dam4-koreband and mohammadi bridges.		2. The regional water of Bushehr		-- Dept of Environment (Wetland Secretariat).
Soil and sediment	-The volume of sediment. -Sediment Features. - Aggregation-heavy metals – Fuel and oil material.	1-basri dam the separate from coast2-Mohammadi and koreband bridges.	Monthly (except in time of flooding). -Annually	- The regional water of Bushehr - Dept of Environment	-Every six months. -Annual.	-Database in Regional Water company of Bushehr and Wetlands Management Secretariat). -Database in Regional Water company of Bushehr and Wetlands Management Secretariat).
Organizing Lands and wetlands	Privacy and bed of Helleh river and wetland.	Direction of Helleh river.	-Annually	- Regional water, environmental protection, local communities, 1-Natural Resources-	-Annual.	1--Database in Regional Water company of Bushehr 2-Jahad agriculture Organization.

Model of sustainable agriculture				Environment 2, 3- Agriculture, 4- local communities		3-Governor.
	-Land status to cover new irrigation from the Helleh river. -The area of land under cultivation model approved by the Ministry of Energy and Agriculture	-Catchment of the Helleh Wetland. - Catchment of the Helleh Wetland.	-Annually -Annually	-1. regional water 2. Jahad Agriculture organization. 3. cooperation with local communities. -1. regional water 2. Jahad Agriculture organization. 3. cooperation with local communities.	-Annual. -Annual.	1--- Dept of Environment (Wetland Secretariat). 2- Jahad agriculture Organization. 3- Regional Water company of Bushehr. 1--- Dept of Environment (Wetland Secretariat). 2- Jahad agriculture Organization. 3- Regional Water company of Bushehr

ANNEXES: Flood Zoning process of Helleh Wetland

PRE FINAL

A: Current applications in the helleh wetland:

During the workshops with the participation of beneficiaries a list of the most important human use of wetlands and the area around it was prepared which the following is provided.

Annex 1: Current Applications in the Helleh Wetland

Activities	Location
Agriculture	Northwest and north of Helleh between helleh wetland and Helleh river, as well as a scattered near the wetland.
Grazing	Central parts of the wetland and reed beds around the helleh wetland.
Forest (Core of Helleh wetland)	Central areas of the wetland including dense reeds of perennial Tamarisk trees.
Sea (to a depth of 6 meters)	The southern margin (According to the definition which till the depth of 6 meters known as coastal wetland).
Boat port	Southeast Region (shifft Island is out of helleh wetland).
Salt marsh and desert	In the east part of area with the low slope no any vegetation seen.
Tidal zone	South area between the sea and estuarine areas due to entering the river water to the flat areas.
Wetland	Center area enclosed between the marshes and forests.
Estuarine areas	The semi southern of the area, the distance between the tidal zones and wetland, and the combination of relatively fresh water and salt water.

(B) The list of Future Proposed Activities in Wetlands:

The starting point for implementation of a management plan is zoning.

Zones by using available information and based on the professional judgment of experts and representatives of the beneficiaries were identified.

The list of proposed activities agreed upon by all participants, to achieve the optimal balance between conservation and exploitation in line with the objectives of ecosystem management integrated that can be seen in table annex 2.

Annex 2: The List of Future Proposed Activities in Wetlands

Activities	Locations
Agriculture	Focused on the sidelines of Helleh River in the North Branch (Agriculture within the range of the wetland and forests must be stopped).
Grazing	In marginal agricultural land (grazing in the reeds of the range must be stopped)
Rehabilitation areas	Swamps, marshes and areas located in the center of agriculture and grazing areas.
Fishing efforts	Outside the boundaries of Helleh wetlands (in Shiftt island and out of the depth of 6 meters from the sea).
Conservation	Estuarine areas and wetland, forest and surrounding reeds.

(C) Sensitive Zoning Areas of Helleh Wetland:

Zoning is largely dependent on the identification of their habitats and special features. Determine the boundaries of the wetland intervention, and carrying out any activity due to direct impacts on wetland conditions requires to recognition of the sensitivity of Helleh wetland habitat. Different levels of sensitivity are as follows:

Very high sensitivity, high sensitivity, Medium sensitivity, low sensitivity

Annex 3: Representing the Spatial Sensitivity Levels in the Helleh Wetland

Sensitivity levels	Sensitivity Index	Reagent points
Very high sensitivity	-Wetland body water. -Confluence of fresh and salt water and sensitive ecosystems	-Central Areas of wetland. -Estuarine Area
High sensitivity	-Nesting and breeding areas of birds. -Area with the high biodiversity	-Forests and Marshes around the helleh wetland. -Tidal zones
Medium sensitivity	Decentralized human activity in Fishing activities	- Shallow sea area
Low sensitivity	-Human activities focused on agriculture - Concentrated human activity in Fishing activities, near by sheiff island.	-Salt marsh -Agricultural areas along the North branch of Helleh river. -Deep Sea areas

(D) The Proposed Layout According to the Compatibility of Land Uses in each Zone:

The next step after identifying zones will be the agreement on user rules of each zone, which can be a simple table including permitted activities in each zone or by providing a written constitution and with full details for each activity or a combination of both these factors.

An example of uses proposed in the attached Table 4.

Annex 4: The Proposed layout according to the compatibility of land uses in each zone

Zone	Permitted Activities	Other Activities	Responsible for preparation instructions
Very high sensitivity High sensitivity	Protection	illegal	Department of Environment(DOE)
	Protection and Rehabilitation	Bird Watching	Department of Environment(DOE)
Medium sensitivity	Ferry(crossing small boat).	Fishing	Department of Environment(DOE) And fisheries company.
Low sensitivity	Agriculture, grazing, fishing	Tourism	Department of Environment(DOE) And fisheries company, Natural Resources and Agricultural Organization.

Allowed activities in sensitive areas with "very high" and "high, in sensitive areas with "moderate" and "low" is applicable but the reverse is not allowed. The authorized activities in medium and low sensitive zone are also defined.

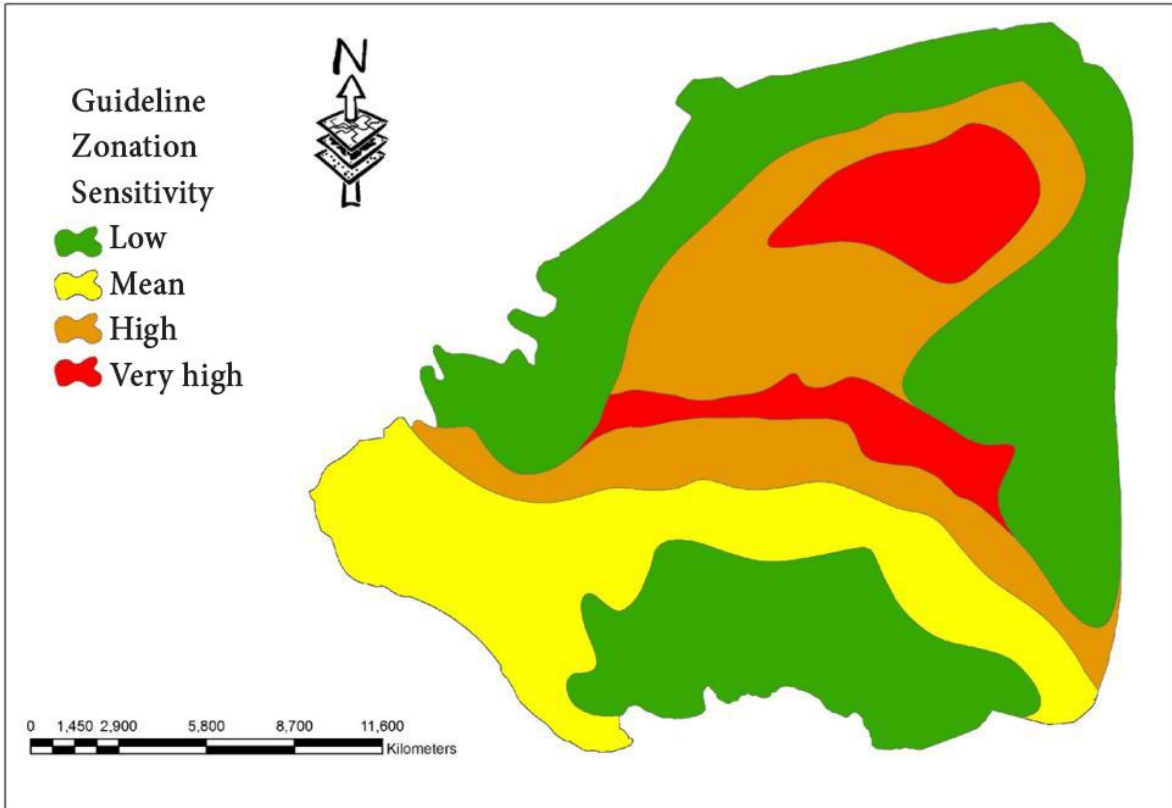


Fig 12- Sensitivity zoning of Helleh Wetland