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**REQUEST FOR PROJECT/PROGRAMME**

**FUNDING FROM THE ADAPTATION FUND**

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat

1818 H Street NW

MSN P4-400

Washington, D.C., 20433

U.S.A

Fax: +1 (202) 522-3240/5

Email: afbsec@adaptation-fund.org



**PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND**

**PART I: PROJECT/PROGRAMME INFORMATION**

Project/Programme Category: Regular

Country/ies: Iran

Title of Project/Programme: Reducing vulnerability to climate change in the Lake Bakhtegan Basin. (UNDP PIMS 6190)

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: United Nations Development Programme

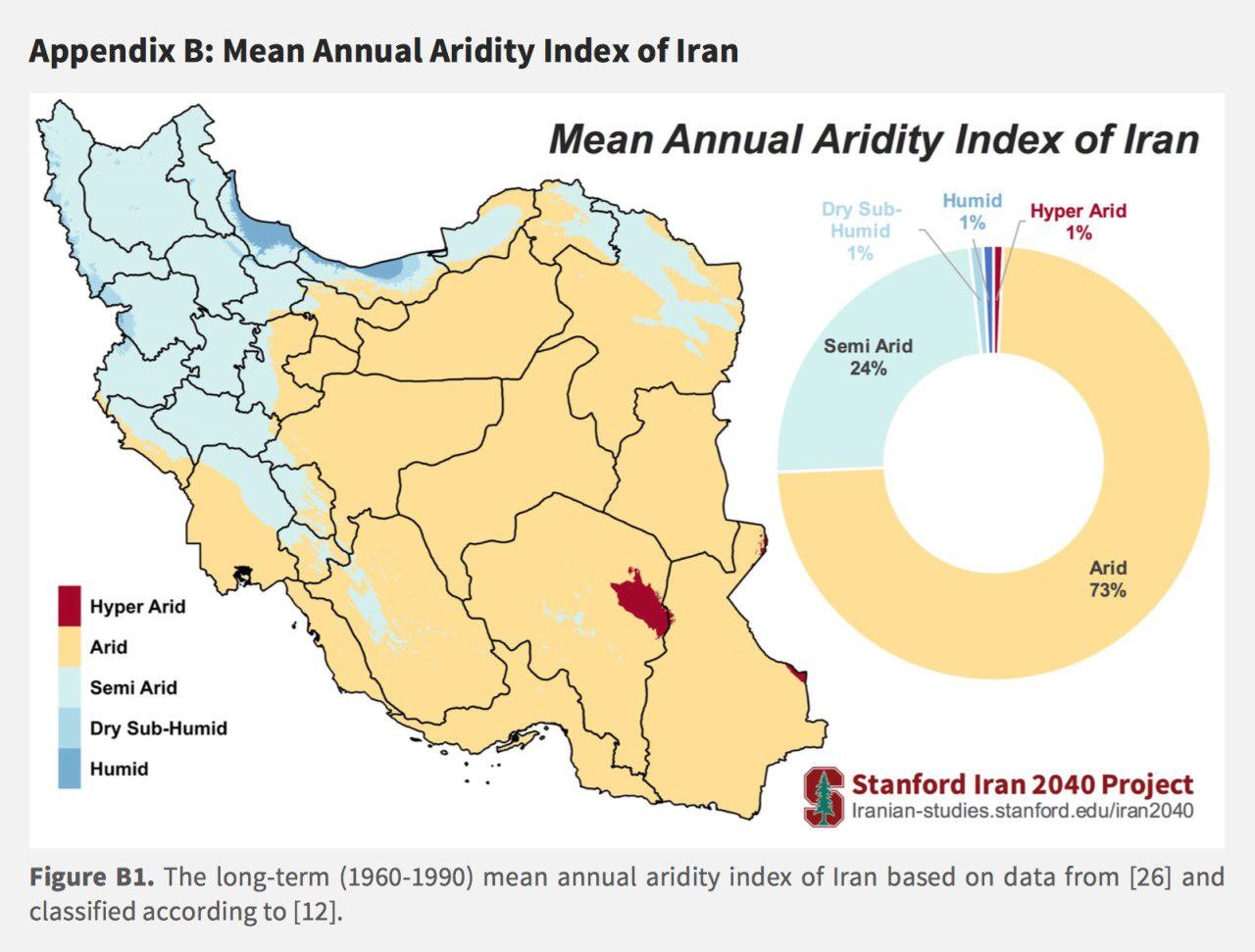
Executing Entity/ies: Department of Environment (DoE)

Amount of Financing Requested: US$ 9,865,651(in U.S Dollars Equivalent)

**Project / Programme Background and Context:**

**National context**

1. According to Iran’s Second National Communication to the UNFCCC “*Iran is highly vulnerable to the adverse impacts of climate change. It is a country with arid and semi-arid areas, limited water availability, low forest cover, liable to drought and desertification, prone to floods, high urban atmospheric pollution, fragile mountainous ecosystems.*
2. It is well documented that the west of Asia region has experienced climate changes, water shortages, and disruptions to agriculture and human settlement for millenia[[1]](#footnote-2). The Middle East and North Africa (MENA) is the most water scarce region in the world. With combined effects of a predominantly arid climate, rapid population increases, increased demand for water, climate change, and transboundary water management issues, Iran, along with other MENA countries, is faced with a growing water crisis situation[[2]](#footnote-3). The rapid growth in demand for water in Iran has led to severe depletion of available water with annual renewable water availability per capita projected to be at crisis level by 2021[[3]](#footnote-4). In a recent World Resources Institute study, Iran ranks 13th out of 33 countries identified as likely to face severe water stress by 2040[[4]](#footnote-5) under a Business as Usual scenario. In the mid-1960s with a population of 19 million water per capita was 7000 cubic metres per annum. By 2014, with a population of 70 million, this figure had reduced to less than 1900 cubic metres per annum, and with projected population increases is expected to be approximately 1400 cubic metres per annum by 2025[[5]](#footnote-6).
3. The Islamic Republic of Iran, with an area of 1,648,195 square kilometres, is mostly a mountainous and semi-arid land. The climate is mainly influenced by a sub-tropical high pressure belt, with three climate types according to the Koppen climate classification; arid and semi-arid; temperate-mesothermal; continental-microclimate. Approximately 97 percent of the country is arid or semi-arid with an average annual rainfall of 240mm, less than a third of the world’s average precipitation[[6]](#footnote-7). Annual rainfall in the inland dry deserts of Iran can be as low as only 10mm. Rainfall is very seasonal with only 10 percent of the annual rainfall occurring during the hot and dry seasons in the central, southern and eastern areas of the country[[7]](#footnote-8).Average annual rainfall over most of the country is about 200mm. Temperatures vary from -6°C to 21°C in January and 19-39°C in July[[8]](#footnote-9).



**Figure 1: Mean annual aridity index for Iran**

1. Mean annual temperatures have increased in Iran based on analysis of data from 1960-2010, with an increase in minimum temperatures over this period of approximately 2°C and an increase in maximum temperatures of approximately 1°C. Annual rainfall is already low throughout most of Iran and for the most part there have been no significant changes over the 1960-2010 period[[9]](#footnote-10). Projections to the 2015-30 period compared to 1982-2009 indicate average temperature increases of approximately 0.5°C, with variable and uncertain changes in precipitation. Projected temperature increases of up to 3-4°C by 2100 were identified in Iran’s Second National Communication to the UNFCCC, with uncertain changes in precipitation. Continued temperature increases, combined with the already low rainfall throughout most of Iran, will increase the risk of drought over time. *“According to the long-term climate predictions, the provinces and areas south of the Zagros Mountains range will experience the greatest decline in snowfall. This will have important consequences on surface and underground water resources and thus the availability of water for irrigation in these areas.”[[10]](#footnote-11)*
2. With high summer temperatures and low summer rainfall, combined with low annual rainfall in most areas, Iran is more often than not in a water deficit situation. The drought risk is very high. The severe drought experienced from 1999-2002 resulted in an estimated $3.5 billion worth of damage, killed 800,000 head of livestock and dried up major inland reservoirs and lakes[[11]](#footnote-12). Unlike other natural disasters, which have immediate and obvious impact, the impacts of drought are insidious. These impacts are experienced throughout the economy, society and environment with often long-lasting consequences. Based on an analysis of the economic impacts of climate change induced water scarcity the MENA region is expected to experience the greatest economic losses, estimated at 6-14 percent of GDP by 2050[[12]](#footnote-13).
3. Iran’s population has grown rapidly over the last sixty years, from approximately 19 million people in 1956 to approximately 80 million in 2016[[13]](#footnote-14). The increase has been notably greater in urban areas than rural. This difference reflects the rapid growth of urbanisation in Iran, with 73 percent of the population now living in urban areas compared to only 27 percent in 1950[[14]](#footnote-15).Within the context of the Iran government’s policy of food self-sufficiency these changes in population and its distribution have had significant impacts. Among other factors the loss of arable land to increased urbanisation and the pressure to feed a rapidly growing population has placed enormous pressure on soil and water resources.

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**Figure 2: Population trend and changes in rural and urban population in Iran**

1. Iran is the second largest economy in the Middle East and North Africa (MENA) region with a Gross Domestic Product (GDP) in 2016/17 of 13,045 trillion Iranian Rials (USD377 billion)[[15]](#footnote-16).Iran’s Human Development Index (HDI) value for 2013 was 0.749, which is in the ‘high human development’ category, positioning the country at 75 out of 187 countries and territories. Between 1980 and 2013, Iran’s HDI value increased from 0.490 to 0.749, an increase of 52.9 percent. Life expectancy at birth increased by 19.9 years, mean years of schooling increased by 5.7 years and expected years of schooling increased by 6.5 years. Iran’s Gross National Income (GNI) per capital increased from 5,065,499 Rials in 1996 to 7,465,317 Rials in 2012 (47.3% increase) using the base year 1997. Government investment in research increased from 0.4 percent of GDP in 2000 to 0.87 percent by 2009[[16]](#footnote-17). In 2011 Iran ranked first in scientific growth in the world and 17th in scientific production. The largest sector in Iran is the service sector, with agriculture ranking third behind industry (mining and manufacturing.
2. Of Iran’s total land area of 165 million hectares about 37 million hectares are suitable agriculture, of which 20 million hectares are irrigated and 17 million hectares are dryland[[17]](#footnote-18). Of the total agricultural land area, currently 18.5 million hectares are devoted to field crop production and horticulture. Of this, 6.4 million hectares are under annual irrigated crops, 2 million hectares are under horticultural crops and about 6.2 million hectares are under annual dryland crops. The remaining 3.9 million hectares are fallow. Cereals (predominantly wheat, but including rice, barley and maize) are grown on 70 percent of cultivated land. Other crops include various fruits, nuts, vegetables, cotton, sugarcane, sugar beet and spices. The main development challenges faced by agriculture and the rural sector include: a harsh physical environment; constraints to food security and self-sufficiency in major staple crops; inadequate access to food; low productivity of the many small-holder farmers with issues including water shortages and outdated and inefficient irrigation systems; rural poverty; limitation and application of and access to modern technologies; adverse impacts on the natural environment.
3. A consequence of the increased demand for and use of freshwater, predominantly for irrigated agriculture, has been severe impacts on natural ecosystems. Iran has a high natural biodiversity with natural habitats supporting over 8200 plants species of which 20 percent are endemic; 535 bird species; 197 mammal species, 227 reptile species, 21 amphibian species and 160 freshwater fish species[[18]](#footnote-19). Iran’s wetlands, covering 1.7 percent of the total land area, provide important habitat for many species. Half of this area, amounting to 1.4 million hectares, is made up of the 24 wetland sites designated as Wetlands of International Importance (Ramsar sites) in Iran[[19]](#footnote-20).From studied wetlands of the country by 2013, about one third of them are under pressure or in a critical condition[[20]](#footnote-21). Extreme drought conditions have exacerbated the dramatic shrinking of inland water bodies in Iran, including the striking examples of Lake Urmia, the Hamoun Wetlands and Lake Bakhtegan. While drought has played a significant role there has been a combination of factors that have led to this situation. The main causes are reduced precipitation, increasing temperatures, construction of dams and diversion of surface water for farming which has also resulted in decreased recharge of groundwater[[21]](#footnote-22).
4. According to the National Biodiversity Strategies and Action Plan (NBSAP2) (page 18) *“Climate change, water shortages and the continuation of droughts are among the serious threats to biodiversity in the past and future that must be considered accurately. The location of Iran in the dry belt and building dams illogically has not been ineffective in causing water crises and desertification of large parts of the country especially in a land where its ancestors knew, from many years ago, that the most important enemy of the water in that land is the sun and learned to conduct the water into underground and roofed water storage tanks. For this reason, special attention must be paid to water management because it plays a significant role in biodiversity conservation.”*
5. The importance of water management in Iran is reinforced through the recently published World Bank report on Water Security in the MENA[[22]](#footnote-23) which states that *“A fundamental development challenge for the region is to take the actions necessary to navigate sustainable pathways toward water security. Sustainable pathways would anticipate and manage the inevitable increases in water scarcity and water-related risks—against a backdrop of climate change, urbanization, growing fiscal constraints, and widespread fragility and conflict. Planning and action are needed to strengthen the resilience of economies and societies to protect them from water-related disasters.”*
6. This project aims to bring these issues into focus, within the context of climate change, in the Bakhtegan Basin in Fars Province in southern Iran. The Bakhtegan Basin is the heart of Persian civilization with the ruins of the ancient cities of Pasargadae and Persepolis within its boundaries. The story of the Bakhtegan Basin is in many ways the story of Iran. It encompasses a long history of wise resource management, the more recent decades of environmental mismanagement, the social, environmental and economic costs that have arisen as a result, and the unfolding impacts of climate change.

**The Bakhtegan Basin[[23]](#footnote-24)**

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| **Figure 3: Lake Bakhtegan in Fars Province was Iran’s second largest lake, home to flamingos and migratory birds** |

1. The Bakhtegan Basin is located in the northeast of Fars Province in the south of Iran and is home to 854,093 people[[24]](#footnote-25). It is one to the most important natural habitats in Iran covering an area of 2,724,592 hectares.99.17 percent of the basin is in Fars province and minor parts are located in Yazd, Isfahan and Kohgiloye and Boyerahmad. It is the heart of Persian civilization and culture, with the ruins of Persepolis and other important archaeological sites located within the basin. Persian civilization undoubtedly thrived there because of water. The hydrological system of the basin has sustained life for thousands of years. Despite the apparent abundance of water the basin’s hydrological system is collapsing, resulting already in a situation that is an environmental, social and economic disaster. This is the result of the combined effects of a dismantling of longstanding traditional land management systems and practices, mismanagement of land and water resources over the last forty years and hotter and drier average conditions over the last decade. The situation is very serious and one which has huge implications for Iran if unaddressed. It is by no means an isolated situation with the over use of surface water and effective mining of ancient groundwater a widespread issue and concern internationally, especially within the context of climate change.

**Climate and climate change**

1. The most important meteorological systems in the region are the Sudanese low pressure system, the low pressure of the Mediterranean, the cold north high pressure, the low thermal pressure of India and the low pressure of Saudia Arabia. Local climate data have been gathered and analysed from 43 meteorological stations. Average annual precipitation varies from 139.1mm recorded at Abadeh to 853.6mm recorded at Choubkhale. Precipitation is distributed unevenly through the year with 24.5 percent in autumn, 58.3 percent in winter, 16.8 percent in spring and 0.6 percent in summer. All stations follow a similar rainfall pattern with rainfall beginning in October, peaking in November and continuing in December. The annual precipitation volume in the study area was estimated at 87.9 billion cubic meters[[25]](#footnote-26). Temperatures vary seasonally and with altitude throughout the Bakhtegan Basin. A lowest absolute minimum temperature of -28°C has been recorded at Kafter. Average minimum temperatures of 6.6°C, 11.5°C and 7.7°C have been observed at Abadeh, Doroodzan and Zarghan Dam stations respectively with average maximum temperatures of 22.1°C, 23.9°C and 24.6°C recorded at the same sites. A daily maximum of 49°C has been recorded at Kafter station in July.
2. Iran’s second national communication included an analysis of changes in runoff by 2100. Percentage changes in runoff by 2100 were calculated for 30 sub-basins using a number of different greenhouse gas emission scenarios. The Tashk-Bakhtegan and Maharloo sub-basin showed the greatest decrease in runoff, ranging from 13-15 percent across five of the six scenarios used. A separate study[[26]](#footnote-27) on the relative effects of climate variability and human activities on runoff in the Bakhtegan Basin showed a trend of decreased annual runoff over the 40 year period from 1972-2011.
3. Climate change is already manifesting in the Bakhtegan Basin with evidence of increasing temperatures and below average rainfall over the last decade. The latter may only be a shorter-term variation, but is wholly consistent with what can be expected with climate change. The Bakhtegan Basin as a whole is a part of Fars Province that is classified as having extremely severe drought risk. In the past 40 years there have been four drought periods. These were:

* 1980/81 to 1985/86
* 1987/88 to 1990/91
* 1996/97 to 2002/03
* 2007/08 to 2014/15 and continuing

1. The 2007/08 drought was particularly severe and the extended drier than average period since then is the worst in the last 40 years (Figure 4).
2. Various climate change assessments have been made in the basin. Recent analyses of drought in Fars Province have come to slightly different, but overall, the same conclusions. The first of these analyses, based on 2000-2008 data, showed that most of the province is vulnerable to drought[[27]](#footnote-28), but with greatest susceptibility in northern and southern areas. The second study[[28]](#footnote-29) concluded that the north and northwest experience the most severe droughts. However, overall, this study demonstrated that the whole province is exposed to moderate to severe drought conditions and recommended the need for effective planning and management of drought, with particular attention being paid to water resources management in order to avoid irrecoverable disasters.

**Figure 4: Annual rainfall changes in the Bakhtegan Basin showing a drier than average period   
since the 2007/08 drought**

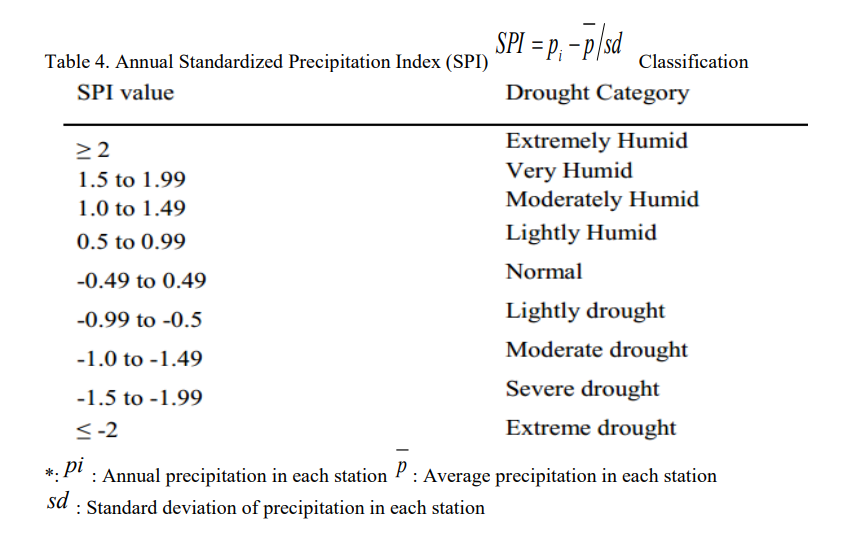
1. A recent analysis of the impacts of climate change on the Bakhtegan wetland[[29]](#footnote-30) is somewhat inconclusive. Using 1998-2012 as a baseline period changes out to 2050 were determined using 28 different climate change scenarios. The results demonstrated that “The Bakhtegan wetland is predicted to have an area of 238–690 km2 in 2050. 16 climate scenarios estimate an increase of 0.4–72 % and 12 scenarios estimate a decrease of 3.8–41 % in the area of this wetland for 2050 in compared to its mean area”. All scenarios predicted a decrease of 17–69.5 % in the maximum area (i.e. the maximum extent identified from the baseline period) of the Bakhtegan wetland.
2. Another recent study[[30]](#footnote-31) involved an assessment of the combined effects of climate and land use change on streamflow, suspended sediment and water quality in the Kor River sub-basin. Scenarios were run for the period 2020-2049, based on current climate change scenarios from the IPCC 5th Assessment Report. Results showed average increases in streamflow, with significant increases in late autumn and winter and decreases in early autumn and summer. Sediment concentrations decreased and orthophosphate increased under land use/agriculture change scenarios.
3. As with all climate change impacts assessments the above results need to be treated with some caution due in particular to uncertainties associated with different GCM results, which increase greatly with downscaling to a local area such as the Bakhtegan Basin. Additionally they represent a somewhat fragmented and ‘snapshot’ assessment approach to what is a very complex interplay of issues arising from mismanagement of land and water resources, drought impacts and unfolding effects of climate change.
4. This complex interplay of issues was qualitatively examined through the Conservation of Iranian Wetlands project. As part of this project vulnerability scoping diagrams (VSDs) were developed for all Iranian Ramsar sites, including those in the Bakhtegan Basin. This involved a participatory process facilitated with managers, experts, specialists and local community representatives. A set of indices were predetermined for each of the three components of vulnerability: exposure, sensitivity and adaptive capacity. Each of these were scored by participants with results collated in the form of the VSDs. The VSD from the Bakhtegan Basin is presented in Figure 5 below, with key indices of exposure, sensitivity and adaptive capacity identified. Key exposures are identified as: extraction of both surface and ground water, agricultural development, hydrological changes, precipitation changes, and failure to comply with environmental water rights. Key sensitivities are: wetland and groundwater levels, increasing cultivation, dealing with drought, and lack of water allocation. Adaptive capacity is lowest with some key biophysical and human/social indices, including: lack of management plan review, lack of knowledge among local people, stresses and pressures that are likely to arise with climate change, and lack of monitoring. Climate variability and change features strongly, but as already noted is occurring within a complex situation involving the need for local people to sustain their livelihoods in a situation of limited water resources. Key issues in the basin that are being affect by drought and climate change are discussed in the following sub-sections.

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| Exposure | Sensitivity | Adaptive capacity |
| 1) Extraction of surface water  2) Extraction of groundwater  10) Agricultural development  23) Hydrological changes  26) Precipitation change  29) Failure to comply with environmental water rights | 33) Wetland water level  34) Ground water level  38) Increasing cultivation  38) Dealing with drought  47) Lack of water allocation | 53) The lack of reviewing management plan  54) Lack of indigenous people knowledge  57) Invasive species likely to increase with climate change  60) Stress be increased by the new climate condition  64) Lack of monitoring |
| **Figure 5: Vulnerability scoping diagram (VSD) for the Bakhtegan Basin, developed through the Conservation of Iranian Wetlands project** | | |

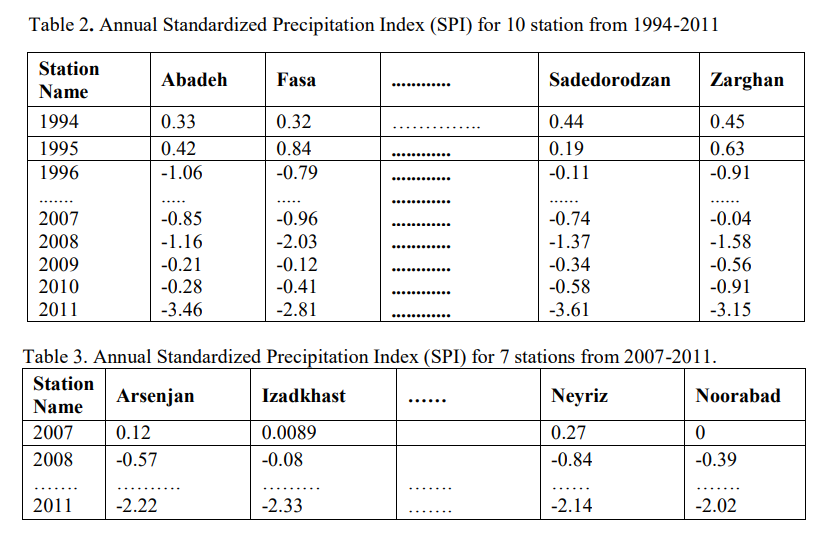
**Aridification**

1. A study[[31]](#footnote-32) mapping drought hazards using the Standardized Precipitation Index (SPI) and GIS in Fars province, based on data compiled by weather stations in the province provide an insight of the extent of the drought overtime since 1994 to date in the Bakhtegan basin.
2. The SPI used to measure drought has the following values associated to drought category classification:

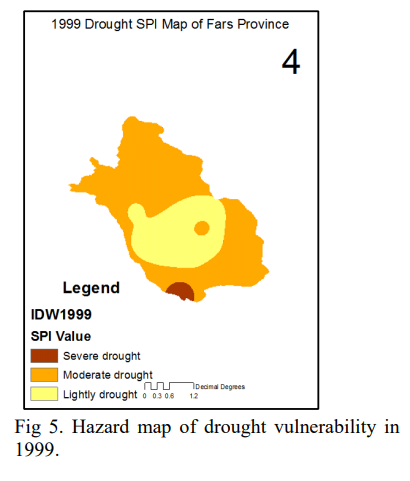
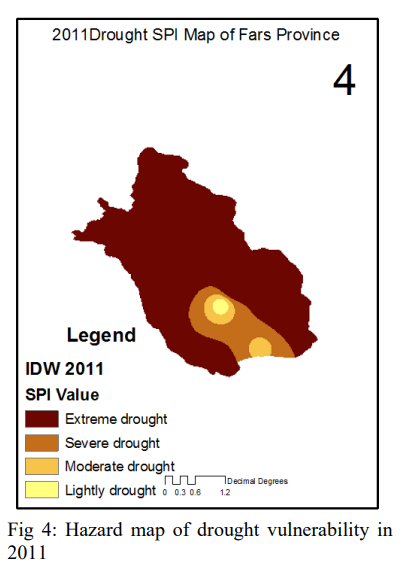
Table 1: Standardized Precipitation Index:



1. Based on data from 10 weather stations from 1994-2011 and from 7 stations from 2007-2011 in Fars province, the SPI index was calculated as follows:



1. Based on the results above, drought maps from Fars province have been developed using ArcGIS coupled with drought index (SPI) that clearly demonstrate the extended severe to moderate drought that Fars province has been enduring for the past decade. It important to point out that the SPI only take into account climate and hydrological variables, therefore it’s clear to affirm that drought is driven by climate factors.



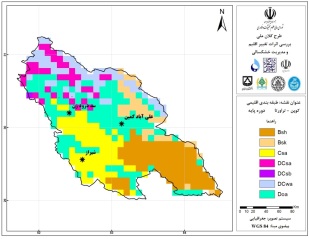
**Climate zoning and future aridification trends**

1. A study[[32]](#footnote-33) commissioned by the Ministry of Energy developed a climatic zoning for the Bakhtegan Basin using the Trewartha - Koppen classification method because of high precision in determining the boundaries of temperature and precipitation. The analysis used network data from CCAFS-Climate Data Center with five-minute spatial resolution under theA2, B2 and A1B scenarios of HadCM3 model for the base time period of 1982 to 2012 the projected periods 2030s, 2050s, and 2080s (More information about the analysis on Annex 2).
2. The observation of climate change was projected based on A2, B2 and A1B climate scenarios for the seven existing climate classes. The projected results are summarized in table and figure below based on A1B scenario which clearly show the aridification over time in the province.

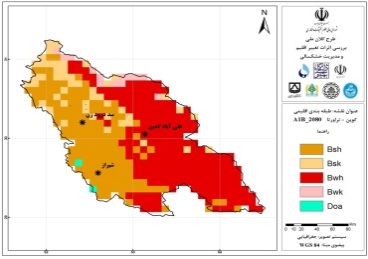
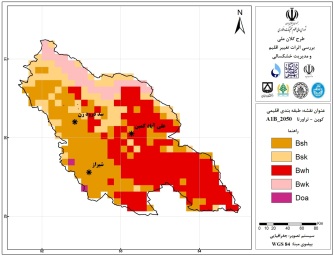
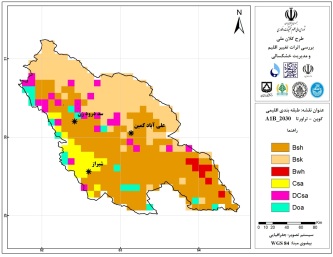
Table 3 comparing the spread changing of climate types in current period to the 2030s, 2050s and 2080s based on A1B scenario:

| Climate Type | Current Period | Based on A1B scenario | | |
| --- | --- | --- | --- | --- |
| 2030s | 2050s | 2080s |
| Warm semi-arid | 21.7 | 49.9 | 33.3 | 35.7 |
| Cold semi-arid | 8.3 | 31.7 | 17.7 | 11.3 |
| Arid hot | - | 1.9 | 40.4 | 49.4 |
| Arid cold | - | - | 8.0 | 3.1 |
| Subtropical with dry summer | 18.7 | 6.1 | - | - |
| Hot dry moderate | 8.5 | 6.1 | - | - |
| Cold dry moderate | 0.2 | - | - | - |
| Arid-hot moderate with winter precipitation | 12.5 | - | - | - |
| Humid moderate | 30 | 4.3 | 0.5 | 0.5 |

Fig 6 comparing the spread changing of climate types in current period to the 2030s, 2050s and 2080s based on A1B scenario



Current period (1983 – 2012)

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2030s 2050s 2080s

**The water situation**

1. The combined area of Lakes Tashk and Bakhtegan makes them the second largest in the country (the largest being Lake Urmia). The area of Tashk and Bakhtegan lakes are 41,000 hectares and 85,000 hectares respectively, located at an altitude of 1525m above sea level. The maximum depth of Lake Bakhtegan is 3m and its average depth is 1.3m. The maximum depth of Lake Tashk is 1.3m and its average depth is between 0.3 and 0.5m. Both of the lakes are classified as saline wetlands. The mean salinity of the lakes is 217046/9 mg/l. The Kamjan Marshes, located on the west side of Lake Bakhtegan, are a fresh water wetland with an area of 2000 hectares.
2. The Bakhtegan Basin consists of three main sub-basins fed respectively by the Kor and Sivand rivers (Figure 5). These two rivers meet in Pol-e-Khan and then feed into the Tashk and Bakhtegan Lakes. The 10 year average volume of water entering Lake Bakhtegan is 784 million cubic meters, of which about 484 million cubic meters is supplied by the Kor-Sivand River and about 206 million cubic meters by temporary streams and the rest by precipitation. The 10 year average of water entering Tashk is estimated at 300 million cubic meters. About 47 million cubic meters is provided by Gomban spring, 218 million cubic meters by stream water, and the rest is provided by direct precipitation. Kamjan is fed by rainfall and Kor river flooding.

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| **Figure 7: The three main sub-basins within the Bakhtegan Basin** |

1. Surface discharge of water had declined over the last decade, based on data from four selected gauges: Tang e Bolaghi, Khsrow shirin, Sad e droudzan and Pol e khan (Figure 6). There have been particularly dramatic declines in discharge as measured at Sad e droudzan and Pol e kan. Over the same period (2006-2016) there has been no apparent decline in ground water levels from nine plains monitoring sites in the basin (see Annex 2). However, this requires closer analysis, and over a longer time period, given the clear evidence of increasing numbers of wells (see Annex 1) and the anecdotal reports of increasing well depths and of saline water intrusion to wells around the lakes.
2. Analysis of monitoring data from throughout the Bakhtegan Basin (Figure 7) demonstrates that irrigated agriculture is the single biggest use of water[[33]](#footnote-34). While the amount used for irrigation drops significantly in dry years the percentage use is much higher (nearly 70 percent based on a 10 year return period). The amount of water received by Lake Bakhtegan varies from 225 to 1567 MCM based on return period calculations. The average input rate In Tashkh - Bakhtegan Lakes, was 616 MCM and 672 MCM in the period from 1969-1984 to 1984-1996, respectively[[34]](#footnote-35).Analysis of data from 1965 to 2006 showed an almost equal division between dry and wet years, with 23 and 20 years respectively. The total water yields released to Bakhtegan Lake varied from 360.5 MCM in the driest period to 966 MCM in the wettest period. The current situation is that there is no surface water feeding into the lake. Saline intrusion into bores around the lake also suggests that there is no net inflow of ground water.

**Figure 8: Changes in surface discharge in the Bakhtegan Basin from 2006 to 2016**

**Figure 9: Water consumption in the Bakhtegan Basin based on return periods (recurrence intervals) derived from data for 1965-2006**

1. Current water extraction and use, and the extent of irrigated agricultural land, is at unsustainable levels. Three dams have been constructed in the basin. These include the Doroodzan dam (completed in 1974), the Mulla Sadra dam (completed in 2006) and the Sivand dam (completed in 2007). At the same time there are bores, both legal and illegal, in the bed of the Kor river above the Doroodzan dam and throughout the middle and lower parts of the basin. Current agricultural land area is 482,898 ha with more than 30,000 wells spread throughout the basin but mainly concentrated in Marvdasht, which is the main arable farming area. Nearly a third of these wells are illegal and even legal wells are being over exploited. As surface water has reduced the number and depth of wells throughout the basin has increased. The average depth of wells is particularly high in Estahban County (Figure 8), which adjoins the lakes and wetland area. With increased reliance on ground water, which is becoming depleted in some areas, or is as at risk of depletion, the vulnerability of communities to drought and climate change has increased.

**Figure 10: Comparison of average water table and well depths in the Bakhtegan Basin**

1. Empirical findings reveal that Lake Bakhtegan lost almost 73 percent of its size from 1973-2013[[35]](#footnote-36). Drier than average conditions since a severe drought in 2007 are seriously exacerbating this situation. With the current extended, multi-year, dry conditions the Kor river is no longer flowing in the middle and lower parts of the basin. The significant area of agricultural land in these areas is currently wholly dependent on ground water. Near to the lakes the lack of surface and ground water inflow combined with the high level of water extraction has led to severe loss of hydrostatic pressure and backflow of saline water into freshwater wells is now happening.
2. Government is aware of the current water crisis result from the drought and has included some policy instruments to address water mismanagement. First, under Article 35 of the 6th Five-Year Development Plan enacted in 2017 guidelines were included to promote efficient water management. In addition, the Ministry of Energy’s Water Strategy endorsed in May 2013 have clear standard procedures related to the promotion of integrated management of water resources and re allocation of water rights (See Annex 3). More importantly MoE has recently announced its vision for the country's water resources, were “new dam projects, which are being designed or constructed, will be reassessed based on hydrological changes, environmental impacts and economic feasibility”[[36]](#footnote-37).

**Agriculture impacts**

1. Agricultural practices, in particular arable farming, in the basin have been geared to a situation of abundant water over the last forty years. Rice cultivation is still widely practiced with high and unsustainable use of water. Most arable farming in the basin involves continual cropping of rice and wheat. There are no fallow periods, with bare soil visible to the horizon and soil erosion from wind now widespread (Figure 9). The continuous cropping has also led to higher inputs of fertilisers and pesticides to sustain production, with resultant negative effects on soil organic matter and soil structure. The impacts of prolonged drought since the severe drought in 2007/08 is very noticeable in fig production statistics (Figure 10 and Annex 2). While the planted area has increased by 1,000 hectares since 2007/08, from just under 22,500 hectares to just over 23,500 hectares, total production over the last decade has been at least half that of the years preceding the 2007/08 drought.

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| **Figure 11: Continuous cropping of wheat and rice combined with over extraction of ground water and below average rainfall is now resulting in a major crisis in the Bakhtegan Basin** |

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| Figure 10: Changes in fig production in the Bakhtegan Basin |
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| **Figure 12: Figs on the margins of Lake Bakhtegan are struggling to survive** |

1. In the upper part of the basin, traditionally grazed by nomads and now a national protected area (water recharge zone), there has been encroachment into forest and rangeland areas for fruit production (Figure 12), river terraces are being used for rice cultivation (Figure 13) and even parts of the reservoir formed by the Doroodzan dam are now being cultivated. In recent years the local government closed 2000 wells in the upper part of the Kor river basin, but within a year the people had opened them all again. In the Doroodzan dam reservoir area displaced families were originally compensated for the loss of their land when the dam was commissioned. The children of these people are now returning to cultivate the land that is being exposed by the lower reservoir levels. Compensation, regulation and enforcement have therefore not been effective.
2. The local people are already being proactive in adapting autonomously through diversifying their agriculture and implementing alternative livelihoods. For example, some farmers are already switching to less water demanding crops such as safflower. In upper and lower parts of the basin some are attempting to diversify into higher value and lower water demanding crops such as pistachio and saffron. Alternative livelihoods being developed include activities such as mushroom cultivation and handicrafts. All of these initiatives present opportunities for enhancement to encourage people more widely to adapt to the changing conditions.

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| **Figure 13: Encroachment of fruit production into rangeland areas in the upper part of the basin** |
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| **Figure 14: River terraces, formerly rangelands, converted to irrigated rice production between the Doroodzan and Mulla Sadra dams** |

**Social impacts[[37]](#footnote-38)**

1. The social costs of the drying of the Bakhtegan Basin are already manifesting with some parts of the basin more severely affected than others (see Table 1, Part II, Section A and Annex 3 for more detail). Conflicts over water are evident between different parts of the basin. Migration is an important issue. In parts of Kharimeh, in the lower part of the basin, 100 percent of jobs have been destroyed leading to increased poverty and increased mental health issues. The national government has
2. While there has not been any detailed analysis of the socioeconomic consequences of drought at the household level in the Bakhtegan Basin, a recent study[[38]](#footnote-39) made in Sabzevar County, Khorasan Razavi Province, in north-eastern Iran provides valuable insights. This study assessed villager responses to 29 economic variables and 28 social variables. The economic variables were grouped into seven main components covering the amount of production, quality of production, costs of natural resources (losses), production costs, costs of living, overall level of living, and invest­ment. Similarly the social variables were grouped into seven main components covering quality of life, poverty or income, employment, psychological tensions, public safety, crime and delinquency, and social damage. Overall, the socioeconomic costs were significant and high and mirror those that have been qualitatively identified in the Bahktegan Basin.

**Biodiversity impacts**

1. There are also significant biodiversity costs. Currently, the lakes are in critical condition. Bakhtegan and Kamjan are completely dry and about only 10-20 percent of the area of Tashk Lake, near Gomban spring, still has some water. The drying out of wetlands has had significant impacts on biodiversity. Lakes Tashk and Bakhtegan and the Kamjan wetlands are important places for the reproduction of birds such as Egrets, Dalmation Pelican and Greater Flamingo. 95 species of birds, most of them winter migratory birds, have been identified in these wetlands. Because of their significance they were listed as Ramsar sites in 1974. Due to their critical status in recent years they have been shifted to the Montreux List of the Convention. Biodiversity impacts are not just occurring in these former wetland areas, but throughout the basin. Brown bear numbers have been affected by wildfires resulting from the prolonged dry conditions. Lack of food has forced them to areas of human occupation where some have been shot. Continued encroachment of agriculture into forest and rangeland areas also has biodiversity impacts, and wider consequences in terms of soil and water conservation. Some specific biodiversity impacts that have been observed (see Annex 3 for details) over the last decade are:

* The population of plains species have severely due to resource conflicts and scarcity of water resources, e.g. Zebra and Chinkara;
* Mountainous regions species are not severely affected, e.g., goats, which have been less affected by drought, but there are subsequent impacts from increased browsing pressure;
* The population of wild birds has severely reduced in Bakhtegan and Tashk lakes with the majority now migrating to the Doroudzan dam reservoir.
* A fairly good population of birds has been observed in Kamjan Lake.

**The problem and the proposed solution**

1. The situation in the Bakhtegan Basin is complex, involving the interplay of multi-decadal mismanagement of water, inappropriate land use, drought and climate change. As the heart of the Persian Empire, Fars Province has a very long history of water use for agriculture and other purposes. In an arid country such as Iran water has very high symbolic and utility value. This has been recognised throughout Iran’s long history. However, the value of water and its balanced use has come under increasing pressure over the last four decades. It is clearly evident that the hydrological system of the Bakhtegan Basin is in a state of collapse, with no surface water currently flowing to the middle and lower parts of the basin and extraction of ground water that is far in excess of recharge rates. The evidence of this state of collapse is apparent with significant water shortages in lower parts of the basin, degraded agricultural environments, social upheaval and detrimental and potentially long-lasting impacts on the natural environment. There is now a serious threat of an irreversible situation that will lead to loss of livelihoods, environmental and human health and biodiversity. Without active intervention a worse case situation could develop where the basin becomes much less habitable leading to mass migration of people and permanent loss of natural ecosystems and the many plant and animal species they support.
2. With a long history of water dependence accompanied by times of prolonged drought, it would be a wise to assume that climate change will not be beneficial to the Bakhtegan Basin. Based on research in the basin using the Standardized Precipitation Index (SPI) to measure drought and extrapolating weather stations’ data collected in the province, analysis shows over time (2030s, 2050s and 2080s based on A1B scenario) that aridification of the Bakhtegan basin will become more severe with expected drier conditions in the area (See Annex 2). .
3. The current development situation in the basin can be described as one of maladaptation. This is still manifesting, for example with the construction of a new dam between the Doroodzan and Mulla Sadra dams. There are clearly strong underlying development issues and challenges that require major interventions. However, at the same time, there are very clear climate risk and climate change related vulnerabilities that present a clear opportunity for this project.
4. Four key limitations and barriers have been identified which are affecting the ability of the Fars provincial government, natural ecosystems and Bakhtegan Basin communities to cope with drought and climate change:

* Limited information and data about the impacts of drought and climate change to make more informed decisions at the provincial and local level;
* Current water-intensive agricultural practices undermine the capacity of the hydrological system to cope with the effects of drought/climate change;
* Locally proven water-saving agricultural practices lack financial resources to be promoted across the province/basin;
* Current governance structure in the Bakhtegan Basin is not conducive to promote adaptation approaches at the regional and local levels.

1. Within this very complex and challenging situation the project has an aspirational goal to restore the Bakhtegan Wetland, which encompasses Lakes Bakhtegan and Tashk and the Kamjan Marshes. towards achieving this long term goal the proposed project will provide a foundation for building resilience to climate change in the basin through a holistic, integrated landscape management approach. To achieve this will require a completely different way of thinking and acting, with a shift in thinking from the current mind-set of high water dependency and use to the already new reality of a dryland environment with water scarcity. This can only be achieved through a process of participatory engagement with all parties aimed at shifting approaches to the development pathway in the Bakhtegan Basin. In particular, this requires project targeting and a governance mechanism that ensures full involvement of both the immediately affected vulnerable communities and those who are less vulnerable but are practising unsustainable water and land use and management practices to the detriment of all.
2. This project seeks to implement such an approach through the following measures, which are aimed at addressing the four key limitations and barriers identified above (paragraph 37):

a) Strengthening knowledge of climate risk, climate change and the environmental situation to support development of long-term climate resilience in the Bakhtegan Basin;

b) Strengthening the resilience of communities in the Bakhtegan Basin through community empowerment and implementation of climate smart agriculture and alternative livelihoods; c) Strengthening the resilience of the natural environment of the Bakhtegan Basin through introduction of soil and water conservation measures in rangeland and forest areas, and supporting restoration and conservation of national parks and protected areas;

d) Strengthening capacity to support better governance and decision making in relation to climate risk management and implementation of effective adaptation responses at local, regional and national levels.

**Project / Programme Objectives:**

1. The objective of the project is increase the resilience of communities and the natural environment of the Bakhtegan Basin to climate variability and change through integrated landscape management.

The project objective will be achieved by the following components:

1. Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan Basin using a decision support system;
2. The resilience of communities in the Bakhtegan Basin is strengthened through community empowerment and implementation of climate smart agriculture and alternative livelihoods;
3. The resilience of the natural environment of the Bakhtegan Basin is strengthened through targeted interventions in key locations;
4. Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures.

**Project / Programme Components and Financing:**

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| --- | --- | --- | --- |
| **Project/Programme Components** | **Expected Concrete Outputs** | **Expected Outcomes** | **Amount (US$)** |
| 1. Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan Basin using a decision support system | 1.1 An integrated model for climate risk and climate change assessment supports medium and long term decision making    1.2 A land and water use planning framework is developed and implemented to support decision making  1.3 Community engagement, empowerment and ownership in decision making is supported through local community monitoring  1.4 A GIS based data and information management system and an information portal system are developed to facilitate more informed, effective and timely decision making | A decision support system is in place and facilitates strengthened knowledge of climate risk and climate change towards the development of long-term resilience in the Bakhtegan Basin | 1,080,277 |
| 2. The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods | 2.1 Climate smart agriculture practices are adopted in target areas  2.2 Alternative livelihoods are adopted by vulnerable households in target villages | Strengthened climate resilience of local communities enables them to sustain and enhance their livelihoods | 3,049,300 |
| 3. The resilience of the natural environment of the Bakhtegan Basin is strengthened | 3.1 A range of watershed management measures are implemented in target areas aimed at increasing resilience to drought risks  3.2 Landscape rehabilitation to restore functionality of ecosystem services to increase climate resilience. | Increased resilience of the natural environment through rehabilitation and conservation work reduces vulnerability of communities to the impacts of climate change | 3,572,630 |
| 4. Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures | 4.1 A comprehensive communications, education and capacity building programme on climate resilience is implemented  4.2 A Bakhtegan Basin Council is formed to facilitate the long-term sustainable and climate resilient management of the Bakhtegan Basin | Strengthened governance and decision-making capacity at local, regional and national level for implementing and sustaining relevant climate change adaptation measures | 560,720 |
| 5. Project/Programme Execution cost | | | 829,839 |
| 6. Total Project/Programme Cost | | | 9,092,766 |
| 7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) | | | 772,885 |
| **Amount of Financing Requested** | | | 9,865,651 |

**Projected Calendar:**

*Indicate the dates of the following milestones for the proposed project/programme*

|  |  |
| --- | --- |
| **Milestones** | **Expected Dates** |
| Start of Project/Programme Implementation | January 2019 |
| Mid-term Review (if planned) | July 2021 |
| Project/Programme Closing | February 2023 |
| Terminal Evaluation | December 2022 |

**pART ii: Project / programme JUSTIFICATION**

1. **Project Components**

*Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.*

1. There are four Components to the project:
2. Knowledge of climate risk, climate change and the environment strengthened
3. Sustainable livelihoods supported
4. A resilient natural environment sustained
5. Capacity for improved governance and decision making strengthened

The relationship between these four components is illustrated in Figure 14 below. Component 1, focused on strengthening knowledge of climate risk, climate change and the environment to support better decision-making forms the foundation of the project. Components 2 and 3, focused on sustainable livelihoods and a resilient natural environment form the two pillars. Component 4, focused on strengthened capacity for improved governance, provides overarching support for improved decision making and actions towards the goal of a climate resilient Bakhtegan Basin. All four Components are inter-dependent. Outputs from Component 1, will directly contribute to improved governance and decision making at all levels through Component 4. Component 4 will then contribute to refinement and wider adoption of activities under Components 2 and 3. Components 2 and 3 are closely inter-related, with respective foci on Community Based Adaptation and Ecosystem Based Adaptation.

Component 4

Strengthened governance

Component 1

A decision support system

Component 2

Sustainable Livelihoods

Component 3

A Resilient Natural Environment

A Climate Resilient Bakhtegan Basin

**Figure 14: The conceptual structure for the project**

**Project targeting**

1. The biophysical targeting for the project is based on previous work in developing land use planning zones for the Bakhtegan Basin[[39]](#footnote-40). These zones conform to various features of homogeneity which include the following

* Common terrain, landscape and geomorphology characteristics
* Common climatic zones
* River morphology
* Land-use
* General ecosystem conditions

These have been matched with the administrative county boundaries (Figure 15) and also relate to identified hydrological units within the basin.

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| Figure 15: Relationship between targeting zones and counties in the Bakhtegan Basin |

1. Zone 1 encompasses the Kor and Sivand sub-basins (see Figure 5) and includes the Eghlid, part of Marvdasht (referred to as Kor County), Safashahr, Bavanat and Saadatshahr. The Dozoodran, Mulla Sadra and Sivand dams are all located in Zone 1. This Zone is defined as a cold, semi-humid, mountainous ecosystem. It was previously all rangeland and forest, with seasonal grazing by nomads. Grazing rights were carefully managed to ensure protection of the land. This is now the only part of the Bakhtegan Basin with year round availability of surface water (although this is in decline) supplemented by water from wells (many of which are illegal). Irrigated agriculture, mainly for rice production, is widespread on river terraces with fruit production on converted rangeland areas and forests. In general the soils are poorer and crop yields lower than the traditional cropping areas of the basin. With declining water availability, yields are decreasing and people are increasingly struggling to survive.
2. Zone 2 encompasses the counties of Ardakan, most of Marvdasht and part of Shiraz. This area is the traditional arable farming area of the basin. With the construction of the Doroodzan dam upstream and the building of irrigation canals, irrigated agriculture expanded significantly in this zone over the last 40 years. The current situation involves continuous cropping of wheat, with rice and to a lesser degree barley production. As a result of the drier average conditions over the last decade there is currently no water flowing in the Kor river into this area and insufficient water from the Doroodzan dam for irrigation. The consequence is much greater dependence on ground water. Soil erosion is apparent, with dust clouds rising from the bare soil throughout this zone.
3. Zone 3 includes most of Shiraz County. Conditions are similar to Zone 2. It occupies the lowest part of the plains area with irrigated lands over clay soils. This zone is completely dependent on the water resources of the upper two zones and is increasingly dependent on groundwater. It has become a desert-like environment as a result of human mismanagement. This zone also includes areas developed for weekend retreats by wealthier residents from Shiraz. These people are all putting in unregulated water bores to provide domestic water and to irrigate their small olive groves, orchards and gardens.
4. Zone 4 encompasses the Tashk and Bakhtegan National Park, which includes Lakes Tashk and Bakhtegan. It includes the counties of Arsanjan, Neyriz and Estahban. In the past surface water was mainly obtained during floods. These areas have been severely affected by the lack of water flowing into the lakes. What was previously described as humid environment is now a dry, desert-like and very dusty environment, described by one elder villager[[40]](#footnote-41) as a ‘living hell’. The worst drought effects and water tensions are being experienced in this Zone. Figs have traditionally been grown in this area, but crops are now suffering from the lack of water, large areas of arable land have been abandoned and there is increased migration of rural people to urban areas and associated social problems.
5. The environmental and socio-economic status of the four zones is summarized in Table 1 (more detail is provided in Annex 3). Reduced precipitation, increasing temperatures and increased evaporation and transpiration are common characteristics throughout the basin, although are being experienced with greater severity in some zones than others. Similarly the drying of the basin is widespread, even in Zone 1 which incorporates the upper reaches of the Kor and Sivand rivers. Biodiversity issues and conflicts are also widespread. The impacts, however, are strongest in Zones 1 and 4. This is reflected in the socio-economic issues, which are being experienced most strongly in Zones 1 and 4 and include increasing poverty, increasing mental health issues, increasing divorce rates and increasing crime rates in urban fringe areas.

**Table 1: The environmental and socio-economic situation in the four zones aggravated by climate change.**

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| Zone | Environmental issues | Socio-economic issues |
| 1 | * Dried Kaftar wetland * Reduced flow into the Mulla Sudra and Sivand dams * Reduced biodiversity in upstream areas * Increased conflicts between wildlife and residents of the catchment area | * Reduced income from aquaculture * Reduced farmer and dairy farmers’ income * Increased unemployment * Increasing mental and psychological problems * Increased divorce rate * Increased migration from villages to the city margins * Increased poverty |
| 2 | * Reduced water flow into the Doroodzan dam * Doroodzan dam lake has become an alternative habitat for aquatic birds of the region * Increased water exploitation * Conflicts between farmers and fruit growers | * Increased rice farms * Villagers preference to cultivate rice and have fish ponds * Conflict with downstream counties over water |
| 3 | * Dried Kor river * Destruction of the habitats of birds, pond turtles and aphanius fishes * Decreased spring flows * Conflicts between livestock farmers and leopards | * Conflict with upstream farmers in spring when water for irrigation is being shared * Dried wells * Migration to cities * Increased unemployment rates * Shift to safflower cultivation |
| 4 | * Dried wetlands * Severely reduced migratory bird numbers * Destruction of hatching habitats * Dried springs * Increased conflicts between farmers and birds * Wind erosion and increased dust storms | * Unemployment * Increased migration * A growing poverty trend * Increased divorce and crime rates * Decreased quality of farm crops and fruits such as fig * Increased rate of diseases(physical and mental) * Land destruction * Conflict with DOE, natural resources organization and water resources management organization |

1. Drawing from the preceding information along with local consultations and experience a number of project villages and sites have been identified for Components 2 and 3 of the project (Figure 16). More detail on the selection process and summary information on the project villages and sites is provided in Annex 4. While not exclusively focused on Zones 1 and 4, the project has a strong emphasis on these areas. Collectively these two zones account for just under 46 percent of the total population of 854,093. The most vulnerable are the rural dwellers (villagers) whose livelihoods are highly dependent on the natural environment, principally to support their agricultural activities. The current population of villagers in Zone 1 is 111,775 spread across 264 villages; with 69,118 villagers in Zone 4 spread across 172 villages.

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| **Figure 15: Target villages and sites for the project** |

***Component 1: Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan basin using a decision support system***

1. Component 1 focuses on enhanced management and processing of relevant climate, hydrological, land use and other identified data and information aimed at supporting decision making and actions that enhance the climate resilience of the Bakhtegan Basin. Results from the identified Outputs, and specific Activities, will be tailored to directly support land and water use planning decisions and actions within the Fars Provincial Government, through the planned Bakhtegan Basin Council (Output 4.2) and through local County governance structures as well as through direct engagement with and participation of communities. There are both technical and non-technical aspects to this Component which will require a multi-partner, integrated, approach to ensure effective implementation and dissemination. The Ministry of Energy (MOE),Ministry of Jihad Agriculture (MOJA) and Department of the Environment (DOE), which have responsibility for monitoring and management of water resources, will take a lead role in the climate and climate change assessments and water/land use planning for the Bakhtegan Basin. Local community monitoring will be facilitated by identified local NGOs, with linkages to the Fars Provincial Government, MOE, MOJA and DOE.
2. Component 1 will encompass the following: a) the customization and application of an integrated climate, climate risk and climate change assessment model which has been progressively developed over the last 24 years. This model (SimCLIM) was developed in its original form as a customized model for climate change impacts assessment in New Zealand and was further customized for applications in Bangladesh and the Pacific Islands. Since 2002 the software has been redesigned into an open architecture platform and has been used extensively throughout the world in multiple applications. This model will be customized for application in the Bakhtegan Basin and will be used for integrated assessment of climate risk and climate change impacts on land and water resources. Simulations and assessments will be made using output from a full suite of GCM and RCM patterns and to cover the full range of IPCC AR5 representative concentration pathways (RCPs); b) development and implementation of a participatory and integrated approach to water and land use planning (WLUP) in the Bakhtegan Basin. This work will be guided by current water and land use planning, and will generate outputs that will further inform both planning and governance of water and land resources (through Component 4). It will involve comprehensive analysis of available data and information on land and water resources in the basin aimed at guiding and informing the wise and sustainable use of land and water resources; c) the development and implementation of a local community monitoring programme. Participating communities in the four Zones will be actively engaged in identifying indicators for monitoring changes in both vulnerability and resilience in their local environment, social situation and economy. This will include monitoring of changes in water use with participating farmers. The focus is to build knowledge, understanding and ownership of the severe situation that many households are now facing throughout the basin, while also building more effective information and communication bridges between local communities and local, provincial and national decision makes; d) education, capacity building and communications. This will include education and capacity building of all stakeholders but in particular focusing on training of trainers (i.e. training of facilitators) and building awareness and capacity of participating households, farmers and communities. This will be supported by a communications programme aimed at wide dissemination of results from Component 1 throughout the Bakhtegan Basin. There will be a strong focus on linking outputs from this Component to support enhanced governance structures and mechanisms under Component 4 aimed at improved decision making and actions which will be implemented through Components 2 and 3.
3. Under Component 1 results will be generated from the climate risk and climate change assessments, water and land use planning and local community monitoring aimed at directly building more climate smart and resilient use of land and water resources by 254560 families in more than 722 target communities and indirectly to the entire population of the Bakhtegan Basin (854,093 people, according to the 2016 census).
4. During the project formulation phase the needs for the Outputs presented in Component 1 were identified through consultations nationally with MOE, MOJA and DOE, provincially with the Fars Provincial Government, and locally with county governors, local representatives of government agencies and local community and NGO representatives. The results of these consultations are summarized in Section H with a report on provincial and local consultations provided in Annex 7. The capacity for in-depth climate risk and climate change assessments, particularly relating to water resources management and decision making, is a direct response to a high priority need identified by the MOE.
5. During project implementation a comprehensive participatory approach will be taken to ensure that outputs from this Component are both directly addressing identified needs and leading to enhanced decision making and actions in relation to climate resilience. Output 1.3 has been specifically designed to empower communities through greater community understanding, engagement and ownership. The participatory approach is further supported and strengthened through Output 1.4 which will support a strong emphasis on education, capacity building and communications.
6. A consistent and comprehensive analysis of climate risk and climate change impacts in the Bakhtegan Basin will greatly assist with informed decision making, planning and action towards building climate resilience. The targeting of specific outputs to participating communities, families and farmers will foster ‘champions of change’ in the basin, while the widespread sharing of information throughout the basin will foster greater understanding of shared issues and challenges, as well as positive solutions. The partnership through this Component of three participating government ministries, of national, provincial and local stakeholders, and of communities representing the four different Zones and associated issues will greatly foster and enhance understanding of the water and land use and associated climate change crisis that must be addressed collectively for the benefit of all life in the Bakhtegan Basin.
7. Component 1 results will be disseminated to all national, provincial and local stakeholders through the information portal system (TIPS) which is described under Output 1.4. In particular this system will provide relevant information to support all Outputs and Activities in Component 4.
8. As the foundation for the project it is intended that all Outputs from Component 1 will be timed for completion to ensure maximum input and support for Components 2, 3 and 4. Outputs 1.1 and 1.2 will be completed within the first two years of the project. The local community monitoring through Output 1.3 will be on-going throughout the project. All results from these three Outputs will be fed into Output 1.4. Under supervision of the project board, the project team will coordinate with MoE as the lead agency for managing hydrological systems and data to roll out the technical assessments. All relevant agencies will work in partnership with provincial and local governments and authorities and participating communities to implement all non-technical activities. The enhancement of existing governance mechanisms (under Component 4), together with the agreed project management structure (refer to Part III, Section A) will be used to guide this work, as will the Outputs from Component 1 be used to guide and support improved governance. In summary, it is expected that Components 1 and 4 will be mutually supportive and will be developed together in an iterative manner.

Component 1 consists of the following Outputs and Activities:

***Output 1.1*** *– Integrated model for climate risk and climate change assessment supports medium and long term decision making.*

1. A customised version of SimCLIM (refer to Annex 5 for more background information) will be developed for the Bakhtegan Basin incorporating monthly time series data for seven climate variables, daily time series of available climate data and GCM patterns from 40 models which are linked with the IPCC AR5 representative concentration pathways (RCPs). Output from SimCLIM. This will be linked to the Soil, Water Assessment Tool (SWAT)) as part of a comprehensive climate change impact and risk assessment in the basin aimed at complementing and enhancing activities in Output 2.1. Assessments will focus on the basin as a whole as well as the three sub-basins (the Kor, Sivand, and Kor-Sivand. Analyses will incorporate different scenarios of water extraction, from surface and ground water, to support clearer understanding and decision-making in relation to the water resources situation in the basin and how it will be impacted by climate change. The different scenarios of water extraction will encompass the current situation based on available monitoring data, and different land use scenarios, aimed at determining as clearly as possible the sustainable level of surface and ground water use under both present and future climate change conditions.
2. The modelling work with SimCLIM will build on past analyses conducted in the Bakhtegan Basin. Importantly it will provide a coherent and consistent set of analyses and results that will be directly targeted at supporting greater understanding and decision making in relation to surface and ground water resources, and different land use options. This will be a clear progression from previous analyses which have involved discrete studies by various researchers using different models, assumptions and scenarios.
3. This output is crucial to developing a clear and comprehensive understanding of how climate change is already impacting, and will continue to impact, on the currently very fragile situation in the Bakhtegan Basin. In combination with the results from Output 1.2 this will provide a much stronger basis for enhanced decision-making, awareness raising and action towards increasing the climate resilience of the environment, society and economy of the basin.

Activities under Output 1.1 include:

* SimCLIM will be customized for the Bakhtegan Basin. This requires data development applying the latest CMIP5 statistically and dynamically downscaled information for the seven variables of minimum, mean and maximum temperature, precipitation, relative humidity, solar radiation and wind. All of these can be generated for monthly patterns and used with SimCLIM to assess baseline and future scenarios of change across all the available Representative Concentration Pathways (RCPs). These GCM and RCM patterns will be at 1 km resolution and applied to the shape file that defines the Basin. Additionally historical time series data for the Basin will be provided by the Ministry of Energy and Iranian Meteorological Organization for inclusion to enable extreme event analysis. All climate scenarios developed will be consistent of a full suite application of current Global Climate Model (GCM) and Regional Climate Model (RCM) results combined with AR5 Representative Concentration Pathways (RCP) in the Bakhtegan Basin.
* Training in the data applied and SimCLIM will be undertaken to facilitate assessments of climate change and climate risk for the Bakhtegan Basin. Such training over a two week period will not only clearly articulate the underlying principles in the development of climate data for basin-wide application but will also encourage better understanding of IPCC guidelines for the application of climate models in decision making. Topics for inclusion include risk analysis using a scenario approach and threshold analysis and integration of climate model outputs for planning and decision making and community outreach.
* Application of SimCLIM will focus on comprehensive modelling of climate change and climate risk in the Bakhtegan Basin, with a specific focus on surface and ground water resources under current and future climate conditions.

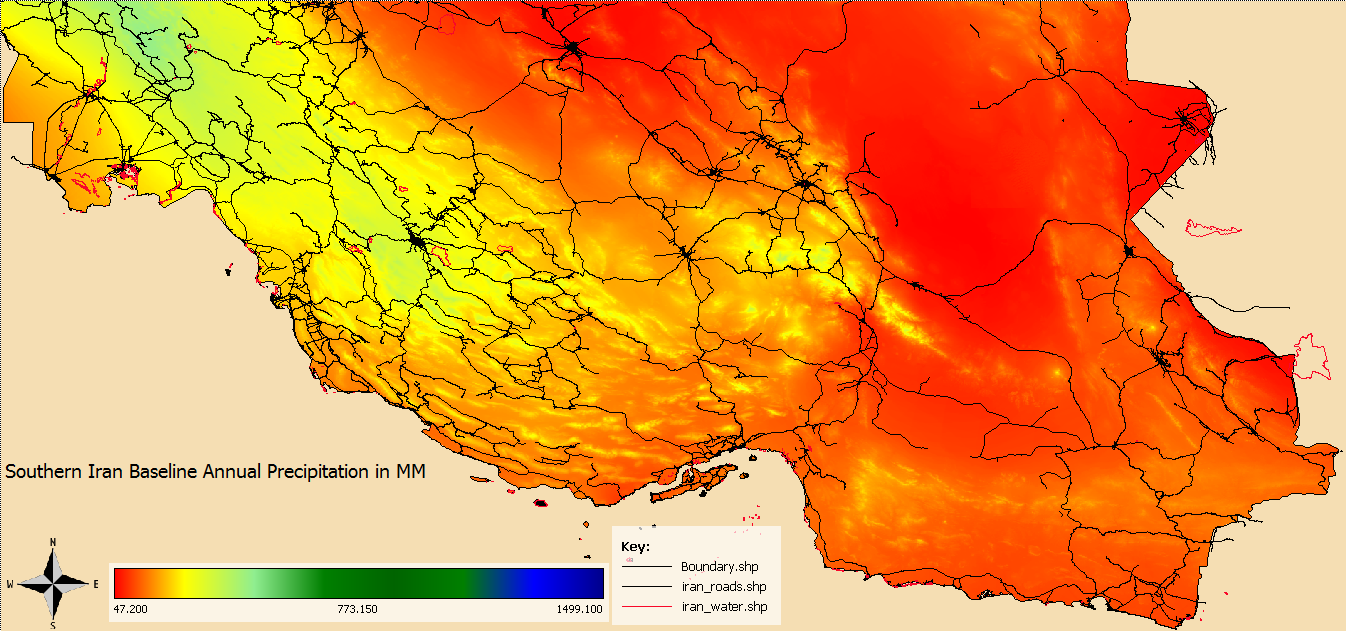


Figure 17: Southern Iran baseline annual precipitation generated using SimCLIM 4.0 for Desktop.

***Output 1.2*** – *A water and land use planning (WLUP framework is developed and implemented to support decision making.*

1. There are many challenges that the rural areas in the Bakhtegan Basin are currently facing. This includes: achieving food security; mitigating and adapting to climate change; protecting biodiversity; supporting economic growth; protecting people from natural disasters; preventing and settling land and water demand conflicts; and encouraging local people and communities to alternative livelihoods. An integrated approach to water and land use planning (WLUP) is one of the tools that can help to address these challenges as it focuses on making best use of available information and data to support informed decision making on the future use of land and water resources with participation of all relevant stakeholders.
2. The main objective of this Output is to develop and implement a land-use planning framework that is based on a fully integrated approach to addressing water resources limitations in the Bakhtegan Basin aimed at building resilience to climate variability and change. This framework can be used to guide land use decisions that protect and enhance natural resources and biodiversity by limiting agricultural expansion, protect and enhance the fragile water resources, and constrain the further conversion of forests and rangelands to arable land while also guiding reconversion of arable land to forests and rangelands. WLUP can also be used to identify areas suitable for carbon sequestration, for example through afforestation or for the introduction of agro-forestry. Examples include the transformation of high water demanding rice monocultures into rice/wheat/saffron systems, and establishment of agro-forestry plantations in which the carbon in biomass and soil litter can be multiplied through the cultivation of plantation shade trees.
3. The results of this Output will be combined with the results from Output 1.1 and integrated into the Decision Support System in Output 1.4 to provide a much stronger basis for enhanced decision-making, awareness raising and action towards increasing the climate resilience of the environment, society and economy of the basin.

Activities under Output 1.2 include:

* Public participation – All stakeholders, representing communities, authorities and industry, will be involved through participatory workshops in the planning and design of the parameters for this Output; in further workshops to agree on recommendations and revisions as the work progresses; and in determining final recommendations for implementation from this Output.
* Development of an integrated WLUP framework for the Bakhtegan Basin. This framework will consist of the following specific activities and steps, which will be undertaken at both the basin level and also for each of the identified land use planning Zones (refer to Figure 15):
* Analysis of existing land-use and policies by using remote sensed data and GIS analysis that includes the present condition of various land-uses including forest, rangeland, irrigated cultivation, rain-fed cultivation, residual area (urban and rural) that prevail under existing national and provincial policies (e.g. allowable or disallowable arable land expansion).
* Analysis of existing water resources (surface and sub-surface) and systems including information and data from registered and unregistered wells, registered and unregistered river water diversions, updated well pumpage information and records, updated river diversion records. All data will be obtained from available hydrometric gauge stations, and planned waste water and desalinization projects.
* Analysis of data from existing water uses from both surface and ground water including agriculture, domestic uses and industrial uses (including mining, factories, hydroelectric power plants).
* Projections of future water supply and demands based on the results of the future climate projections that will be formulated in Output 1.1 using the SimCLIM model coupled with the SWAT hydrological model. WLUP will be introduced at the Bakhtegan Basin and land use planning Zone levels to identify measures to reduce vulnerability and build resilience to climate change. This will enable identification, discussion and decision-making on specific risks and interventions that are related to the unique characteristics and circumstances of each of the four Zones.
* Identification, review and assessment (including costing) of water and land resource options that include: changes and refinements to conventional water system infrastructure; alternative water resource measures (e.g. desalinization and use of recycled water); supply side and demand side options. The supply side will be evaluated under three climate change scenarios: projection under the optimistic climate change scenario, i.e. RCP 2.6; projection under the pessimistic climate change scenario, RCP 8.5; projection under a mid-range scenario. The demand side will be defined based on: different land use scenarios ranging from high water use to no water use, and including retirement and reconversion of arable lands to rangelands or forest; population growth scenarios. This will help address the current situation where there are no limitations on water use and policy makers are not following any plan towards water resources management based on the water availability limitations in uplands and climate change vulnerabilities.

***Output 1.3*** *– Community engagement, empowerment and ownership in decision making is supported through local community monitoring*

1. A fundamental issue within communities in the Bakhtegan Basin is a lack of in-depth awareness and ownership of the seriousness of climate change impacts. The levels of awareness and ownership vary in the four different Zones identified for targeting. For example, it is clearly evident to people in Zone 4 that there is no surface water available and that they have saline water in their wells. They are aware that they are now living in a dryland environment, but they are not fully aware of all of the causes, the most importantly the role of climate change. On the other hand, people in Zone 1 have access to water but their production is still suffering due to factors such as high soil erosion rates. There is also a lot of blame being apportioned with people and communities becoming territorial as a result, particularly where they have water. This gap results from a lack of sharing of issues that people are experiencing in different Zones. At the same time people have no means to monitor improvements in their situations and environment and for sharing their success stories with others.
2. To address this situation this Output will focus on empowering communities to take ownership through developing, in a participatory manner, with targeted communities, a system for monitoring changes in both vulnerability and resilience and sharing this information between communities and with both county and provincial authorities. This local community monitoring will be accompanied by education and capacity building under Output 1.4. Examples of indicators for vulnerability and resilience monitoring include: biodiversity status, water situation, soil quality, household income, crop productivity, crop health, crop pattern, animal health. Specific indicators will be developed in partnership with the targeted communities, using as much as possible a simple ranking (e.g. on a scale of 1 to 5) for reporting on their status. The number of indicators and frequency of reporting to be determined with participating communities and families. Responses to indicators will be verified with quarterly site visits and facilitated sessions. Information will be collated into a form that will be available for communications, education and sharing with communities and authorities throughout the basin.
3. This Output will provide the basis for awareness building and ownership of issues and building resilience in response to identified vulnerabilities. It will also provide valuable information on the status of different communities that will be shared throughout the basin with the goal of informing people widely of the challenges that are being faced and what is being implemented to address them. It will also help the fine tuning and targeting of resilience building interventions for different communities. This local community monitoring will complement and add further insight to results from existing monitoring activities, in particular the monitoring of water resources and climate.

Activities under Output 1.3 include:

* Participatory engagement with targeted communities, farmers and households to identify and agree on a set of vulnerability and resilience indicators (encompassing environmental, social and economic) which will be used for local community monitoring.
* Development of a participatory monitoring system to facilitate tracking changes on the agreed indicators by targeted communities and households.
* Installation of a water monitoring system with participating farmers from Output 2.1 to measure and quantify water reductions from the introduction of climate smart practices.
* Quarterly site visits to all participating communities to verify and review information provided and discussed in the participatory monitoring system.
* In conjunction with Output 1.4, development and dissemination of information based on the local community monitoring, which will be fed back to communities and others through Output 4.1.

***Output 1.4*** – *A GIS based data and information management system and an information portal system are developed to facilitate more informed, effective and timely decision making*

1. The focus of Output 1.4 is on data and information management for improved decision making. This is focused on streamlining all relevant data and information generated through the project through a customized GIS platform and development of an information portal system (TIPS). This will then provide input to guide all Outputs under Component 4. Advances in data acquisition through remote sensing, data utilization through geographic information systems (GIS), and data sharing through the internet have provided watershed managers access to more information for management decisions. In the future, applications incorporating hydrologic simulation models, GIS, and decision support systems will be deployed through the internet. In addition to challenges in making complex modeling technology available to diverse audiences, new information technology issues, such as interoperability, internet access, and security, are introduced when GIS, simulation models, and decision support systems are integrated in an internet environment. This project will review current use of information technology in watershed management decision making and develop a discussion of issues created when developing internet based, integrated watershed management decision support systems. A prototype spatial decision support system (TIPS) for rangeland, forest, cultivation areas management will be developed around web services, which are components that communicate using text based messages, thus eliminating proprietary protocols. This new framework will provide an extensible, accessible, and interoperable approach for decision support in the Bakhtegan Basin. The information generated will be used by policy and decision makers in Fars Province, through the mechanism of the Bakhtegan Basin Council (Output 4.3).
2. Data and information management will be linked strongly to both the education and capacity building and communications elements of Output 4.3. In particular, but not exclusively, this element will focus on effective management and use of data and information that is either generated from, or underpins, other Outputs. The key is to insure that all data and information are brought together in a form that is accessible to all project stakeholders, from individual householders and farmers through to national level policy makers. In essence this will take the form on an internet based decision support system, as outlined above, to ensure effective decision making and actions of relevance to climate resilience.

Activities under Output 1.4 include:

* Data and information management for decision support will focus on the development of a GIS platform that integrates all relevant data and information layers generated for and through the project.
* Establishment of the information/data portal system (TIPS) to facilitate completion to disseminate the needs all the stakeholders based on the national, provincial and local scales.

***Component 2: The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods***

1. Component 2 focuses on the development and implementation of climate smart agriculture and alternative livelihood practices which are aimed towards achieving significant reductions in the demand for, and pressure on, land and water resources in the Bakhtegan Basin. It is designed to address some of the core vulnerabilities that are increasingly being exacerbated by climate variability and extremes, in particular drought associated with climate change. Core vulnerabilities are arising from the unsustainable rates of extraction and overuse of both surface and ground water resources, combined with over-extensification and over-intensification of agriculture. The severe drought in 2007/08 intensified the effects of these practices and this has continued with the sustained period of drier than normal conditions since then. The consequences of this are severe in an already arid environment. While this Component cannot address all of the underlying issues throughout the basin, it will provide support for more climate smart and climate resilient agricultural practices and alternative livelihoods which will lead to significant reductions in vulnerability to drought and climate change by participating farmers, households and communities.
2. The project will strengthen and add value to existing agriculture initiatives within the Bakhtegan Basin. This includes supporting the Fars provincial government strategy to change cropping patterns and practices. Changes already occurring include: shifting arable land to alternative crops such as almond, fig, rose-flower (mostly using for cosmetics and some food industries), pistachio and medicinal herbs. Additionally farmers are already making changes such as: increasing the area of saffron cultivation (estimated to be increasing by about 100 ha annually); shifting to lower water demanding crops such as safflower (increasing by about 500 ha annually in Shiraz, Marvdasht and Kharameh Counties); increased cultivation of barley and introduction of less water demanding wheat varieties. Other current agricultural initiatives include organic certification of farms and processing facilities. However, it needs to be clarified to what extent these organically certified farms are receiving sufficient economic incentives to sustain their organic status and whether they are achieving significant reductions in water use. Crops currently covered include dates, figs, pomegranate, saffron and medicinal herbs.
3. Similarly the project will extend existing alternative livelihood practices within the Bakhtegan Basin aimed at diversifying household incomes away from dependence on land based, water dependent activities. Current alternative livelihood practices that will be extended include sewing, mushroom production, carpet weaving, vegetable production, processed food products (e.g. pomegranate sauce, tomato paste, fig products, grape juice, raisins, pickles), bread making, chicken and turkey breeding, bee keeping and sheep husbandry. A specific mechanism for supporting women is the Rural Women’s Trust Fund, which will be supported and enhanced through the project.
4. Component 2 will therefore encompass the following: a) climate smart agriculture which will include a participatory planning process, market research, research on new crops and cropping systems that are suited for a dryland environment which can provide more income with less land and significant reductions in water use, extension of both existing initiatives and of the results from the research into new crops and cropping systems and widespread dissemination of results; b) alternative livelihoods which will also involve a participatory process, market research, education and training, certification, marketing and widespread dissemination of results. All activities and practices will be targeted to the specific needs of participating farmers, households and communities within the context of the limitations and challenges of each of the four Zones. In all cases a Community Based Adaptation approach will be used, which will be complementary to the Ecosystem Based Adaptation approach of Component 3.
5. Through Component 2, 4425 farmers and fruit and nut growers in 15 villages, and covering 21,910 ha agriculture and 1,726 ha of horticulture (2.06 percent of arable land and 0.78 percent of horticultural land in the Bakhtegan Basin) covering Zones 1, 2, 3 and 4 will directly benefit from the introduction of climate smart agriculture practices (see Annex 3 for details of targeted villages). Direct beneficiaries of sustainable livelihood practices will include 766 households, with 900 women receiving support from the Rural Women’s Trust Fund, in ten villages with two from Zone 1, two from Zone 2, one from Zone 3 and five from Zone 4 (see Annex 4 for details). Targeting of villages for both Outputs in Component 2 has been developed to address the range of agricultural issues (e.g. from overuse of water to lack of water) and focusing in particular on identified vulnerable communities for alternative livelihood practices. Indirect beneficiaries of the project will be the entire population of the Bakhtegan Basin through communication of project results and outcomes, which will be facilitated through Output 1.4.
6. During the project formulation phase the needs for the Outputs presented in Component 2 were identified through consultations nationally with MOE, MOJA and DOE, provincially with the Fars Provincial Government, and locally with county governors, local representatives of government agencies and local community and NGO representatives. The results of these consultations are summarized in Section H with a report on provincial and local consultations provided in Annex 7. Reference was also made to existing successful initiatives in Iran, including the Lake Urmia project (see Section F).
7. Component 2 has been designed with the recognition that participation, empowerment and ownership building are the keys to success. Project results won’t be sustained if people are simply told what to do. Therefore both Outputs 2.1 and 2.2 will begin with a participatory planning process and will involve continual engagement with and feedback from farmers, women, households and their communities for the duration of the project. This process will ensure that all direct beneficiaries will own both the problems and the solutions.
8. The main outcomes of Component 2 will be successful introduction and extension of climate smart agriculture and alternative livelihoods that decrease vulnerability to drought and climate change in the Bakhtegan Basin, by reducing pressure on scarce land and water resources, providing viable and sustainable sources of income, and reducing pressure towards migration from rural areas. By building climate resilience within the context of what is now a dryland environment the project will raise understanding and awareness of the underlying situation and associated effects of drought and climate change, and provide solutions that will be of long-term benefit to the basin if adopted widely and wisely.
9. The two Outputs in this Component will be spread throughout the lifetime of the project. The Fars provincial government, through the Bakhtegan Basin Council, together with provincial and local staff of MOJA, MOE and DOE, and local county governors will have collective responsibility for implementation of Component 2.

Component 2 consists of the following Outputs and Activities:

***Output 2.1*** *– Climate smart agriculture practices are adopted in target areas*

1. Development and implementation of climate smart agriculture in the Bakhtegan Basin forms one of the most substantial components of this project and the project aims to revolutionise the behaviour of local communities and farmers towards such practices. In this regard, SA techniques are developed based on participatory approaches, bringing together farmers, agriculture research centers and professional facilitators aiming at water saving at farm level to help meet part of the lake water rights without compromising farmers’ net income.
2. Agriculture is both the single major source of the situation that now exists in the basin and must be an integral part of the solution. The solution involves putting into practice many of the elements of the project, in particular drawing on results of the assessments in Component 1 and guided by the governance arrangements in Component 4. It will involve a clear action focus towards drastically reducing water consumption and shifting the mind sets of farmers towards what must now be treated as a dryland environment. Experience shows that this cannot be achieved by trying to tell farmers what they must do, for example by trying to shut down illegal wells. It can only be achieved by engaging with farmers fully in an action focused, participatory process. This will involve bringing together farmers, agriculture research centres and professional facilitators aimed at implementing identified climate smart practices that reduce water consumption without compromising farmers’ net income.
3. For this reason, local community engagement is one of the major objectives of the project. The above-mentioned process led to engagement of government, private sector, NGOs and the local farmers. Significant improvement of inter-sectoral collaboration can be seen to the point where different stakeholders are participating in planning and decision making on a regular basis. Besides, a bottom-up planning and implementation of SA techniques is carried out by farmers in collaboration with local companies.
4. In addition, local companies and cooperatives play a key role in the project with regular and continued presence in the field and accompany with local farmers and providing a collaborative platform toward joint planning and implementation among key stakeholders in line with sustainable agriculture, applying smart agriculture technics and aiming to achieve results.
5. There are a number of critical elements to this Output which are aimed at building on other relevant projects elsewhere in Iran and within the basin. This is includes market research, including for organically certified products, research at the MOJA research station in Marvdasht on new crops and cropping systems suited to a dryland environment, participatory extension and engagement with farmers and communications drawing on existing and new research. These different elements need to consider the variation in conditions and agricultural activities throughout the basin, while at the same time considering the need for a coherent, integrated, approach for the whole basin. It will therefore draw strongly on results from the Output 1.2, which will guide and inform the limitations and opportunities relating to sustainable land and water use in each of the four Zones.
6. Based on the current situation in the four different Zones , and subject to the results of Output 1.2 which will further guide this Output, the following is an overview of the likely activities in each Zone. Zone 1 encompasses the Kor and Sivand sub-basins, and was traditionally a rangeland area with seasonal grazing by nomads and rural people. There is now heavy use of water here, including significant amounts for rice cultivation on river terraces. The focus will therefore be on achieving significant reductions in water use drawing on available research from the MOJA research station in Marvdasht, while also encouraging diversification towards lower water-demanding and higher value crops and cropping systems and alternative livelihoods (Output 2.2). In Zones 2 and 3, where there is the highest concentration of water dependent arable farming, the focus will similarly be towards achieving significant reductions in water use and other sustainable agriculture practices, and encouraging all water users to diversify based on revised water allocation plans, produced through Output 1.2 for the Bakhtegan Basin. In Zone 4, which is the most critical zone in terms of the lack of water, the focus will be towards enhancing already existing shifts towards higher value, less water demanding, crops and cropping practices.

Activities under Output 2.1 include:

* Development and implementation of Climate Smart Agriculture Plans, tailored to the needs of each participating village. This activity will involve training of facilitators, engagement with farmers, participation of researchers and local agricultural support industries (e.g. processing companies) and cooperatives. This plan will encompass preliminary identification of alternative crops and cropping systems and the provision of productive inputs (seeds, seedlings and biologically friendly inputs).
* Market research, including value chain analyses, on alternative crops and cropping systems that are suited to a dryland environment under changing climate conditions. This will include market research on the potential for high value, export focused, organically certified crops. The focus on organically certified crops (focused mainly on fruit and nuts) for export is intended to identify as clearly as possibly the potential for alternatives to rice production that will give farmers a strong economic incentive to change. Additionally, it will include an emphasis on processing opportunities for added value products that are aimed at high end markets. One example is cold-pressed safflower oil aimed at international health food markets. Simply focusing on local markets in Iran is unlikely to be sufficient to provide enough of an economic incentive for farmers to change. This market research will also encompass exploration of the potential to develop a unique branding of all produce from the Bakhtegan Basin[[41]](#footnote-42), aimed at gaining international recognition of, and support for, the need to restore, revive and sustain its unique character as the heart of Persian civilisation.
* Extension of existing knowledge and applied research results to participating farmers. Specifically, this will involve engaging with farmers to implement more water efficient practices in rice cultivation. Based on research already undertaken at the MOJA research station in Marvdasht a 50 percent reduction in water use can be achieved with no loss in yield[[42]](#footnote-43). This activity will also include introduction of practices aimed at increasing use of biological fertilisers and pesticides, and other sustainable agriculture practices such as mulching and discontinuing the practice of burning crop stubble. These practices have already been successfully applied with farmers in Lake Urmia, and to some degree in parts of the Bakhtegan Basin.
* Development and implementation of a new applied research programme at the MOJA research station in Marvdasht. This will draw on the results of the market research on alternative crops, cropping systems and added value processing opportunities to ensure that it is focused only on new crops and techniques suited for a dryland environment that are likely to result in strong environmental, social and economic benefits. It will encompass introduction of fallow crops and periods, use of shelter trees around fields (ideally using nitrogen fixing species) to reduce wind erosion of soil and to provide mulch material, and other soil and water conservation practices. Subject to outcomes of the market research this will also include the design of farming systems that are capable of earning greater income from less land and with substantially reduced water inputs. Participatory engagement with farmers will be designed to ensure that they are committed to such changes. This research programme will be designed to be as action focused as possible, with implementation of a farmer field school approach. Such an approach will involve the initial trialling of new crops and cropping systems at the Marvdasht research station and then rapid extension of further trialling to identified leading, and innovative, farmers.
* Widespread extension of the results of the new research programme to farmers, particularly focusing on Zones 1, 2 and 3 where the greatest reductions in water use are required and there is an urgent need for climate smart agricultural practices. This will be accompanied by the water monitoring activity under Output 1.3.
* Support for extension of existing certified organic agriculture initiatives in Zone 4, to encompass additional crops such as pistachio and other agricultural products from all other Zones. For example, growing of medicinal herbs has been attempted in Kodre shul village in Zone 1 but was discontinued by farmers due to the lack of a market. Similarly, saffron growing is being attempted in Zone 1 but there is a lack of knowledge, skills and market access.
* Based on the results of the market research, development of a unique brand for the Bakhtegan Basin. Associated with this working groups will be established in each Zone, involving farmers and industry (i.e. food processors) aimed at working together to identifying and implementing new opportunities for high added value products, such as the previously mentioned example of cold pressed safflower oil.
* A comprehensive extension, communication and education programme to disseminate results and information as widely as possible throughout the Bakhtegan Basin (Output 4.1).

***Output 2.2*** *– Alternative livelihoods are adopted by vulnerable households in target villages.*

1. Support and establishment of water-friendly alternative livelihoods with an especial focus on women and youth involvement forms a crucial part of this project. This activity could significantly decrease the dependency of local community to water resources in the pilot sites while providing new job opportunity to local community. It is also a complementary tool beside smart agriculture which provide alternative solutions for local farmers. Many households and villages within Zones 1 and 4 are no longer able to sustain themselves economically due to the sustained effects of drier than normal conditions over the last decade and depleted water resources. This situation will continue to worsen with climate change. There has already been land abandonment within these four zones due to drought, low rainfall, lack of available water and/or low crop yields, and migration of families to urban fringe areas with associated social issues of increased divorce rates. Zone 4, in the immediate and wider environments of Lakes Bakhtegan and Tashk is the most severely affected. These zones, in particular Zone 4, will be the primary focus for activities under Output 2.2.
2. The current situation is one where individual households are already practicing alternative livelihoods. The emphasis of Output 2.2 is therefore to build on and enhance these existing initiatives. This will involve a fully participatory and structured approach encompassing market participatory planning, market research, vocational training, support for alternative livelihoods and support for processing, packaging and marketing. The identified aim is to support the shift away from water dependent agriculture, which is already been enforced through lack of available water in some situations, increase the climate resilience of communities and stem the flow of people to urban fringe areas. Such initiatives decrease the local communities’ dependence on wetland resources, while making rural people aware of their role in restoration and management of wetlands and increases the level of social responsibility.
3. The targeted villages currently have different capacities for adopting and sustaining alternative livelihoods. Therefore, interventions through Output 2.2 will be based on the needs assessment with each village and with participating households in each village. Alternative livelihood practices will therefore be tailored to the specific identified needs of participating households and communities. A specific support mechanism for women is the Rural Women’s Trust Fund which, based on feedback during consultations, has had mixed success. The focus with this mechanism will therefore be on learning the lessons from both successes and failures and implementing them.
4. Local NGOs and cooperatives will play a crucial role in this output to provide capacity development and introducing new skills to local communities, women in particular, to set up environmental friendly alternative livelihoods. Such initiatives decrease the local communities’ dependence on wetland resources, while makes rural people aware of their role in restoration and management of wetlands and increases the level of social responsibility.
5. NGOs/local cooperatives will be selected to support community members to develop and establish sustainable alternative livelihoods (alternative livelihood plans) to be implemented with AF resources.
6. These alternative livelihood plans will be implemented based on the experiences and best practices generated by the UNDP-implemented Iran Small Grants Programme (SGP). The AF project will build upon the SGP’s National Steering Committee (NSC) comprised by DoE and UNDP and other key institutions such as MoJA, MoE, others. The NSC is responsible for the review, selection and approval of small-scale projects and for ensuring their technical and substantive quality. The AF project will build upon existing Iran SGP delivery modality to direct grants to approved community projects. AF grants will be channelled directly to selected NGOs, community-based organizations (CBOs) and local cooperatives and the maximum grant amount per project will be US$50,000. To assess eligibility of CBOs and NGOs (grantees) proposals, the National Steering Committee will base its decisions on SGP´s Eligibility Criteria for Grantees and Projects (Annex 6).DoE, as a member of the National Steering Committee, will lead this process and will provide inputs as part of the strategic directions for the SGP country programme.A fundamental part of the proposals’ screening process will be the technical elements, where a special focus will be put at supporting those proposals which contribute to increase the adaptive capacity and resilience to climate change impacts in the basin. The technical criteria will assess high adaptation benefit; degree of reliance on water inputs vs. water efficiency; potential for employment (agriculture and non-agriculture sectors); number of direct female beneficiaries; potential to contribute to landscape regeneration and integrity of the basin ecosystem; among others. The UNDP will provide financial oversight on grants allocation. In addition, the NSC will promote community proposals to enhance ecosystem resilience for the sustainability, productivity and resilience of public goods and services that no single community member could afford to carry out or might be motivated to carry out given the disparity between private costs and public benefits.
7. These small-scale projects (alternative livelihood plans) in principle will not require an Environmental Impact Assessment (EIA) based on the nature, purpose and possible effects on the environment. The National Steering Committee will assess if a proposal would require carrying out an EIA, to showcase if the environmental and community benefits outweigh the negative effects, to be subsequently approved or rejected. As previously stated, the AF project includes technical and budget provisions in compliance with UNDP requirements, including adherence to all national and local standards on environmental and social impacts, to request and carry out EIAs if any of the activities would require. (More information on EIAs in Annex 9)
8. In addition, DoE with the guidance of the Steering Committee, will ensure that each community is assisted by qualified technical personnel from government extension agencies and/or NGOs to ensure that all environmental, social and technical issues that may arise are squarely addressed. This will be important to guarantee that project activities are in full compliance with AF requirements, do not lead to maladaptation or other undesirable consequences, i.e. that activities aggravate inequality, cause negative environmental impacts or create dependency on technical solutions requiring resources and capacities beyond the reach of community participants. In its review of community proposals, the Steering Committee will determine the necessity of further design or development of specific risk mitigation measures to avoid maladaptive outcomes. On the Steering Committee UNDP will ensure that due diligence is observed.
9. The AF Project Coordinator will work closely with the communities to identify viable projects for funding, provide assistance in project design, monitor project implementation, lead participatory evaluation of the projects and help synthesize lessons learned and other knowledge for policy inputs. The National Steering Committee will oversee the development of the portfolio of community-based projects (alternative livelihood plans), ensuring its alignment with AF requirements and that lessons learned are discussed and evaluated. Information collected from project M&E will be centralized in a database and shared with communities, organizations and government institutions for policy and program discussions.

**Selection of Beneficiaries:**

1. DoE in consultation with other government entities and local stakeholders and NGOs has identified a criterion to be used to identify and prioritize community beneficiaries for the development of proposed activities. The criteria are consistent with the rationale of the AF project which aims to increase not only ecosystem resilience but also economic, social and territorial climate-related resilience within targeted communities.
2. The main beneficiaries of the project will be the rural communities in within the target Zone1, 2, 3 and 4 as below:

*Zone 1*

* Emamzade Esmail
* Kordshul

*Zone 2*

* Aliabad
* Doroodzan

*Zone 3*

* Bande amir

*Zone 4*

* Kamjan
* Jamishi
* Jazin
* Jazin
* Khane kat
* Shargh abad

1. The rationale of selection of these communities is included in Annex 4 Targeting of Beneficiaries.
2. The feasibility of the proposed interventions was assessed with local, regional and national stakeholders and beneficiaries as part of the consultation process, relying on their experience implementing related initiatives in the region (See Annex 7 Report on Consultations in the Bakhtegan Basin).

Activities under Output 2.2 include:

* A qualitative and quantitative livelihood assessment, including alternative livelihood plans will be developed. This will encompass a participatory planning process with targeted households and villages, assessment of the local labour market (demand and supply), market research on the different livelihood options and identification of opportunities and capacities for livelihoods diversification at the local level.
* Local executive partners (NGOs/Local cooperatives) will be selected to support community members to establish sustainable alternative livelihoods based on the livelihood plans that will include a range of water-friendly alternative livelihoods (i.e. sewing, carpet weaving, dried fruit processing, traditional aviculture, and dairy products, etc.)
* Off-farm technical and vocational training for all participating household members will be provided, based on the identified needs of each village and household. Some villages already have existing capacity which can be drawn on through development of a ‘training of trainers’ and mentoring approach within the village.
* Development of small micro-enterprises which could include mushroom production, dairy production, beekeeping, food processing (tomato paste and pomegranate sauce), tailoring and embroidery, carpet weaving, processing and packaging of produce. Selection of specific enterprises for support will be based on the market research and assessment of the viability and potential for their extension.
* Attracting effective support for establishment and operation of small and microenterprises. The Department of Labor and Social Welfare and the Industry and Mines Organization support manufacturing workshops and small companies, both for issuing start-up licenses and for loans.

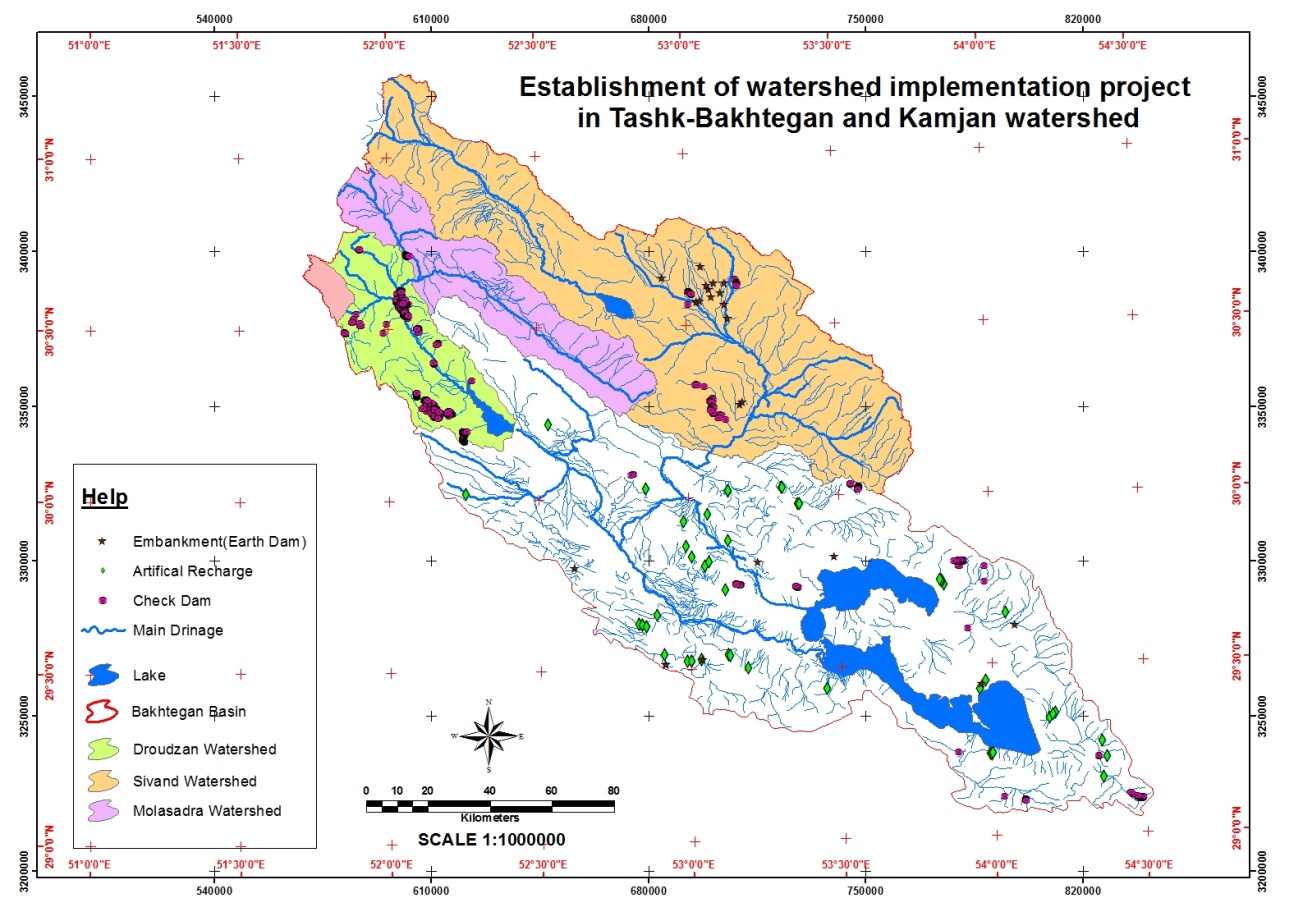
***Component 3: The resilience of the natural environment of the Bakhtegan Basin is strengthened***

1. Component 3 focuses on implementation of a range of soil and water conservation measures in rangelands and forests; and the rehabilitation and conservation of national parks and protected areas. The natural environment of the Bakhtegan Basin has been significantly modified and put under severe stress over the last four decades. These stresses are now being exacerbated by the prolonged dry period since 2007, with climate change an increasing influence. While it is not realistic to believe that this project can fully restore the natural environment of the basin, it can implement measures to increase the resilience of what must now be treated as a dryland environment.
2. The resilience of the natural environment of the Bakhtegan Basin will be strengthened through the following two Outputs: a) soil and water conservation in rangelands and forest areas which will involve implementation of a number of specific measures at project target sites. While targeting goals have been set the specific target sites for implementation of different measures will be identified based on the results of Output 1.2 and through a participatory engagement and decision-making process. Measures introduced will build on past successful work of this kind within the Bakhtegan Basin and in other Provinces; b) rehabilitation and conservation of national parks and protected areas will also involve implementation of specific measures at project target sites, to be undertaken as an essential part to recover and maintain overall functional integrity of the landscape. In particular this Output will draw on approaches, results and lessons learned from the Central Zagros Mountains project[[43]](#footnote-44).
3. Component 3 will be implemented in Zones 1 and 4. Zone 1 forms the principal catchment area of the Bakhtegan Basin, while Zone 4 encompasses the Tashk and Bakhtegan National Park. Output 3.1 will be implemented in eight most vulnerable areas related to 14 and 13 direct and indirect vulnerable villages, respectively, with 21380 directly vulnerable rural people, while Output 3.2 will be implemented in seven communities with 8794 people. All Component 3 activities will be implemented in tandem with relevant activities from Component 2, with a particular focus on integrated approaches that combine climate smart agriculture and alternative livelihood activities with community engagement and participation in building the resilience of their natural environment.
4. The need for Component 3 was identified through national level consultations with MOE, MOJA and DOE. All three agencies place a high priority on rehabilitation and conservation of the natural environment of the Bakhtegan Basin. They recognize that the natural environment plays a fundamental role in the provision of ecosystem services which have widespread environmental, social and economic benefits if managed wisely. Given the current situation in the basin there is a recognition that a significant effort is required to strengthen the climate resilience to the now prevailing dryland conditions. Consultations with provincial and local stakeholders (Section H) confirmed the importance of this Component as an integral part of the project.
5. As with Components 1 and 2 a participatory planning and engagement process will be developed and implemented through both Objectives for Component 3, which will be sustained for the duration of the project.
6. The main outcomes from this Component will be enhancement of the natural environment of those areas that are targeted by this project, with wider benefits to the water catchments where they are located. Additionally there will be greater awareness and ownership by participating communities of the need to continue protecting the natural environment within the wider environs of their villages.
7. As work progresses with implementation of specific activities within Component 3 there will be regular communication of results through the various mechanisms identified in Output 1.4
8. As one of the two main pillars of the project Component 3 will involve a significant amount of work which will be staged through the entire life of the project. Technical leads for Outputs 3.1 and 3.2 will be MOJA and DOE respectively, working in partnership with the Fars Provincial Government, through the Bakhtegan Basin Council (Output 4.2) and with local officers from participating County governments.

Component 3 consists of the following Outputs and Activities:

***Output 3.1 –*** *A range of watershed management measures are implemented in target areas aimed at increasing resilience to drought risks*

1. Under the changing climatic conditions of the Bakhtegan Basin vital, and scarce, water and soil resources have experienced measurable quantitative changes in recent years. Natural resources in the basin are now suffering directly from the impacts of climate change, and as a consequence of soil and water mismanagement resulting from uncontrolled intensification of agriculture. The only realistic solution is to implement an integrated watershed management approach which involves practices including rehabilitation of vegetation cover in forests and rangelands and protecting natural resources. By implementing such practices widely over time this will help facilitate a much need situation of wise resource management. For long term success, it is essential to not simply see rehabilitation activities as the solitary and final task. An integrated and participatory approach is required to ensure sustainable management. This approach involves a two-way process involving sharing technical and scientific considerations with local people and listening to and incorporating their needs, knowledge and experiences into planning, policymaking and implementation of agreed solutions. Without such an approach, land degradation and desertification will continue unabated, aggravated by climate change, with continuing long-term environmental, social and economic costs.



**Figure 18: Sites of previously implemented watershed management practices   
in the Bakhtegan Basin**

1. This Output will build on the success of other relevant projects elsewhere in Iran and within the basin (see Figure 18 above).These projects have involved successful implementation of watershed management practices using participatory approaches in East and West Azerbaijan, Khouzestan, Golestan, Kordistan, Markazi, Isfahan, Booshehr, Sistan and Baloochestan, Hormozgan, Fars, Yazd, Kermanshah, south Khorasan and elsewhere. They have been funded through national budgets under MOJA and through international projects in partnership with MOJA involving FAO, GEF, UNDP and JICA. Specifically, this Output will involve engagement with rural communitites from the Chahmahaki, Temshouli, and Tang-e-hana villages in Bakhtegan1 county and Koushk and JahanAbad villages in Bakhtegan 2 county (Zone 4), Bakian, Palangari, Khaniman, Hajiabad, Moradkhani, Chamriz and Chamchenar villages in Marvdasht and Kamfirouz (Zone 1), Dochahi and Nayris in Nayriz (Zone 4), Zino village in Estahban (Zone 4), Bolaghi village in Pasargad (Zone1) and Charghalat and Kenare villages in Arsanjan (Zone 1), to implement physical solutions and management practices to reduce soil erosion and increase the vegetation cover in forest and rangeland areas of the Bakhtegan Basin.
2. Based on the current situation in the four different Zones, the defined activities will be focused principally in Zones 1 and 4. Zone 1 encompasses the Kor and Sivand sub-basins, and was traditionally a rangeland and forest area with seasonal grazing by nomads and rural people. A major issue now is the encroachment of agricultural activities into the rangelands and forest areas. Zone 4 encompasses the land surrounding the Bakhtegan-Tashk lakes which are now severely affected by soil salinization and desertification. The focus in Zone 4 will therefore be on achieving significant reductions in soil erosion, drought control in rangelands and forest areas and combating desertification. Project work in Zone 4 will have a strong emphasis on combating desertification using best management activities aimed at achieving significant reductions in surface water runoff, increasing recharge to the aquifers and increasing vegetative cover.
3. This output will include the construction of small-scale works that in principle will not require an Environmental Impact Assessment (EIA) based on their nature. As previously stated, the AF project includes technical and budget provisions in compliance with UNDP requirements, including adherence to all national and local standards on environmental and social impacts, to request and carry out EIAs if any of the activities would require. (More information on EIAs see Annex 9 Environmental and Social Management Framework)

Activities under Output 3.1 include:

* Development and implementation of an Integrated Watershed Management (IWM) plan in a participatory manner involving training of facilitators, engagement with local people, participation of researchers, local authorities and other relevant stakeholders. This plan will encompass preliminary identification and agreement on watershed management practices.
* Capacity building and training all the stakeholders to participate in planning, implementing and monitoring of the relevant activities for ecosystem protection. Training workshops will integrate the science and technology of the authorities with the knowledge and experiences of local people to rehabilitate and protect the Zagros forest and the rangelands in Bakhtegan basin.
* Implementation of integrated watershed management adaptation activities by local people, with support from MOJA, involving a range of physical options and interventions. These include constructing 70,000m3 of embankment dams[[44]](#footnote-45) (small earth dams), 2700m3 of check dams[[45]](#footnote-46), 250ha of rainfall trapping with pitting, groundwater artificial recharge projects[[46]](#footnote-47), re-vegetation of rangelands and forest areas, contouring[[47]](#footnote-48) and strip cropping[[48]](#footnote-49). Such an integrated, multi-faceted, approach will provide the necessary conditions to support conservation of the soil and water resources of the Bakhtegan Basin.
* A comprehensive extension, communication and education programme (through Output 1.4) to disseminate results and information as widely as possible throughout the Bakhtegan Basin.

***Output 3.2 –*** *Landscape rehabilitation to restore functionality of ecosystem services to increase climate resilience.*

1. The Bakhtegan Basin includes three general types of ecosystem which can be defined by their water status: aquatic, semi-aquatic and dryland. While many of the aquatic and semi-aquatic ecosystems are now mostly dry, these general types will be used to establish project activities aimed at enhancing the natural environment of the basin and building greater resilience to climate change.
2. Aquatic and semi-aquatic ecosystems in the basin include the Kor and Sivand rivers and their tributaries, Lakes Bakhtegan and Tashk and the Kamjan Marshes (abbreviated to Bakhtegan Wetland). The three lakes, their delta and spring-fed marshes are designated as Wetlands of International Importance by the Ramsar Convention on Wetlands. They are located in Zone 4 and are also referred to as the Neyriz Lakes and Kamjan Marshes[[49]](#footnote-50) covering an area of 1080 km2. The Bakhtegan-Taskh National Park is within this area (see Figure 19), which also encompasses a wildlife protected area. Semi-aquatic ecosystems are those in the basin that can be seasonally wet and are used as habitat by migratory birds and also by farmers with water buffalo. This includes the Margoun waterfall protected area in Zone 3 which is located in western part of Bakhtegan Basin. Dryland ecosystems are divided between National Parks and Protected Areas, which are managed by DOE, and rangelands and forest areas which fall under the Forests, Range and Watershed Management Organisation (FRWO) of Iran. The main dryland area that falls under DOE is the Bamou National Park in Zone 3, which occupies an area of 486.78 km2. Additional dryland areas are: Tang–e-Bostanak protected area in Zone 2 which is located in the northwestern part of the basin; Basiran hunting prohibited area in Zone 1 in the north and KouhSiahArsanjan hunting prohibited area in Zone 4.

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| **Figure 19: National parks and protected areas in the Bakhtegan Basin** |

1. All three ecosystem types have been disrupted by the combined effects of mismanagement of water resources, intensification and extensification of agriculture and the extended dry period that has been experienced since 2007, with serious impacts on and threats to ecosystems. The drought resulting in the drying of water sources used by wildlife for drinking, including springs and some small water ponds, which has been sustained since then along with serious depletion of food supplies.
2. The Kamjan Marshes previously covered about 10,000 hectares of permanent and seasonal aquatic habitat. Drainage began in 1967, principally for rice cultivation. There has subsequently been some rehabilitation work done with drainage systems from surrounding arable land being conducted into the wetland. A negative consequence of this has been the transfer of agro-chemicals into the wetland environment. There are pressures and tensions in the environs of Bamou National Park, the Bakhtegan National Park and wildlife protected area, the Margoun waterfall protected area, the Tang–e-Bostanak protected area, the Basiran hunting prohibited area and KouhSiah-e-Arsanjan hunting prohibited area between surrounding farmers and DOE rangers. Drier conditions due to the impact of climate change, have also increased the risk of wildfires and also reduce water and food availability for wildlife who then encroach into settled areas.
3. The project will build on past efforts in the Kamjan Marshes, Bamou and Bakhtegan National Parks, Margoun waterfall and Tang-e-Bostank protected areas and both Basiran and KouhSiahArsanjan hunting prohibited area with a strong emphasis on participatory engagement between the DOE and local communities[[50]](#footnote-51). Such approach is essential to recover and maintain ecosystems services in the basin that will enhance climate resilience not only of the communities relying on these services but to the natural environment itself.

Activities under Output 3.2include:

* The activities under this output are result of a participatory approach to develop the Bakhtegan Basin Integrated Management Plan[[51]](#footnote-52) that will include:
  + Rehabilitation and monitoring activities for the Kamjan Marshes, Bamou and Bakhtegan National Parks, Margoun waterfall and Tang-e-Bostank protected areas and both Basiran and KouhSiahArsanjan hunting protected area which are linked to basin level activities and within the framework of integrated landscape management.
  + Wetlands (Kamjan, Tashk, Bakhtegan) water rights will be calculated and considered within the water allocation of the basin and at least 50 percent of it will be realized at the end of the project. This will be done by calculating, monitoring and executing national protocols and guidelines for water rights allocation.
  + An ecosystem monitoring system is established within all targeted protected areas and national parks (Kamjan Marshes, Bamou and Bakhtegan National Parks, Margoun waterfall and Tang-e-Bostank protected areas and both Basiran and KouhSiahArsanjan hunting protected area) providing information and data of the effect of drought/ climate change on key fauna and flora species which could include: annual mammal census, mid-winter bird census, spring animal breeding monitoring, wildlife disease monitoring, springs and watering place monitoring, landscape monitoring in hunting prohibited areas (depth, quality and biological parameters). The monitoring system will be established building upon on the work of the rangers working in the target areas that will gather data and biological parameters to be shared and analyzed by DoE provincial staff. Based on the main results of time series of data and information reviewed and analyzed, DoE will share messages and policy advice to related Ministries’ local offices to take necessary action to address impacts of drought on protected areas.
  + A climate resilience action plan for the key species in target protected area will be prepared and implemented per monitoring results from the ecosystem monitoring system which will include but not be limited to the following in-situ and ex-situ conservation-activities including:1) Conservation of preys 2) Captive breeding, 3) Control of invasive species.
  + Rehabilitation of selected wetland areas will be implemented with local community participation which will include but not be limited to the following 1) restoring existing small-scale drainage/channels linked to wetlands to increase water inflow to the wetland; 2) water treatment in drainage/channels linked to wetlands to improve the quality of inlet water; 3) re- introduction or protection of endangered species to support wetland biodiversity;
  + Biological stabilization of margins of the wetland area by planting of native species (that cannot be restored in the short term) to control the sand and dust storm sources;
  + Conservation activities to reduce climate change impacts on selected protected areas in the Bakhtegan Basin (Bamou and Bakhtegan National Parks) will be implemented to mitigate human-wildlife conflicts, control of wildlife disease, controls of invasive species, etc.

***Component 4: Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures***

1. Iran is yet to develop an official national climate change action plan. So far the country has envisioned climate change within the broader objective of achieving sustainable development. This vision was incorporated into the 2025 Vision of Iran, the Fifth Five-Year National Development Plan, as well as in other macro policies and sectoral plans. The 2025 Vision of Iran introduces a number of key objectives in areas such as culture, politics, economy, defence, education and environment. The document notes Iran should be a developed country that ranks as number one in the region by 2025. The Sixth Five-Year National Development Plan (SYDP) covering 2016 to 2020 mandates all relevant ministries to develop and implement programmes leading to reduction of GHGs and to manage the adverse impacts of climate change over water resources, agriculture and forestry, human health, biodiversity and coastal zones. The sixth FYDP is currently under development.
2. The National Rules of Procedure for Implementation of the UNFCCC and the Kyoto Protocol were approved in 2009, and revised in 2012. These National Rules of Procedure provide a path for implementation of climate strategies and the climate action plan, which mandates all ministries and organisations to incorporate climate change considerations in drawing up their development plans. The National Climate Change Committee (NCCC) is responsible for implementation of climate strategies and action plans. It comprises the deputy ministers of the most relevant ministries, under the responsibility of the Department of Environment. The Committee is organised into sectorial working groups, as well as an inter-sector layer, which ensures that the policies and projects promote climate change adaptation and mitigation across areas, as well as across regional and provincial spheres.
3. Within the above context there is currently a fragmented approach to land and water resource planning at national level, with no explicit consideration of climate change. There is therefore a need to carry out water management from a more integrated and less segmented focus, in which all the disciplines that rely on water in one form or another meet and are represented, with climate change fully considered and accounted for. Neither water resource plans nor land use plans currently give sufficient attention to territorial needs due to the absence of specific mechanisms in the current water resource planning process. This situation directly affects the instruments for territorial planning in areas such as the Bakhtegan Basin. At the local level, within the Bakhtegan Basin, this fragmented, sectoral, approach is therefore perpetuated. This situation arises from and results in the competitive compartmentalization between management administrations for water, agriculture and the environment. The need, in a twenty first century context with climate change, is therefore to shift from the current situation of fragmentation and artificial division to one of interdependence and cooperation. This can be achieved in this project through an integrated, multi-administration, approach to land use planning and water resource management. An important mechanism for facilitating this is a basin wide council, the Bakhtegan Basin Council, which is responsible for coordinating effective planning and timely decision making across all relevant sectors.
4. The above represents a refinement of traditional ‘top down’ decision making structures and while an essential ingredient for more effective and timely planning and decision making the important role of households and communities cannot be ignored. For this project to truly be successful, not just within its lifetime but to be of enduring benefit for the whole of the Bakhtegan Basin, it is essential that there is strong involvement and empowerment of local people from throughout the basin.
5. A key gap that has to be addressed to ensure that this Component delivers as effectively as possible in support of the remainder of the project, is the widespread need for education, capacity building and communications. This is required at local community level all the way through to senior decision makers at Fars Provincial Government level. This therefore forms the first Output of Component 4.

Component 4 consists of the following Outputs and Activities:

***Output 4.1:*** *A comprehensive communications, education and capacity building programme on climate resilience is implemented*

1. Output 4.1 will draw directly from data and information collated under the GIS platform and disseminated through TIPS (Output 1.4) as a basis for supporting Outputs 4.2 and 4.3 and the project as a whole. The two key elements of Output 4.1 are: education and capacity building; and communications. These two elements have been brought together within this Output to form an essential part of Component 4 that are integral to all three other Components. While targeted and tailored for different audiences, the two key elements to this Output serve a common purpose of ensuring that all stakeholders throughout the basin develop a much deeper understanding of the issues and challenges they are facing and the solutions that are required and are empowered to take action. They are therefore designed to ensure that the project doesn’t simply support a set of discrete activities that have a finite life and thus no enduring benefit beyond the project.
2. Education and capacity building will be targeted at participating farmers, households and communities as well as participating local government authorities. This will specifically include education and capacity building that is conducted in a fully participatory manner aimed at both understanding more clearly the problems and what is required to develop and implement solutions. The focus on the problems will be on both the underlying conditions and situation throughout the Bakhtegan Basin and the already changing climate conditions, and likely future climate change and associated climate risks and impacts. The focus on the solutions will be on developing a clear understanding of what is required to build environmental, social and economic resilience throughout the basin.
3. Communications will involve the use of multi-media platforms, including social media, to ensure that data and information relating to the project, and results generated through the project, are communicated widely throughout the Bakhtegan Basin.

Activities under Output 4.1 include:

* Education and capacity building will involve development of resource materials based on information shared through TIPS (refer to Output 1.4 for details), training of facilitators, and facilitation of participatory workshops with all identified target groups and participating authorities. As the project progresses further workshops will be facilitated, together with farm and other field site visits, to share results more widely.
* Communications will include the use of video to share stories within the basin and more widely, publication and dissemination of training materials, brochures and posters, sms messaging, television programmes and communication through the arts (e.g. poetry and painting).

***Output 4.2:*** *Bakhtegan Basin Council is formed to facilitate the long-term sustainable and climate resilient management of the Bakhtegan Basin*

1. The proposed governance structure for the project and beyond is based on the existing management plan for the Bakhtegan-Tashk Lakes and Kamjan Marshes that has already been prepared by the DoE of Fars province and UNDP of Iran to combat drought. The intention to build on this existing mechanism represents a focus on ensuring participation of all relevant stakeholders to address the consequences of water and land resource mismanagement and adapt to the unfolding negative impacts of climate change in the Bakhtegan Basin. This includes working to ensure maximum participation from local people.

Headquarters for building resilience to climate change in the Bakhtegan Basin

**Head: Fars Province Governor**

Provincial Technical Steering Committeefor climate resilience

Provincial Working Group for Climate Resilience in Bakhtegan Basin

Zone 1 Climate resilience committee

Zone 2 Climate resilience committee

Zone 3 Climate resilience committee

Zone 4 Climate resilience committee

Village climate resilience committees

Village climate resilience committees

Village climate resilience committees

Village climate resilience committees

Figure 20: The proposed governance structure for the Bakhtegan Basin

The proposed governance structure is shown in Figure 20. At the highest level in Fars Province the Fars provincial governor, as the highest local official, will oversee the project’s goal of building resilience to climate change in the Bakhtegan Basin. The Director General of the DOE in Fars Province will serve as the secretary. Under this provincial leadership there will be a working group that is headed by the Director General of the DOE from Fars province. The Provincial Working Group will be made up of county level representatives from Marvdasht, Arsanjan, Neyriz, Kherame, Estahban and Pasargad counties. From each county it will include the local governor, head of DOE, head of water and sewage system, MOJA and head of the natural resources office. Local NGOs will also be represented. Most importantly, a mechanism will be established for direct community input and engagement to ensure that decisions being made are workable and fully owned at the community level.

Activities under Output 4.2 include:

* Establishment of a Bakhtegan Basin Council under existing Fars Province structures. This activity will build on existing Fars provincial structures and also the existing management plan for the Bakhtegan Wetland that has already been defined by the DoE of Fars province and UNDP of Iran. The functions of this existing taskforce will be extended to incorporate adaptation to climate change in the Bakhtegan Basin and to oversee and guide the implementation of the outputs from Component 2 and all activities under Components 3 and 4. This will require some capacity building of provincial officials, to be undertaken through Output 4.1, to increase their awareness of climate change within the context of the current land and water crisis in the basin and what is required to build resilience, with a specific focus on the project Components, Outputs and Activities.
* Guided by recommendations from the National and Provincial Councils and responding to identified needs from local communities, the Bakhtegan Basin Council will take account of the following national, provincial and local realities:
* Commission a thorough review of existing national/province frameworks and policies relating to climate change adaptation and land and water resources planning and management. This review will focus on identifying key gaps and needs, particularly in relation to the efficiency and effectiveness of current governance mechanisms from national level all the way through to local farmers.
* Drawing on the results of the above review to establish an integrated water and land management system that incorporates considerations of climate change and natural elements of the total water cycle alongside the realities of human resource use. This will involve the use of a “national spatial strategy plan” approach based on natural water basins, which will be trialed in the Bakhtegan Basin. It will require a fully participatory approach among all stakeholders in the Bakhtegan Basin. To be effective this process must work from the ground up, as well as being informed by climate change and natural resource issues and constraints and the national policy and planning context. Outcomes from this will guide and inform the provincial environmental working group under the Environmental High Council of Iran at the highest national scale.
* Alignment with relevant national plans and policies based on the resistance economy[[52]](#footnote-53) and food and water security in Bakhtegan Basin within a climate change adaptation context;
* Addressing the need for people to sustain their livelihoods within the context of the land and water crisis and associated impacts of drought and climate change within the Bakhtegan Basin and in a manner that supports environmental, social and economic resilience throughout the basin;
* Addressing the necessity to protect and rehabilitate water, land and other natural resources for future generations.

1. **Economic, Social and Environmental Benefit**

*Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.*

1. The Bakhtegan Basin is one of the most drought prone agricultural areas of Iran. The worst droughts in recent decades occurred in 1999 to 2002 and then 2007. Subsequently there has been a decade of drier than average conditions. This period has been preceded by at least four decades of land and water resource mismanagement with the result that the hydrological system of the basin is collapsing. Farmers and their communities are struggling to come to terms with a situation where they are now living in what must be treated as a dryland environment which is increasingly being impacted by climate change.
2. The project has been designed to address the climate change issues that are now apparent with the intention that a pathway will be established towards resolution of the much larger underlying developmental issues. The latter includes, in particular, the drying of the Bakhtegan Wetland. It is a massive undertaking to try and restore this highly significant protected area and it is not even certain that this can be achieved given the current lack of surface and ground water recharge and the very high rates and increasing depth of ground water extraction. The project is therefore focused clearly on what can be realistically achieved within the context of the current dry land environment and with a range of communities throughout the basin, focused in particular on those who are most vulnerable.

**Socioeconomic benefits**

1. This project is recognised as being of national importance and it is expected that it will provide a model for other parts of Iran, building on the work of other relevant projects such as the Lake Urmia and Zagros Mountains projects. The Bakhtegan Basin, as the home of Persian Civilisation, is of high significance nationally. The symbolic and utility value of water is strongly embedded in Persian culture and therefore this project, through its location, will be of very high symbolic value to the whole of Iran. In particular it provides a unique opportunity to remind and re-educate as many Iranians as possible about the fragile nature of their environment, the impacts of climate change and the importance of using water and land resources wisely. Effective communication of the Bakhtegan Basin story, by helping foster mind-set changes throughout Iran, will therefore have widespread social and economic benefits.
2. Within the Bakhtegan Basin the current population of 854,093 people will benefit directly through increased awareness of the issues throughout the basin, the respective roles of resource mismanagement and climate change, and the solutions that are required. The results from Component 1 will be of particular importance in this regard. Output 1.1 will provide specific information on drought risk and the potential impact of climate change. This information will be applied within the context of a comprehensive review and revision of water and land use planning through Output 1.2. Additionally, local community monitoring through Output 1.3 will both enhance knowledge and awareness of participating communities and provide better community based information to enable more informed decision making. All of the data and information generated by these three outputs will be integrated and fed through an online information portal, which will provide a mechanism for its widespread dissemination and application throughout the Bakhtegan Basin.
3. The introduction of climate smart agricultural practices (Output 2.1) will be of direct benefit to 4425 farmers from 15 villages, covering 23,636 ha of land and be of indirect benefit to all 374795 rural people throughout the Bakhtegan Basin. Climate smart agriculture will be carefully targeted and tailored to address the different issues and needs that are evident in the four different zones of the basin. There will be a strong focus on the most vulnerable communities and households within Zones 1 and 4, which are both experiencing the worst effects of the current extended dry conditions. Zone 4 in particular is severely affected and there will be a strong focus in this zone. Some farmers are already taking action in terms of shifting to alternative crops such as safflower and expanding cultivation of others such as saffron. However, such activities are occurring in the absence of a basin wide coordinated response that is focused on added-value production systems that are more climate resilient. Output 2.1 will address this situation, firstly by supporting market research on the economic value of alternative crops and associated cropping practices. This is an essential component to the project, to ensure that there are strong economic incentives for farmers to both reduce the amount of land under cultivation and significantly reduce the amount of water that is being used. At the same time there will be a focus on developing a unique Bakhtegan Basin brand, which is targeted at discerning national and international markets for high value products that have environmental integrity. This market research will then be supported by action-focused research which specifically targets those crops and cropping systems that have genuine economic potential. Participating farmers will benefit directly from this research, with the expectation that there will be widespread adoption by other farmers once the benefits become evident.
4. The provision of support for alternative livelihood practices (Output 2.2) will directly benefit 11750 people in 10 villages, with a strong emphasis on the most vulnerable communities and households in Zones 1 and 4. Some villages and households have already been proactive in developing alternative livelihood practices and the project will focus on building on these existing initiatives. One example is mushroom growing, with the development of household level production systems. At present all of the mushrooms being produced are sold in the local market in Shiraz city and there is an informal view that there is scope for more. However, this requires proper market research to determine the real scope for expansion along with support for marketing and selling. A similar approach will be taken for all alternative livelihood options. As much as possible these options will focus not just on providing supplementary income to households, but on strong alternative incomes streams that are not highly dependent on land and water resources.
5. Environmental protection and enhancement in the Bakhtegan Basin is a huge undertaking within the context of the combined effects of the development context and climate change. This is particularly so when seeking to address the effects of drought and extended dry periods, which are both insidious and widespread. The direct social and economic benefits of all activities under Component 3 will therefore be localised to those communities that are associated with project activities, but it is expected that there will be indirect benefits to the whole Bakhtegan Basin. An important dimension to this will be the opportunity for developing success stories of environmental protection and enhancement which can be associated with the Bakhtegan Basin branding of value added agricultural products under Output 2.1.
6. Decision makers at all levels, including households and local through to national government authorities, will benefit through Component 4 from increased awareness of climate change within the context of the development situation and through strengthened governance structures for decision making. Increased awareness will be achieved through multiple approaches and platforms involving education, capacity building and communications. Increased awareness, coupled with strengthened governance structures, will ensure that timely and effective decisions are made to improve the social and economic situation in the Bakhtegan Basin.

**Environmental benefits**

1. The unique challenge of this project is to establish a pathway towards the aspirational goal of restoring the Bakhtegan Wetland in a manner that is achievable within the timeframe and budget of the project and sustainable beyond its lifetime. The whole project has been designed in this manner, taking account of the fact that the basin is now a dryland environment. By adopting a climate resilience emphasis within this context the intention is to shift people towards livelihood practices that are beneficial both to the environment and and their communities. This is a very complex and challenging undertaking. Fortunately there is growing awareness of the issues and challenges and a willingness to take action. However, as is often the case, the awareness and willingness to act is currently strongest with those who are the worst affected. A big part of the challenge therefore is to also engage with those who are currently less affected and less willing to take action, to foster an understanding that they are all part of the same environment and that their collective actions can either be to the detriment or benefit of all.
2. The first step towards environmental enhancement is to develop greater awareness of the environmental issues and associated effects of climate change throughout the Bakhtegan Basin. This will be achieved through the combined work generated from Components 1 and 4 of the project. Firstly, people need to recognise that there is a problem. This will be supported through the local community monitoring (Output 1.3). Secondly, they need to understand the problem. This will be supported through all education, capacity building and communication activities through Output 4.1 which is based on data and information provided through Output 1.4. Thirdly, they need to own the problem and take action. This will be supported through all activities under Components 2 and 3.
3. The direct environmental benefits of climate smart agriculture will be enhanced management of 10000 hectares of agricultural land, involving at least 30 percent reductions in water use on all participating farms and introduction of more sustainable land management practices. This will result in decreased extraction of ground water, reduced demand on surface water resources, increased soil organic matter, reduced wind erosion and increased biological diversity in agricultural systems. The successful introduction of alternative livelihoods to 570 households in 10 villages will reduce dependence on agricultural production and therefore reduce demands for both land and water resources. This is particularly important in Zones 1 and 4 where there is encroachment into rangelands and protection areas, issues with saline water intrusion into groundwater (Zone 4 in the vicinity of the Bakhtegan Wetland), and over extraction of surface water (Zone 1) and increasing depth of ground water extraction (Zone 4).
4. Component 3 is directly focused on environmental protection, enhancement and conservation in selected areas of the Bakhtegan Basin. Under Output 3.1 this will involve participatory engagement with communities aimed at identifying and implementing specific measures that are designed to enhance the environment in the vicinity of their communities. These measures will involve a range of physical options and interventions including constructing various embankment dams (small earth dams) and check dams, groundwater artificial recharge projects, re-vegetation of rangelands and forest areas, contouring and strip cropping. Output 3.2 will focus on restoration and conservation work in protected areas and National Parks, focusing in particular on the Bakhtegan Wetland.
5. A crucial element to ensure environmental benefits are fully realised through the project is the development of awareness, knowledge and ownership of both the problems and solutions. This need to happen from the community level, and at all levels of governance within the Bakhtegan Basin. All activities under Component 4 are designed to ensure that such results are realised both throughout the lifetime of the project and beyond.

**Empowerment of women**

1. The project was developed through various consultations in the target area, where the comments, feedback and needs from women were specifically identified in the workshops and reflected in the proposed interventions. Th inclusion of output 2.2, is a clear indication of this approach as it will target and support women and women-headed households who are seeking to develop alternative livelihood practices (i.e. sewing, carpet weaving, dried fruit processing, traditional aviculture, and dairy products, etc.) with small-grants.
2. In addition, it is expected that throughout the project, women will play a vital role as part of the project management unit and as beneficiaries of the project to receive productive inputs (seeds, seedlings, etc.), to be active participants in meetings and workshop, by providing small grants to implement alternative livelihoods, and engage working in protected areas as rangers to gather biological data.
3. The project will promote the agency of women in the light that climate change impact differently men and women. For monitoring, disaggregated and measurable data related to empowerment of women has been incorporated.
4. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.

**Environmental and Social Risk Management**

1. UNDP’s Social and Environmental Standards (SES) have been applied during development of the project. UNDP’s SES have been reviewed by the Adaptation Fund and it was determined that the SES address the requirements of the Adaptation Fund’s Environmental and Social Policy. UNDP will not support activities that do not comply with national law and obligations under international law, whichever is the higher standard.
2. The project was screened with UNDP’s Social and Environmental Screening Procedure (see Annex 8). The screening and preliminary analysis found that certain project activities could generate a number of limited adverse social and environmental impacts. The screening resulted in an overall social and environmental risk categorization of “Moderate.” (e.g. Category B) overall project social and environmental risk categorization. Based on this categorization, an Environmental and Social Management Framework (ESMF) has been developed.
3. An EMSF is a management tool used to assist in minimising the impact to the environment and society; and reach a set of environmental and social objectives. The ESMF identifies relevant legislation, multi-lateral agreements, steps for screening activities, potential environmental and social impacts, recommended mitigation measures, and proposed monitoring schedules.
4. To ensure the environmental and social objectives of the projects are met, the EMSF will be used by the project implementers to structure and control the environmental management safeguards that are required to avoid or mitigate adverse effects on the environment.
5. The EMSF will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and GoZ to incorporate changes in the detailed design phase of the projects.
6. The project will include a complaints and grievance redress process. The project complaints and grievance process has been designed to be problem-solving mechanism with voluntary good-faith efforts. The Grievance Redress Mechanism is not a substitute for the legal process. In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP’s Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations, and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project.
7. **Cost-effectiveness**

*Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.*

1. As a predominantly arid country that is highly dependent on its agriculture the cost of drought in Iran is very high. The estimated cost of the prolonged drought from 1999-2002 was US$3.5 billion. This situation is likely to worsen rather than improve based on a number of key factors unless proactive measures are taken. These include: rapid population growth; a strong focus on agricultural production within Iran; deforestation and land degradation; over-exploitation of surface and ground water resources and climate change. The most cost-effective solution to address this situation within the context of climate change adaptation is to adopt an integrated landscape management approach which includes strong participatory engagement with affected communities. This project is therefore focused on an integrated, participatory, approach to climate change adaptation in the Bakhtegan Basin as a successful model for other regions of Iran.
2. The situation in the Bakhtegan Basin, as with other regions of Iran, involves a complex of interacting factors with climate change having an increasing influence. Historically, as a result of the agrarian reforms of 1961-1972, there was a destruction of social capital in farming communities. Subsequently there has been a strong focus on increasing agricultural production with little attention, until more recently, to the need for farmer education and the need to address the growing environmental costs. Iranian farmers on the whole have limited understanding of markets and the environment and lack the capacity to produce food in a sustainable and climate smart manner. Physical constraints to agriculture include “*water scarcity, drought, soil erosion, fertility decline, plant pests and diseases, natural disasters, variable temperatures, dispersed farm plots, unstable markets and arbitrary price policies, and lack of access to credit, innovations and inputs.”[[53]](#footnote-54)* Many of these factors are increasing, with climate change exacerbating an already fragile situation. Although not quantified in the Bakhtegan Basin the combined cost of the above factors is very high. The current situation is one of positive feedback where continued environmental degradation, lowered production, reduced water availability, and high social costs are resulting in increasing pressure on the natural environment leading to further environmental degradation and increased vulnerability of households and communities.
3. While there has not been any detailed analysis of the socioeconomic consequences of drought at the household level in the Bakhtegan Basin, a recent study[[54]](#footnote-55) made in Sabzevar County, Khorasan Razavi Province, in north-eastern Iran provides valuable insights. This study assessed villager responses to 29 economic variables and 28 social variables. The economic variables were grouped into seven main components covering the amount of production, quality of production, costs of natural resources (losses), production costs, costs of living, overall level of living, and invest­ment. Similarly the social variables were grouped into seven main components covering quality of life, poverty or income, employment, psychological tensions, public safety, crime and delinquency, and social damage. Overall, the socioeconomic costs were significant and high and mirror those that have been qualitatively identified in the Bahktegan Basin for each of the four Zones.
4. Doing nothing is clearly not an option. At the same time the complexity of issues makes it clear that there are no simple solutions, with the need for *“sustainable strategies in natural resources management (NRM) and agricultural and rural development at multiple levels.”[[55]](#footnote-56)* This requires an approach that recognises the continued importance of agriculture to Iran, the resource constraints on agriculture, the underlying development issues, the increasing role of climate change and the importance of engaging rural people in both understanding the problems and being an integral part of the process of identifying and implementing solutions. Such an approach has been adopted through the Lake Urmia project (see Section F) and has proven to be highly successful.
5. As already explained in previous Sections and in the opening paragraph of this section the realistic and most cost-effective approach for this project is to focus on what is achievable within a climate change adaptation context. While the restoration of the Bakhtegan Wetland is an important aspirational goal, a more achievable goal is to build on existing initiatives and successes with the Bakhtegan Basin aimed at building resilience to the dryland environment that now exists.
6. At an operational level the cost-effectiveness of the project is reflected in the following ways:
   * A governance body is proposed at the local level which will be supported by three government ministries (DOE, MOE and MOJA) at national and provincial level with required technical expertise;
   * The project is building on past and on-going projects with proven track records, including past and existing initiatives within the Bakhtegan Basin;
   * The PMU will be based on the target area which will reduce costs and increase efficiencies.
7. Additionally the generation of a comprehensive drought and climate change risk analysis, the development and implementation of targeted solutions through a participatory community planning process, and lessons learned will result in more informed public policy at both national and provincial level. This will result in more timely, integrated and effective responses to drought and climate change that also take account of the underlying development issues that are impacting strongly on local communities.
8. All elements of the project have been brought together in an integrated manner within the context that has been outlined above. Without exception every Output within the project is designed to build on existing tools, methods, mechanisms and initiatives. It is therefore strongly focused towards adding value, rather than building things from scratch. This is evident in each specific Output as follows:

**Output 1.1** is focused on the customisation and application of an existing, well-proven, tool for integrated analysis of the impacts of climate change in the Bakhtegan Basin. An important element of this Output is to build the capacity to readily duplicate such work throughout Iran.

**Output 1.2** is aimed at conducting an in-depth review and revision of water and land resources planning in the Bakhtegan Basin, drawing on results from Output 1.2, and aimed at more environmentally sustainable and cost-effective use of water and land resources.

**Output 1.3** is focused on engaging communities directly in monitoring their local environment as a cost-effective means of data and information gathering as well as building local ownership.

**Output 1.4** is designed to ensure that all data and information generated through the project is readily available and accessible for timely use in education, capacity building, communications and decision making at all levels.

**Output 2.1** is focused strongly on encouraging farmers away from agricultural production systems that have high water demands and are leading to continued degradation of both land and water resources. Based on market research it is strongly focused towards added-value and environmentally friendly production systems that are climate smart.

**Output 2.2** is focused on providing strong support for alternative livelihoods, with a strong focus on women and women-lead households, which are aimed at reducing negative impacts on the environment and increasing household income as well as providing strong social benefits.

**Outputs 3.1 and 3.2** are both designed to build on the success of initiatives already implemented in the Bakhtegan Basin and elsewhere in Iran aimed at building the resilience of the natural environment. This work, as much as possible, will be done in parallel with all Component 2 activities to ensure that co-benefits are realised.

**Output 4.1** is aimed at ensuring everyone in the Bakhtegan Basin is informed about the issues and challenges being faced and solutions that are required. An essential component to this Output is to build a sense of shared ownership throughout the basin.

**Outputs 4.2** is designed to ensure informed, timely and effective decision making at all levels by establishing a basin governance strcture.

1. The project is strongly focused on implementing cost-effective solutions that are of direct and immediate benefit with 85% percent of the budget allocated towards the implementation of actions aimed directly at improving the resilience of the natural environment and increasing the social and economic well-being of people and communities in the Bakhtegan Basin, particularly those that are most vulnerable.
2. **National and Sub-National Priorities**

*Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.*

1. Vision 2025. The 20-Year National Vision of the Islamic Republic of Iran for the dawn of the Solar Calendar Year 1404 [2025 C.E.] has been defined as the “Vision 2025 document”. This vision document provides a clear horizon for the future of Iran. Some provisions of this document address issues of sustainable development and the necessity of environmental protection in the development process of the country in relation to environmental and land administration. The most relevant part of this document is Article 43, which indicates sustainability of the development process with environmental protection and the optimal utilization of environmental resources. While not explicitly addressing the need to adapt to climate change the Vision 2025 addresses the following strategies that are of direct relevance to this project:

* Good governance for conservation and sustainable use of biodiversity is promoted;
* Sustainable forest and rangeland management plans are developed and implemented across the relevant zones in Iran;
* Environmental diplomacy, bilateral and multilateral cooperation in the context of biodiversity at regional and international levels is promoted;
* Preservation, restoration and sustainable use of terrestrial and inland water ecosystems are ensured.

1. Sixth Development Plan. On 19 March 2017, the “Law on the Sixth Five-Year Economic, Cultural, and Social Development Plan for 1396-1400 (2016–2021)” (the “Sixth Development Plan”) was approved by the Iranian Parliament. The development plan sets out the goals and objectives to be achieved by the country over the next five years. In a notable change from previous plans, the Sixth Development Plan places less emphasis on achieving hard targets and attempts to provide guidelines for the Iranian government (the “Government”) to deal with certain shortcomings facing the country. The plan addresses relevant water and environmental issues, which were identified as specific issues of strategic importance when the plan was submitted by the government to the parliament. Articles 45 to 47 address water-related issues such as the need for increased productivity, integrated water resources management, water needs, and determining suitable cultivation patterns to increase productivity and reduce water use. Also, Article 48 in the environmental section identifies the need for implementation of a program for the next five years aimed at protection, restoration and management of wetlands, with the participation of other executive agencies and with emphasis on wetlands that are registered under the Ramsar Convention. These above articles cover the core focus of this project, which are specifically addressed through Components 2 and 3.
2. National Strategic Plan on Climate Change. The first draft of the National Strategic Plan on Climate Change was launched in May, 2017. This plan includes strategies to both address the need to reduce greenhouse gas (GHG) emissions and to adapt to the impacts of climate change. Strategies of direct relevance to this project are summarized as follows:

* Food security and agriculture identifies the follows strategies: establish and improve climate smart agriculture to combat the negative impacts of climate change; develop plans, with climate change considerations fully integrated, for agriculture, horticulture, animal husbandry and fisheries; and improve existing agricultural sectoral structures towards more sustainable and climate resilient agriculture.
* Natural resources and biodiversity strategies include: climate based regional and rural development; integrating climate change considerations into the management structure for natural resources and biodiversity; empowering financial supporting systems; increasing relevant research, training, public awareness and human resource development related to climate change; and improve international and regional corporation.
* Water resources strategies include: Strengthening the sectoral and multi-sectoral management and institutions for cooperation on water management; public education and awareness raising related to climate change and water; sustainability of water demand and supply based within a climate change adaptation context; and improving international corporation relating to all aspects of climate change.
* Additionally the health section includes the `following three main strategies: improving the resilience of the health sector to combat the impact of climate change; knowledge improvement and increased public awareness of climate change and health issues; and improved international and regional corporation.

The need for monitoring and evaluation of all the above relevant components is also addressed. Detailed strategies and relevant action plans will be drafted in a future version of the national climate change plan.

1. Iran’s Intended Nationally Determined Contribution (INDC).The Vulnerability and Adaptation section of Iran’s INDC identifies the following key climate change vulnerabilities, which are aligned with the main issues identified in the Bakhtegan Basin:

* Reduction of the levels of agricultural production;
* Sharp drops in surface runoff and underground water storage;
* Increase of mean temperature with its consequences (heat exhaustion and spread of some diseases);
* Increased hot-spots of dust and sand storms (with high health and industrial adverse impacts);
* Extreme vulnerability of biodiversity and natural resources are some of the direct and indirect extreme impacts of climate change.

Key climate change adaptation actions, which are aligned with the focus of this project, are:

* Investment in water resources infrastructure focused on demand management, increasing productivity in the water sector, increasing efficiency and reducing losses in water yield, water networks and providing new water resources;
* The need to improve the environment, protecting natural resources and ensuring food security

1. Iran’s second National Biodiversity Strategy and Action Plan (NBSAP2, 2016-2030). The vision for Iran’s second National Biodiversity Strategy and Action Plan (NBSAP2) 2016-2030*“lays out the aims, by 2030, to have raised awareness of the importance of biodiversity for human wellbeing and to have improved the status of biodiversity sustainably, so the natural landscapes, ecosystems, species and genetic resources, vital elements of air, water, soil, fauna and flora are effectively conserved. In such an environment, people have physical and mental health, peace and security, and sustainable socio-economic and environmental justice.”* The NBSAP2 aims to realise this vision through four strategic goals, 24 national targets and 99 actions. The four strategic goals are:

**Strategic Goal 1:** Mainstreaming biodiversity across government and society and promoting awareness and public participation to achieve sustainable development goals;

**Strategic Goal 2:** Integrated biodiversity monitoring, assessment and reporting;

**Strategic Goal 3:** Reducing pressures on biodiversity and promoting sustainable use of natural resources;

**Strategic Goal 4:** Integrated conservation of biodiversity.

The proposed project is aligned with all of these. The NBSAP2 recognises that as a result of excessive unsustainable development and population growth Iran is now facing serious environmental challenges including water shortages, desertification, habitat destruction, drying of wetlands, soil erosion and pollution. It further recognises that serious threats to biodiversity are arising from the combined effects of climate change, water shortages and the continuation of droughts. The need for special attention to water management is recognised due to the significant role it plays in biodiversity conservation.

1. Long-term Development Strategies for Iran’s Water Resources. The following are relevant strategies from those approved in the Cabinet Council meeting dated October 19, 2003.

* National water management must be based on supply and demand management, integrated consideration of the water cycle, principles of sustainable development and land use planning in national and joint basins, and to realize integrated water resources management, various economic, social, infrastructural and service sectors must be coordinated with the water sector.
* The utilization of Iran's water resources in each basin must be planned in such a way that the volume of the utilized underground water does not exceed the present utilized volume considering their tolerance. Therefore, structural and nonstructural actions must be taken to meet people’s new demands to the extent that the utilized share of surface water resources increases from the present 46 percent to 55 percent within the coming 20 years and meets the minimum need of the natural environment.
* The water consumption pattern in Iran must be reformed in such a way that the agricultural water consumption share will be reduced from the present 92 percent to 87 percent within the coming 20 years while doubling water use efficiency of 1 kg/m3 and allocating to more economically valuable crops. New water allocation priorities will be drinking and hygiene, industry and service, and horticulture and agriculture respectively.
* Iran water management must determine and notify the economic value of water, including its inherent value in every basin proportionate to its natural and climatic conditions having access to water, the value of investment in supplying, transferring, distributing and recycling water to be consumed in various sectors.
* Since the water resources are limited from the qualitative, quantitative, time and spatial points of view, the structural development projects and land use planning must take into consideration the cost and inherent value of water, and agriculture, mines and industries, urban and rural development sectors and other sector needs in each basin must be provided for and implemented after taking into account the basin tolerance.
* The structure of Iran water management must be improved considering decentralization while implementing and operating projects, increasing people's and local organizations' participation role and integrated consideration of the water cycle, regarding basins as natural units of water management and provincial units for operation and water users' participation observing the laws and regulations.
* In provincial development plans, basins must be considered as effective territories in the economic and social development of the province.
* All the plans for drought and flood management must be prepared and executed with the cooperation of all related organizations on the basis of risk management.
* Public awareness programs for conserving water quantity and quality as well as optimized consumption of water must be compiled and executed.
* Equipping and completing water quality and quantity gauging networks and information and communication systems must be considered.
* The sustainable preservation, revival and operation of the historical hydraulic structures must be considered in providing and compiling water plans of the country.
* High Water Council will coordinate the policies in water supply, distribution and consumption in accordance with article 10 for the establishment of the Ministry of Jihad-e-Agriculture approved in 2000.

1. The UN Development Assistance Framework for Iran (2017-2021). The proposed project aligns with the following Outcome areas identified in the United Nations Development Assistance Framework (UNDAF) for Iran (2017-2021): 1.1, Integrated natural resource management; 1.2 Low carbon economy and climate change; 3.1 Inclusive growth, poverty eradication and social welfare; 3.2 Food security, sustainable agriculture and improved nutrition. The UNDAF (2017-2021) provides a strategic framework for coordinated support from the UN system towards achievement of Iran’s development priorities. Four priority areas are identified: Environment; Health; Resilient Economy; Drug Control. Of most relevance to this proposed project are outcomes identified under Environment and Resilient Economy. Under Environment it is noted that *“Many of Iran’s environmental challenges (such as water resource scarcity and desertification) are expected to be compounded by ongoing climate change.”* Identified challenges include the impacts of unsustainable farming and land management practices which continue to contribute to reduced vegetation cover, soil erosion, desertification, shrinking wetlands and droughts. Overuse of groundwater and surface water, and subsequent drying of rivers and shrinking of wetlands, is attributed predominantly to agriculture. Negative impacts on biodiversity from multiple factors, including overgrazing, deforestation, land degradation and soil erosion, are also identified. Under Resilient Economy the impact of unsustainable use of water is further noted with a need for *“more sustainable agricultural production practices … as part of a comprehensive national land and water resource management strategy, based on further analysis of the economic costs and benefits of different agricultural and rural livelihood development options.”*
2. The Country Programming Framework (CPF) 2012-2016 for Iran’s Agriculture Sector. The Country Programming Framework (CPF) 2012-2016 for Iran’s Agriculture Sector. Developed by the FAO, focuses on three main Strategic Priority Areas (SPAs):
3. Pro-poor enhancement of productivity for better food security, nutrition and livelihood of vulnerable groups in rural and urban areas;
4. Enhanced sustainable management and development of natural resources, climate change mitigation and adaptation to its impact, and disaster risk management; and
5. Strengthened governance and enhanced knowledge management of agricultural and rural development, food security and food safety.

The proposed project is particularly aligned to the second of these three SPAs. Within this SPA there are a number of specified Outputs that are of particular relevance:

**Output 2.1.1:** Water resource management and conservation, which is focused on the provision of “*support to restore and upgrade tertiary irrigation schemes, provide institutional strengthening and improve on-farm water management and promote community-based water management organizations and participatory approaches.”*

**Output 2.2.2:** Climate change related disaster risk management, which is focused on provision of “*support to measures to improve preparedness and disaster risk management for climate-related natural hazards.”*

**Output 2.2.3:** Desertification and drought control, which is focused towards: “*Enhanced national and local capacity to improve preparedness to combat desertification and drought and deal with related agricultural emergencies, including community-based and participatory approaches.”*

1. National Action Plan to Combat Desertification and Mitigate the Effects of Drought 2005. Iran as a signatory to the United Nations Convention to Combat Desertification (UNCCD) produced its National Action Plan to Combat Desertification and Mitigate the Effects of Drought in 2005. The plan identifies the need for a well-coordinated and integrated approach with a strong focus on engagement with and participation of local communities aimed at the sustainable management of Iran’s natural resources. Based on this premise the plan framework consists of four pivots:
2. Identification and control of the factors contributing to desertification;
3. Support for the sustainable use and management of natural resources through conservation and reclamation;
4. Promotion of sustainable livelihoods in affected areas through job creation, income generation and the improvement of socioeconomic standards;
5. Strengthening the role of rural communities in terms of decision-making, planning, designing, implementation, monitoring and evaluation.

A number of cross-sectoral and sectoral programmes are presented which are directly relevant to this proposed project. Relevant cross-sectoral programmes include strengthening public participation and awareness, and social programmes which include reorganising land use categories, enhancing management of natural habitats and diversifying and developing non-agricultural activities in rural and nomadic areas. Relevant sectoral programmes include sustainable management of farmland, including sustainable agriculture, food security, water resource management; sustainable management of natural resources, including sustainable management of catchment basins with emphasis on conservation and principled utilization; and sustainable management of water resources.

1. Strategic Plan of Ramsar Convention for 2016-2024. The Contracting Parties approved the Fourth Ramsar Strategic Plan for 2016-2024 at COP12. The Plan lays out a new vision under the Convention mission, four overall goals and 19 specific targets which are designed to support the efforts of Parties, partners and other stakeholders in preventing, stopping and reversing the global decline of wetlands. The four overall goals are defined as the following:

* Addressing the Drivers of Wetland Loss And Degradation;
* Effectively Conserving and Managing the Ramsar Site Network;
* Wisely Using All Wetlands;
* Enhancing Implementation.

1. **Technical Viability**

*Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.*

The project conforms with the following national laws:

1. The project is compliant with the legislation, technical/implementation system under the Technical and Implementation System Bureau[[56]](#footnote-57) (TISB), and associated national standards, under the Institute of Standards & Industrial Research of Iran (ISIRI)[[57]](#footnote-58), the Water Industrial Standard[[58]](#footnote-59) (WIS) and will seek to strengthen these by mainstreaming climate change adaptation guidelines as per the Third National Communication of climate change and the National Climate Change Policy for Iran.
2. There are various relevant laws and regulations for protection and improvement of the environment; Land and Coastal; water fair distribution; Regulations on rivers, anchors, mussels, marshes, natural ponds and water supply networks, irrigation and drainage and the general environmental policy under the supreme leader's announcement.
3. Law of protection and improvement of the environment; One the most important existing laws is “The law of protection and improvement of the environment” which was approved in June, 18, 1974 and updated November, 19, 1992. Based on Article 16, the Iranian Department of Environment (DOE) is the main government agency responsible for environmental protection and is the legal officer (authority) to manage the country’s’ wetlands and their properties. The article also says, DOE does not have the right to transfer the utilization rights of wetlands to other authorities/organizations. This article also emphasizes that if the management and development of the wetlands requires the cutting the trees the Forest, Range and Watershed Management Organization (FRWMO) of Iran has to act.
4. Land and Coastal Law (Approved 20/07/1975); Under this law, lands that appear or are created as a result of lowering water level on the banks of water bodies including the sea, lakes, islands etc. are under government jurisdiction.
5. The law of water fair distribution (Approved 07/03/198); According to Article 45 of the Constitution of the Islamic Republic of Iran, the waters of the seas, natural rivers, streams, valleys and every natural water path, including surface and ground water, floods, sewage and drainage, lakes, natural ponds, and springs are common property under the governance of the Islamic Republic. The protection, monitoring and harvesting of all above water resources are delegated to the government to ensure they are used according to the public interest. Furthermore, any water contamination is prohibited, and responsibility for preventing the pollution of water resources is delegated to the DOE.
6. Regulations on rivers, anchors, mussels, marshes, natural ponds and water supply networks, irrigation and drainage (approved on 01/11/2000); According to this regulation, the river or stream bank border is determined with the Ministry of Energy or regional water companies in each location with regard to the hydrometric data and water tail footprint of and maximum flood with a 25-year return period. The regulations consist of 15 articles.
7. General Environmental Policy, Supreme Leader's Announcement November 17, 2015,This announcement includes 15 articles that covered various issues such as requirements for integrated natural resources management and focused on issues such as environmental monitoring and protection. An important point in this notice is the attention to climate change as an emerging pillar and its emphasis on the need to manage these changes and the resulting effects. Some of the important and relevant provisions of this announcement are as follows:

* Comprehensive, coordinated and systematic management of vital resources (such as air, water, soil and biodiversity) should be arranged based on the potential and sustainability of the habitat, especially by increasing the legal and structural capacities and capabilities associated using the participatory approach;
* Establishing an integrated national environmental system;
* Correction of living conditions in order to enable the community to enjoy a healthy environment and respect for intergenerational justice and rights;
* Preventing of the spread of all types of illicit pollution and the crippling of environmental degradation and the effective and deterrent punishment of polluters and environmental degraders and their obligation to compensate for damages;
* Continuous monitoring and control air, water, soil, noise, waves and destructive rays, pollutants sources and climate change. This process requires an obligation to comply the monitoring process based on environmental standards and indicators as well as land development/ planning programs.
* Providing an ecologic atlas of the country –covering conservation, restoration, rehabilitation and development of renewable natural resources, i.e. sea, lake, river, dams reservoirs, wetland, groundwater aquifer, forest, soil, rangeland and biodiversity, especially wildlife.

1. The basic idea of establishing ISIRI emerged upon the approval of "The Law of Weights and Measures" in 1925. Following the approval of the bill to establish ISIRI in 1960, the Institute became operational within the framework of the specified functions and responsibilities and joined the International Organization for Standardization (ISO) in the same year. In 2011, ISIRI status was set under the direct supervision of the President of the Islamic Republic of Iran as it has already been under the supervision of Minister of Industry, Mines and Commerce.
2. The TISB, under the Plan and Budget Organization (PBO), is the main national body for setting the executive criteria and methodology in Iran. The assigned missions for TISB are formulation and notification of technical and regulatory criteria, including legal and contractual conditions, the principles of remuneration, the relationship between private agents, technical and general specifications, etc. The development and dissemination of technical standards in various fields of the water and electricity industry was considered in order to improve the quality of technical activities and to adapt the advanced technology. In late 1981, following the negotiations between the MOE and the Plan and Budget Organization, there was agreement to establish the water industrial standards. There are more than 300 standards, criteria, guidelines and Terms of References (ToRs) related to water resources management, Environmental Impact Assessment (EIA), watershed management activities etc.
3. The following are references, standards, ToRs and guidelines that govern the implementation of climate change adaptation measure in the Bakhtegan Basin.

|  |  |  |
| --- | --- | --- |
| References/Standards/ToRs/Guidelines | Issued by & Date | Subject |
| Guideline to harvest the river bed material | WIS (2011) | Water and Environmental |
| Guideline for Environmental Impact Assessment (EIA) on River Engineering projects | WIS (1998) | Water and Environmental |
| Guideline for Environmental Impact Assessment (EIA) on water and sewage projects | WIS (1999) | Water and Environmental |
| Guideline for studying the big dam’s reservoirs | WIS (2011) | Water and Environmental |
| Guideline for monitoring surface water | WIS (2009) | Water and Environmental |
| Guideline for monitoring sub-surface water | WIS (2012) | Water and Environmental |
| Environmental criteria for reusing recycle and sewage water | WIS (2011) | Water and Environmental |
| Fundamental of environmental issues to design artificial recharge projects | WIS (2010) | Water and Environmental |
| Term of References for Soil and Watershed Management studies | WIS (1994 & 1996) | Water Resources Management |
| Term of References for Sub-surface water studies | WIS (2001) | Water Resources Management |
| Guideline for water sampling | WIS (1999) | Water Resources Management |
| Term of References for Water Artificial Recharge studies | WIS (2001) | Water Resources Management |
| Guideline for agricultural wells rehabilitation and restoration | WIS (2002) | Water Resources Management |
| Applied guideline for using GIS & RS in Hydrology studies in various Iranian water basins | WIS (2013) | Water Resources Management |
| Guideline to calculate Probable Maximum Flood (PMF) | WIS (2013) | Water Resources Management |
| [A Revision on the Current Studies of EIA,SEA and the Proposed Adaptive Needs](https://centralzagros.doe.ir/Portal/file/?636010/A-Revision-on-the-Current-Studies-of-EIA-SEA-and-the-Proposed-Adaptive-Needs.pdf) | CZM[[59]](#footnote-60) (2015) | Environment Impact Assessment |
| The Guideline of Sustainable Agriculture | CZMP (2015) | Sustainable Agriculture |
| The Guideline on Sustainable Tourism | CZMP (2015) | Sustainable Tourism |
| The Guideline on Sustainable Use of Forests | CZMP (2015) | Sustainable Use of Forests |
| The Guideline on Sustainable Use of Rangelands | CZMP (2014) | Sustainable Use of Rangelands |
| The Guideline on Sustainable Use of Water Resources | CZMP (2014) | Sustainable Use of Water Resources |
| The Guideline on the Effluent Management in the Rural Areas | CZMP (2013) | Effluent Management in the Rural Areas |
| The Guideline on the Solid Waste Management of the Rural Area | CZMP (2013) | Solid Waste Management in the Rural Area |
| The Guideline on Sustainable Aquaculture | CZMP (2013) | Sustainable Aquaculture |

1. An Environmental and Social Management Framework (ESMF - Annex 7) has been prepared to address potential social and environmental risks and impacts and to ensure compliance with applicable regulations and standards. The ESMF outlines procedures for screening, assessment, and development of measures to manage potential social and environmental risks and impacts during project implementation.
2. **Chances of Duplication**

*Describe if there is duplication of project / programme with other funding sources, if any.*

1. The project is designed to build on and learn from existing and past activities in Iran, rather than duplicate. At present there are a number of relevant activities underway in the Bakhtegan Basin, but nothing is being done within a climate change context and current efforts mostly involve local government authorities working with communities as well as they can within their resource constraints. Relevant projects currently within Iran are briefly described below with relevant summary material provided in Table 2. Of most direct relevance is the project currently underway in Lake Urmia. Completed projects include the Central Zagros Mountains project which completed a number of relevant activities in the Bakhtegan Basin.
2. Conservation of Iranian Wetlands Project - Phase II (Scale-up): The second phase of the Conservation of Iranian Wetlands Project builds on the results and achievements of the initial Wetlands Project launched in 2005 and funded by the Global Environment Facility. The second phase expands the project throughout the country. The goal is to enhance the sustainability of Iran’s wetland protected areas and conserve its globally-significant biodiversity. It will do so by establishing eco-system based wetland management plans and inter-sectoral coordination structures for 15 important Iranian wetlands. A grant of US$3 million has been provided by the Government of Japan to UNDP, contributing to the revival of one of these important wetlands, Urmia Lake, from its current critical situation. The project specifically addresses the restoration of the lake through modeling local community participation, promotion of sustainable agriculture and effective reduction of water consumption. The project engages with local communities and farmers using sustainable agriculture techniques. This approach is expected to contribute to an increase of inflow to the lake as well as to the protection of the biodiversity in the area.
3. Currently Integrated Management plan of LU basin developed under Conservation of Iranian Wetlands Project (CIWP).This project specifically addresses the restoration of Lake Urmia mainly through effective reduction of water/agricultural chemical input consumption at farm level by engaging local community and farmers applying sustainable agriculture techniques. It is expected that this approach would lead to increase of inflow to the lake as well as protect the biodiversity focusing on the island habitat of two main IUCN red list species. At the same time there would also be direct biodiversity protection by implementing a water harvesting project in one of the key wildlife island habitats.
4. The Central Zagros Mountains project: This project included a number of relevant activities in the Bakhtegan Basin, with additional activities supported by various government agencies, as follows:

* Preparation of an integrated rangeland management plan (multipurpose) in Kor catchment management area in Sepidan County (Zagros project)
* The implementation of a school nursery “program, 978 students and 120 teachers were covered by this program (Zagros project)
* Implementation of ecotourism and sustainable tourism project in Mengan village (Zagros project)
* Equipping and activating the Mountain Biodiversity resource Centre and empowering the only existing Local Association (in that region) to work in the centre (Zagros project)
* A sustainable agriculture program was conducted in Bakan village in the years 2012-2013, and was extended to 6 villages: Sarbast, Hossein Abad, Abbas Abad, Bakyan, Chogha, Mansour Abad (50 percent reduction in water consumption, developing and increasing the mechanized rice planting in more than 70 percent of the under cultivation area, the use of biological fertilizers, etc.) Introducing the achievements of the sustainable agricultural project in other villages in the Kor and Kamfiroz districts (39 villages) as well as promoting the objectives of the plan in the form of Green Initiatives (Zagros project)
* The creation of a research site for planting medicinal plants at 300 square meters and planting 12 species of medicinal plants (Zagros project)
* Maintenance of 2000 oak seedlings located in the northern part of Kamfirooz Free Zone Deh Damche village in 400 hectares (Zagros project)
* Equilibrium groundwater allocation plan (Fars regional water authority)
* Almond and apple sapling plantation, Plantation of almond and apple trees on the contour lines instead of annual rain-fed crops such as wheat and barley on hills with 8 to 30 degree slope. (MOJA)
* Drought-tolerant tree cultivation (MOJA)
* Medicinal plants and by-products such as devil dung in the upstream rangelands (forests, rangeland and watershed organization)
* 850 hectares was planted with seedlings, in Neyriz County, 100 hectares of which was planted in 2015, and 100 hectares was planted in 2014. Subsequent irrigation and protection has been undertaken
* Improvement of the KorRiver banks by bio structure technique (5.5 km, by Zagros project and Fars regional water authority)

1. Participatory Management of Natural Resources and Sustainable Rural Development in line with Carbon Sequestration in Desertified Areas: The Carbon Sequestration Project (CSP) aims to sequester atmospheric carbon in arid and semi-arid areas of Iran and improve the socio-economic status of local communities. It uses a community-based natural resources development approach. While the project was initiated in one pilot in the first phase back in 2003, now through the up-scale phase, the project is at various stages of implementation across 18 provinces in Iran. Given its success, it is quickly developing into the rural development model of choice in Iran. Over the years, the project has demonstrated both the carbon sequestration potential of significant quantities of marginal land and the potential of local communities to engage in sustainable rural development. The project has empowered local communities, generated sustainable enterprises, built local institutions, thus ensuring ownership by local communities. These communities have, in turn, assumed responsibility for the restoration, conservation and sustainable use of Iran’s limited land and water resources.
2. MENARID-Institutional Strengthening and Coherence for Integrated Natural Resource Management: MENARID is a Middle East and North Africa Regional Development for Integrated Sustainable Development. MENARID provides valuable lessons and experiences for promoting Integrated Natural Resource Management (INRM) in arid, semi-arid and dry sub-humid environments. It also addresses regions suffering severe land degradation and loss of ecosystem services. The goal of the project is to promote climate-resilient integrated management of renewable natural resources, while maintaining the capacity of ecosystems to deliver the goods and services needed to support local livelihoods.
3. Study on Integrated Water Resources Management for the Sefidrud River Basin: Within the context of rising water demand for agricultural, industrial and domestic use, construction and planning of dams are proceeding without integrated water resources management planning in the Sefidrud river basin. This typifies what has happened throughout Iran, including the Bakhtegan Basin, over the last 40 years. This study was therefore started with the objectives of formulating a Master Plan for water resources management in Sefidrud river basin and to transfer technology on integrated water resources management to all stakeholders. In the study, present water demand, individual water development plans and water resource potential in each region are studied. Based on this information, future water demand is predicted and water balance is simulated. Furthermore, as a method to address water conflicts, workshops are held in each province. Finally, the Master Plan for water resources management in the Sefidrud river basin is formulated and technology transfer is conducted. In the study, conflict management is employed to address the water conflicts. As a part of the management, workshops were held in 7 provinces which are Zanjan, Kordestan, East Azarbaijan, Qazvin, Ardabil, Tehran and Gilan. The objectives of workshops are 1) to identify the background of conflicts on water distribution among the provinces, 2) to make all water users aware and knowledgeable of other ware users in the provinces to foster confidence among the water users, and 3) to develop the agenda for the stakeholder meetings.
4. Project on establishment of participatory water management system in Golestan Province: The JICA development study "the Study of Improvement of Irrigation, Drainage and Agricultural Development for Gorgan Plain, Golestan Province, was conducted from 2002 to 2003 in the Tazeh Abad area. The recommendations from the study were adopted by the Iranian Government and farming infrastructures were equipped by Iranian funds. However, the irrigation facilities that were installed by the Iranian government have not been sufficiently utilized, due to (1) lack of sufficient farming instruction for farmers, (2) weakness of farmers' organization (especially on water management), (3) lack of completion of the irrigation control plan, (4) lack of continuous maintenance of canals. Therefore, the agricultural productivity has stayed low and farmers' income has remained at a low level. Given this background, the Iranian Government requested this technical cooperation project with the Government of Japan in order to introduce a "Participatory Water Management System" aimed at materializing optimized water management and to improve the agricultural productivity which will eventually contribute to the increase of farmers' income in the area.
5. The following is a tabulated summary of relevant projects

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Title | Main Objective | Geographic Area | Status | Adaptation Approach | Potential Synergies and Coordination Mechanisms |
| Conservation of Iranian Wetlands Project - Phase II (Scale-up) | Enhancement of the effectiveness and sustainability of Iran’s system of wetland protected areas as a tool for conserving globally significant biodiversity | Across Iran | Ongoing | Ecosystem approach in wetlands management | Inter-sectoral coordination structures for 12 (9 new wetlands + 3 demonstration sites) important Iranian wetlands, Put in place strong wetlands ecosystem management legislative platform and inter-sectoral administrative structures at national level, supporting implementation of the “Ecosystem Approach” in important Iranian wetlands and share CIWP and other wetlands management initiatives, knowledge and lessons learnt with the neighbouring countries |
| Contribution to Lake Urmia Restoration via local community participation  in sustainable agriculture and biodiversity conservation | Wise use of land and water  Resources  Including agriculture water saving, urgent biodiversity conservationand awareness rising. | Urmia | Ongoing | Climate change mitigation and adaptation, water management | Participatory decision making and planning at national, provincial and local level will  enhanced bottom up and inter sectoral  collaboration during the project |
| Participatory Management of Natural Resources and Sustainable  Rural Development in line with Carbon Sequestration in Desertified Areas | Rehabilitate the desertified areas and rangelands, while also seeking capacity building for communities who will carry out the activities to achieve this rehabilitation and conservation. | North Khorasan (two sites), South Khorasan, Yazd and Golestan provinces | Closed | Climate change adaptation | Inter-sectoral coordination and cooperation mechanisms established and strengthened at the provincial and local levels to facilitate sustainable rural development |
| MENARID - Institutional Strengthening and Coherence for Integrated Natural Resource Management | Removal of barriers to Integrated Natural Resources Management (INRM) by developing and strengthening institutional knowledge, capacity and coordination, and by demonstrating and up-scaling successful sustainable land and water management practices | Kermanshah; Sistan and Baluchistan; Tehran; Yazd; North Khorasan; Semnan; Karoon watershed | Closed | Climate change adaptation and mitigation | Inter-sectoral coordination and cooperation mechanisms established and strengthened at the provincial and local levels to facilitate sustainable rural development |
| Central Zagros Mountains Project |  |  | Closed |  |  |
| Monitoring water use efficiency in Qazvin through City Prosperity Initiative | The Greener Cities Partnership (GCP) is to develop a list of recommended indicators that shall be added to the extended City Prosperity Initiative (CPI) framework to enhance the quality and depth of monitoring in the city. The Qazvin Pilot will be the first global project on Urban Environmental Indicators Monitoring, with the aim to collect long-term data and analyse these for more sustainable policies and results. | Qazvin Province  Qazvin city | Ongoing | Climate Change adaptation and SDG | The new indicators tackle the issues of water quality, water usage efficiency, more specifically reducing the use of potable water for non-drinking purposes, wastewater management, public transport and preservation of natural heritage. The data will be made available based on inter-sectoral coordination by various local and regional stakeholders e.g.,National Statistics Organization and academic institutions, as appropriate. |
| Study on Integrated Water Resources Management for Sefidrud River Basin (Iran and JICA) | Under the circumstances, the study was started with the objectives to formulate a Master Plan for water resources management in Sefidrud river basin and to transfer technology on the integrated water resources management to the counterpart personnel. | Sefidrud Basin, Kordestan, Zanjan and East Azerbaijan, Ardabil, Qazvin and Gilan provinces | Closed | Climate Change Adaptation and Integrated Water Resources Management | In the study, conflict management is employed to coordinate the water conflict. As a part of the management, workshops were held in 7 provinces which are Zanjan, Kordestan, East Azarbaijan, Qazvin, Ardabil, Tehran and Gilan. |
| Project on Establishment of Participatory Water Management System in Golestan Province  (Iran & JICA) | JICA development study "the Study of Improvement of Irrigation, Drainage and Agricultural Development for Gorgan Plain, in Golestan Province. The project was aimed at capacity building of the staff in JAO of Golestan Province as well as strengthening of structure in JAO of Golestan Province for extension of the model. | Golestan Province | Closed | Climate Change Adaptation & Sustainable Agriculture | In this project, "Participatory Water Management System" was to be promoted in Tazeh Abad irrigation area, one of 40 irrigation areas in Golestan Province. |
| Anzali Wetland Ecological Management Project  (Iran & JICA) | Environmental conditions in the Anzali Wetland have been degraded due to direct impact by development activities and indirect impact through inflow of sewerage, wastewater and solid waste, and soil inflow from the upper stream mountainous area. Government of Iran requested the Government of Japan to consider a technical co-operation for a comprehensive study to establish a plan for conservation of the Anzali Wetland. | Gilan Province | Closed | SDG and Ecological based adaptation to Climate Change | The study accomplished the following activities: 1) Development of an integrated Master Plan (M/P) for the conservation of the Anzali Wetland, 2) Implementation of pilot activities, some of the prevention measures identified in the M/P, and 3) Assistance for capacity development of the concerned organizations and their staff to build up co-ordination mechanisms for overall wetland management. |

1. **Learning and Knowledge Management**

*If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.*

1. Dissemination of all relevant data, information, knowledge and lessons learned through the project is addressed explicitly in the project design. Under Component 1, relevant data and information that is generated through the project will be collated within a customised GIS platform for the Bakhtegan Basin. These data and information will then be made available through the planned information portal system (TIPS). The TIPS will be the principle mechanism by which data and information are provided as input to Component 4.
2. Component 4 is focused towards enhanced governance and decision making in relation to climate resilience in the Bakhtegan Basin. This will be supported, through Output 4.1, by a comprehensive focus on education, capacity building and communications. Data and information generated through Component 1 and made available through TIPS will provide primary input for Output 4.1. Additional knowledge and information will be integrated to address specific education, capacity building and communication needs. This will include, for example, relevant background summary information on the science of climate change, likely impacts in Iran, and implications for the Bakhtegan Basin. This will be combined with results generated from the climate change analysis under Output 1.1. Additional information of relevance to Components 2 and 3 will also be provided for use in education and capacity building activities. This will include materials relating to climate smart agriculture practices, results of market research, water resource management, alternative livelihood practices, marketing of value added products, and natural resources management.
3. Education and capacity building will be implemented with decision makers at multiple levels and will involve on-going activities for the duration of the project. This will involve dedicated sessions with local and regional government authorities and with local communities. There will be a strong emphasis on education and capacity building with local communities. This will focus on two principal dimensions. Firstly, the focus will be on building ownership of the issues and challenges that are being faced. This will involve activities both within communities in the four different Zones as well as between communities across the four Zones. The intention is to build a widespread sense of shared ownership throughout the Bakhtegan Basin. Secondly, the focus will shift to active participation in developing and implementing solutions. This will involve a strong ‘learning by doing’ emphasis, through both Components 2 and 3. Regular community meetings will be conducted to discuss and review lessons that are being learned, with continual feedback and refinement of approaches and methods. Furthermore this process will serve the purpose of engaging people more widely, beyond the initial target beneficiaries, in the project and its results.
4. The communications part of Output 4.1 will be focused on wide dissemination of results and lessons learned from the project. This will involve the use of multiple media platforms, including video, TV, social media and publications. The intention will be to educate and inform all people living in the Bakhtegan Basin and to also reach as many people as possible nationally.
5. **Stakeholder Consultation and Participation**

*Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.*

1. During the project preparation consultations were conducted with stakeholders at national, provincial and local levels. The consultation process involved meetings, workshops and informal discussions with local communities. The bulk of these consultations were conducted during an 11 day mission to Iran and the Bakhtegan Basin with a team that involved an international consultant, national consultants, local consultants from Fars Province, a UNDP Bangkok technical support person, UNDP Iran and representatives from participating government ministries. Additional consultations will communities were conducted by the local consultant team.
2. At national level the emphasis was on clarifying expectations of the participating government ministries and the national technical committee (NTC) for the project, identifying needs from their perspective, reporting back to them at the conclusion of the mission and receiving their feedback. At provincial level a meeting was held with provincial government staff and representatives. The focus of this meeting was to inform them about the planned project and to receive their feedback on key issues and needs with the Bakhtegan Basin. At local level, three participatory workshops were held with local governors, local government representatives of the three principal central government ministries, NGOs and others.
3. The three participating government ministries are the Department of Environment (DOE), Ministry of Jihad Agriculture (MOJA) and Ministry of Energy (MOE). All three ministries have previously worked on separate ideas and plans for an Adaptation Fund proposal. However, they subsequently came together and agreed that a combined, cross-sectoral, approach would be much more powerful and effective. Such an approach, involving several government ministries, is a new initiative in Iran and challenges the compartmentalised and silo-based thinking that prevails. They had held their own meetings and internal discussions prior to the project planning mission focused on initial scoping for the project. During the planning mission each of these participating ministries were consulted jointly, through the NTC, and separately.
4. Following the national level consultations in Tehran the project team travelled to Shiraz, the capital of Fars Province. In Shiraz they held an initial meeting with staff from the provincial DOE and the local consultant team. A briefing on the situation in the Bakhtegan Basin was provided in this meeting, data and information needs were discussed and plans for site visits and local consultations were presented and discussed.
5. The meeting with the Fars Provincial government was chaired by the Acting Deputy of the Governor General of Fars Province. This meeting involved a briefing on the project and what was required to develop an AF proposal, presentations from provincial representatives, and identification of issues and needs from provincial government staff representing environment, water and agriculture.
6. Three local consultation workshops were held within the Bakhtegan Basin along with visits to potential project sites and villages. A report on outputs from these consultations is presented in Annex 7. These workshops were held in the towns of Kharame, Estahban (both in Zone 4) and Marvdasht (Zone 2). The latter, while located in Zone 2 included representation from the upper part of the basin (within Zone 1). In each workshop there was an introductory presentation on the project followed by an overview from the local governor, and then a facilitated process with participants to identify issues and needs.
7. The needs of women were specifically identified in the workshops. This included an extended discussion in the Estahban workshop on the Rural Women’s Trust Fund, which is a mechanism for support women who are seeking to develop alternative livelihood practices. One of the main foci of this fund is empowerment of women, with the goal of empowering women. This discussion highlighted the fact that this fund has had successes and failures and that the project needs to learn from these lessons to ensure that it works effectively.
8. In the upper part of the basin, above Doroodzan Dam, the project team were also hosted for a day by the governor of Kamfirouz district (within Marvdasht County). Despite the relative abundance of water in this part of the basin, many households are suffering due to the poor soils and low yields. Visits to several local alternative livelihood initiatives were undertaken, including to a local women’s cooperative that has been established to make jewellery for sale in Shiraz city and elsewhere (Figure 21).

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|  |
| **Figure 21: A local women’s jewellery making cooperative in Kor, a district of Marvdasht County. An example of alternative livelihoods that the project aims to develop and strengthen further** |

1. Further consultations were held by the local consultants to identify locations and villages for implementing Components 2 and 3 of the project. This involved consultation with county authorities, farmers, NGOs and also drew on field experiences of the local consultants.
2. The following table summarise the stakeholders consulted and contributions they made to the project design.

|  |  |  |  |
| --- | --- | --- | --- |
| **Organisation consulted** | **Role/Responsibility** | **Issues addressed** | **Project components** |
| National Technical Committee (NTC) | Cross-departmental committee overseeing development of the AF proposal on behalf of the Iranian Government  Provided conceptual and technical guidance an input to the project development process | Identified the Bakhtegan Basin as the project location  Project scope and management arrangements  Feedback and comments on the project proposal | Components 1, 2, 3 and 4 |
| Department of Environment | Responsible for natural resources management, with a particular project focus on protected wetland areas | Provided technical input into the formulation of Component 3 | Components 1, 2, 3 and 4 |
| Ministry of Energy | Responsible for water resources management | Developed a pre-proposal that guided the formulation of Component 1 | Components 1, 2, 3 and 4 |
| Ministry of Jihad Agriculture | Responsible for agriculture and food security | Provided technical input into the formulation of Component 2 | Components 1, 2, 3 and 4 |
| United Nations Development Programme | Provided technical and administrative support during the proposal preparation, organised the project development mission to Iran and the Bakhtegan Basin | Input to project formulation and design  Contributions and support to the National Technical Committee  Project management and institutional arrangements | Components 1, 2, 3 and 4 |
| Fars Provincial Government | Responsible for the management of land and water resources in the Bakhtegan Basin  Provided an overview of the situation in the basin  Assisted in gathering requested data for the national consultants from stakeholders | Identification of issues and needs within the Bakhtegan Basin  Information on existing activities and initiatives | Components 2, 3 and 4 |
| Kharame County Government and community representatives | Responsible for local decision making in relation to land and water resources management  Coordination between different County authorities and assistedwith the workshops | Provided information of the issues being experienced in Kharame County, actions that are already being taken and what additional support is required | Components 2 and 3 |
| Estahban County Government and community representatives | Responsible for local decision making in relation to land and water resources management  Coordination between different County authorities and assistedwith the workshops | Provided information of the issues being experienced in Estahban County, actions that are already being taken and what additional support is required | Components 2 and 3 |
| Marvdasht County Government and community representatives | Responsible for local decision making in relation to land and water resources management  Coordination between different County authorities and assistedwith the workshops | Provided information of the issues being experienced in Marvdasht County, actions that are already being taken and what additional support is required | Components 2 and 3 |
| Non-Governmental Organizations | Participation in consultative workshops | Provided information of the issues being experienced, existing livelihoods and alternative ones | Components 2 and 3 |

1. **Funding Justification**

*Provide justification for funding requested, focusing on the full cost of adaptation reasoning*

**Component 1: Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan Basin.**

***Baseline (without the AF investment)***

1. Many Iranian institutions, including the Ministry of Energy and the Iranian Meteorological Organisation, currently have access to historical data sets for relevant climate and hydrological parameters. Similarly there is a strong capacity within Iran to undertake drought risk assessments. This is confirmed with a predominantly web based search identifying at least 20 published papers from within Iran focused on drought analyses, with and without consideration of climate change. At least two of these have included drought assessments in the Bakhtegan Basin. While a lot of relevant work has been done nationally there is a lack of consistency with modelling approaches including selection of GCM scenarios, use of outdated emissions scenarios by some and application of different drought models. Within this context there has been no systematic climate change risk assessment of each province in Iran. In summary, current analyses are fragmented, inconsistent and incomplete.
2. Iran’s draft third National Communication to the UNFCCC includes a country-scale climate change analysis. This analysis uses results from 15 Global Climate Models (GCMs) in combination with emissions scenarios (referred to as the SRES scenarios) that were used the IPCC third and fourth assessment reports. These SRES scenarios have now been superseded by the Representative Concentration Pathways (RCPs) scenarios which were used in the IPCC fifth assessment report. The draft third National Communication analysis also uses the now outdated Standardised Precipitation Index (SPI) for drought analysis, which has been superseded by the Standardised Precipitation Evapotranspiration Index (SPEI). Results are presented for temperature and rainfall changes only, projected to 2030, with no in-depth analysis of drought risk nationally and provincially and how it might change with climate change. Nor is consideration given to potential impacts on available water resources.
3. A comprehensive report on land and water resources was published in 2007[[60]](#footnote-61), with relevant summary material presented in Annex 1. While very valuable this information needs to be updated and revised to account for the significant changes that have occurred over the last decade. The Ministry of Energy has a current national strategic water plan which provides general guidance but no specific detail on the amount of water available for agriculture and other uses in the Bhaktegan Basin.
4. There is no coordinated community based monitoring of vulnerability and resilience. Evidence of the impacts of the 2007 drought and extended dry period since on communities and their local environments is predominantly anecdotal. For example, the information presented in Table 1 on the socioeconomic and environmental situation in the four Zones is principally based on local knowledge. Local people are aware of the situation in their locale but more widely throughout the basin there is a lack of understanding of the issues and their causes. The result of this is apportionment of blame and growing disharmony between communities in different parts of the basin.
5. Overall, the current situation is one that lacks clear and consistent application of climate change impact and vulnerability assessment methodologies at all levels, including national, provincial, county and local community. Within the Bakhtegan Basin there is a strong base of climate and hydrological data, but a lack of up to date socioeconomic and environmental data. There is also a lack of coherence in terms of the collation and dissemination of available data and information, between different government agencies and between the different levels of decision making (national to local and vice versa).

***Additionality (with the AF investment)***

1. Component 1 is designed to provide a coherent structure and consistent approach for assessing climate change impacts and vulnerabilities, as a basis for identifying and implementing solutions aimed at building climate resilience in the Bakhtegan Basin. This will also be of wider benefit throughout Iran. As a first step the capacity for consistent, and rapid, assessments with all currently available GCM results (from at least 40 models) and the current IPCC emissions scenarios (Representative Concentration Pathways) will be developed. This will then be implemented in association with a comprehensive updating of water and land use planning within the Bakhtegan Basin, to ensure that climate change impacts and vulnerabilities are fully integrated. Greater understanding of vulnerabilities, within and between communities and with decision makers at all levels of administration, will be facilitated through development and implementation of a structured approach to local community monitoring. Finally, platforms for collation, storage and dissemination of results will be established by building on current GIS capacity and through the development of an online information portal system. This will ensure that all stakeholders will have ready access to the same data and information, in support of the goal of more effective, efficient and timely decision making which takes full account of climate change.

**Component 2: The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods**

***Baseline (without the AF investment)***

1. Farmers within the Bakhtegan Basin are currently facing different circumstances, as summarised in the opening paragraphs of Section A. Within this context different measures are being adopted, mostly involving autonomous adaptations. In Zone 1 there is a situation of declining rice yields on the river terraces as a result of declining surface and ground water (extraction of the latter is mostly illegal) and also due to poor soil quality. There is also on-going encroachment into rangeland and forested areas for fruit production and other activities. Some attempts are being made to grow higher value crops such as saffron and pistachio, but there is limited knowledge and experience with growing these crops. Zones 2 and 3, in particular Zone 2, encompass the principal (and historical) agricultural area of the Bakhtegan Basin. The prolonged dry period over the last decade is leading to deeper and deeper wells and also an increase in the number of illegal wells. Continuous cropping is also resulting in soil degradation and wind erosion. Some farmers are switching to less water demanding crops such as safflower. Zone 4 is the worst affected by the activities in Zones 2 and 3, with local conflicts arising relating to water. This is the traditional fig growing area of the Bakhtegan Basin but fig production has declined significantly due to the lack of rain, impacts of saline water around the margins of the lakes and as a result of wind borne salt particles. There are also villages around the lakes that have traditionally relied on water buffalo and other activities that are associated with a wetland environment. Overall, many farmers in Zone 4 in particular are suffering and most have limited capacity to explore, develop and implement alternatives.
2. On the positive side there are some added value initiatives that provide scope for further development. In particular there is currently some organically certified production in the Bakhtegan Basin, covering dates, figs, pomegranate, saffron and medicinal herbs. However, there is a general lack of market research and basin wide coordination. Additionally it is presently not clear to what extent these added value practices fit within the criteria of what might be defined as ‘climate smart’. While organic practices such as mulching, increasing agro-biodiversity, crop rotations with fallow periods, a focus on build soil biology and use of biological friendly products, are aligned with climate smart agriculture this does not mean that all organically certified farms can automatically be considered to be climate smart.
3. In Zones 1 and 4 in particular some villages, and some households in villages, are already self-organising in terms of adopting alternative livelihood practices. This includes mushroom production, dairy production, beekeeping, food processing (tomato paste and pomegranate sauce), tailoring and embroidery, carpet weaving, processing and packaging of produce. Data are available on the number of households currently engaged in different alternative livelihood activities and have been provided for the villages identified for inclusion in this project (Annex 4). The extension of these practices to other households and villages is limited by a number of factors including: access to appropriate knowledge and skills; access to finance; and relevant market information and marketing expertise and capacity.
4. The Rural Women’s Trust Fund provides an existing mechanism for women to access financial support to initiate alternative livelihood activities. This fund is currently more active in some counties and villages than others. There are also anecdotal reports of both success and failures with the fund.
5. In summary, the current situation involves differing impacts on communities in the different Zones in the basin. Some farmers and households are already adapting autonomously to the changed conditions. However, there is no clear emphasis on the development and implementation of climate smart agriculture practices and there is no overall coordination of efforts to introduce alternative livelihood practices, in particular to the most vulnerable.

***Additionality (with the AF investment)***

1. Component 2 is focused firstly on establishing a clear climate change context for the introduction and implementation of relevant adaptation measures aimed at strengthening the resilience of livelihood practices in the Bakhtegan Basin. This context will be provided through Component 1 and further supported through Component 4. Within this context a systematic approach will be adopted, which is aimed at building on and adding value to existing initiatives. The primary focus of Output 2.1 will be the introduction of economically viable climate smart agricultural practices which are aimed at reducing demand for water and also the amount of land that is under cultivation. Essentially its core focus will be on behaviour change, to be fostered through a strongly participatory process that is focused on building ownership and learning by doing. While farmers and their current agriculture practices have rightly been identified as part of the problem it is also essential to recognise that they need to be an integral part of the solution. The primary focus of Output 2.2 will be on extending and adding value to existing alternative livelihood initiatives and practices by the provision of small-grants with a target on women entrepreneurs and women-headed households. This will include a strong emphasis on supporting those in the most vulnerable communities, particularly in Zones 1 and 4.
2. Lessons learned from the Rural Women’s Trust Fund will inform the provision of small-grants to women to implement alternative livelihoods, that otherwise won’t be able to be implemented and will not be able to promote off-farm livelihoods maintaining the dependence on water-intense agriculture practices.

**Component 3: The resilience of the natural environment of the Bakhtegan Basin is strengthened.**

***Baseline (without the AF investment)***

1. The situation with the natural environment in the Bakhtegan Basin is highly complex with no simple solutions. There are multiple issues arising from the decline in surface and water resources, particularly in the lower parts of the basin, and the increasing encroachment of people into national parks, protected areas, forests and rangelands. This situation has arisen as the results of decades of mismanagement following, firstly, the land reforms that were implemented in Iran in the 1960s and subsequently with further development decisions.The damming of rivers for various reasons, but now principally used for irrigated agriculture, along with exponential increases in the extent, depth and rates of ground water extraction and the draining of ecologically significant wetlands is more than likely the main cause of the drying of the Bakhtegan Wetland (encompassing Lakes Bakhtegan and Tashk) over time. This situation has been exacerbated by a prolonged drier than average period since the last serious drought in 2007.
2. The above situation, including the restoration of the Bakhtegan Wetland in alignment with the national priority focus on wetland restoration, cannot be easily resolved. Government agencies and communities are focused instead on what is achievable within their human and financial resource capabilities. Soil and water conservation work undertaken in the Bakhtegan Basin during the last 18 years has included revegetation of 106,700 hectares of land, exclusion of livestock from 65,000 hectares, construction of 22 embankments and 1712 masonry check dams and 61 groundwater artificial recharge projects. Work in protected areas and national parks has involved a combination of efforts from local communities and DoE. Restoration work in the Kamjan Marshes was initiated by the local community and has subsequently been supported by the DOE. Runoff was flowing in drains which were constructed 35 years ago to drain Kamjan for agricultural purposes. Local people blocked these drains to conduct water to the Kamjan Marsh. These drainage systems also reached to Tashk Lake. One on-going issue in this area is the nutrient and agro-chemical loading of the runoff. Other important work includes that undertaken through the Central Zagros Mountains (CZM) project. In the Bakhtegan Basin this involved a number of activities which are summarised in Section F.
3. One of the biggest issues for communities to come to terms with in the Bakhtegan Basin is that what was previously a moist, humid environment is increasingly becoming an arid, dryland environment. The focus on the natural environment therefore needs to be on the design and implementation of measures that enhances resilience of the rangelands, forests, wetlands, protected areas and national parks within the context of these changed conditions. As much as possible this needs to include restoration and protection of wetland habitats in local areas to support migratory birds and other wildlife.

***Additionality (with the AF investment)***

1. Component 3 is focused on implementing realistic and achievable measures to protect, enhance, and build the resilience of the natural environment within the context of the prevailing dryland environment. AF resources will be used construct small-scale works such as check-dams, contouring, strip-cropping that are intended to achieving significant reductions in soil erosion, drought control in rangelands and forest areas and combating desertification. In addition, rehabilitation and monitoring of forest rangelands, protected areas, national parks and wetlands will strengthen the necessary conditions to support conservation of the soil and water resources in the Bakhtegan Basin. Rehabilitation activities will be implemented with local community participation. On the same regard, AF resources will be used to develop and implemented a climate resilience action plan for the key species in target protected areas to monitoring results and conserve biodiversity in the context of severe drought.
2. Importantly, it is recognised that such work needs to involve active engagement with and participation of local communities. As much as possible this work will be aligned with communities who are also engaged with through Component 2 of the project, to ensure a fully integrated approach to resilience building which addresses environmental, social and economic issues.

**Component 4: Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures.**

***Baseline (without the AF investment)***

1. There is a current lack of clear understanding and integration of climate change considerations to guide decision making at all levels in the Bakhtegan Basin. Additionally the current situation involves a combination of government agencies operating in their individual silos and, in general, a top down approach to decision making. The latter is not exclusively the situation. For example in Arsanjan County (Zone 4) the local government authority has worked in a participatory manner with communities to stop rice cultivation and bring an end to the burning of stubble. Those local authorities who are working more proactively with their communities tend to be those are in more of a crisis situation. There is also an atmosphere of blame, increasing mistrust, and also people wanting to retain what they believe is their unrestrained right to have access to water. In the words of the Arsanjan Deputy of Local Government, *“you can’t stop people, you can only advise them”.* There is no existing governance structure specifically for the Bakhtegan Basin.

***Additionality (with the AF investment)***

1. Component 4 will provide, firstly and very importantly, a comprehensive and inclusive approach to education and informing as many people as possible in the Bakhtegan Basin about the current situation, its causes, and the increasing role of climate change. The latter will involve the provision of a clear, but concise, understanding of the science of climate change, what is already happening as a consequence, what it means for the basin in the future, and what can and needs to be done to build resilience. This will occur through multiple approaches and platforms, and will include education and capacity building of local communities, local authorities and provincial government. This improved knowledge and understanding of issues, challenges and solutions will be supported by strengthened governance structures and mechanisms, which build on existing governance structures. This strengthening of governance will have a very strong focus on inter-agency cooperation and strong engagement with and participation of local communities.
2. **Sustainability of the project/programme outcomes**

**Institutional sustainability**

1. A defining feature of this project is the multi-agency collaboration between MOE, DOE and MOJA. These three government agencies have individually and collectively recognized the importance and potential of collaboration as against continuing to work in their silos. The issues that are now presenting themselves, not just in the Bakhtegan Basin but throughout Iran, demand such an approach. The dynamic nature of the project design, in particular the relationships and inter-dependencies between the four project Components, reflects this collaborative approach between these three institutions.
2. Within the above context the development of institutional capacity to both effectively implement the project and build on its achievements into the future is a fundamental aspect to the project. Component 4, with its strong focus on strengthening existing governance structures and mechanisms, is designed specifically to ensure long term sustainability of project outcomes. An important pre-requisite is that this has been clearly identified as a need both by the three government agencies as well as by provincial and local government authorities in the Bakhtegan Basin. There is a widespread recognition that the issues and challenges are now so big that everyone has to work together to ensure that the environment, social structure and economic well-being of communities in the basin are sustained for generations to come.
3. Specific measures that have been incorporated in the project design to ensure institutional sustainability of project outcomes are: the generation of relevant data and information from Component 1, incorporating climate change analyses, water and land using planning and community based monitoring, which are all designed to ensure more informed, timely and effective decision making at all levels; through Output 4.2, a thorough review of relevant national plans and strategies leading to a comprehensive plan for management of land and water resources in the Bakhtegan Basin; establishment of the Bakhtegan Basin Council under Output 4.2, with clear mechanisms for strong community participation in decision making.

**Technical sustainability**

1. The key to ensuring technical sustainability of project outcomes is effective education and capacity building, and on-going positive relationships between technical staff from government agencies and local communities. This has been taken into account for all technical aspects of the project design. Under Component 1 a fundamental technical dimension to the project is the development and implementation of a capacity for consistent and up to date climate change and climate risk assessments. This work will build on the strong existing technical capacity that already exists within Iran for conducting such assessments. It will be achieved through customization of a widely used climate change scenario generator and risk assessment tool for Iran as a whole and specifically for the Bakhtegan Basin. Customization of this software tool will be accompanied by capacity building in relation to its application at national and provincial level. On-going applications will be supported and enhanced through the joining of an international community of scientists and technical staff who are engaged in applications of the same software. Other technical aspects of Component 1, in particular the development of a decision support system, will build on existing capacity and expertise with GIS as well as drawing on existing capabilities for the development of the information portal system (TIPS).
2. Components 2 and 3 will also require strong technical support and input. Engagement with, and increased ownership of, communities will be fundamental to ensuring that these efforts are sustained beyond the project. Of particular importance under Output 2.1 will be the research programme to be developed and implemented at the Marvdasht research station. To ensure its on-going success this work is focused on building on existing capacity within the research station. Importantly, the emphasis in the project design has been on an action research approach which is aimed at building ownership with farmers and rapid dissemination of results as widely as possible. With such an approach the technical capacity for new innovations is not simply held by scientific experts, but is held, owned and shared by a community of farmers with on-going feedback to scientists. Under Output 2.2 the technical dimensions of alternative livelihoods will be supported and sustained by local community experts, with additional input through specific education and training activities. Some villages already have strong technical capacity in certain areas, such as weaving for example, with sharing of technical skills through inter-generational learning and existing community structures. The project will build on these existing capacities as much as possible. Under Component 3 there is strong existing technical capacity amongst MOE, DOE and MOJA staff within the province and locally. As with Component 2, the key to long-term sustainability is the building of ownership, which requires firstly the development of strong working relationships between technical staff and local community members.

**Environmental sustainability**

1. The current crisis in the Bakhtegan Basin is first and foremost an environmental crisis. This situation has been clearly presented in this proposal and is the main underlying driver for the whole project design. The environmental issues in the basin are large, widespread and complex. This project cannot address them all and it cannot undo the progressive, and rapid, changes that have arisen since the 1960s that have resulted in the drying of the Bakhtegan Wetland and is now threatening the whole hydrological system of the basin.
2. The project has therefore been carefully designed to encompass what can be realistically achieved and sustained within a climate change adaptation context. Specifically, it is deliberately focused on the current dryland environment that is now prevailing. The rationale for this approach is that even if there is a climate shift in coming years towards wetter than average conditions which ease the situation, there will have been a significant raising of awareness and implementation of actions that are designed to conserve water and protect and enhance the environment. These actions will be supported by the strengthened institutional and technical capabilities which have been summarised above.

**Social sustainability**

1. Communities within the Bakhtegan Basin, particularly in the rural areas, have strong social networks and support systems. However, the unfolding land and water crisis has had serious social impacts which have been summarized in Table 1. The loss of rural livelihoods, in particular through lack of water, environmental degradation and declining production, has directly resulted in migration to urban areas, loss of self-esteem, increased divorce rates, increased drug use and addition and increased crime. These, and other issues, are not unique to the Bakhtegan Basin and have been documented and studied in more depth elsewhere in Iran. Drought is a particularly insidious phenomenon that can have long-lasting impacts on individuals and communities.
2. Despite these challenges there is evidence of the strong social networks and support systems at work in the basin to address the crisis situation. This is apparent through the concerns and proactive work already being undertaken by a number of county governors and their administrations which were shared during project design consultations. It is evident in local examples of communities and individuals who are already adapting autonomously to the changed conditions. It is also evident in the increasing focus of government agency staff at provincial and local level on working together with communities to develop and implement solutions.
3. The project is designed to build on and enhance these existing social structures and initiatives and therefore has a strong foundation to work from to ensure the social sustainability of project outcomes. This will be achieved in two key ways. Firstly, the strong focus on education and capacity building in a participatory manner which builds long-term ownership will directly strengthen the social sustainability of participating individuals and communities. Secondly, the communication of project results widely to all people throughout the Bakhtegan Basin combined with an emphasis on sharing stories and fostering constructive dialogue between communities in different parts of the basin will provide enduring social benefits to the whole population.

**Financial sustainability**

1. Many of the environmental and social issues within the Bakhtegan Basin have arisen from the basic need of people to make a living from the land. With the removal of traditional land management systems and practices in the 1960s, accompanied by the absence of any education of farmers, a situation of unrestrained development has occurred. This has been exacerbated by subsequent government policies that have been narrowly focused on production with no consideration of the environmental and social costs. This is exemplified by the strong emphasis on rice production, which has been supported by high economic returns to farmers. The consequences of this narrow focus on production at all costs are now evident. An important part of the challenge now is to identify new initiatives that are environmentally and socially beneficial, and provide strong economic incentives to change.
2. It is a reality that people are much less likely to sustain initiatives and activities when they experience direct economic benefits. Component 2, therefore, is strongly focused on improving the economic well-being of project beneficiaries, while at the same time enhancing and protecting the environment and improving social well-being. This forms one of the two key pillars of the project and is of fundamental importance to its enduring success. Output 2.1 is of particular importance in this regard with its focus on the introduction of climate smart agriculture practices that are designed to reduce demands on land and water and at the same time increase farmer incomes. The market research component of this Output is of particular importance in this regard. It is essential that the project identifies, promotes and implements climate smart agriculture practices that are going to provide clear economic benefits to farmers. Similarly, under Output 2.2, it is important that any support for alternative livelihoods is supported by market research to ensure that activities supported through the project are sustained into the future.
3. For activities under component 3 that are targeted at achieving significant reductions in soil erosion, drought control in forest, rangelands, protected areas, national parks and wetlands, sustainability is associated with the capacity of local communities and of local and regional authorities to influence collective decisions regarding the implementation of policies and activities to address climate change impacts which are embedded in the project’s approach. Regarding the financial sustainability strategy for the rehabilitation, conservation and monitoring of these sites, the DoE will incorporate in its general operation budget all associated costs related to the involvement managing, rehabilitating, and monitoring strengthened forest, rangelands, protected areas, national parks and wetlands.
4. **Overview of the environmental and social impacts and risks identified and relevant to the project / programme.**
5. Following the UNDP Social and Environmental Screening Procedure, the project was assessed as Category B (Moderate), based on the aspects identified in the last column of the Checklist Table below. An Environment and Social Management Framework - ESMF (Annex 9) has been prepared to ensure that risks on the project and the above risks in particular, are managed appropriately and therefore mitigated. A summary of the risks and the potential impacts for each item in the Checklist Table is given below.

|  |  |  |
| --- | --- | --- |
| **Checklist of environmental and social principles** | **No further assessment required for compliance** | **Potential impacts and risks –further assessment and management required for compliance** |
| *Compliance with the Law* |  | X |
| *Access and Equity* |  | X |
| *Marginalized and Vulnerable Groups* |  | X |
| *Human Rights* | X |  |
| *Women’s Empowerment* |  | X |
| *Core Labour Rights* | X |  |
| *Indigenous Peoples* | X |  |
| *Involuntary Resettlement* | X |  |
| *Protection of Natural Habitats* | X |  |
| *Conservation of Biological Diversity* | X |  |
| *Climate Change* | X |  |
| *Pollution Prevention and Resource Efficiency* |  | X |
| *Public Health* | X |  |
| *Physical and Cultural Heritage* | X |  |
| *Lands and Soil Conservation* |  | X |

**Compliance with the Law**

1. The following legislation will be considered during the implementation of the project:

|  |  |
| --- | --- |
| **National Legislation** | **Objective/Relevance** |
| Constitution | “After the Islamic Revolution, the government enshrined environmental protection in the Constitution. "In the Islamic Republic of Iran protection of the environment, in which present and future generations should enjoy a transcendent social life, is regarded as a public duty," reads **Article 50**. "Therefore, economic and any other activity, which results in pollution or irremediable destruction of the environment is prohibited." |
| Environmental Protection Law 1974 | The Environmental Protection Law specifies rules and measures for the protection and management of the environment. The objectives of this Law, consisting of 21 articles, are the protection and improvement of the environment. Appropriate measures must be taken by the department of Environment (DOE) and the High Council for Environmental Protection in order to: (a) Preserve the ecological balance; (b) Prevent and control waste and noise pollution considered harmful to the environment; (c) Establish a system of supervision and monitoring for wildlife and marine resources; (d) Conduct environmental scientific research aimed at protecting and improving the environment; (e) Adopt effective measures against polluting units in order to prevent air, water, and soil pollution; (f) Arrange public training courses in order to raise awareness about environmental protection and improvement; and (g) Establish limitations for hunting and shooting in some protected areas. |
| Regulations on Environmental Protection Law 1975. | These Regulations were adopted in accordance with article 21 of the Environmental protection Law. The text is divided into 9 Chapters. "National parks", "Natural resources", "Wildlife shelters", "Important protected areas" have been defined in Chapter I. Basic principles and rules, which govern these areas and their limitations, have been defined in Chapter II. Remaining chapters spell out provisions for strengthening the prevention, control on hunting, shooting, and grazing in these designated areas. Sections on regulations concerning inspection of polluting units, emphasis on promotion of environmental education and formulation of standards for improving environmental quality with cooperation of relevant organization are also included in this text. |
| Environmental Protection and Enhancement Act (1974):. | Identifies four categories of protected natural areas: national parks, wildlife refuges, protected areas, and national nature monument |
| National Law of Conversation, Restoration and Management of Wetlands. 2017 | Any development activities that will cause pollution and destruction its non-compensable, completely prohibited and the reference organization to distinguish the destruction and pollution is DoE.  DoE should determine the water needs of wetlands and ministry of energy is obligated to supply the water need based on an approved plan. |
| National Regulation for Conservation, Restoration and Management of Wetlands 2015 | Provides a definition of wetlands, water rights definition and supply, and preparation of integration of management plans for wetlands, and considering the plans within ministerial action plans. |
| Act on plant varieties registration, control and certification of seedlings 2003 | The Act sets up the Seed and Seedling Registration and Certification Research Institute, which supervises and regulates the identification of both new plant varieties and breeders' rights, as well as issue a patent for the newly certified registered seed and seedling varieties. Article 3 refers to non improved and wild plant genetic resources, whose patenting procedures shall be restricted to the State. Further the Act establishes that varieties prevalent in the country shall be given priority in the registration process. |
| Comprehensive Program of Public Education on Environment 2009 | The Act aims to reduce environmental degradation and increase the sustainable use of natural resources through training of various groups of population. |
| Executive By-Law on improved utilization of water in agriculture 1996 | This By-Law consists of 4 Chapters and 3 Annexes making provisions for the improved utilization of water in agriculture by presenting some methods on behalf of the Ministries of Agriculture (MOA) and Energy (MOE).Chapter 1, general description and issues: (a) Supplying a method for improvement in utilization according with Annex 3; (b) Establishment of expert committee with representatives from MOA and MOE; (c) Supplying a comprehensive agricultural and watershed management plan in each region after 3 months of approving this By-Law; (d) MOA will prepare a cultivation plan for each region taking into consideration national and regional policies; and (e) MOA commits to establish legal bodies for the land that is under the coverage of water delivery system. Chapter 2, delivery volumes in irrigation networks. The Regional Water Organization will deliver required water to consumers according to the new methods of consumption which can reduce water usage or limit delivery particularly during incidences of drought. Chapter 3, controlling water volume in deep and semi-deep wells. The Regional Water Organization is required to determine the exact water needs for agricultural land using deep and semi- deep wells 3 months following approval of this By-Law. |
| Instruction of Assignment of National and Public Resources for Agricultural and Non-agricultural Purpose 2008 | The Instructions lay down provisions on assignment of national and public resources for agricultural and non-agricultural purposes. |
| Iran Water Law and Methods of Nationalization of Water 1968 | The purpose of the Law is to nationalize all internal waters and recognize the Ministry of the Energy as a responsible authority for maintaining and exploiting of water resources. The Ministry is responsible to determine the permitted water consumption for domestic, agriculture and industry sectors, as well as to establish the official tariff for each. For any use of public water, as well as groundwater resources, a special authorization is required from the Ministry. |
| Iran Water Law and the manner of water nationalization 1968 | The Law provides for the nationalization of river basins and of other water resources, the public use of water resources, the concession of permits consenting use of aforesaid resources and the relative prescriptions. It also defines and set the charges due for water utilisation, the conditions involved in using water resources and for their protection from polluting and wasting. |
| Law on Agricultural Labour 1974 | The purpose of this Act, which consists of 40 articles, is to regulate obligations governing employment conditions in agricultural jobs. Thus, it provides comprehensive definitions for a number of basic relevant concepts, such as agricultural worker, agricultural job, agricultural employer, agricultural labour contract and wage. According to this Act, agricultural jobs include all jobs related to farming, gardening, animal husbandry, fishery, forestry and any related technical jobs. |
| Law on Biosecurity 2009 | The Law, which consists of 11 articles, aims to regulate provisions on production, domestic or cross-border trans-shipment, importation, exportation, trade, supply and consumption of genetically modified organisms. |
| Law on Conservation and Protection of Natural Resources and Forest Reserves of the Country 1992 | The Act aims to protect and rehabilitate the natural forests and resources. The Acts considers particular species of trees and plants as national forest reserves and prohibits their cutting. In case of necessity, these species may only be cut with permission obtained by the Ministry of Agriculture. Any violation of this Act shall be punished by imprisonment and fine. |

**Access and Equity**

1. A potential negative impact has been identified in the access and equity for beneficiaries to adaptation measures and technologies proposed by the project. To mitigate this impact, the project will establish and implement transparent and clear criteria, which will be socialized into the coordination mechanism of local and community organizations, as well in the Bakhtegan Basin Council and partner institutions, on how the selection of interventions sites and direct beneficiaries will be done, and who and how they will have access to on-ground measures, and related capacity building support and information services to be provided by the project.
2. Transparent and clear criteria will be applied along the following principles:

* Open to all persons in project areas on non-discriminatory basis;
* Benefits to be provided on basis of fair treatment of all eligible beneficiaries;
* Targeted outreach to marginalized, vulnerable groups and individuals;
* Clear, accessible, culturally appropriate communications that inform potential beneficiaries of available services, entitlements and how to obtain them;
* Sensitive to diverse cultural and socio-economic backgrounds of potential beneficiaries and be responsive as far as practical to individual circumstances;
* Clear beneficiary feedback and complaint processes will be outlined.

**Marginalized and Vulnerable Groups**

1. A risk has been identified considering that affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating in decisions that may affect them. This is due to limitations that may exist in the capacities of local stakeholders, in particular poor and vulnerable groups, to participate effectively in decision making that can affect them. Marginalized groups in the project area of Bakhtegan Basin can be considered poor and vulnerable population, land and water resource issues.
2. Mitigation measures to this risk will be as follows:

* Analysis of groups in the project inception phase and prioritized for adaptation interventions.
* Stakeholder engagement process will be fully participatory, assuring broad representation of existing relevant community-based organizations/groups. These include community development associations that are represented in villages and sub-basins, women’s committees, water associations, community producer associations, forestry cooperatives, communal health promoters.

221. Overall, the Project is expected to have a positive impact on vulnerable and marginalized groups that can be considered as poor and vulnerable populations living in the Bakhtegan Basin. The Project is expected to benefit these communities and groups by implementing measures that are proposed to build resilience and support their livelihoods. Therefore, the project will support improving the availability, accessibility and quality of information and services (e.g. technology, finance) for individuals and potentially marginalized groups, and increasing their inclusion on decision making processes that may affect them (in accordance with the principle of human rights and non-discrimination and equality).

**Human Rights**

1. Project preparation and planned implementation process follows a human-rights based approach. In the face of climate change impacts and unsustainable land and water management and agricultural practices, the project supports the Iranian government’s efforts to ensure access to sustainable livelihoods, water and productive land through integrated land and water resources management and restoration and conservation of critical ecosystems.
2. The project will directly benefit an estimated 766 households, 900 women and 5575 farmers who are especially vulnerable to the impacts of climate change, through the design and implementation of concrete adaptation measures for more efficient agricultural practices and use of water resources, along with diversification of livelihoods. Providing families with alternatives and improving community economic bases will also help reduce the migration of rural communities to urban fringe and the associated increase in crime, divorce, violence and drug use.
3. Potential project-related concerns and/or grievances of local communities will be addressed through a complaint’s register along with a Grievance Redress Mechanism consistent with the UNDP’s Stakeholder Response Mechanism: Overview and Guidance (2014). The Grievance Redress Mechanism will be designed in consideration of the specific local context and draws on existing processes and procedures for the resolution of complaints and grievances.

**Women’s Empowerment**

1. There is a risk of potentially reproducing discrimination against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits as women may be excluded from decision-making or not adequately participate in the design/implementation of the Project. As a result, they might have unequal access to resources and/ or access to opportunities and benefits.
2. To ensure that the project does not exclude women, or increases the inequality gap, a gender analysis will be undertaken in the first phase of the project to assess divisions of labor and women’s role and access to resources and to develop recommendations on how the project will promote women’s empowerment, including participation in project decision-making. Measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized.
3. Female representation in project decision-making bodies will be ensured. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women’s views, such as the Rural Women’s Trust Fund and other women’s associations.
4. For monitoring, disaggregated and measurable data related to empowerment of women will be incorporated. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.

**Core Labour Rights**

1. The project will promote employment through the support of micro-enterprises and promotion of alternate livelihoods. Improved agricultural practices should enable farmers to dedicate more time to productive farming.
2. Relevant labour laws will apply to the project. The Project will also monitor carefully and enforce necessary measures so that there is no child labor involved in its activities.

**Indigenous Peoples**

1. The Project does not foresee any change or negative impact on the current livelihood of any indigenous people or their natural resource base, in fact it will promote the use of traditional knowledge and will support the implementation of adaptive techniques to current livelihood activities.
2. In case any project activities would require formal processes of Free and Informed Prior Consultation (FPIC), then the Project will revert to existing national mechanisms.

**Involuntary Resettlement**

1. Involuntary resettlements are not foreseen within the project.

**Protection of Natural Habitats**

1. Conservation and restoration activities will be implemented in rangelands and forest areas as well as in national parks and protected areas. Targeted productive sectors, in particular agriculture, have been expanding into some environmentally sensitive areas. The project will support zoning in order to reduce productive expansion into particularly critical sensitive areas.

**Conservation of Biological Diversity**

1. With reforestation activities, there is an identified risk of potential use of alien and invasive alien species, although forest and rangeland restoration will only involve planting of more resilient native tree species. To mitigate this risk, the work will be undertaken following the establishment of a restoration protocol/guide for CFC municipalities integrating climate change and variability.
2. The Project will generate a positive impact on the conservation of biological biodiversity through forest and rangeland protection and restoration. The Project will also support the development of information platforms (GIS, TIPS and an App) for monitoring and reporting of restoration actions implemented. This information will be accessible to all stakeholders so that there will be shared ownership of successes.
3. The project will provide training on more sustainable use of resources, particularly aimed at the reduction in use of water, also the introduction and promotion of alternative livelihoods (e.g. bee keeping) which can enhance biodiversity.
4. Training, broader awareness of issues and greater ownership, coupled with information platforms is expected to lead to improved decision making, reduced conflict, more equitable use of resources and in turn slowing of the current loss in biodiversity.
5. The project will also incorporate ecosystem-based adaptation measures and technologies focused on climate resilience into the integrated land and water planning and management plans.

**Climate Change**

1. The project is directly addressing climate change vulnerabilities and adaptation capacities in the Bakhtegan Basin. The project will adopt a National Strategy approach to implementation of adaptation measures at the basin, sub-basin, village and household level. All stakeholders within the Bakhtegan Basin will gain a deeper understanding of the issues facing them as a result maladaptive practices and climate change. Through this will be a greater ownership of problems and responses required to address them.
2. More sustainable practices will help negate the growing negative impacts of climate change and poor management practices. Application of consistent and comprehensive analysis of climate risks and climate change impacts throughout the Basin will lead to improved planning and regulation of resource use.

**Pollution Prevention and Resource Efficiency**

1. The Project will promote measures and technologies for the optimal use of water and land resources, which will have a positive impact. Through the project, producers should also adopt improved farming techniques (e.g. organic agriculture, soil and water conservation) that would reduce the use of fertilizers and pesticides, thus reducing the contamination of soil and water bodies.
2. Some physical disturbance of previously farmed land may release residual herbicides and/or pesticides, however prior assessment of risk and application of mitigation measures will reduce the likelihood of adverse impacts.

**Public Health**

1. Improved access to water, reduced conflict over resources, reduction in erosion and dust generation, and reduced migration are expected to result in improved health of residents and ecology.

**Physical and Cultural Heritage**

1. There are no expected negative impacts on physical and cultural heritage sites in the Bakhtegan Basin.

**Lands and Soil Conservation**

1. Through the application of adaptive and organic agricultural practices (including soil and water conservation techniques), rehabilitation and restoration of forests and rangelands, improved protection for reserves and National Parks (in particular wetlands) it is expected that the project will support soil conservation.
2. The adaptive water management activities may involve construction of micro-dams, embankments and check dams; contouring, strip cropping, that will imply some earth works. To avoid any adverse effects on soil conditions, the project will ensure compliance with environmental impact assessment procedures of DOE. In addition, the project will follow technical guidance developed by previous projects in the Bakhtegan Basin.

**pART iiI: Implementation arrangements**

1. **Adequacy of Project Management Arrangements**
2. The Government of the Islamic Republic of Iran will execute the project with the support of the UNDP under the National Implementation Modality (NIM). The Department of the Environment (DOE) will be the Executing Entity responsible for ensuring that the objectives and components of the project are delivered, and that resources are allocated and disbursed in an efficient and effective manner. The DOE will have the technical and administrative responsibility for applying AF inputs in order to reach the expected Outcomes/Outputs as defined in this project document. The DOE will be responsible for the timely delivery of project inputs and outputs, and in this context, for the coordination of all other responsible parties, including other government agencies, regional and local government authorities.
3. As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key general management and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in: programme formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of programme staff and consultants; general oversight and monitoring, including participation in programme reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building. In this context, UNDP will provide support to the Project Coordinator of the programme to maximize its reach and impact as well as the quality of its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Programme Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Programme activities, will be undertaken under the supervision of the UNDP Country Office, UNDP Regional Hub and UNDP HQ, in line with the 3-tiered quality assurance function of UNDP. UNDP will undertake the internal monitoring of the Programme and of evaluation activities, taking into account from the outset local capacities for administering the programme, capacity limitations and requirements, as well as the effectiveness and efficiency of communications between ministries and other institutions that are relevant to the programme[[61]](#footnote-62).
4. Implementation of the project will be carried out under the general guidance of a **Project Board (or Project Steering Committee)** that is responsible for making management decisions for the project in particular when guidance is required by the Project Manager. The Project Board plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual WorkPlan, the Project Board can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans based on AF budget guidance.
5. In order to ensure UNDP’s ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with UNDP.
6. Potential members of the Project Board are reviewed and recommended for approval during the PAC meeting. Representatives of other stakeholders can be included in the Board as appropriate. The Project Board will be composed of designated senior-level representatives from MOE, MOJA, DOE and Fars Province. A complete list of PB members and their designated alternates will be provided in the inception workshop report.
7. **Project Manager:** The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager’s prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The Project Manager or Coordinator will prepare a Work Plan to incorporate the activities and results of the project to be delivered. The Plan will define the timeframe for implementation of each activity and the parties responsible for their implementation. The First Work Plan will be finalized and incorporated into the Project Document within 30 days of its signature.
8. **Project Support:** The Project Support role provides project administration, management and technical support to the Project Manager as required by the needs of the individual project or Project Manager.
9. **Project assurance:** UNDP Iran will support project implementation by assisting in monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. UNDP Iran will also monitor the project implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned UNDP Programme Officer to support the Project Board to objectively and independently oversee and monitor the project.
10. Upon request from the Executing Entity, UNDP can provide Direct Project Services (DPS) according to its specific policies and convenience. In this case, the Executing Entity will sign a Letter of Agreement specifying the services to be provided and their costs. The costs of these services will be part of the project management costs of the executing entity identified in the project budget. UNDP and the government of Iran recognize that these services are not mandatory and will only be provided in full compliance with the UNDP recovery of direct costs policies. The DPS will be charged annually using the UNDP Universal Price List.

**Project Board**

**Senior Beneficiary:**

Fars Province’s communities

**Executing Agency:**

DoE

**Senior Supplier:**

UNDP

**Project Assurance: UNDP**

* Resident Representative
* Programme Officer
* Regional Technical Advisor

**Project Implementation Unit:**

* National and Deputy Project Managers
* Administrative Assistant
* Technical Staff

**Project Organization Structure**

**Responsible Party Outcome 1**

DoE, MoJA, MoE

**Responsible Party Outcome 2**

MoJA,DoE

**Responsible Party Outcome 3**

DoE

**Responsible Party Outcome 4**

DoE, MoJA, MoE

1. **Measures for financial and project risk management**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Type | Risk Description | Level | Mitigation strategy |
| 1 | Institutional | Decision-making processes at the national and local levels are slow. | Low | -Project Implementation Unit will operate directly in the project area to promote decision-makers’ involvement in the project and keep authorities and decision-makers informed about the development and achievements of the project.  -Permanent political and technical support will be provided to the project and its stakeholders by the agencies of the Government that are involved in the project (MoE, DoE, MoJA), as well as coordination of actions with the project team and regional and local stakeholders. |
| 2 | Institutional | Coordinated efforts with DoE, MoE and MoJA in Tehran and in Fars Province might create delays during project implementations. | Low | -Project Board (Steering Committee) will be structured to have representatives from national ministries and their counterparts from Fars Province to foster coordination.  -Foster participation of national and provincial policy and decision-makers in workshops during the project preparation phase and consultation through various meetings and communications about the project’s strategy, components, and expected outcomes.  -Active participation of national and provincial policy and decision-makers in key moments during the life of the project (approval, inception, implementation, and mid-term and final evaluations). |
| 3 | Operational | There might be resistance from some stakeholders in adopting the proposed measures in target area. | Low | A Bakhtegan Basin Council will be established where community members, community leaders, civil authorities and other stakeholders will discuss locally important issues related to climate change and adaptation and interventions to be implemented in the Basin increasing the ownership and acceptance of interventions. |
| 4 | Financial | Delays in executing funding at the provincial level. |  | -Project activities have been designed and paced to ensure a reasonable chance of completion after the timeframe of the project.  -UNDP and MoE/MoJA/DoE will provide permanent support for the mobilization of funds, contracting, monitoring, and financial reporting.  -UNDP will provide specific technical assistance and management support to each agency based on the results of such assessments. |
| 5 | Financial | Gov of Iran is not able to leverage sufficient financial resources for the sustainability of project actions. | Medium | -A financial sustainably strategy for the early warning system will be developed beginning in Year 3 of project implementation.  -The project will strengthen the institutional basis for accessing public and private sources of climate change finance in the future to attract additional sources of funding.  -UNDP will provide support to the GoI in securing and mobilizing climate change-related financing. |
| 6 | Political | Continued anthropogenic degradation in the Bakhtegan Basin, as a result of deforestation and conventional irrigation practices. | Medium | -Project activities will be aligned to national and provincial initiatives currently addressing deforestation and water-intensive irrigation practices.  -Project coordinator will work closely with provincial staff from MoE, DoE and MoJA to take advantage of environmental and land use instruments in place to assure that the objectives sought in the AF proposal are not undermined.  -Specific activities were designed to directly and indirectly address anthropogenic degradation while generating food security and generation of income in target communities. |

1. A comprehensive risk management strategy will be a core component of project management activities. This is in line with UNDP’s stringent risk management approach which is corporate policy. The respective UNDP CO provides support to the project team and executing agency for constant and consistent risk monitoring, and the results are tracked and reported in UNDP’s internal risk monitoring system. Risks will be entered into the UNDP’s Atlas (project management system) and will be systematically monitored as part of the M&E process by UNDP staff carrying out their oversight related tasks. The results are also reported in the yearly evaluation undertaken for each project.
2. **Measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.**
3. As noted in previous sections (Section II.K) in this document, the project falls under the B category as assessed by 15 criteria and principles established by the Adaptation Fund.
4. Risk mitigation and management measures are described under Section K, and in the UNDP Social and Environment Screening Document and in the Social and Environmental Management Framework attached to this proposal.
5. The ESMF outlines monitoring arrangements for implementation of environmental and social risk management, as well as procedures for addressing stakeholder concerns regarding the project’s social and environmental performance.
6. **Monitoring and Evaluation arrangements in compliance with the ESP and the Gender Policy of the Adaptation Fund, including budgeted M&E plan.**
7. The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

**Project start:**

1. A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.
2. The Inception Workshop should address a number of key issues including:
3. Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
4. Based on the project results framework, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
5. Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
6. Discuss financial reporting procedures and obligations, and arrangements for annual audit.
7. Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

**Quarterly:**

1. The following will be undertaken on a quarterly basis:

* Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
* Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP AF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
* Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
* Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

**Annually:**

1. The project is required to submit a Project Performance Report (PPR) to the donor on an annual basis, one year after the start of project implementation (date of inception workshop) and the last such report should be submitted six months after project completion

The PPR completed template should be submitted to the secretariat in English and that all financial figures provided in the template should be in US dollars (USD). There are 8 sections in the template, as follows:

1. Overview
2. Financial information
3. Procurement data
4. Risk assessment
5. Ratings
6. Project indicators
7. Lessons learned
8. Adaptation Fund results tracker

**Periodic Monitoring through site visits:**

1. UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no later than one month after the visit to the project team and Project Board members.

**Mid-term of project cycle**

1. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project’s term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-EEG. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the [UNDP Evaluation Office Evaluation Resource Center (ERC)](http://erc.undp.org/index.aspx?module=Intra).

**End of Project:**

1. An independent Final Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and AF guidelines. The final evaluation will focus on the delivery of the project’s results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-EEG.
2. The Final Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the [UNDP Evaluation Office Evaluation Resource Center (ERC)](http://erc.undp.org/index.aspx?module=Intra).
3. During the last three months, the project team will prepare the Project Final Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project’s results.

**Audit**

1. The audit would be performed under the UNDP financial regulations and rules applicable to audit policies on UNDP projects.

**Learning and knowledge sharing:**

1. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.
2. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.
3. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

**Communications and visibility requirements:**

1. The AF logo should appear on all relevant publications of the Project, included within other logos, project equipment and other acquisitions with AF funds. Any citation in publications regarding projects funded by the AF should give recognition to the AF. The logos of the implementing agencies and enforcement agencies will also appear on all publications. Full compliance is required with UNDP’s Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>.
2. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

**M&E workplan and budget**

| **Type of M&E activity** | **Responsible Parties** | **Budget US$**  *Excluding project team staff time* | **Time frame** |
| --- | --- | --- | --- |
| Inception Workshop and Report | * Project Manager * UNDP CO, UNDP CCA | Indicative cost: 10,000 | Within first two months of project start up |
| Measurement of Means of Verification of project results. | * UNDP CCA RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. | To be finalized in Inception Phase and Workshop. | Start, mid and end of project (during evaluation cycle) and annually when required. |
| Measurement of Means of Verification for Project Progress on *output and implementation* | * Oversight by Project Manager * Project team | To be determined as part of the Annual Work Plan's preparation. | Annually prior to the annual report and in accordance with the definition of annual work plans |
| Annual reports (PPR) | * Project manager and team * UNDP CO * UNDP RTA * UNDP EEG | None | Annually, after inception workshop |
| Periodic status/ progress reports | * Project manager and team | None | Quarterly |
| Mid-term External Evaluation | * Project manager and team * UNDP CO * UNDP RCU * External Consultants (i.e. evaluation team) | Indicative cost: 40,000 | At the mid-point of project implementation. |
| Final External Evaluation | * Project manager and team, * UNDP CO * UNDP RCU * External Consultants (i.e. evaluation team) | Indicative cost : 40,000 | At least three months before the end of project implementation |
| Project Final Report | * Project manager and team * UNDP CO * local consultant | 0 | At least three months before the end of the project |
| Audit | * UNDP CO * Project manager and team | Indicative cost per year: 3,000 | Yearly |
| Visits to field sites | * UNDP CO * UNDP RCU (as appropriate) * Government representatives | For AF supported projects, paid from IA fees and operational budget | Yearly |
| **TOTAL indicative COST**  Excluding project team staff time and UNDP staff and travel expenses | | US$ 95,000  (+/- 5% of total budget) |  |

1. **Strategic Result Framework**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Indicators** | **Baseline** | **End of project targets** | **Means of verification** | **Risks and assumptions** |
| **Objective of the Project**  To increase the resilience of communities and the natural environment of the Bakhtegan basin to climate variability and change through integrated watershed management | Number of villages (disaggregated by households / women ) in the Bakhtegan Basin with increased resilience to climate variability and change. | The Bakhtegan Basin is within one of the most drought prone areas of Iran. The entire population of 854,093 people is increasingly exposed to the impacts of a 10 year extended dry period. Water resources are becoming increasingly limited and social and environmental costs are already evident. | Direct project benefits to:  - 15 villages adopting climate smart agriculture practices  - 9 villages adopting alternative livelihoods  - 6 villages with ecosystem conservation in forest and rangeland areas  - 7 national park, protected areas and hunting prohibited areas with rehabilitation work  Indirect benefits to the entire population of the Bakhtegan Basin through communications and awareness raising | - Field reports  - Climate-related databases  - Project reports: annual reports; mid-term and final evaluations | The project is focused on addressing the impacts of drought and a decade of drier than average conditions, not the underlying issues associated with the mismanagement of water resources since the 1960s.  Decision makers at all levels in the Bakhtegan Basin are willing to work together to ensure that climate change considerations are fully integrated into all planning decisions.  Participating communities are willing to adopt and sustain the climate change adaptation measures introduced to them. |
| **Outcome 1**  **A data and information management system for decision support and communications is developed and implemented to support development of long-term climate resilience in the Bakhtegan basin** | 1.1 Number of climate change scenarios developed to asses climate risks and climate change impacts in target area. | Published analyses of climate change in Bakhtegan Basin but no coherent study for the whole basin using up to date climate change scenarios | At least 3 Climate change scenarios for the Bakhtegan basin will be developed based on the tailored SimCLIM software.  (Scenarios will be developed: 1) projection under the optimistic climate change scenario, i.e. RCP 2.6; 2) projection under the pessimistic climate change scenario, RCP 8.5; 3) projection under a mid-range scenario.) | A published report and generated results integrated into the GIS and the Information Portal System (TIPS) (Output 1.4). | Climate change impact and vulnerability assessments are completely in a timely manner to ensure that results are fully accounted for in all other project activities  Communities fully participate in the community based monitoring programme  The GIS and TIPS are used by stakeholders to support enhanced governance and decision making that is informed by climate change considerations.  Effective information for improved decision making relating to land use and water resources management is being used. |
| 1.2  Number of frameworks to support decision making that include climate change, land and water resources in the Bakhtegan Basin. | A comprehensive study on water and land resources was completed in 2007, with key results summarized in Annex 1  Researchers at the Water Resources Engineering Department, Tarbiat Modares University, Tehran have recently completed a baseline (current conditions) analysis for the Bakhtegan Basin using a modified version of the Soil and Water Assessment Tool (SWAT) | An integrated WLUP framework for the Bakhtegan Basin developed and used in decision making processes. | A published report and generated results integrated into the GIS and TIPS (Output 1.4) |
| 1.3 Number of households and farmers regularly participating and using the community monitoring system. | There is currently no local community monitoring system focused on climate vulnerability and resilience in the Bakhtegan Basin | An operational community monitoring system is established.  40 villages, involving 13,011 households and 12,821farmers are involved in the monitoring system. | - Field reports  - Climate-related databases  - Project reports: annual reports; mid-term and final evaluations |
| 1.4 Number of operational decisions support systems incorporating a customized GIS platform and development of the information portal system (TIPS)  1.5 Number of local and provincial plans that incorporate adaptation to climate change considerations based on the decision support system. | There is currently no system in place for collating and sharing relevant climate change impact, risk and vulnerability data and information | A decision support system is established to improve decision making and governance in the Bakhtegan Basin by customizing a GIS to collate all relevant data and information and a TIPS which is developed and operationalized (through Component 4)  Five (5) plans that incorporate considerations for adaptation to climate change: Fars Province, Zone 1, Zone 2, Zone 3 and Zone 4 Plans | TIPS web page  Number of visits to the TIPS web page  Use of TIPS data and information in revised plans for the Bakhtegan Basin |
| **Outcome 2**  **The environmental, social and economic resilience of the Bakhtegan Basin is strengthened through implementation of sustainable agro-ecological practices and alternative livelihoods** | 2.1 Number of farmers with climate smart agriculture practices.  2.2 Area (ha) of farmland with climate resilient agriculture practices | Research has been undertaken at the Marvdasht Agricultural Research Centre on improved water use efficiency for rice cultivation, but has not yet been disseminated to farmers.  There is no active research of climate smart agricultural systems for the Bakhtegan Basin.  In the 11 target villages farmers are currently adapting autonomously with the following practices:   * Growing saffron (7 ha in 1 village), safflower (1 village) and other crops (4 villages) * Reducing water consumption (3 villages) * Using natural fertilisers (1 village)   The Central Zagros Mountains project implemented a sustainable agriculture program in Bakan village in 2012-2013, which was extended to 6 villages: Sarbast, Hossein Abad, Abbas Abad, Bakyan, Chogha, Mansour Abad. Achievements of the project were introduced to other villages in the Kor and Kamfiroz districts (39 villages) | 4,425 farmers and gardeners from the 15 target villages will be practicing climate smart agriculture  21,910 hectares of cropping land will be converted to climate smart production systems  1,726 hectares of horticultural land will be converted to climate smart production systems | - A published report on the market potential, including value chain analysis, of different climate smart agriculture crops, practices and systems  - A published report on results from action research on climate smart agriculture  - Project monitoring, including community based monitoring (Output 1.3)  - Measured reductions in water use of at least 30 percent with participating farmers  - Field reports | The market research will be successful in identifying economically viable climate smart crops, practices and systems  Participating farmers and farmers more widely will be willing to adopt and sustain climate smart agriculture and reduce their water consumption  Participating households and women will be willing to adopt and sustain alternative livelihoods |
| 2.3 Number of households practicing alternative livelihoods | In the 9 target villages for Output 2.2 (2 in Zone 1, 2 in Zone 2, 1 in Zone 3, 4 in Zone 4) there are currently 368 households practicing alternative livelihoods and 193 women receiving support from the Rural Women’s Trust Fund.  Details of the current alternative livelihood practices of each target village are provided in Annex 4. | In the 9 target villages for Output 2.2 there will be 766 households practicing alternative livelihoods and 900 women by receiving small-grants support.  Most of the beneficiaries will be in the four Zone 4 villages where a total of 508 households will be practicing alternative livelihoods and 540 women by receiving small-grants support. | - Project monitoring  - Project reports |
| **Outcome 3**  **The resilience of the natural environment of the Bakhtegan Basin is strengthened** | 3.1 Area (ha/M3) of rangeland and forest with soil and water conservation practices implemented. | The following measures have been implemented more widely in the Bakhtegan Basin over the last 18 years:  -22 embankments  -1,712 masonry check dams  61 groundwater artificial recharge projects  106,700 ha revegetated  65,000 ha with livestock excluded | Check dams:  2,700 M3  Embankments  70,000 M3  Concrete coating  50 M3  The above activities will build resilience for 160 ha of arable land and about 500 ha of the downstream rangelands, dependent livestock and the vulnerable people in Charghalat and Kenare villages in Arsanjan county that are distributed in seven counties located in Zone 1 and 4.  -250 ha will be covered by the rainfall trapping with pitting.  -Participatory forest rehabilitation by seeding and development of medicinal herbal plantation in degraded rangelands about 300 ha.  -Participatory combat desertification in zone 4 about 400 ha. | -Contractor reports  -Project reports | The introduced soil and water conservation practices will lead to tangible and measurable improvements in the environment and help conserve water and reduce soil erosion  The rehabilitation work in national parks, protected areas and hunting prohibited areas will provide measurable benefits to the environment and wildlife |
| 3.2 Area (ha) of wetlands rehabilitated.  3.3 Area (ha) of protected areas being monitored and rehabilitated. | The Bakhteghan Integrated Management Plan has been developed with a participatory approach but not yet implemented.  The Central Zagros Mountains project included: development of an integrated rangeland management plan in the Kor catchment area of Sepidan County; implementation of a school plant nursery programme; equipping and activity the Mountain Biodiversity Resource Centre; planting of 2000 oak seedlings; drought tolerant tree cultivaton; planting 850 ha with seedlings in Neyriz County  Kamjan Marshes: local people acted independently to divert water from the arable lands drainage system into the Kamjan Marshes, and after some tension are now working cooperatively with local DOE staff to improve their local environment  Bakhtegan National Park: The Bakhtegan Wetland has been completely dry for the last decade with significant impacts on migrant birds  Bamou National Park: Environmental degradation of the national park fauna and flora resulted from drought  Margoun waterfall protected area: Drought threats on the waterfall and the landscape  Tang-e-Bostank protected area: endangering the wild life and endangered biodiversity due to drought  Basiran hunting prohibited area: Lack of the artificial watering and feeding during the dry periods facilities/ accommodations system  KouhSiah-e-Arsanjan hunting prohibited area: Lack of the artificial watering and feeding during the dry periods facilities/accommodations system | 30,000 ha will be rehabilitated in target area (Kamjam, Tashk and Bakhtegan) through the following activities:  - At least 50% of Bakhtegan Wetland water rights will be achieved.  - At least 50% of sand and dust storm resources of wetland bed has been biologically stabilized.  -Rehabilitation action plan for selected wetland areas has been developed and implemented which lead to rehabilitation of at least 30% of Bakhtegan wetlands.  At least 70% of the total ha of target protected areas will be monitored through the following:  -Bakhtegan basin protected areas ecosystems monitoring is established.  -Rangers and game stations in targeted PAs has been equipped with monitoring equipment.  -At least 25% of the total ha of protected areas will be rehabilitated.  -Climate resilience activities for at least 5 key species have been implemented  20 artificial watering built in targeted PAs  -In Bakhtegan and Bamous National Parks, wildlife habitats activities implemented in the dryland section. | Project monitoring  Contractor reports  Project reports |
| **Outcome 4**  **Institutional capacity at the local, regional and national level is strengthened for mainstreaming climate risk management and adaptation measures into planning and decision-making processes.** | 4.1 Number of key beneficiaries and decision makers aware and trained by the project on wetland ecosystem services and climate change- related drought (disaggregated by gender). | Zero | Participatory communication, education, public awareness (CEPA) plan is developed and implemented by the following:  -At least two (2) public awareness campaigns on wetland ecosystem services and climate change- related drought.  -At least 20 training material on climate change adaptation for different target groups developed and distributed.  -At least 200 government expert/staff trained on climate change impacts and adaptation strategies (at least 100 women). | - Records of the quantities produced, published and disseminated of resource materials, training materials, videos, brochures and posters  - Workshop participant lists  - Records of SMS messages sent  - Recording of the national TV programme  - Attendance numbers for the arts events | Communities throughout the Bakhtegan Basin will be more informed about the situation in the basin, its underlying causes and the impacts of climate change.  As a result of being more informed communities in the different Zones will be more willing to work together for the long-term benefit of the Bakhtegan Basin and its people.  The spatial plan for the Bakhtegan Basin will be widely adopted and implemented.  The Bakhtegan Basin Council will be supported by communities, local authorities, provincial government and national government agencies in ensuring that the project is a success and that its outcomes are sustained into the future |
| 4.2 An integrated, multi-sectoral, spatial plan for the Bakhtegan Basin that fully considers climate change risks and needs for building resilience developed. | Water and environmental issues, including the restoration of wetlands, are identified as national priorities in the Sixth Development Plan.  The draft National Strategic Plan on Climate Change identifies the need to:  -Establish and improve climate smart agriculture to combat the negative effects of climate change and develop sectoral plans  -Integrate climate change considerations into the management structure for natural resources and biodiversity  -Strengthen the sectoral and multi-sectoral management and institutions for cooperation on water management | An integrated, multi-sectoral, spatial plan for the Bakhtegan Basin is developed, taking full account of climate change, with full participation of all stakeholders including local communities | -A published spatial plan for the Bakhtegan Basin  -Monitoring of project activities to ensure their alignment with the plan |
| 4.3 Number of governance structures in the Bakhtegan Basin strengthen by the project. | The existing governance structure in Fars Province involves the Provincial Government, Country and City Authorities and Village Islamic Councils. There is no specific governance structure in place to address issues in the Bakhtegan Basin | Establishment of a Bakhtegan Basin Council within the context of the existing governance framework for Fars Province. | -Official record documenting establishment of the Bakhtegan Basin Council and its membership  -Minutes of Council meetings |

1. **Alignment of Project Objectives/Outcomes with Adaptation Fund Results Framework**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Project Objective(s)[[62]](#footnote-63)** | **Project Objective Indicator(s)** | **Fund Outcome** | **Fund Outcome Indicator** | **Grant Amount (USD)** |
| To increase the resilience of communities and the natural environment of the Bakhtegan Basin to climate variability and change through integrated landscape management. | Number of villages (disaggregated by households / women) in the Bakhtegan Basin with increased resilience to climate variability and change. | Outcome 6: Diversified and strengthened livelihoods  and sources of income for vulnerable people in  targeted areas. | 6.1 Percentage of households and communities  having more secure (increased) access to livelihood  assets. | 9,092,766 |
| **Project Outcome(s)** | **Project Outcome Indicator(s)** | **Fund Output** | **Fund Output Indicator** | **Grant Amount (USD)** |
| Outcome 1:  A data and information management system for decision support and communications is developed and implemented to support development of long-term climate resilience in the Bakhtegan basin. | 1.5 Number of local and provincial plans that incorporate adaptation to climate change considerations based on the decision support system. | Output 7: Improved integration of climate-resilience  strategies into country development plans. | 7.1. No., type, and sector of policies introduced or  adjusted to address climate change risks. | 1,080,277 |
| **Project Outcome(s)** | **Project Outcome Indicator(s)** | **Fund Output** | **Fund Output Indicator** | **Grant Amount (USD)** |
| Outcome 2:  The environmental, social and economic resilience of the Bakhtegan Basin is strengthened through implementation of sustainable agro-ecological practices and alternative livelihoods. | 2.3 Number of households practicing alternative livelihoods. | Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability. | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies. | 3,049,300 |
| **Project Outcome(s)** | **Project Outcome Indicator(s)** | **Fund Output** | **Fund Output Indicator** | **Grant Amount (USD)** |
| Outcome 3:  The resilience of the natural environment of the Bakhtegan Basin is strengthened | 3.2 Area (ha) of wetlands rehabilitated | Output 5: Vulnerable physical, natural, and social  assets strengthened in response to climate change  impacts, including variability. | 5.1. No. and type of natural resource assets  created, maintained or improved to withstand  conditions resulting from climate variability and  change (by type of assets) | 3,572,630 |
| **Project Outcome(s)** | **Project Outcome Indicator(s)** | **Fund Output** | **Fund Output Indicator** | **Grant Amount (USD)** |
| Outcome 4:  Institutional capacity at the local, regional and national level is strengthened for mainstreaming climate risk management and adaptation measures into planning and decision-making processes. | 4.1 Number of key beneficiaries and decision makers aware and trained by the project on wetland ecosystem services and climate change- related drought (disaggregated by gender). | Output 2.1: Strengthened capacity of national and  regional centres and networks to respond rapidly to  extreme weather events. | 2.1.1. No. of staff trained to respond to, and mitigate  impacts of, climate-related events | 560,720 |

1. **Detailed budget with budget note**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Award ID:** | TBA | | | | | **Project ID:** | | TBA | | | | |
| **Award Title:** | Iran AF PIMS 6190: Reducing vulnerability to climate change in the Lake Bakhtegan Basin | | | | | | | | | | | |
| **Business Unit:** | TBA | | | | | | | | | | | |
| **Project Title:** | Reducing vulnerability to climate change in the Lake Bakhtegan Basin | | | | | | | | | | | |
| **PIMS no.** | 6190 | | | | | | | | | | | |
| **Implementing Partner  (Executing Agency)** | Department of Environment (DoE) | | | | | | | | | | | |
| **GEF Outcome/Atlas Activity** | **Responsible Party / Implementing Agency** | **Fund ID** | **Donor Name** | **Atlas Budgetary Account Code** | **ATLAS Budget Description** | **Amount Year 1 (USD)** | **Amount Year 2 (USD)** | **Amount Year 3 (USD)** | **Amount Year 4 (USD)** | **Amount Year 5 (USD)** | **Total (USD)** | **Budget Note** |
| **OUTCOME 1:  Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan Basin using a decision support system** | DoE | 62040 | AF | 71300 | Local consultants | 40,000 | 60,000 | 75,000 | 75,000 | 50,890 | 300,890 | 1 |
| 71400 | Contractual Services - Individuals | 7,850 | 8,175 | 8,500 | 8,825 | 9,150 | 42,500 | 2 |
| 71600 | Travel | 4,000 | 3,000 | 3,000 | 2,500 | 3,550 | 16,050 | 3 |
| 72100 | Contractual services - Companies | 25,000 | 90,750 | 110,750 | 110,750 | 99,087 | 436,337 | 4 |
| 72200 | Equipment and furniture | 90,000 | 50,000 | 20,000 | 20,000 | 9,500 | 189,500 | 5 |
| 74500 | Miscellaneous Expenses | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 30,000 | 6 |
| 75700 | Training, Workshops and Conferences | 20,000 | 15,000 | 12,000 | 7,000 | 11,000 | 65,000 | 7 |
| **Sub-total Outcome 1** | | **192,850** | **232,925** | **235,250** | **230,075** | **189,177** | **1,080,277** |  |
| **OUTCOME 2:  The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods** | DoE | 62040 | AF | 71200 | International consultants | 30,000 | 80,000 | 80,000 | 75,000 | 40,500 | 305,500 | 8 |
| 71300 | Local consultants | 20,000 | 12,000 | 8,000 | 7,000 | 3,000 | 50,000 | 9 |
| 71400 | Contractual Services - Individuals | 23,850 | 25,175 | 26,500 | 27,825 | 29,150 | 132,500 | 10 |
| 71600 | Travel | 10,000 | 10,000 | 8,000 | 7,000 | 5,760 | 40,760 | 11 |
| 72100 | Contractual services - Companies | 147,000 | 285,000 | 285,000 | 285,000 | 135,740 | 1,137,740 | 12 |
| 72300 | Material & goods |  | 75,000 | 75,000 | 75,000 | 75,000 | 300,000 | 13 |
| 72600 | Grants | - | 212,500 | 212,500 | 212,500 | 212,500 | 850,000 | 14 |
| 74500 | Miscellaneous Expenses | 9,560 | 9,560 | 9,560 | 9,560 | 9,560 | 47,800 | 15 |
| 75700 | Training, Workshops and Conferences | 59,000 | 49,000 | 24,000 | 19,000 | 34,000 | 185,000 | 16 |
| **Sub-total Outcome 2** | | **299,410** | **758,235** | **728,560** | **717,885** | **545,210** | **3,049,300** |  |
| **OUTCOME 3:  The resilience of the natural environment of the Bakhtegan Basin is strengthened.** | DoE | 62040 | AF | 71300 | Local consultants | 64,750 | 64,750 | 64,750 | 64,750 | 64,954 | 323,954 | 17 |
| 71400 | Contractual Services - Individuals | 23,850 | 25,175 | 26,500 | 27,825 | 29,150 | 132,500 | 18 |
| 72100 | Contractual services - Companies | 467,000 | 592,000 | 703,000 | 526,000 | 307,361 | 2,595,361 | 19 |
| 72200 | Equipment and furniture | 77,500 | 127,500 | 67,500 | 17,500 | 10,000 | 300,000 | 20 |
| 74500 | Miscellaneous Expenses | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 40,000 | 21 |
| 75700 | Training, Workshops and Conferences | 60,000 | 50,000 | 30,000 | 15,000 | 25,815 | 180,815 | 22 |
| **Sub-total Outcome 3** | | **701,100** | **867,425** | **899,750** | **659,075** | **445,280** | **3,572,630** |  |
| **OUTCOME 4:  Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures** | DoE | 62040 | AF | 71200 | International consultants | 8,000 | 12,000 | 13,000 | 8,000 | 4,000 | 45,000 | 23 |
| 71300 | Local consultants | 25,000 | 25,000 | 35,000 | 45,000 | 32,000 | 162,000 | 24 |
| 71400 | Contractual Services - Individuals | 7,850 | 8,175 | 8,500 | 8,825 | 9,150 | 42,500 | 25 |
| 74200 | Audiovisual & Print Production Costs | 10,000 | 12,000 | 15,000 | 10,000 | 15,850 | 62,850 | 26 |
| 74500 | Miscellaneous Expenses | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 10,500 | 27 |
| 75700 | Training, Workshops and Conferences | 35,974 | 50,474 | 50,474 | 50,474 | 50,474 | 237,870 | 28 |
| **Sub-total Outcome 4** | | **88,924** | **109,749** | **124,074** | **124,399** | **113,574** | **560,720** |  |
| **PROJECT MANAGEMENT** | DoE | 62040 | AF | 71200 | International consultants |  |  | 26,000 |  | 26,000 | 52,000 | 29 |
| 71300 | Local consultants | - | - | 9,000 | - | 9,000 | 18,000 | 30 |
| 71400 | Contractual Services - Individuals | 51,100 | 53,300 | 55,500 | 57,700 | 59,900 | 277,500 | 31 |
| 71600 | Travel | 1,000 | 1,000 | 6,000 | 1000 | 6,000 | 15,000 | 32 |
| 72100 | Contractual services - Companies | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 7,200 | 33 |
| 72200 | Equipment and furniture | 28,000 | 5,000 | 5,000 | 2,000 | 2,000 | 42,000 | 34 |
| 72400 | Communications | 250 | 250 | 250 | 250 | 250 | 1,250 | 35 |
| 72500 | Supplies | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 5,000 | 36 |
| 72800 | IT Equipment | 8,000 | 3,000 | 1,000 | 1,000 | 1,000 | 14,000 | 37 |
| 74100 | Professional services (Audit) | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 15,000 | 38 |
| 74200 | Audiovisual & Print Production Costs | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 | 24,000 | 39 |
| 74500 | Miscellaneous Expenses | 250 | 250 | 250 | 250 | 250 | 1,250 | 40 |
| 64300 | Service to Project - CO staff | 50,069 | 50,069 | 50,069 | 50,069 | 50,069 | 250,347 | 41 |
| 74500 | Service to Project - GOE | 21,458 | 21,458 | 21,458 | 21,458 | 21,458 | 107,292 |
| **Sub-total PMU** | | **170,368** | **144,568** | **184,768** | **143,968** | **186,168** | **829,839** |  |
|  |  |  |  | **TOTAL PROGRAMME COST** | | **1,452,652** | **2,112,902** | **2,172,402** | **1,875,402** | **1,479,409** | **9,092,766** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Budget Notes** | |  |  |  |
| **Note** | **ATLAS Number** | **ATLAS Budget Description** | **5 year  Total (USD)** | **Description of Expenditures** |
| **OUTCOME 1: Knowledge of climate risk, climate change and the environmental situation is strengthened to support development of long-term climate resilience in the Bakhtegan Basin using a decision support system Total: 1,080,277 USD** | | | | |
| 1 | 71300 | Local consultants | 44,500 | Contract for national experts to develop and undertake analyses with SimCLIM for the Bakhtegan Basin |
| 45,500 | Contract for national experts to conduct training in the use of WLUP |
| 44,520 | Contract for national experts to develop and undertake analyses with WLUP |
| 44,570 | Contract for local consultants to facilitate workshops with targeted villages on development of vulnerability and resilience indicators and a local community monitoring programme |
| 96,800 | Contract for local consultants to pay quarterly visits to project target villages to ground truth the local community monitoring platform |
| 25,000 | Contract with a local consultant to integrate all relevant data into the GIS platform and TIPS |
| 2 | 71400 | Contractual Services - Individuals | 12,500 | Tehran Coordinator - 25% of contract charges to Output 1 |
| 13,000 | Communication expert - 20% of contract charges to Output 1 |
| 9,500 | National Project Manager (NPM) - 10% of contract charges to Output 1 |
| 7,500 | Deputy National Project Manager (DNPM) - 10% of contract charges to Output 1 |
| 3 | 71600 | Travel | 16,050 | Travel costs for quarterly visits to project target villages |
| 4 | 72100 | Contractual services - Companies | 73,477 | Contract for development and provision of a customised version of SimCLIM |
| Contractual services - Companies | 23,860 | Contract for international experts to conduct training in the use of SimCLIM |
| Contractual services - Companies | 39,500 | Contract for development and provision of a customised version of WLUP |
| Contractual services - Companies | 163,000 | Development of a comprehensive plan for allocating water and land resources in a sustainable and climate resilient manner |
| Contractual services - Companies | 56,500 | Development of a participatory platform for use by participating villagers on agreed vulnerability and resilience indicators |
| Contractual services - Companies | 65,000 | Contract to develop a customised GIS platform for integrating all results from Component 1 |
| Contractual services - Companies | 15,000 | Contract to develop the Information Portal System (TIPS) for sharing results from Component 1 |
| 5 | 72200 | Equipment and furniture | 189,500 | Equipment costs for monitoring water use changes with participating farmers |
| 6 | 74500 | Miscellaneous Expenses | 30,000 | Miscellaneous costs associated with the climate change and climate risk assessment; the land-use change and land-use planning assessment; the local community monitoring programme; data and information sharing |
| 7 | 75700 | Training, Workshops and Conferences | 32,500 | Workshops and meetings to define the scope of the climate change and climate risk analyses to be undertaken |
| Training, Workshops and Conferences | 32,500 | Workshops and meetings to define the scope of WLUP analyses to be undertaken |
| **OUTCOME 2: The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods Total: 3,049,300 USD** | | | | |
| 8 | 71200 | International consultants | 160,000 | Contract with international consultant to undertake market research, including value chain analysis, on climate smart alternative crops, cropping systems and added value products, including organically certified crops and products (international markets) |
| 80,000 | Contract with international organic certification agency to support the extension of climate smart organically certified agriculture |
| 65,500 | Contract with international consultants to undertake quantitative and qualitative analyses of alternative livelihood options and small micro-enterprises and develop a comprehensive plan |
| 9 | 71300 | Local consultants | 50,000 | Contract with local consultant for training of facilitators |
| 10 | 71400 | Contractual Services - Individuals | 9,500 | National Project Manager (NPM) - 10% of contract charges to Output 2 |
| 13,000 | Communication expert - 20% of contract charges to Output 2 |
| 7,500 | Deputy National Project Manager (DNPM) -10% of contract charges to Output 2 |
| 90,000 | 4 Field Coordinators - 50% of contract charges to Output 2 |
| 12,500 | Tehran Coordinator - 25% of contract charges to Output 2 |
| 11 | 71600 | Travel | 40,760 | Cost of farmer field visits to extend results to other farmers |
| 12 | 72100 | Contractual services - Companies | 112,000 | Contract with local consultant for development of Climate Smart Agriculture Plans |
| 90,000 | Contract with national consultant to undertake market research, including value chain analysis, on climate smart alternative crops, cropping systems and added value products, including organically certified crops and products (national markets) |
| 62,500 | Contract with national consultants to extend existing knowledge and research results on alternative crops and cropping systems that are more climate smart |
| 200,000 | Contract for the development of an applied research programme on climate smart agriculture at the Marvdasht Research Station based on the results of the market research |
| 99,870 | Contract with national consultants to extend the results of the applied research programme on climate smart agriculture to participating farmers |
| 64,500 | Contract with national consultant to support extension of existing organically certified agriculture initiatives to participating villages, focused on climate smart practices |
| 40,370 | Contract with national consultants to undertake quantitative and qualitative analyses of alternative livelihood options and small micro-enterprises and develop a comprehensive plan |
| 400,000 | Supporting the development the selected livelihoods plans in the targeted villages/households in Zone, 1, 2, 3 and 4. |
| 68,500 | Contracts with national consultant to assess lessons learned from the Rural Women’s Trust Fund |
| 13 | 72300 | Material & goods | 300,000 | Cost of seed, seedlings and biologically friendly inputs for participating farmers |
| 14 | 72600 | Grants | 850,000 | Implementation of alternative livelihoods plans in Zone, 1, 2, 3 and 4.(i.e. sewing, carpet weaving, dried fruit processing, traditional aviculture, and dairy products, etc.) |
| 15 | 74500 | Miscellaneous Expenses | 47,800 | Miscellaneous costs associated with the development, extension and communication of all climate smart agriculture activities and alternative livelihood activities |
| 16 | 75700 | Training, Workshops and Conferences | 100,000 | Cost for facilitation of workshops to develop Climate Smart Agriculture Plans |
| 85,000 | Workshops and meetings with targeted households and villages to identify opportunities and capacities for livelihoods diversification at the local level |
| **OUTCOME 3: The resilience of the natural environment of the Bakhtegan Basin is strengthened Total: 3,572,630 USD** | | | | |
| 17 | 71300 | Local consultants | 88,954 | Contract with national consulting companies to develop analysis at the target sub-basins based on IWM approach |
| 80,000 | Cost of monitoring Output 3.1 activities in target watersheds |
| 155,000 | Develop and implement a climate resilience action plan for the key species |
| 18 | 71400 | Contractual Services - Individuals | 9,500 | National Project Manager (NPM) -10% of contract charges to Output 3 |
| 13,000 | Communication expert -20% of contract charges to Output 3 |
| 90,000 | 4 Field Coordinators -50% of contract charges to Output 3 |
| 7,500 | Deputy National Project Manager (DNPM)-10% of contract charges to Output 3 |
| 12,500 | Tehran Coordinator -25% of contract charges to Output 3 |
| 19 | 72100 | Contractual services - Companies | 356,000 | Contracting to design and construct embankment dams and check-dams in target sub-basins |
| 229,760 | Contracting for the water artificial recharge projects in target sub-basins |
| 136,401 | Capacity building and training for local people to work as the contractors to construct check-dams, contouring, strip-cropping, etc. following Best Management Practices (BMPs) |
| 21,700 | Rehabilitation of the rangelands |
| 120,000 | Extension and implementation of the medical plants |
| 45,000 | Development and protecting the Zagros forest area |
| 258,500 | Vegetation rehabilitation to combat desertification |
| 225,000 | Ecosystem monitoring in target areas |
| 185,000 | Biological treatment of drainage & reforming the wetland |
| 120,000 | Cost of construction and reconstruction of wildlife artificial watering troughs in the summer |
| 120,000 | Cost of feeding wild life during the dry summers |
| 378,000 | Rehabilitation of the wildlife habitats in the dryland ecosystem naional parks |
| 350,000 | Protecting wildlife hunting prohibited areas |
| 50,000 | Commission a study for the water rights and re allocation of water rights withintarget area (Kamjan, Tashk, Bakhtegan) |
| 20 | 72200 | Equipment and furniture | 300,000 | Equipping DoE's monitoring stations to improve monitoring at basin level |
| 21 | 74500 | Miscellaneous Expenses | 13,680 | Miscellaneous costs associated with the all ecosystem conservation activities |
| 26,320 | Miscellaneous costs associated with the development, extension and communication of all rehabilitation and conservation in target areas |
| 22 | 75700 | Training, Workshops and Conferences | 59,375 | Participatory workshops and meetings to define the scope of IWM results & measures to be undertaken |
| 49,300 | Participatory workshops to raise awareness of local people surrounding Bamou and Bakhtegan National Parks |
| 72,140 | Comprehensive extension, communication and education programme (through Output 4.1) |
| **OUTCOME 4: Capacity at the local, regional and national level is strengthened for improved governance and decision making in relation to climate risk management and effective implementation of adaptation measures Total: 560,720 USD** | | | | |
| 23 | 71200 | International consultants | 45,000 | Internationl consultant/facilitator to support establishment of Bakhtegan Basin Council |
| 24 | 71300 | Local consultants | 75,000 | National consultant/facilitator to support establishment of the Bakhtegan Basin Council |
| Local consultants | 87,000 | Contract with a research center to study existing national frameworks and policies relating to climate change adaptation and land and water resources planning and management to establish a “national spatial strategy plan” to be trialed in the Bakhtegan Basin. |
| 25 | 71400 | Contractual Services - Individuals | 9,500 | National Project Manager (NPM) -10% of contract charges to Output 4 |
| 12,500 | Tehran Coordinator -25% of contract charges to Output 4 |
| 7,500 | Deputy National Project Manager (DNPM) -10% of contract charges to Output 4 |
| 13,000 | Communication expert -20% of contract charges to Output 4 |
| 26 | 74200 | Audiovisual & Print Production Costs | 62,850 | Cost of visual aids of trainings |
| 27 | 74500 | Miscellaneous Expenses | 10,500 | Miscellaneous costs associated with the development, extension and communication related to education, capacity building and communications |
| 28 | 75700 | Training, Workshops and Conferences | 159,170 | Cost of public awareness campaigns which includes training video, publications, brochures, posters, TV programs |
| 58,000 | Cost of rolling out trainings to ensure the relevant activities will be linked directly to Output 2.1, 2.2, 3.1 and 3.2 |
| 20,700 | Miscellaneous costs associated the establishment of the council (Costs of organizing the Bakhtegan Basin Council meetings during 5 years) |
| **Project Management Total: 829,839 USD** | | | | |
| **29** | 71200 | International consultants | 52,000 | Mid-Term and Terminal Evaluation |
| **30** | 71300 | Local consultants | 18,000 | Mid-Term and Terminal Evaluation |
| **31** | 71400 | Contractual Services - Individuals | 57,000.00 | National Project Manager (NPM) - 60% of contract charges to PMU |
| 45,000.00 | Deputy National Project Manager (DNPM)/M&E - 60% of contract charges to PMU |
| 13,000.00 | Communication expert - 20% of contract charges to PMU |
| 65,000.00 | Finance expert |
| 57,500.00 | Administrative Assistant |
| 40,000.00 | Driver/clerk |
| **32** | 71600 | Travel | 15,000 | Transport for Project Management Unit |
| **33** | 72100 | Contractual services - Companies | 7,200.00 | Contractual Service to support communication (Website Maintenance) |
| **34** | 72200 | Equipment and furniture | 42,000.00 | Office Equipment & Furniture |
| **35** | 72400 | Communications | 1,250.00 | Communications |
| **36** | 72500 | Supplies | 5,000.00 | Supplies |
| **37** | 72800 | IT Equipment | 14,000.00 | IT equipment |
| **38** | 74100 | Professional services (Audit) | 15,000.00 | NIM Audit |
| **39** | 74200 | Print and Publication | 24,000.00 | Print and Publications |
| **40** | 74500 | Miscellaneous Expenses | 1,250.00 | Miscellaneous |
| **41** | 64300 | Service to Project - CO staff | 357,639.23 | Financial and administrative services provided by UNDP (DPC) |
| 74500 | Service to Project - GOE |

1. **Disbursement schedule**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Upon Agreement signature** | **Upon signing of agreement for**  **Year 1 activities** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Total** |
|
| **Scheduled Date** | Nov-18 | Jan-19 | Jan-20 | Jan-21 | Jan-22 | Jan-23 |  |
| **Project Funds** |  | 1,452,652 | 2,112,902 | 2,172,402 | 1,875,402 | 1,479,408 | **9,092,766** |
| **Implementing**  **Entity Fee** | 309,154 | 74,085 | 107,758 | 110,793 | 95,645 | 75,450 | **772,885** |
| **Total** | 309,154 | 1,526,737 | 2,220,660 | 2,283,195 | 1,971,047 | 1,554,858 | **9,865,651** |

**part iV: endorsement by government and certification by the Implementing Entity**

1. **Record of endorsement on behalf of the government[[63]](#footnote-64)** *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

|  |  |
| --- | --- |
| *H.E. Mr. Seyyed Ali Mohammad Mousavi*  *Director General for International Environmental and Sustainable Development*  *Affairs of the Ministry of Foreign Affairs and National Designated Authority* | Date*: August 2nd, 2018* |

**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person’s name, telephone number and email address*

|  |  |
| --- | --- |
| I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme. | |
| *Adriana Dinu*  *Director, Sustainable Development (Environment) a.i.*  *Executive Coordinator, Global Environmental Finance*  *Bureau for Policy and Programme Support*  *United Nations Development Programme*  Implementing Entity Coordinator | |
| Date: *August 4th, 2018* | Tel. and email: 212 906 5143; adriana.dinu@undp.org |
| Project Contact Person: Reis Lopez Rello | |
| Tel. And Email:+6623049100 ext.5286; reis.lopez.rello@undp.org | |

1. Kaniewski, Daniel, Van Campo, Elise, Weiss, Harvey. 2012. Drought is a recurring challenge in the Middle East. PNAS 109 (10) 3862-3867 [↑](#footnote-ref-2)
2. World Bank. 2017. Beyond Scarcity: Water Security in the Middle East and North Africa. [↑](#footnote-ref-3)
3. Iran Second National Communication to the UNFCCC. 2010. [↑](#footnote-ref-4)
4. Luo, T., R. Young, P. Reig. 2015. “Aqueduct Projected Water Stress Country Rankings.” Technical Note. Washington, D.C.: World Resources Institute. Available online at: [www.wri.org/publication/aqueduct-projected-water-stresscountry-rankings](http://www.wri.org/publication/aqueduct-projected-water-stresscountry-rankings) [↑](#footnote-ref-5)
5. Garshasbi, Parviz. 2014. *Drought conditions and management strategies in Iran*. Report presented to UN Water Regional Workshop for Near East and North Africa Region on Capacity Development to support National Drought Management Policies, 17-20 November 2014. [↑](#footnote-ref-6)
6. Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030. [↑](#footnote-ref-7)
7. Garshasbi, Parviz. 2014. *Drought conditions and management strategies in Iran*. Report presented to UN Water Regional Workshop for Near East and North Africa Region on Capacity Development to support National Drought Management Policies, 17-20 November 2014. <http://www.ais.unwater.org/ais/pluginfile.php/605/mod_page/content/23/Iran.pdf> [↑](#footnote-ref-8)
8. Iran Second National Communication to the UNFCCC. 2010. [↑](#footnote-ref-9)
9. Iran’s Third National Communication to the UNFCCC. Chapter 4: Vulnerability and Adaptation Assessment, Climate Change Modelling. DRAFT. [↑](#footnote-ref-10)
10. Iran Second National Communication to the UNFCCC. 2010. [↑](#footnote-ref-11)
11. http://www.un-spider.org/sites/default/files/Iran\_booklet\_final\_web\_012016.pdf [↑](#footnote-ref-12)
12. World Bank. 2016. *High and Dry: Climate Change, Water, and the Economy*. Washington, DC: World Bank. [↑](#footnote-ref-13)
13. Iran Census 2016 [↑](#footnote-ref-14)
14. Statistical Center of Iran [↑](#footnote-ref-15)
15. International Monetary Fund. 2017.Islamic Republic of Iran : 2016 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for the Islamic Republic of Iran [↑](#footnote-ref-16)
16. Source: <https://en.wikipedia.org/wiki/Economy_of_Iran> [↑](#footnote-ref-17)
17. Keshavarza et al, 2005. Water Allocation and Pricing in Agriculture of Iran, Water Conservation, Reuse, and Recycling: Proceedings of an Iranian-American Workshop, page: 153-172. [↑](#footnote-ref-18)
18. Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030. [↑](#footnote-ref-19)
19. <http://www.ramsar.org/wetland/iran-islamic-republic-of> [↑](#footnote-ref-20)
20. Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030. [↑](#footnote-ref-21)
21. Nazemosadat, M.J. Amin, S., Kamgare-Haghighi, A.A., Khalili, D. 2000. Workshop on Drought-Related Issues in Fars Province, Iran: Critical Points and Resolutions. Drought Network News (1994-2001), p. 64. [↑](#footnote-ref-22)
22. World Bank. 2017. Beyond Scarcity: Water Security in the Middle East and North Africa. [↑](#footnote-ref-23)
23. Relevant summary information, including maps, from a comprehensive 2007 study on the natural environment and environmental challenges in the Bakhtegan Basin is provided in Annex 1 [↑](#footnote-ref-24)
24. Iran Census 2016 [↑](#footnote-ref-25)
25. Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Persian [↑](#footnote-ref-26)
26. Hamidreza Gharechaei, Alireza Moghaddam nia, Arash Malekian, Azadeh Ahmadi (2015) Separating the effects of climate variability and human activities on runoff in Bkhtegan Basin Ecohydrology Journal. 2, 445-454 .(In Persian) [↑](#footnote-ref-27)
27. Mahdi Erfanian, Nasrin Vafaei, Mehdi Rezaianzadeh. 2014. A New Method for Drought Risk Assessment by Integrating the TRMM Monthly Rainfall Data and the Terra/MODIS NDVI Data in Fars Province, Iran*. Physical Geography Research Quarterly, 46 (1).* [↑](#footnote-ref-28)
28. Fatemeh Bagheri . 2016. Mapping Drought Hazard Using SPI index And GIS (A Case study: Fars province, Iran). *International Journal of Environment and Geoinformatics 3 (1), 22-28* [↑](#footnote-ref-29)
29. Sanjerehei, M.M and Rundel, P.W. 2017. The future of Iranian Wetlands under climate change. *Wetlands Ecology and Management.* 22: 257-273. [↑](#footnote-ref-30)
30. Vaighan, A.A., Talebbeydokhti, N., Bavani, A.M. 2017. Assessing the impacts of climate and land use change on streamflow, water quality and suspended sediment in the Kor River Basin, Southwest of Iran. *Environmental Earth Sciences.* 76: 543 [↑](#footnote-ref-31)
31. Bagheri, Fatemeh. (2016). Mapping Drought Hazard Using SPI index And GIS (A Case study: Fars province, Iran). International Journal of Environment and Geoinformatics. 3. 22-28. 10.30897/ijegeo.304419. [↑](#footnote-ref-32)
32. Ministry of Energy. Macro-National Plan "Impact of Climate Change and Drought Management". Summary of Pilot Report of Lake Bakhtegan Basin (Detection of Climate Change and Drought Identification). Prepared by Shahid Beheshti University. [↑](#footnote-ref-33)
33. Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Farsi [↑](#footnote-ref-34)
34. Ibid [↑](#footnote-ref-35)
35. Arsanjani, T.J., Javidan, R., Nazemosadat, M.J., Arsanjani, J.J., Vaz, E. 2015. Spatiotemporal monitoring of Bakhtegan Lake’s areal fluctuations and an exploration of its future status by applying a cellular automata model. Computers & Geosciences. 78: 37-43. <https://doi.org/10.1016/j.cageo.2015.02.004> [↑](#footnote-ref-36)
36. https://financialtribune.com/articles/energy/75280/irans-new-energy-minister-vows-action-on-chronic-water-crisis [↑](#footnote-ref-37)
37. The information presented here is based on a summary of the current situation in the Bakhtegan Basin provided by the local consultant team from Fars Province (see Annex 3). It is consistent with documented evidence from elsewhere in Iran. [↑](#footnote-ref-38)
38. Darban-e Astane, A. R., &Azimpour, Gh. (2017). Evaluation of Farmers’ Resilience Against Socioeconomic Con­sequences of Drought: A Case Study on Sabzevar, Iran. *Journal of Sustainable Rural Development, 1*(1), 27-38. [↑](#footnote-ref-39)
39. Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Farsi [↑](#footnote-ref-40)
40. From project development consultations 14-20 November 2017 [↑](#footnote-ref-41)
41. For example, see the mountain partnership under FAO; “Mountain Product Initiative” <http://www.fao.org/mountain-partnership/our-work/regionalcooperation/climate-change-and-mountain-forests/mountain-products/en/> [↑](#footnote-ref-42)
42. This aligns with the development of a climate smart rice production system by the International Rice Research Institute (IRRI) known as Alternate Wetting and Drying (AWD) [↑](#footnote-ref-43)
43. Conservation and Sustainable Development Program of Central Zagros Mountains [↑](#footnote-ref-44)
44. A dam made of mounded earth and rock. [↑](#footnote-ref-45)
45. A check dam is a small, sometimes temporary, [dam](https://en.wikipedia.org/wiki/Dam) constructed across a [swale](https://en.wikipedia.org/wiki/Swale_(landform)), [drainage ditch](https://en.wikipedia.org/wiki/Ditch), or waterway to counteract [erosion](https://en.wikipedia.org/wiki/Erosion) by reducing water flow velocity. [↑](#footnote-ref-46)
46. Artificial recharge is the planned, human activity of augmenting the amount of groundwater available through works designed to increase the natural replenishment or percolation of surface waters into the groundwater aquifers, resulting in a corresponding increase in the amount of groundwater available for abstraction. [↑](#footnote-ref-47)
47. Contouring is the tillage practice for planting the plants aligned to terrain contours in the forest and the rangelands. [↑](#footnote-ref-48)
48. Strip cropping is a band arrangement of plants that is mainly used on steep slopes. [↑](#footnote-ref-49)
49. The term Neyriz Lakes and Kamjan Marshes is used by the UNEP World Conservation Monitoring Centre (WCMC) with support from IUCN and its World Commission on Protected Areas (WCPA) https://www.protectedplanet.net/neyriz-lakes-kamjan-marshes-ramsar-site-wetland-of-international-importance [↑](#footnote-ref-50)
50. There was another successful experience through the Conservation of Iranian Wetlands Project involving establishment of an Ecosystem Approach for management of wetlands in Iran. It has been applied to 18 wetlands in Iran. This approach emphasizes balance between development and conservation goals by promoting wise use of natural resources and involves all stakeholders in planning and implementation processes. [↑](#footnote-ref-51)
51. The Bakhteghan Integrated Management Plan has been developed with a participatory approach and will be approved through high level governance mechanisms which provide a framework for management decisions and action plans in the basin. This reflects roles and responsibilities of stakeholders at basin level aimed at finding the right balance between conservation, development and wise use of the wetland and its sustainable management. [↑](#footnote-ref-52)
52. The “Resistance Economy” is a concept declared originally by the Supreme Leader of Iran in his August 2012 speech to promoteeconomic self-reliance, a strategy that would defeat the US-led efforts against Iranvia economic and trade sanctions.<https://en.wikipedia.org/wiki/Resistive_economy> [↑](#footnote-ref-53)
53. Karamidehkordi, Esmail, 2010*.* A Country Report: Challenges Facing Iranian Agriculture and Natural Resource Management in the Twenty-First Century. *Human Ecology, 38: 295-303* [↑](#footnote-ref-54)
54. Darban-e Astane, A. R., &Azimpour, Gh. (2017). Evaluation of Farmers’ Resilience Against Socioeconomic Con­sequences of Drought: A Case Study on Sabzevar, Iran. *Journal of Sustainable Rural Development, 1*(1), 27-38. [↑](#footnote-ref-55)
55. Karamidehkordi, Esmail, 2010*.* A Country Report: Challenges Facing Iranian Agriculture and Natural Resource Management in the Twenty-First Century. *Human Ecology, 38: 295-303* [↑](#footnote-ref-56)
56. http://isiri.gov.ir/portal/home/?331765/ISIRI-Portal [↑](#footnote-ref-57)
57. http://sama.mporg.ir/sites/publish/SitePages/Home.aspx [↑](#footnote-ref-58)
58. http://www.waterstandard.wrm.ir/ [↑](#footnote-ref-59)
59. These guidelines have resulted from the Central Zagros Mountain Project (CZMP) [↑](#footnote-ref-60)
60. Rooyan Consulting. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*”, in Persian. [↑](#footnote-ref-61)
61. As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of programme execution modalities determined on country demand, the specificities of an intervention, and country context. Under the national execution modality proposed to be used for this programme, UNDP selects a government entity as the Executing Entity based on relevant capacity assessments performed by UNDP. Please note that UNDP uses slightly different terminology to that used by the operational policies and guidelines of the Adaptation Fund: In UNDP terminology, the "executing entity" is referred to as the "Implementing Partner" in countries which have adopted harmonized operational modalities and the "Executing Entity" in countries which have not yet done so. The Executing Entity is the institutional entity entrusted with and fully accountable to UNDP for successfully managing and delivering programme outputs. It is responsible to UNDP for activities including: the preparation and implementation of programme work plans and annual audit plans; preparation and operation of programme budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and programme personnel; financial and progress reporting; and monitoring and evaluation. As stated above, however, UNDP retains ultimate accountability for the effective implementation of the programme. [↑](#footnote-ref-62)
62. The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply [↑](#footnote-ref-63)
63. 6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities. [↑](#footnote-ref-64)