



ADAPTATION FUND

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
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ADAPTATION FUND

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 61□0) |
| 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□ □,□65,651(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 millenia¹. 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 situation². 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 2021³. In a recent World Resources Institute study, Iran ranks 13th out of 33 countries identified as likely to face severe water stress by 2040⁴ under a Business as Usual scenario. In the mid-1□60s with a population of 1□ million water per capita was 7000 cubic metres per annum. By 2014, with a population of

¹ Kaniewski, Daniel, Van Campo, Elise, Weiss, Harvey. 2012. Drought is a recurring challenge in the Middle East. PNAS 109 (10) 3862-3867

²World Bank. 2017. Beyond Scarcity: Water Security in the Middle East and North Africa.

³Iran Second National Communication to the UNFCCC. 2010.

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

70 million, this figure had reduced to less than 1000 cubic metres per annum, and with projected population increases is expected to be approximately 1400 cubic metres per annum by 2025⁵.

3. The Islamic Republic of Iran, with an area of 1,640,100 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 7 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 precipitation⁶. 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 country⁷. Average annual rainfall over most of the country is about 200mm. Temperatures vary from -6°C to 21°C in January and 10-30°C in July⁸.

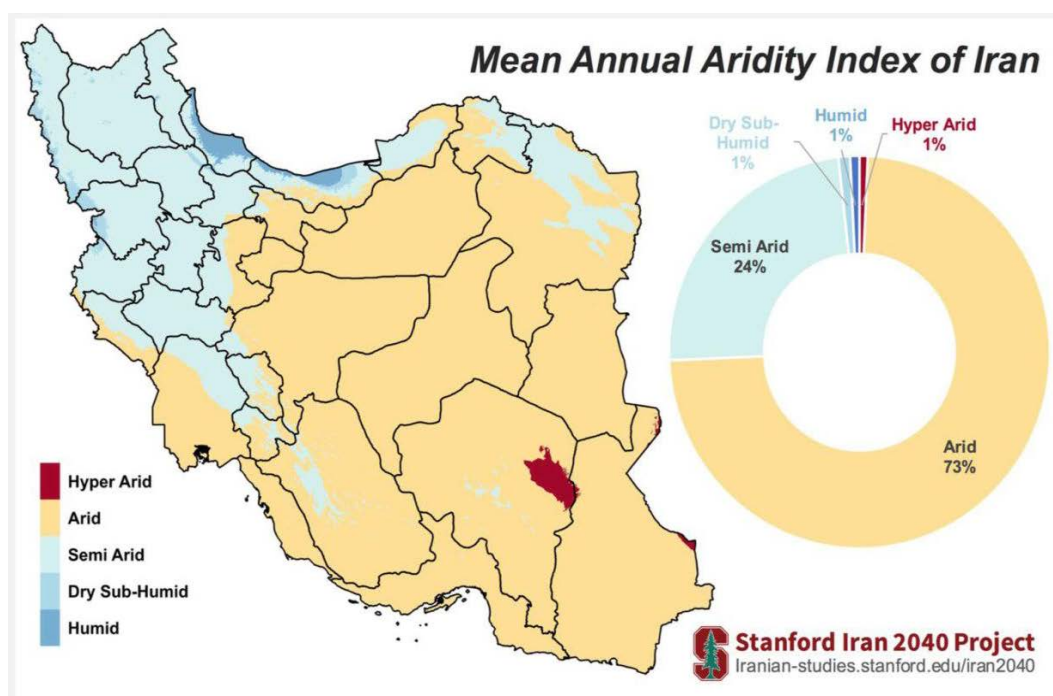


Figure 1: Mean annual aridity index for Iran

⁵Garshasbi, 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.

⁶Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030.

⁷Garshasbi, 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.

⁸http://www.ais.unwater.org/ais/pluginfile.php/605/mod_page/content/23/Iran.pdf

⁸Iran Second National Communication to the UNFCCC. 2010.

4. 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 period⁹. Projections to the 2015-30 period compared to 1992-2000 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
5. 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 100,000 head of livestock and dried up major inland reservoirs and lakes¹¹. 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 2050¹².
6. Iran's population has grown rapidly over the last sixty years, from approximately 10 million people in 1956 to approximately 80 million in 2016¹³. 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 1950¹⁴. 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.

⁹Iran's Third National Communication to the UNFCCC. Chapter 4: Vulnerability and Adaptation Assessment, Climate Change Modelling. DRAFT.

¹⁰Iran Second National Communication to the UNFCCC. 2010.

¹¹http://www.un-spider.org/sites/default/files/Iran_booklet_final_web_012016.pdf

¹²World Bank. 2016. *High and Dry: Climate Change, Water, and the Economy*. Washington, DC: World Bank.

¹³Iran Census 2016

¹⁴Statistical Center of Iran

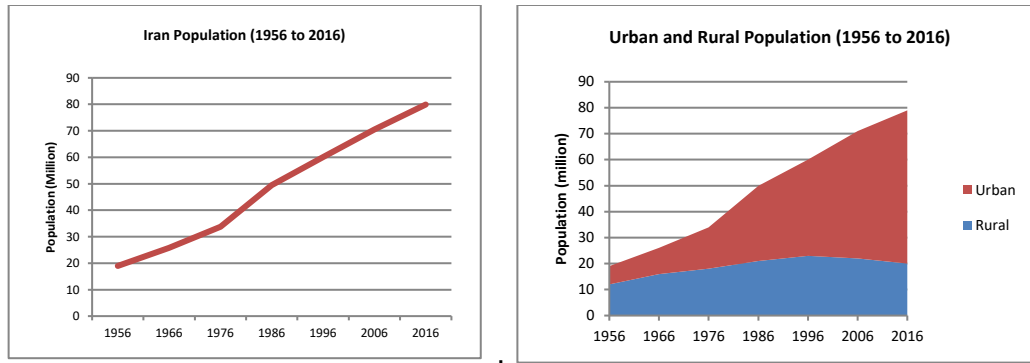


Figure 2: Population trend and changes in rural and urban population in Iran

7. 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. Iran's Human Development Index (HDI) value for 2013 was 0.74¹⁶, which is in the high human development category, positioning the country at 75 out of 187 countries and territories. Between 1990 and 2013, Iran's HDI value increased from 0.49 to 0.74, an increase of 52.1 percent. Life expectancy at birth increased by 11 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 5,065,400 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 0.7 percent by 2009¹⁶. 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).

- 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 dryland¹⁷. Of the total agricultural land area, currently 11.5 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 3.1 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.

¹⁵International 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

¹⁶ Source: https://en.wikipedia.org/wiki/Economy_of_Iran

¹⁷Keshavarza 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.

□ 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 □200 plants species of which 20 percent are endemic□535 bird species□1□7 mammal species, 227 reptile species, 21 amphibian species and 160 freshwater fish species¹⁸. 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 Iran¹⁹. From studied wetlands of the country by 2013, about one third of them are under pressure or in a critical condition²⁰. 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 groundwater²¹.

10. According to the National Biodiversity Strategies and Action Plan (NBSAP2) (page 1□) *“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.”*
11. The importance of water management in Iran is reinforced through the recently published World Bank report on Water Security in the MENA²² 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.”*

¹⁸Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030.

¹⁹<http://www.ramsar.org/wetland/iran-islamic-republic-of>

²⁰Department of Environment. 2016. Islamic Republic of Iran Revised National Biodiversity Strategies and Action Plan (NBSAP2) 2016-2030.

²¹Nazemosadat, 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.

²²World Bank. 2017. Beyond Scarcity: Water Security in the Middle East and North Africa.

12. 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 Basin²³



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

13. The Bakhtegan Basin is located in the northeast of Fars Province in the south of Iran and is home to 54,033 people²⁴. It is one of the most important natural habitats in Iran covering an area of 2,724,502 hectares. 17 percent of the basin is in Fars province and minor parts are located in Yazd, Isfahan and Kohgiluyeh and Boyer-Ahmad. 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

²³Relevant 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

²⁴Iran Census 2016

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

14. 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 13□.1mm recorded at Abadeh to □53.6mm recorded at Choubkhale. Precipitation is distributed unevenly through the year with 24.5 percent in autumn, 5□.3 percent in winter, 16.□ 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 □7.□ billion cubic meters²⁵. Temperatures vary seasonally and with altitude throughout the Bakhtegan Basin. A lowest absolute minimum temperature of -2□□C has been recorded at Kafer. Average minimum temperatures of 6.6□C, 11.5□C and 7.7□C have been observed at Abadeh, Dorood□an and □arghan Dam stations respectively with average maximum temperatures of 22.1□C, 23.□□C and 24.6□C recorded at the same sites. A daily maximum of 4□□C has been recorded at Kafer station in July.
15. 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 study²⁶ 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 1□72-2011.
16. 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:
 - 1□□0/□1 to 1□□5/□6

²⁵ Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Persian

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)

- 1397/98 to 1400/01
- 1396/97 to 2002/03
- 2007/08 to 2014/15 and continuing

17. 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).

18. 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 drought²⁷, but with greatest susceptibility in northern and southern areas. The second study²⁸ 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.

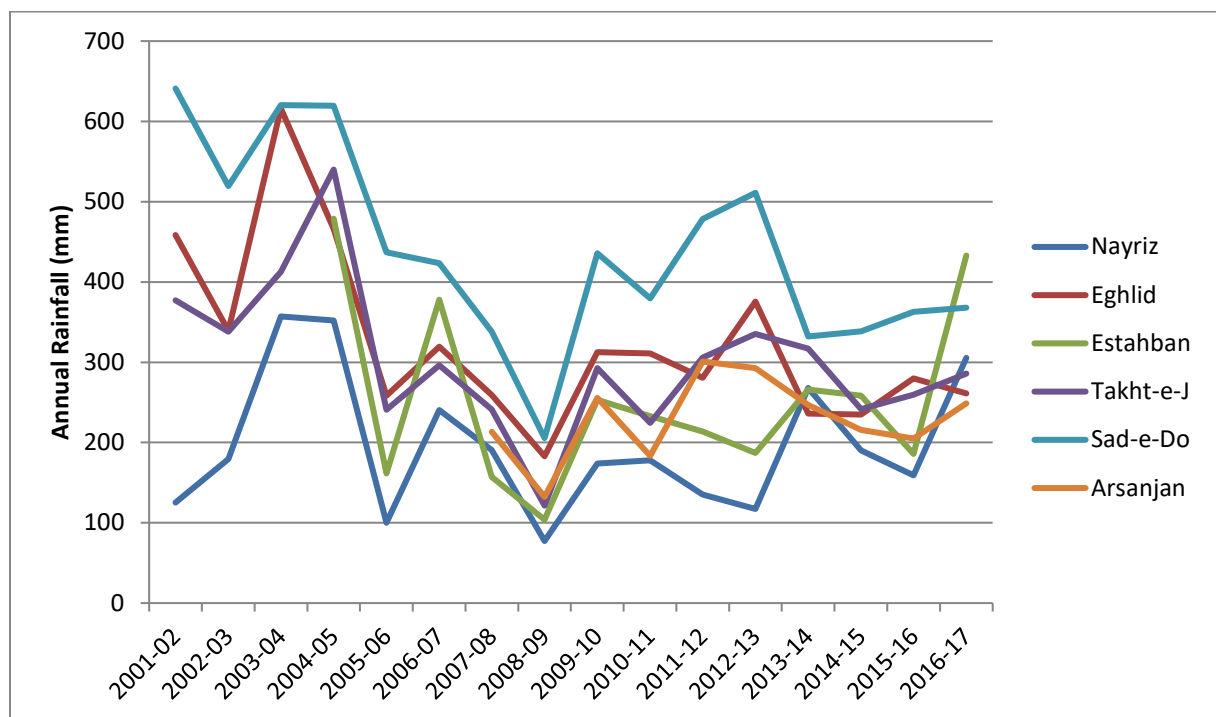


Figure 4: Annual rainfall changes in the Bakhtegan Basin showing a drier than average period since the 2007/08 drought

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).

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

19. A recent analysis of the impacts of climate change on the Bakhtegan wetland²⁹ is somewhat inconclusive. Using 1999-2012 as a baseline period changes out to 2050 were determined using 20 different climate change scenarios. The results demonstrated that "The Bakhtegan wetland is predicted to have an area of 23,600 km² in 2050. 16 climate scenarios estimate an increase of 0.4-72 % and 12 scenarios estimate a decrease of 3.41 % in the area of this wetland for 2050 in compared to its mean area. All scenarios predicted a decrease of 17-61.5 % in the maximum area (i.e. the maximum extent identified from the baseline period) of the Bakhtegan wetland.
20. Another recent study³⁰ 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.
21. 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.
22. 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

²⁹ Sanjerehei, M.M and Rundel, P.W. 2017. The future of Iranian Wetlands under climate change. *Wetlands Ecology and Management*. 22: 257-273.

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

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.

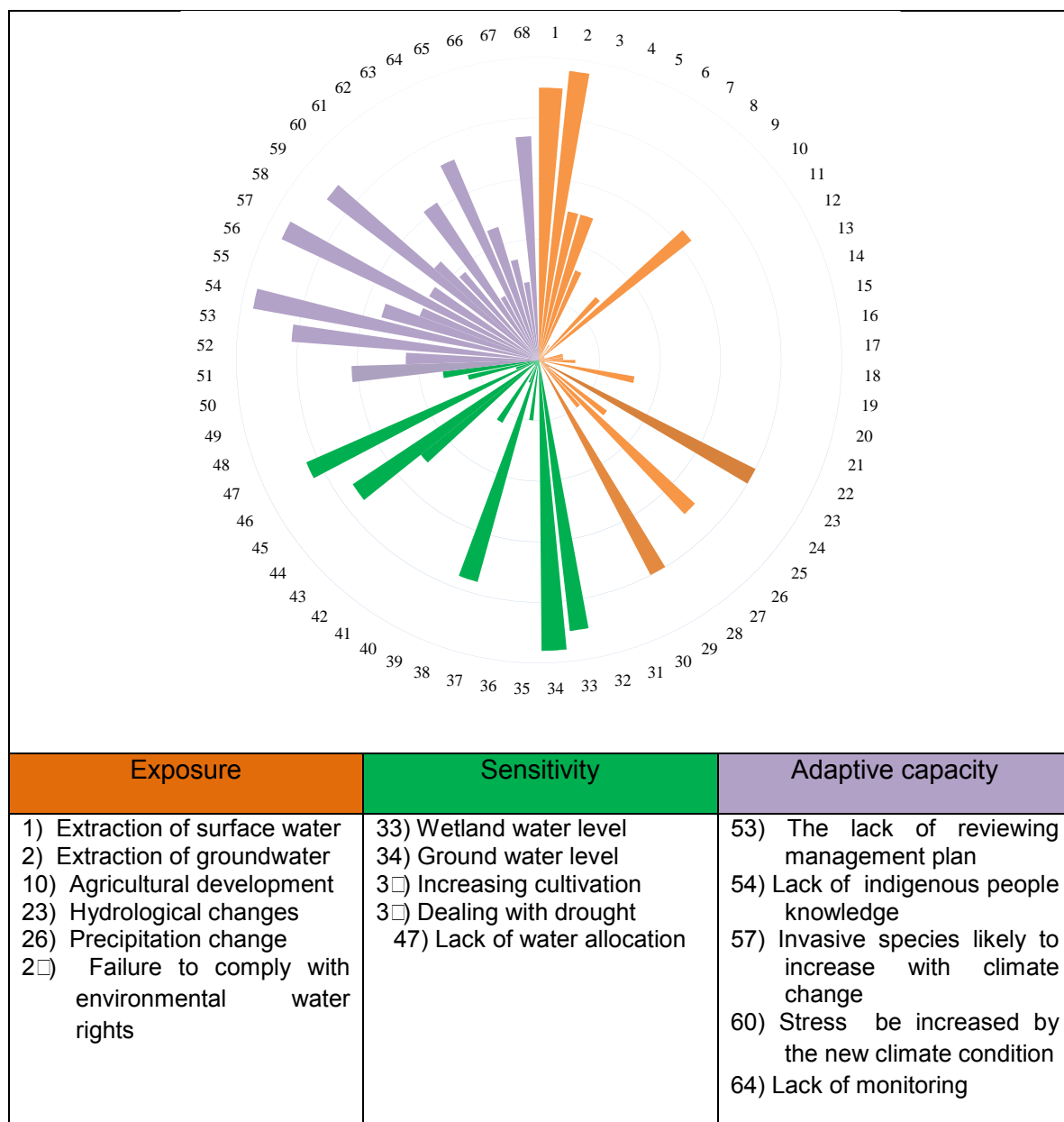


Figure 5: Vulnerability scoping diagram (VSD) for the Bakhtegan Basin, developed through the Conservation of Iranian Wetlands project

Aridification

23. A study³¹ 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 1384 to date in the Bakhtegan basin.
24. The SPI used to measure drought has the following values associated to drought category classification:

Table 1: Standardized Precipitation Index:

Table 4. Annual Standardized Precipitation Index (SPI) $SPI = \frac{p_i - \bar{p}}{sd}$ Classification

| SPI value | Drought Category |
|---------------|------------------|
| ≥ 2 | Extremely Humid |
| 1.5 to 1.99 | Very Humid |
| 1.0 to 1.49 | Moderately Humid |
| 0.5 to 0.99 | Lightly Humid |
| -0.49 to 0.49 | Normal |
| -0.99 to -0.5 | Lightly drought |
| -1.0 to -1.49 | Moderate drought |
| -1.5 to -1.99 | Severe drought |
| ≤ -2 | Extreme drought |

*: p_i : Annual precipitation in each station \bar{p} : Average precipitation in each station
 sd : Standard deviation of precipitation in each station

25. Based on data from 10 weather stations from 1384-2011 and from 7 stations from 2007-2011 in Fars province, the SPI index was calculated as follows:

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.

Table 2. Annual Standardized Precipitation Index (SPI) for 10 station from 1994-2011

| Station Name | Abadeh | Fasa | ..... | Sadedorodzan | Zarghan |
|--------------|--------|-------|-------|--------------|---------|
| 1994 | 0.33 | 0.32 | ..... | 0.44 | 0.45 |
| 1995 | 0.42 | 0.84 | ..... | 0.19 | 0.63 |
| 1996 | -1.06 | -0.79 | ..... | -0.11 | -0.91 |
| | | | | | |
| 2007 | -0.85 | -0.96 | ..... | -0.74 | -0.04 |
| 2008 | -1.16 | -2.03 | ..... | -1.37 | -1.58 |
| 2009 | -0.21 | -0.12 | ..... | -0.34 | -0.56 |
| 2010 | -0.28 | -0.41 | ..... | -0.58 | -0.91 |
| 2011 | -3.46 | -2.81 | ..... | -3.61 | -3.15 |

Table 3. Annual Standardized Precipitation Index (SPI) for 7 stations from 2007-2011.

| Station Name | Arsenjan | Izadkhast | ..... | Neyriz | Noorabad |
|--------------|----------|-----------|-------|--------|----------|
| 2007 | 0.12 | 0.0089 | | 0.27 | 0 |
| 2008 | -0.57 | -0.08 | | -0.84 | -0.39 |
| | | | | | |
| 2011 | -2.22 | -2.33 | ..... | -2.14 | -2.02 |

26. 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.

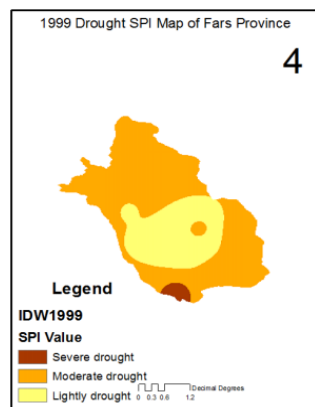


Fig 5. Hazard map of drought vulnerability in 1999.

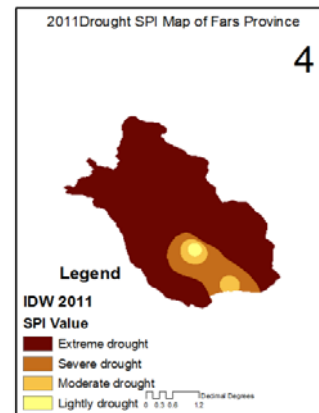


Fig 4: Hazard map of drought vulnerability in 2011

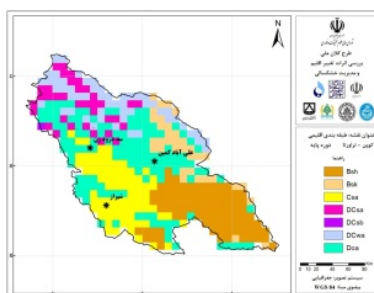
Climate zoning and future aridification trends

27. A study³² 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 the A2, 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).
28. 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:

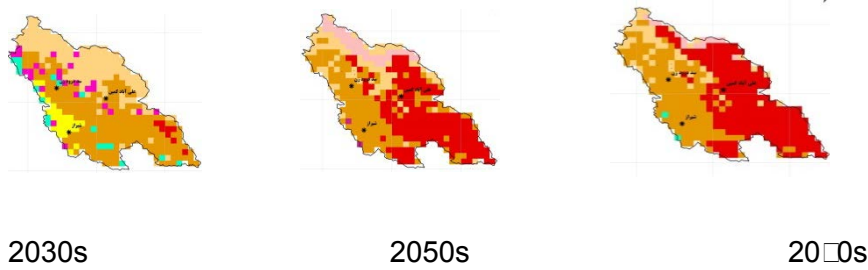
| Climate Type | Current Period | Based on A1B scenario | | |
|---|----------------|-----------------------|-------|-------|
| | | 2030s | 2050s | 2080s |
| Warm semi-arid | 21.7 | 49.9 | 33.3 | 35.7 |
| Cold semi-arid | 8.3 | 31.7 | 17.7 | 11.3 |
| Arid hot | - | 1.9 | 40.4 | 49.4 |
| Arid cold | - | - | 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



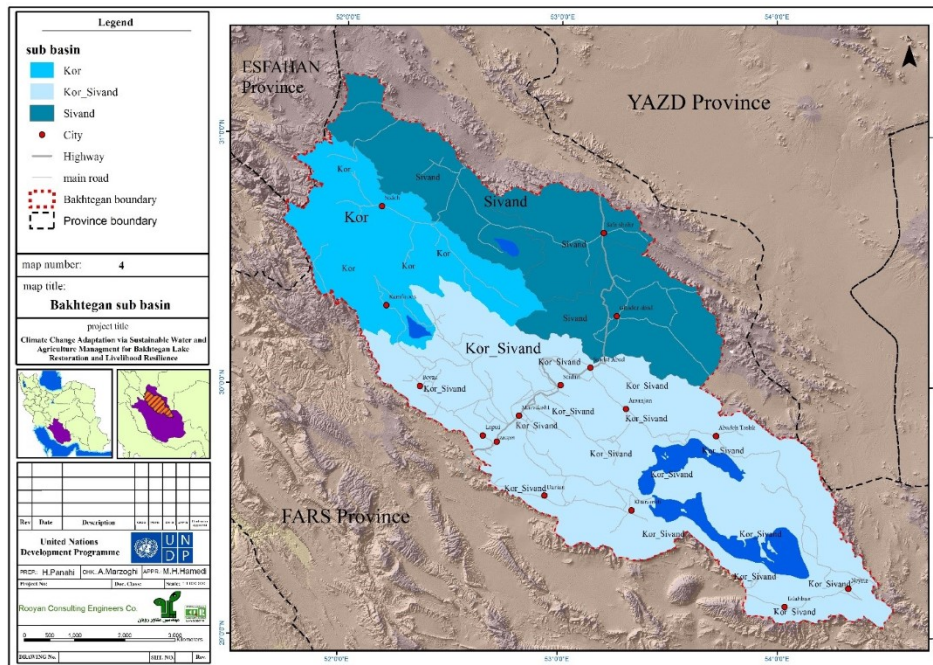
³² Ministry of Energy. Macro-National Plan "Impact of Climate Change and Drought Management". Summary of Pilot Report of Lake Bakhtegan Basin (Detection of Climate Change and Drought Identification). Prepared by Shahid Beheshti University.

Current period (1983 - 2012)



The water situation

29. 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 15,000 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 217046/1000 mg/l. The Kamjan Marshes, located on the west side of Lake Bakhtegan, are a fresh water wetland with an area of 2000 hectares.
30. 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 714 million cubic meters, of which about 414 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, 211 million cubic meters by stream water, and the rest is provided by direct precipitation. Kamjan is fed by rainfall and Kor river flooding.



31. Surface discharge of water had declined over the last decade, based on data from four selected gauges: Tang e Bolaghi, Khsrow shirin, Sad e droudān and Pol e khan (Figure 6). There have been particularly dramatic declines in discharge as measured at Sad e droudān 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.
32. Analysis of monitoring data from throughout the Bakhtegan Basin (Figure 7) demonstrates that irrigated agriculture is the single biggest use of water³³. 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 1961-1994 to 1994-1996, respectively³⁴. 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 666 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.

³³Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Farsi

³⁴Ibid

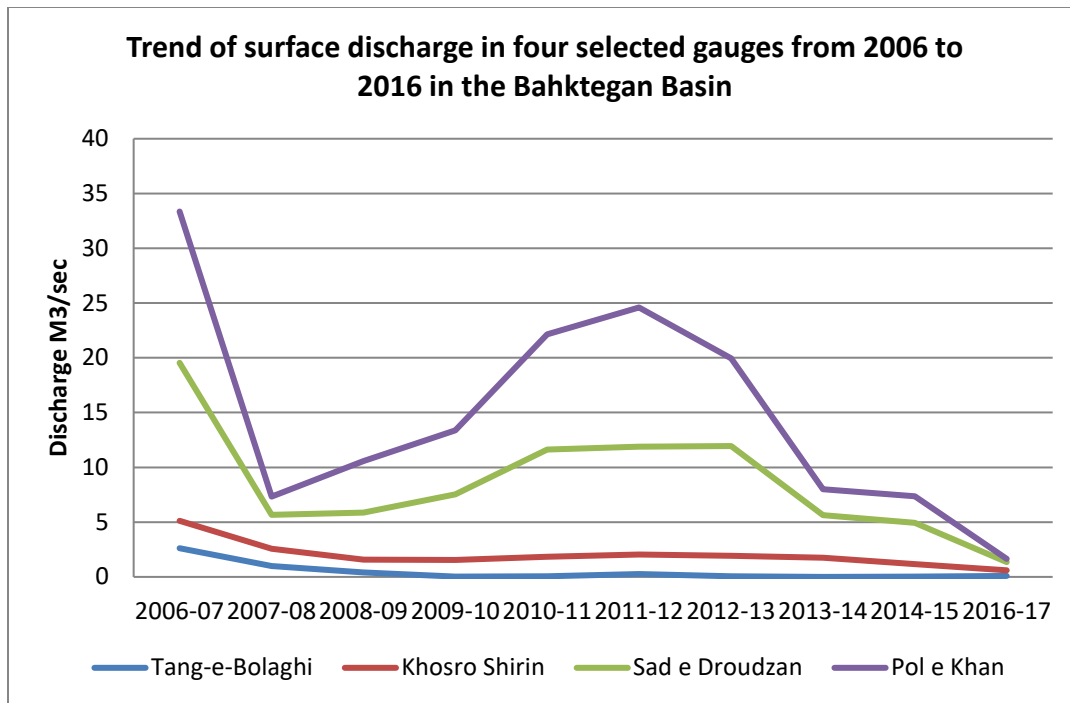


Figure 8: Changes in surface discharge in the Bakhtegan Basin from 2006 to 2016

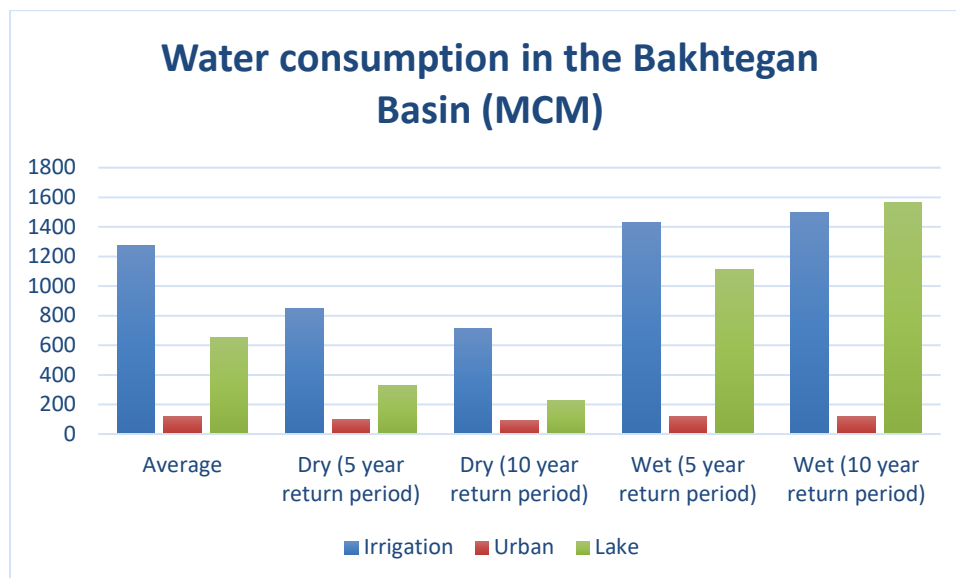


Figure 9: Water consumption in the Bakhtegan Basin based on return periods (recurrence intervals) derived from data for 1965-2006

33. 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 Doroodān 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 Doroodān dam and throughout the middle and lower

parts of the basin. Current agricultural land area is 40,000 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 10), 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.

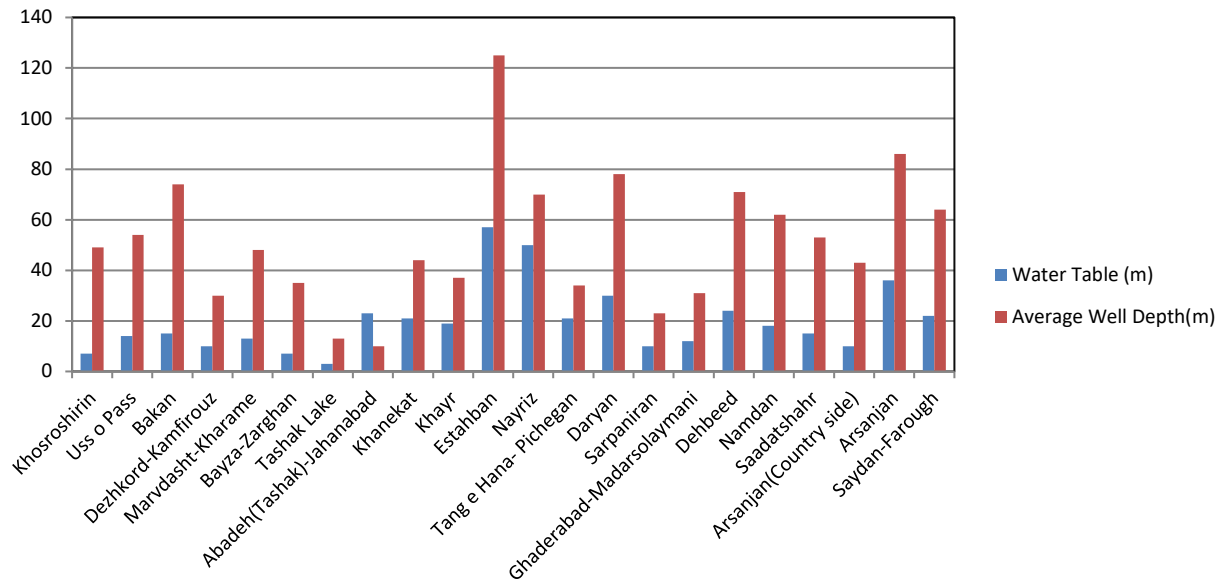


Figure 10: Comparison of average water table and well depths in the Bakhtegan Basin

34. Empirical findings reveal that Lake Bakhtegan lost almost 73 percent of its size from 1973-2013³⁵. 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.
35. 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

³⁵Arsanjani, 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>

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, where new dam projects, which are being designed or constructed, will be reassessed based on hydrological changes, environmental impacts and economic feasibility³⁶.

Agriculture impacts

36. 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 11). 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.



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

³⁶ <https://financialtribune.com/articles/energy/75280/irans-new-energy-minister-vows-action-on-chronic-water-crisis>

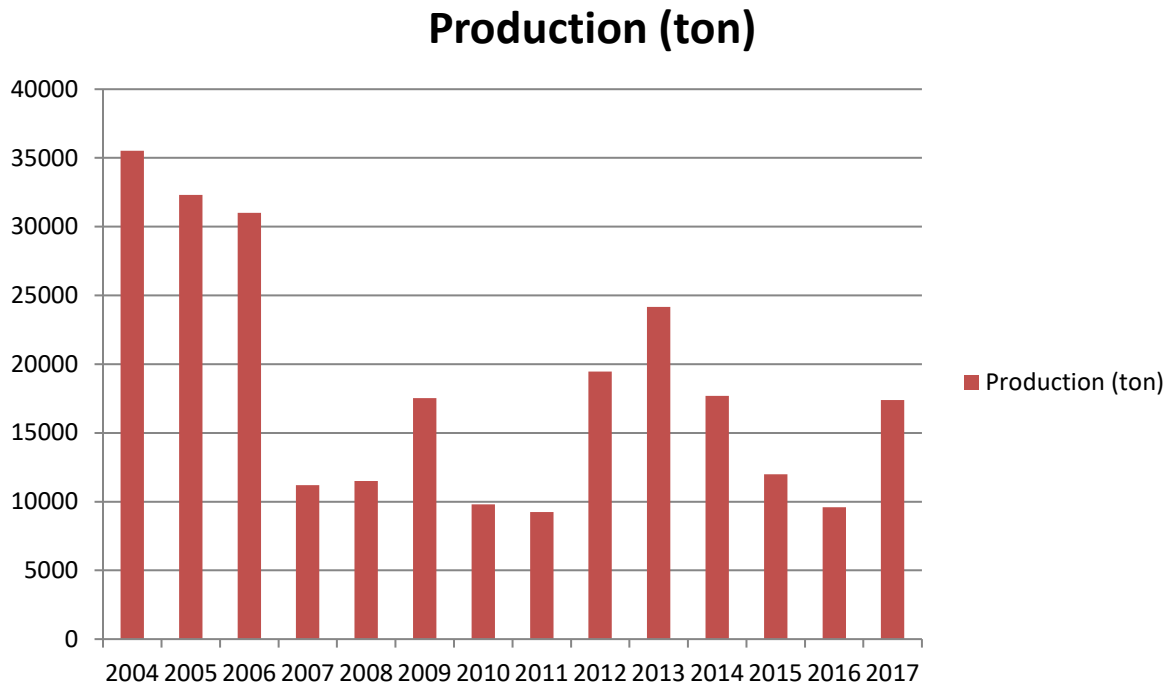


Figure 10: Changes in fig production in the Bakhtegan Basin



Figure 12: Figs on the margins of Lake Bakhtegan are struggling to survive

37. In the upper part of the basin, traditionally gra^{ed} by nomads and now a national protected area (water recharge ^{one}), 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 Dorood^{an} 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 Doroodkan 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.

- 3□ 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.



Figure 13: Encroachment of fruit production into rangeland areas in the upper part of the basin



Figure 14: River terraces, formerly rangelands, converted to irrigated rice production between the Doroodzan and Mulla Sadra dams

Social impacts³⁷

- 3□ 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
40. 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^{3□} made in Sabzevar County, Khorasan Raḡavi Province, in north-eastern Iran provides valuable insights. This study assessed villager responses to 2□ economic variables and 2□ 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,

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.

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.

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

41. 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. 5 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. Lebra 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 Doroudan dam reservoir.
 - A fairly good population of birds has been observed in Kamjan Lake.

The problem and the proposed solution

42. 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.

43. 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 2070s based on A1B scenario) that aridification of the Bakhtegan basin will become more severe with expected drier conditions in the area (See Annex 2).
44. 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 Doroodkan 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.
45. 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.
46. 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.

47. 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:

- 4□ 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:

| 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 | <p>1.1 An integrated model for climate risk and climate change assessment supports medium and long term decision making</p> <p>1.2 A land and water use planning framework is developed and implemented to support decision making</p> <p>1.3 Community engagement, empowerment and ownership in decision making is supported through local community monitoring</p> <p>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</p> | 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 | 1,000,277 |
| 2. The resilience of communities in the Bakhtegan Basin is strengthened through implementation of climate smart agriculture and alternative livelihoods | <p>2.1 Climate smart agriculture practices are adopted in target areas</p> <p>2.2 Alternative livelihoods are adopted by vulnerable households in target villages</p> | Strengthened climate resilience of local communities enables them to sustain and enhance their livelihoods | 3,040,300 |

| | | | |
|--|---|--|-----------|
| 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 | | | 2,3 |
| 6. Total Project/Programme Cost | | | 02,766 |
| 7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) | | | 772,5 |
| Amount of Financing Requested | | | 65,651 |

PROJECTED CALENDAR:

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

| Milestones | Expected Dates |
|---|----------------|
| Start of Project/Programme Implementation | January 201 |
| Mid-term Review (if planned) | July 2021 |
| Project/Programme Closing | February 2023 |
| Terminal Evaluation | December 2022 |

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. 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.

4□ There are four Components to the project:

1. Knowledge of climate risk, climate change and the environment strengthened
2. Sustainable livelihoods supported
3. A resilient natural environment sustained
4. 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.

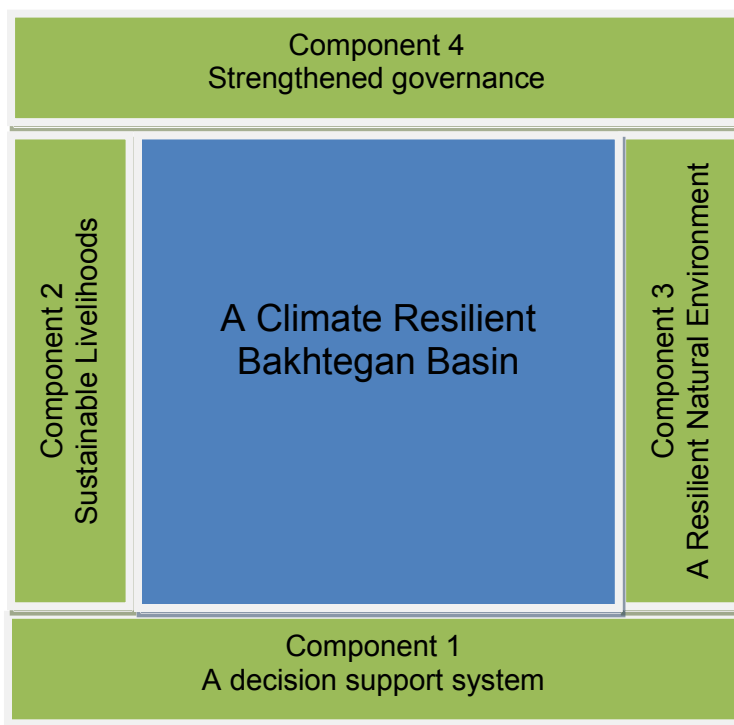


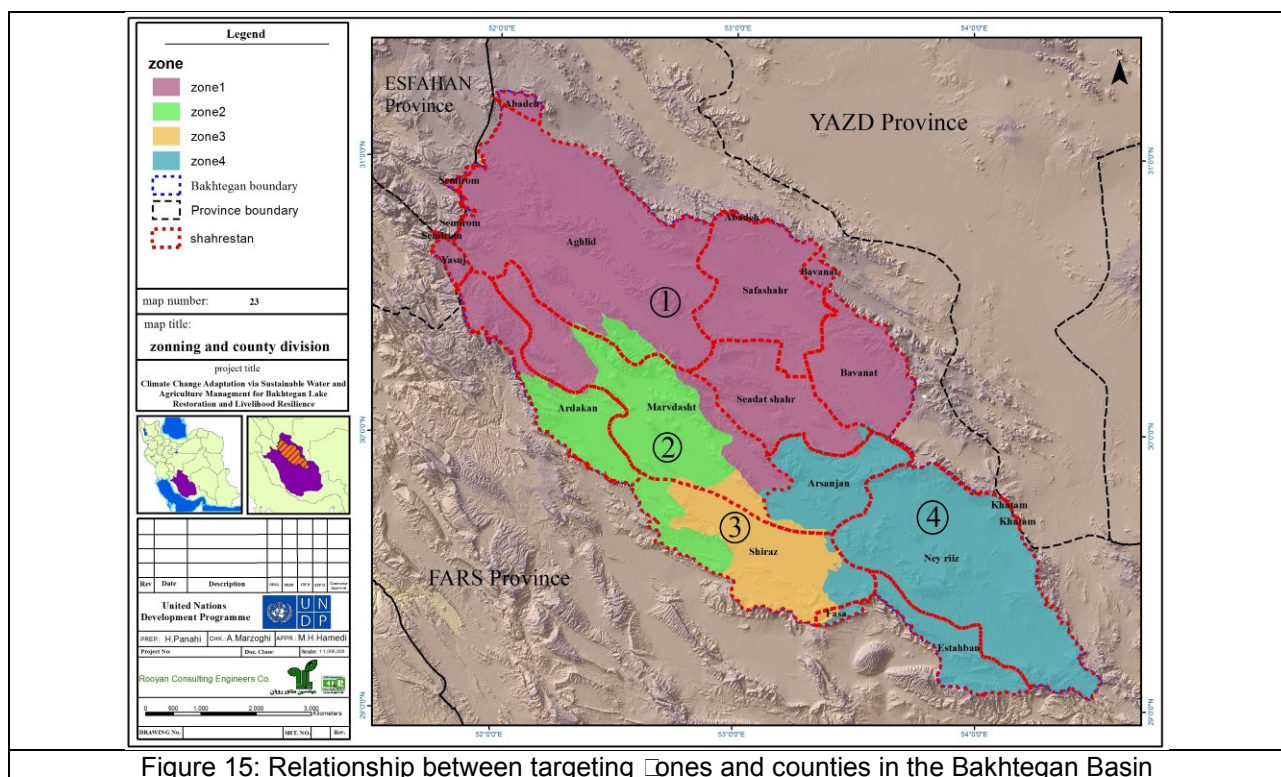
Figure 14: The conceptual structure for the project

Project targeting

50. The biophysical targeting for the project is based on previous work in developing land use planning zones for the Bakhtegan Basin³⁹. 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.



51. 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 Dooodran, 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

³⁹ Rooyan Consulting Co. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*. in Farsi

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.

52. Zone 2 encompasses the counties of Ardakan, most of Marvdasht and part of Shiran. This area is the traditional arable farming area of the basin. With the construction of the Doroodkan 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 Doroodkan 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.
53. Zone 3 includes most of Shiran 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 Shiran. These people are all putting in unregulated water bores to provide domestic water and to irrigate their small olive groves, orchards and gardens.
54. 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 villager⁴⁰ 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.
55. The environmental and socio-economic status of the four zones is summarised 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.

⁴⁰From project development consultations 14-20 November 2017

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

| Zone | Environmental issues | Socio-economic issues |
|------|---|--|
| 1 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Reduced water flow into the Doroodkan dam • Doroodkan dam lake has become an alternative habitat for aquatic birds of the region • Increased water exploitation • Conflicts between farmers and fruit growers | <ul style="list-style-type: none"> • Increased rice farms • Villagers preference to cultivate rice and have fish ponds • Conflict with downstream counties over water |
| 3 | <ul style="list-style-type: none"> • Dried Kor river • Destruction of the habitats of birds, pond turtles and aphanis fishes • Decreased spring flows • Conflicts between livestock farmers and leopards | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 |

56. 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



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.

- 5□ 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 makers□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.
- 5□ 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 (□54,0□3 people, according to the 2016 census).

60. 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.
61. 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.
62. 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.
63. 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.
64. 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.

65. 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.
66. 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.
67. 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 customised 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.

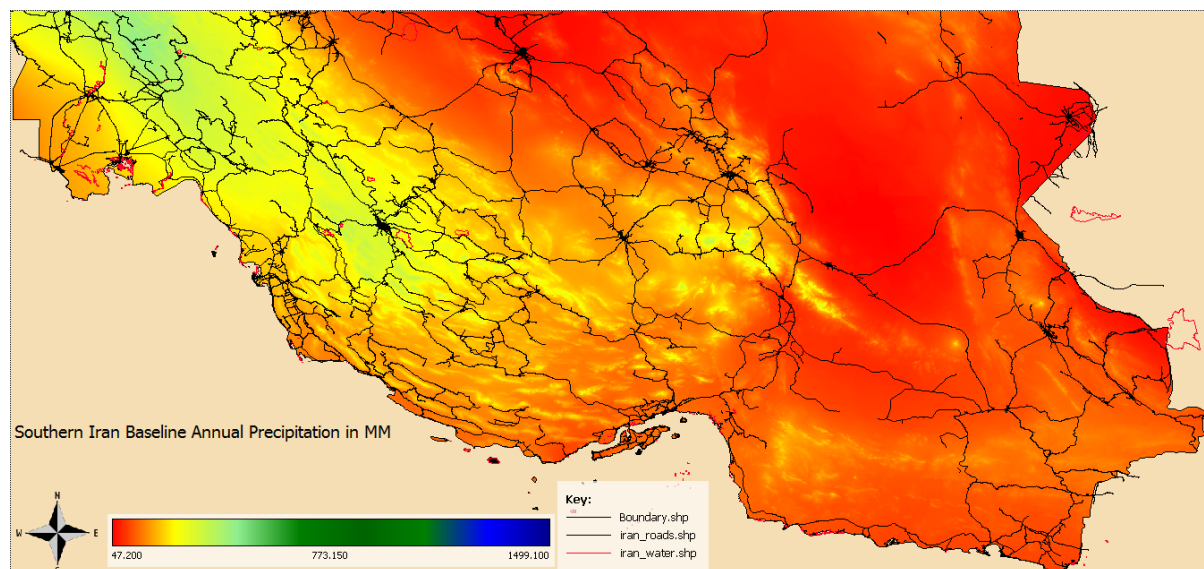


Figure 17: Southern Iran baseline annual precipitation generated using SimCLIM 4.0 for Desktop.

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

- 6 □ 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.

6. 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.
70. 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 desalination 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 □one 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 □ones.
- 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. desalini□ation 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 □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

71. 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 □ones identified for targeting. For example, it is clearly evident to people in □one 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 □one 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 □ones. At the same time people have no means to monitor improvements in their situations and environment and for sharing their success stories with others.
72. 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.

73. 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*

74. 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).

75. 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

76. 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.

77. 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 Shira□ 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.
- 7□ 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.
- 7□ 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.

- 0. Through Component 2, 4425 farmers and fruit and nut growers in 15 villages, and covering 21,□10 ha agriculture and 1,726 ha of horticulture (2.06 percent of arable land and 0.7□ 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 □00 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.
- 1. 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).
- 2. 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.
- 3. 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.

- 4. 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

- 5. 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.
- 6. 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.
- 7. 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.
- . 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.
- . 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 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.

- 0. 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 possible 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 Basin⁴¹, 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 yield⁴². 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.

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/>

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)

- 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 □)
- . 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.
- . 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 synthesise 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 centralised in a database and shared with communities, organisations and government institutions for policy and program discussions.

Selection of Beneficiaries:

- 100. DoE in consultation with other government entities and local stakeholders and NGOs has identified a criterion to be used to identify and prioritise 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.
- 101. The main beneficiaries of the project will be the rural communities in within the target □one1, 2, 3 and 4 as below:

Zone 1

- Emamshade Esmail
- Kordshul

Zone 2

- Aliabad
- Doroodkan

Zone 3

- Bande amir

Zone 4

- Kamjan
- Jamishi
- Jashin
- Jashin
- Khane kat
- Shargh abad

102. The rationale of selection of these communities is included in Annex 4 Targeting of Beneficiaries.

103. 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

104. 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.

105. 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 project⁴³.

106. 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 2130 directly vulnerable rural people, while Output 3.2 will be implemented in seven communities with 74 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.

⁴³Conservation and Sustainable Development Program of Central Zagros Mountains

107. 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 recognise 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.
- 10□ 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.
- 10□ 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.
110. 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
111. 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

112. 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.

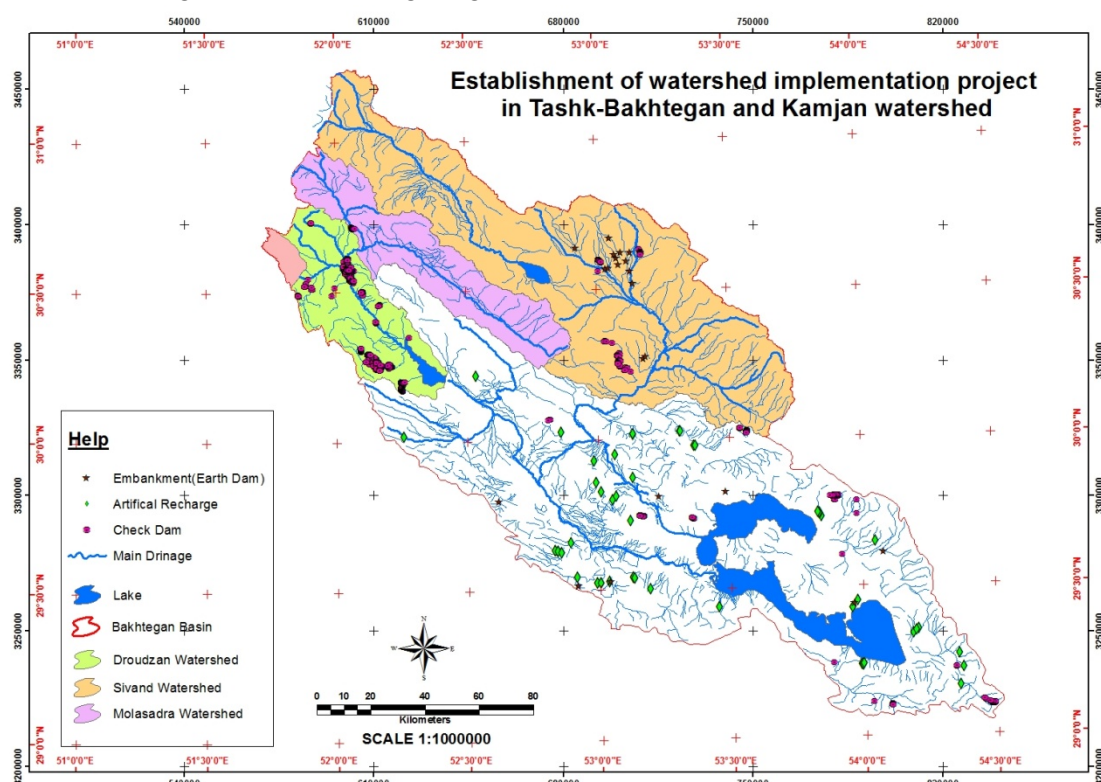


Figure 18: Sites of previously implemented watershed management practices in the Bakhtegan Basin

113. This Output will build on the success of other relevant projects elsewhere in Iran and within the basin (see Figure 1□ above). These projects have involved successful implementation of watershed management practices using participatory approaches in East and West A□rbaijan, Khou□estan, Golestan, Kordistan, Marka□, Isfahan, Booshehr, Sistan and Baloochestan, Hormo□gan, Fars, Ya□d, 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 communities from the Chahmahaki, Temshouli, and Tang-e-hana villages in Bakhtegan1 county and Koushk and JahanAbad villages in Bakhtegan 2 county (□one 4), Bakian, Palangari, Khaniman, Hajiabad, Moradkhani, Chamri□ and Chamchenar villages in Marvdasht and Kamfirou□ (□one 1), Dochahi and Nayris in Nayri□ (□one 4), □ino village in Estahban (□one 4), Bolaghi village in Pasargad (□one1) and Charghalat and Kenare villages in Arsanjan (□one 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.

114. 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.
115. 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 4 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 agro 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 dams⁴⁴ (small earth dams), 2700m³ of check dams⁴⁵, 250ha of rainfall trapping with pitting, groundwater artificial recharge

⁴⁴A dam made of mounded earth and rock.

⁴⁵A check dam is a small, sometimes temporary, dam constructed across a swale, drainage ditch, or waterway to counteract erosion by reducing water flow velocity.

projects⁴⁶, re-vegetation of rangelands and forest areas, contouring⁴⁷ and strip cropping⁴⁸. 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.

116. 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.
117. 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 Marshes⁴⁹ covering an area of 1000 km². The Bakhtegan-Taskh National Park is within this area (see Figure 1), 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 46.7 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.

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.

⁴⁷ Contouring is the tillage practice for planting the plants aligned to terrain contours in the forest and the rangelands.

⁴⁸ Strip cropping is a band arrangement of plants that is mainly used on steep slopes.

⁴⁹The 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>

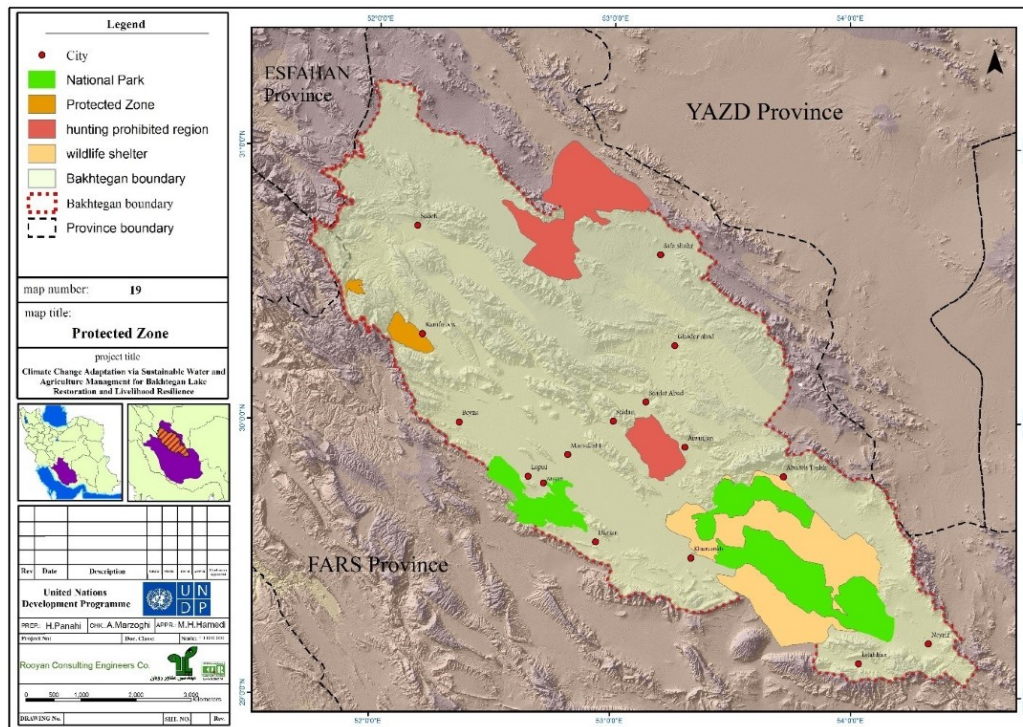


Figure 19: National parks and protected areas in the Bakhtegan Basin

- 11□ 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.
- 11□ 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.
120. 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 communities⁵⁰. 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 3.2 include:

- The activities under this output are result of a participatory approach to develop the Bakhtegan Basin Integrated Management Plan⁵¹ 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

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.

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.

- 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

121. 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.
122. The National Rules of Procedure for Implementation of the UNFCCC and the Kyoto Protocol were approved in 2004 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.

123. 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.
124. 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.
125. 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

126. 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.

127. 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.
128. 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

129. 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.

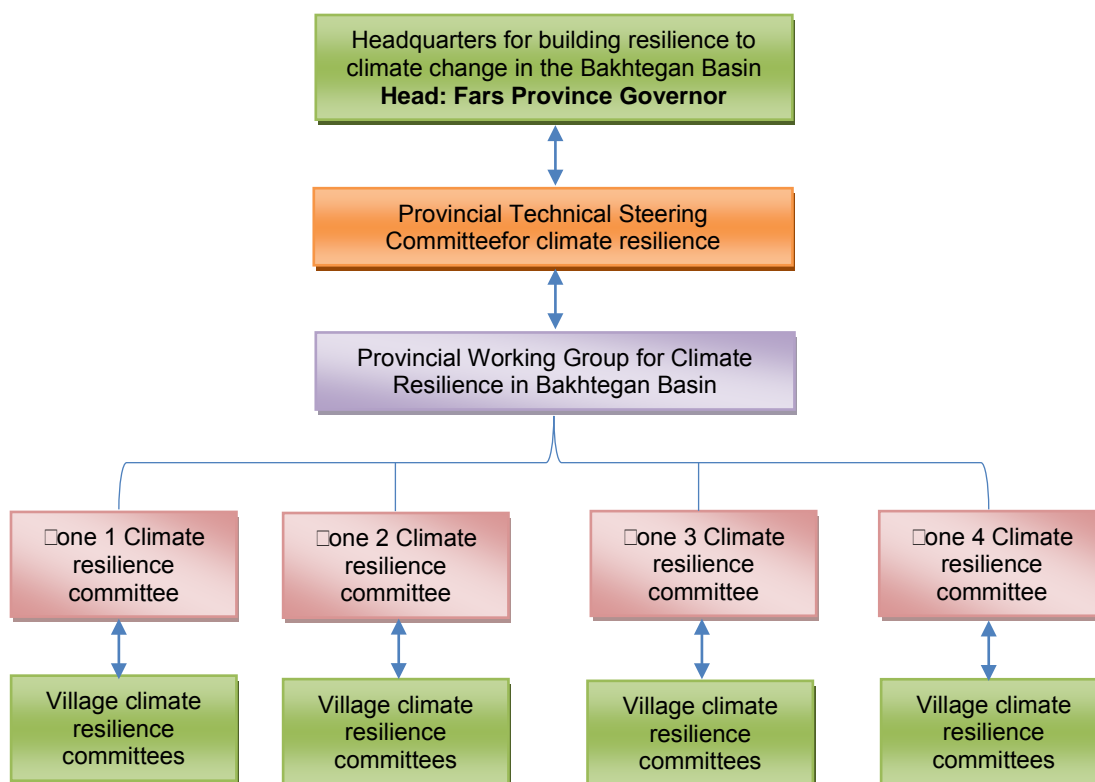


Figure 20: The proposed governance structure for the Bakhtegan Basin

130. 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, Neyri, 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 economy⁵² 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.

B. 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.

131. 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

⁵²The "Resistance Economy" is a concept declared originally by the Supreme Leader of Iran in his August 2012 speech to promote economic self-reliance, a strategy that would defeat the US-led efforts against Iran via economic and trade sanctions. https://en.wikipedia.org/wiki/Resistive_economy

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.

132. 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

133. 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.
134. Within the Bakhtegan Basin the current population of 54,000 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.
135. 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 374705 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.

136. 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.
137. 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.

- 13□ 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

- 13□ 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 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.
140. 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.
141. 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 □ones 1 and 4 where there is encroachment into

rangelands and protection areas, issues with saline water intrusion into groundwater (□one 4 in the vicinity of the Bakhtegan Wetland), and over extraction of surface water (□one 1) and increasing depth of ground water extraction (□one 4).

142. 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.
143. 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

144. 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.
145. 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.
146. 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.
147. 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

- 14□ 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.

14. The project was screened with UNDP's Social and Environmental Screening Procedure (see Annex). 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.
150. 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.
151. 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.
152. The EMSF will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and Go to incorporate changes in the detailed design phase of the projects.
153. 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.

C. Cost-effectiveness

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

154. 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.

155. 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 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.
156. While there has not been any detailed analysis of the socioeconomic consequences of drought at the household level in the Bakhtegan Basin, a recent study⁵⁴ made in Sabzevar County, Khorasan Rāzavi Province, in north-eastern Iran provides valuable insights. This study assessed villager responses to 20 economic variables and 20 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.
157. 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*

⁵³Karamidehkordi, Esmail, 2010. A Country Report: Challenges Facing Iranian Agriculture and Natural Resource Management in the Twenty-First Century. *Human Ecology*, 38: 295-303

⁵⁴Darban-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.

*resources management (NRM) and agricultural and rural development at multiple levels.*⁵⁵

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.

- 15□ 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.
- 15□ 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.
160. 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.
161. 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.

⁵⁵Karamidehkordi, Esmail, 2010. A Country Report: Challenges Facing Iranian Agriculture and Natural Resource Management in the Twenty-First Century. *Human Ecology*, 38: 295-303

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 structure.

162. The project is strongly focused on implementing cost-effective solutions that are of direct and immediate benefit with 5 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.

D. 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.

163. 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.

164. Sixth Development Plan. On 1 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 4 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.

165. 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.

166. 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

167. 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 □□ 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.

16□ Long-term Development Strategies for Iran's Water Resources. The following are relevant strategies from those approved in the Cabinet Council meeting dated October 1□, 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 realise integrated water resources management, various economic, social, infrastructural and service sectors must be coordinated with the water sector.
- The utilisation of Iran's water resources in each basin must be planned in such a way that the volume of the utilised underground water does not exceed the present utilised volume considering their tolerance. Therefore, structural and nonstructural actions must be taken to meet people's new demands to the extent that the utilised 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 □2 percent to □7 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.

16. 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."*

170. 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):

1. Pro-poor enhancement of productivity for better food security, nutrition and livelihood of vulnerable groups in rural and urban areas□
2. Enhanced sustainable management and development of natural resources, climate change mitigation and adaptation to its impact, and disaster risk management□and
3. 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.*”

171. 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:

1. Identification and control of the factors contributing to desertification□
2. Support for the sustainable use and management of natural resources through conservation and reclamation□
3. Promotion of sustainable livelihoods in affected areas through job creation, income generation and the improvement of socioeconomic standards□
4. 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.

172. 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 1□ 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.

E. 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:

173. The project is compliant with the legislation, technical/implementation system under the Technical and Implementation System Bureau⁵⁶ (TISB), and associated national standards, under the Institute of Standards □ Industrial Research of Iran (ISIRI)⁵⁷, the Water Industrial Standard⁵⁸ (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.

174. 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.

175. 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, 1□, 1□74 and updated November, 1□, 1□□2. 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

⁵⁶<http://isiri.gov.ir/portal/home/?331765/ISIRI-Portal>

⁵⁷<http://sama.mporg.ir/sites/publish/SitePages/Home.aspx>

⁵⁸<http://www.waterstandard.wrm.ir/>

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.

176. Land and Coastal Law (Approved 20/07/1375) 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.
177. The law of water fair distribution (Approved 07/03/1390) 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.
178. 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.
179. 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.

100. The basic idea of establishing ISIRI emerged upon the approval of "The Law of Weights and Measures" in 1325. Following the approval of the bill to establish ISIRI in 1360, 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.

101. 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 1381, 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.

102. 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 (1388) | Water and Environmental |
| Guideline for Environmental Impact Assessment (EIA) on water and sewage projects | WIS (1388) | Water and Environmental |
| Guideline for studying the big dams reservoirs | WIS (2011) | Water and Environmental |
| Guideline for monitoring surface water | WIS (2008) | 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 (1394 - 1396) | Water Resources Management |
| Term of References for Sub-surface water studies | WIS (2001) | Water Resources Management |
| Guideline for water sampling | WIS (1394) | 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 | C&M ⁵⁹ (2015) | Environment Impact Assessment |
| The Guideline of Sustainable Agriculture | C&MP (2015) | Sustainable Agriculture |
| The Guideline on Sustainable Tourism | C&MP (2015) | Sustainable Tourism |
| The Guideline on Sustainable Use of Forests | C&MP (2015) | Sustainable Use of Forests |
| The Guideline on Sustainable Use of Rangelands | C&MP (2014) | Sustainable Use of Rangelands |
| The Guideline on Sustainable Use of Water Resources | C&MP (2014) | Sustainable Use of Water Resources |
| The Guideline on the Effluent Management in the Rural Areas | C&MP (2013) | Effluent Management in the Rural Areas |
| The Guideline on the Solid Waste Management of the Rural Area | C&MP (2013) | Solid Waste Management in the Rural Area |
| The Guideline on Sustainable Aquaculture | C&MP (2013) | Sustainable Aquaculture |

13. 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.

F. Chances of Duplication

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

14. 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.

⁵⁹ These guidelines have resulted from the Central Zagros Mountain Project (CZMP)

- 1□5. 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.
- 1□6. 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.
- 1□7. 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, 70 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 (3 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 Kamfiroo Free Zone Deh Damche village in 400 hectares (Agros 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 15 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)
- 50 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 Kor River banks by bio structure technique (5.5 km, by Agros 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 11 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.

1. 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.

1. 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 Chaharmahal and Bakhtiari, 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 water users in the provinces to foster confidence among the water users, and 3) to develop the agenda for the stakeholder meetings.

- 1-1. 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 Taqeh 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.

1 □2. 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 (□ 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 conservation and 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 | Removal of barriers to Integrated Natural Resources Management (INRM) by developing and strengthening institutional | Kermanshah □ Sistan and Baluchistan □ Tehran □ Yazd □ | Closed | Climate change adaptation and | Inter-sectoral coordination and cooperation mechanisms established and strengthened at the provincial and local levels to facilitate sustainable rural development |

| | | | | | |
|--|--|--|---------|---|---|
| Resource Management | knowledge, capacity and coordination, and by demonstrating and up-scaling successful sustainable land and water management practices | North Khorasan□ Semnan□ Karoon watershed | | mitigation | |
| 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, Qazvin 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 Qazvin, Kordestan, East Azerbaijan, 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 | Golestan Province | Closed | Climate Change Adaptation □ Sustainable Agriculture | In this project, "Participatory Water Management System" was to be promoted in Taleh Abad irrigation area, one of 40 irrigation areas in Golestan Province. |

| | | | | | |
|---|--|----------------|--------|---|---|
| | the staff in JAO of Golestan Province as well as strengthening of structure in JAO of Golestan Province for extension of the model. | | | | |
| 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. |

G. Learning and Knowledge Management

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

- 1□3. 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.
- 1□4. 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.
- 1□5. 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 □ones as well as between communities across the four □ones. 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.
- 1□6. 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.

H. 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□7. 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.
- 1□□ 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.
- 1□□ 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.
200. Following the national level consultations in Tehran the project team travelled to Shira□ the capital of Fars Province. In Shira□ 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.

201. 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.
202. 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 Kharama, 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.
203. 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.
204. In the upper part of the basin, above Doroodan Dam, the project team were also hosted for a day by the governor of Kamfirouh 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).



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

205. 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.
206. 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) | <p>Cross-departmental committee overseeing development of the AF proposal on behalf of the Iranian Government</p> <p>Provided conceptual and technical guidance an input to the project development process</p> | <p>Identified the Bakhtegan Basin as the project location</p> <p>Project scope and management arrangements</p> <p>Feedback and comments on the project proposal</p> | 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 |
| Kharama County Government and community representatives | Responsible for local decision making in relation to land and water resources management Coordination between different County authorities and assisted with the workshops | Provided information of the issues being experienced in Kharama County, actions that are already being taken and what additional support is required | Components 2 and 3 |
| Estahban County | Responsible for local | Provided information | Components 2 and 3 |

| | | | |
|---|--|--|--------------------|
| Government and community representatives | <p>decision making in relation to land and water resources management</p> <p>Coordination between different County authorities and assisted with the workshops</p> | of the issues being experienced in Estahban County, actions that are already being taken and what additional support is required | |
| Marvdasht County Government and community representatives | <p>Responsible for local decision making in relation to land and water resources management</p> <p>Coordination between different County authorities and assisted with the workshops</p> | 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 |

I. 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)

207. 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.

- 20□ 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 in 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.
- 20□ A comprehensive report on land and water resources was published in 2007⁶⁰, 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 Bakhtegan Basin.
210. 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.
211. 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)

212. 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

⁶⁰Rooyan Consulting. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*", in Persian.

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)

213. 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 □one 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. □ones 2 and 3, in particular □one 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. □one 4 is the worst affected by the activities in □ones 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 □one 4 in particular are suffering and most have limited capacity to explore, develop and implement alternatives.
214. 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.

215. 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.
216. 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.
217. 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)

- 21" 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.

- 21□ 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)

220. 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.
221. 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 10 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.

222. 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)

223. 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.
224. 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)

225. 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 (□one 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)

226. 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.

J. Sustainability of the project/programme outcomes

Institutional sustainability

227. A defining feature of this project is the multi-agency collaboration between MOE, DOE and MOJA. These three government agencies have individually and collectively recognised 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.

228. 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.

- 22□ 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

230. 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 customi□ation of a widely used climate change scenario generator and risk assessment tool for Iran as a whole and specifically for the Bakhtegan Basin. Customi□ation 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).
231. 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

232. 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.
233. 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

234. 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 summarised 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 addiction 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.
235. 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.

236. 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

237. 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.
238. 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.
239. 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.

K. Overview of the environmental and social impacts and risks identified and relevant to the project / programme.

240. 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 □) 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 |
|---|---|---|
| <i>Compliance with the Law</i> | | X |
| <i>Access and Equity</i> | | X |
| <i>Marginalized and Vulnerable Groups</i> | | X |
| <i>Human Rights</i> | X | |
| <i>Women's Empowerment</i> | | X |
| <i>Core Labour Rights</i> | X | |
| <i>Indigenous Peoples</i> | X | |
| <i>Involuntary Resettlement</i> | X | |
| <i>Protection of Natural Habitats</i> | X | |
| <i>Conservation of Biological Diversity</i> | X | |
| <i>Climate Change</i> | X | |
| <i>Pollution Prevention and Resource Efficiency</i> | | X |
| <i>Public Health</i> | X | |
| <i>Physical and Cultural Heritage</i> | X | |
| <i>Lands and Soil Conservation</i> | | X |

Compliance with the Law

241. 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 1374 | 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 1375. | These Regulations were adopted in accordance with article 21 of the Environmental protection Law. The text is divided into 4 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 organizations are also included in this text. |
| Environmental Protection and Enhancement Act (1374):. | Identifies four categories of protected natural areas: national parks, wildlife refuges, protected areas, and national nature monument |
| National Law of Conservation, 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 2004 | 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 | This By-Law consists of 4 Chapters and 3 Annexes making provisions for the improved |

| | |
|---|--|
| improved utilization of water in agriculture 1□6 | 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 200□ | 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 1□6□ | 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 1□6□ | 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 1□74 | 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 200□ | 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 1□□2 | 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

242. 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.

243. 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 marginali□ed, 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

244. A risk has been identified considering that affected stakeholders, in particular marginali□ed 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. Marginali□ed groups in the project area of Bakhtegan Basin can be considered poor and vulnerable population, land and water resource issues.

245. 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 organi□ations/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 marginali□ed 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 marginali□ed 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

246. 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.
247. The project will directly benefit an estimated 766 households, 100 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.
248. 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

249. 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.
250. 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.
251. 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.
252. 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

253. 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.
254. 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

255. 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.
256. 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

257. Involuntary resettlements are not foreseen within the project.

Protection of Natural Habitats

- 25□ 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 □oning in order to reduce productive expansion into particularly critical sensitive areas.

Conservation of Biological Diversity

- 25□ 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.
260. 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.

- 261. 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.
- 262. 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.
- 263. 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

- 264. 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.
- 265. 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

- 266. 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.
- 267. 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

- 26□ 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

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

Lands and Soil Conservation

270. 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.
271. 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

A. Adequacy of Project Management Arrangements

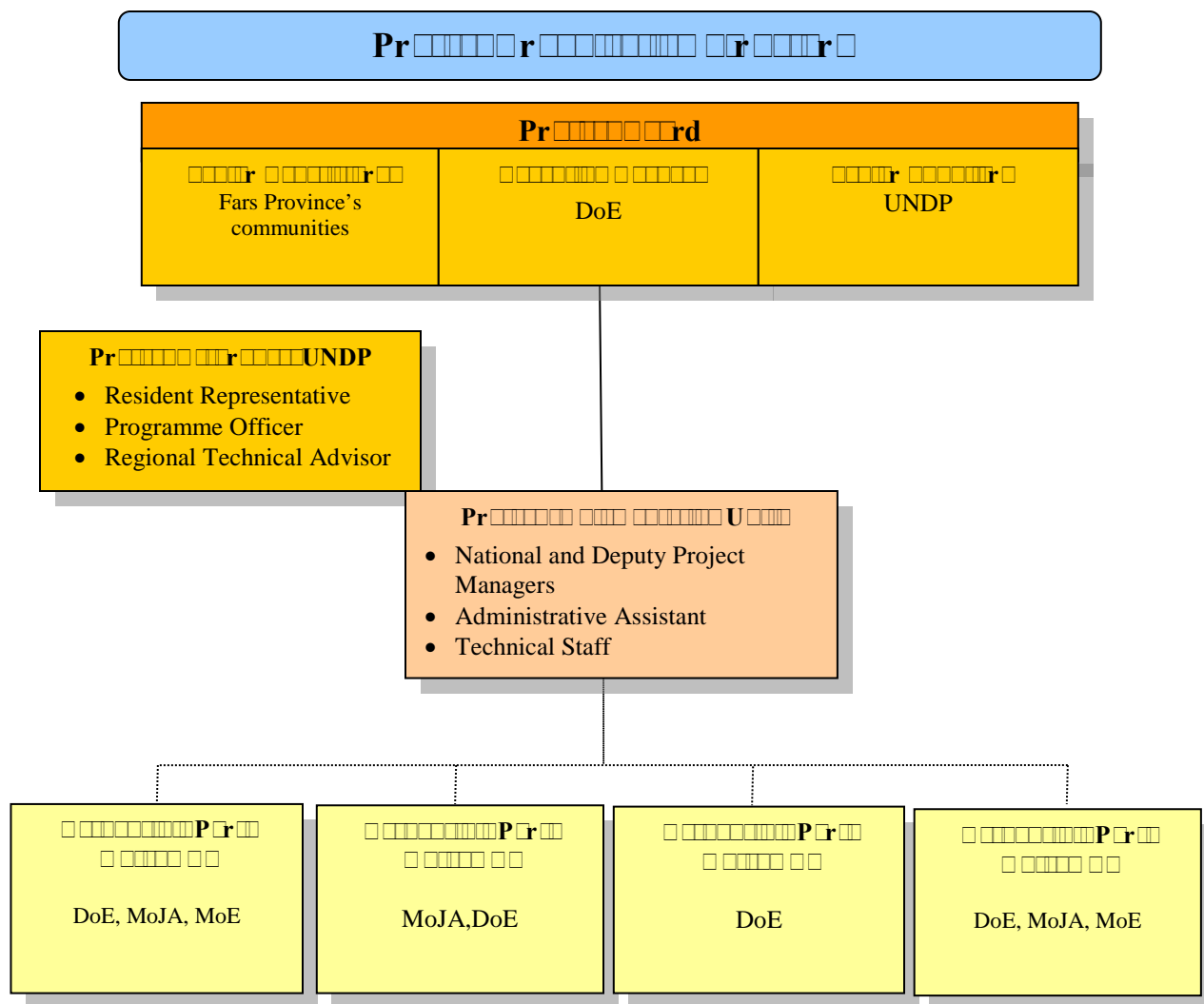
272. The Government of the Islamic Republic of Iran will execute the project with the support of the UNDP under the National Implementation Modality (NIM). The Department of the Environment (DOE) will be the Executing Entity responsible for ensuring that the objectives and components of the project are 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.
273. 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 programme⁶¹.

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

274. 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.
275. 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.
276. 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.
277. **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.

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.

- 27□ **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.
- 27□ **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.
- 2□0. 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 recognise 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.



B. 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 | <p>-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.</p> <p>-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.</p> |
| 2 | Institutional | Coordinated efforts with DoE, MoE and MoJA | Low | -Project Board (Steering Committee) will be structured to have representatives from national ministries and their counterparts from Fars Province to foster coordination. |

| | | | | |
|---|-------------|---|--------|--|
| | | in Tehran and in Fars Province might create delays during project implementations. | | <p>-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.</p> <p>-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).</p> |
| 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. | | <p>-Project activities have been designed and paced to ensure a reasonable chance of completion after the timeframe of the project.</p> <p>-UNDP and MoE/MoJA/DoE will provide permanent support for the mobilization of funds, contracting, monitoring, and financial reporting.</p> <p>-UNDP will provide specific technical assistance and management support to each agency based on the results of such assessments.</p> |
| 5 | Financial | Gov of Iran is not able to leverage sufficient financial resources for the sustainability of project actions. | Medium | <p>-A financial sustainability strategy for the early warning system will be developed beginning in Year 3 of project implementation.</p> <p>-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.</p> <p>-UNDP will provide support to the GoI in securing and mobilizing climate change-related financing.</p> |
| 6 | Political | Continued anthropogenic degradation in the Bakhtegan Basin, as a result of deforestation and conventional irrigation practices. | Medium | <p>-Project activities will be aligned to national and provincial initiatives currently addressing deforestation and water-intensive irrigation practices.</p> <p>-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.</p> <p>-Specific activities were designed to directly and indirectly address anthropogenic degradation while generating food security and generation of income in target communities.</p> |

2.1. 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.

C. Measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

- 2□2. 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.
- 2□3. 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.
- 2□4. 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.

D. Monitoring and Evaluation arrangements in compliance with the ESP and the Gender Policy of the Adaptation Fund, including budgeted M&E plan.

- 2□5. The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

Project start:

- 2□6. 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□7. The Inception Workshop should address a number of key issues including:
 - a) 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.
 - b) 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.
 - c) 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.

- d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- e) 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 formalise various agreements and plans decided during the meeting.

Quarterly:

2. 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 capitalisation 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:

2. 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 7 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
- Adaptation Fund results tracker

Periodic Monitoring through site visits:

- 2□0. 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

- 2□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 \(ERC\)](#).

End of Project:

- 2□2. 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□3. 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 \(ERC\)](#).
- 2□4. 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

- 2□5. The audit would be performed under the UNDP financial regulations and rules applicable to audit policies on UNDP projects.

Learning and knowledge sharing:

- 2□6. Results from the project will be disseminated within and beyond the project intervention □one through existing information sharing networks and forums.
- 2□7. 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, analy□e, and share lessons learned that might be beneficial in the design and implementation of similar future projects.
- 2□□. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Communications and visibility requirements:

- 2□□. 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>.
300. 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\$ <i>Excluding project team staff time</i> | Time frame |
|---|--|---|--|
| Inception Workshop and Report | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 <i>output and implementation</i> | <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Project manager and team UNDP CO UNDP RTA UNDP EEG | None | Annually, after inception workshop |
| Periodic status/ | <ul style="list-style-type: none"> Project manager and team | None | Quarterly |

| Type of M&E activity | Responsible Parties | Budget US\$ <i>Excluding project team staff time</i> | Time frame |
|--|---|---|--|
| progress reports | | | |
| Mid-term External Evaluation | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Project manager and team UNDP CO local consultant | 0 | At least three months before the end of the project |
| Audit | <ul style="list-style-type: none"> UNDP CO Project manager and team | Indicative cost per year: 3,000 | Yearly |
| Visits to field sites | <ul style="list-style-type: none"> 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\$ 5,000 (5% of total budget) | |

E. 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 54,03 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 - 1 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 | 1.1 Number of climate change scenarios developed to assess 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) | 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 |

| | | | | | |
|-----------------|--|---|---|--|--|
| Bakhtegan basin | | | projection under the optimistic climate change scenario, i.e. RCP 2.6□2) projection under the pessimistic climate change scenario, RCP □.5□3) projection under a mid-range scenario.) | | 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. |
| | 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 summarised 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) | Effective information for improved decision making relating to land use and water resources management is being used. |
| | 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,□21farmers are involved in the monitoring system. | - Field reports - Climate-related databases - Project reports: annual reports□mid-term and final evaluations | |

| | | | | | |
|--|---|--|---|--|---|
| | <p>1.4 Number of operational decisions support systems incorporating a customized GIS platform and development of the information portal system (TIPS)</p> <p>1.5 Number of local and provincial plans that incorporate adaptation to climate change considerations based on the decision support system.</p> | <p>There is currently no system in place for collating and sharing relevant climate change impact, risk and vulnerability data and information</p> | <p>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)</p> <p>Five (5) plans that incorporate considerations for adaptation to climate change: Fars Province, Zone 1, Zone 2, Zone 3 and Zone 4 Plans</p> | <p>TIPS web page</p> <p>Number of visits to the TIPS web page</p> <p>Use of TIPS data and information in revised plans for the Bakhtegan Basin</p> | |
| <p>Outcome 2</p> <p>The environmental, social and economic resilience of the Bakhtegan Basin is strengthened through implementation of sustainable agro-ecological practices and alternative livelihoods</p> | <p>2.1 Number of farmers with climate smart agriculture practices.</p> <p>2.2 Area (ha) of farmland with climate resilient agriculture practices</p> | <p>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.</p> <p>There is no active research of climate smart agricultural systems for the Bakhtegan Basin.</p> <p>In the 11 target villages farmers are currently adapting autonomously with the following practices:</p> <ul style="list-style-type: none"> Growing saffron (7 | <p>4,425 farmers and gardeners from the 15 target villages will be practicing climate smart agriculture</p> <p>21,010 hectares of cropping land will be converted to climate smart production systems</p> <p>1,726 hectares of horticultural land will be converted to climate smart production systems</p> | <p>- A published report on the market potential, including value chain analysis, of different climate smart agriculture crops, practices and systems</p> <p>- A published report on results from action research on climate smart agriculture</p> <p>- Project monitoring, including community based monitoring (Output 1.3)</p> <p>- Measured</p> | <p>The market research will be successful in identifying economically viable climate smart crops, practices and systems</p> <p>Participating farmers and farmers more widely will be willing to adopt and sustain climate smart agriculture and reduce their water consumption</p> <p>Participating households and women will be willing to adopt and sustain alternative livelihoods</p> |

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| | | <p>ha in 1 village), safflower (1 village) and other crops (4 villages)</p> <ul style="list-style-type: none"> • Reducing water consumption (3 villages) • Using natural fertilisers (1 village) <p>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 Kamfiro districts (3 villages)</p> | | <p>reductions in water use of at least 30 percent with participating farmers</p> <p>- Field reports</p> | |
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| | 2.3 Number of households practicing alternative livelihoods | <p>In the □ target villages for Output 2.2 (2 in □one 1, 2 in □one 2, 1 in □one 3, 4 in □one 4) there are currently 36□ households practicing alternative livelihoods and 1□3 women receiving support from the Rural Women's Trust Fund.</p> <p>Details of the current alternative livelihood practices of each target village are provided in Annex 4.</p> | <p>In the □ target villages for Output 2.2 there will be 766 households practicing alternative livelihoods and □00 women by receiving small-grants support.</p> <p>Most of the beneficiaries will be in the four □one 4 villages where a total of 50□ households will be practicing alternative livelihoods and 540 women by receiving small-grants support.</p> | <p>- Project monitoring</p> <p>- Project reports</p> | |
| <p>Outcome 3</p> <p>The resilience of the natural environment of the Bakhtegan Basin is strengthened</p> | 3.1 Area (ha/M ³) of rangeland and forest with soil and water conservation practices implemented. | <p>The following measures have been implemented more widely in the Bakhtegan Basin over the last 1□ years:</p> <p>-22 embankments</p> <p>-1,712 masonry check dams</p> <p>61 groundwater artificial recharge projects</p> <p>106,700 ha revegetated</p> <p>65,000 ha with livestock excluded</p> | <p>Check dams: 2,700 M³</p> <p>Embankments 70,000 M³</p> <p>Concrete coating 50 M³</p> <p>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 □one 1 and 4.</p> <p>-250 ha will be covered by the rainfall trapping with pitting.</p> | <p>-Contractor reports</p> <p>-Project reports</p> | <p>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</p> <p>The rehabilitation work in national parks, protected areas and hunting prohibited areas will provide measurable benefits to the environment and wildlife</p> |

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| | | | <p>-Participatory forest rehabilitation by seeding and development of medicinal herbal plantation in degraded rangelands about 300 ha.</p> <p>-Participatory combat desertification in one 4 about 400 ha.</p> | | |
| | 3.2 Area (ha) of wetlands rehabilitated. | <p>The Bakhtegan Integrated Management Plan has been developed with a participatory approach but not yet implemented.</p> <p>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 cultivation planting 50 ha with seedlings in Neyri County</p> <p>Kamjan Marshes: local people acted independently to divert water from the arable lands drainage system into the Kamjan Marshes,</p> | <p>30,000 ha will be rehabilitated in target area (Kamjam, Tashk and Bakhtegan) through the following activities:</p> <ul style="list-style-type: none"> - 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. | <p>Project monitoring</p> <p>Contractor reports</p> <p>Project reports</p> | |
| | 3.3 Area (ha) of protected areas being monitored and rehabilitated. | | <p>At least 70% of the total ha of target protected areas will be monitored through</p> | | |

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| | | <p>and after some tension are now working cooperatively with local DOE staff to improve their local environment</p> <p>Bakhtegan National Park: The Bakhtegan Wetland has been completely dry for the last decade with significant impacts on migrant birds</p> <p>Bamou National Park: Environmental degradation of the national park fauna and flora resulted from drought</p> <p>Margoun waterfall protected area: Drought threats on the waterfall and the landscape</p> <p>Tang-e-Bostank protected area: endangering the wild life and endangered biodiversity due to drought</p> <p>Basiran hunting prohibited area: Lack of the artificial watering and feeding during the dry periods facilities/ accommodations system</p> <p>KouhSiah-e-Arsanjan hunting prohibited area: Lack of the artificial watering and feeding during the dry periods facilities/accommodations system</p> | <p>the following:</p> <ul style="list-style-type: none"> -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 <p>20 artificial watering built in targeted PAs</p> <p>-In Bakhtegan and Bamous National Parks, wildlife habitats activities implemented in the dryland section.</p> | | |
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| <p>Outcome 4</p> <p>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.</p> | <p>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).</p> | <p>Zero</p> | <p>Participatory communication, education, public awareness (CEPA) plan is developed and implemented by the following:</p> <ul style="list-style-type: none"> -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). | <ul style="list-style-type: none"> - 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 | <p>Communities throughout the Bakhtegan Basin will be more informed about the situation in the basin, its underlying causes and the impacts of climate change.</p> <p>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.</p> <p>The spatial plan for the Bakhtegan Basin will be widely adopted and implemented.</p> <p>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</p> |
| | <p>4.2 An integrated, multi-sectoral, spatial plan for the Bakhtegan Basin that fully considers climate change risks and needs for building resilience developed.</p> | <p>Water and environmental issues, including the restoration of wetlands, are identified as national priorities in the Sixth Development Plan.</p> <p>The draft National Strategic Plan on Climate Change identifies the need to:</p> <ul style="list-style-type: none"> -Establish and improve climate smart agriculture to combat the negative effects of climate change and develop sectoral | <p>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</p> | <ul style="list-style-type: none"> -A published spatial plan for the Bakhtegan Basin -Monitoring of project activities to ensure their alignment with the plan | |

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| | | 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 | | | |
| | 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 | |

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

| Project Objective(s) ⁶² | 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. | □,0□2,766 |
| Project Outcome(s) | Project Outcome Indicator(s) | Fund Output | Fund Output Indicator | Grant Amount (USD) |
| Outcome 1: A data and information | 1.5 Number of local and provincial plans that incorporate adaptation to | Output 7: Improved integration of climate-resilience | 7.1. No., type, and sector of | 1,0□0,277 |

⁶² The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

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| management system for decision support and communications is developed and implemented to support development of long-term climate resilience in the Bakhtegan basin. | climate change considerations based on the decision support system. | strategies into country development plans. | policies introduced or adjusted to address climate change risks. | |
| 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. | 3,04□,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 |

G. Detailed budget with budget note

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|--|---|---------|------------|------------------------------|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------|-------------|
| Award ID: | TBA | | | | | Project ID: | | TBA | | | | |
| Award Title: | Iran AF PIMS 6100: 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. | 6100 | | | | | | | | | | | |
| 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 | 50,000 | 300,000 | 1 |
| | | | | 71400 | Contractual Services - Individuals | 7,050 | 0,175 | 0,500 | 0,025 | 0,150 | 42,500 | 2 |
| | | | | 71600 | Travel | 4,000 | 3,000 | 3,000 | 2,500 | 3,550 | 16,050 | 3 |
| | | | | 72100 | Contractual services - Companies | 25,000 | 0,750 | 110,750 | 110,750 | 0,007 | 436,337 | 4 |
| | | | | 72200 | Equipment and furniture | 0,000 | 50,000 | 20,000 | 20,000 | 0,500 | 100,500 | 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 | DoE | 62040 | AF | 71200 | International consultants | 30,000 | 0,000 | 0,000 | 75,000 | 40,500 | 305,500 | 0 |
| | | | | 71300 | Local consultants | 20,000 | 12,000 | 0,000 | 7,000 | 3,000 | 50,000 | 0 |
| | | | | 71400 | Contractual Services - Individuals | 23,050 | 25,175 | 26,500 | 27,025 | 20,150 | 132,500 | 10 |
| | | | | 71600 | Travel | 10,000 | 10,000 | 0,000 | 7,000 | 5,760 | 40,760 | 11 |

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| agriculture and alternative livelihoods | | | | 72100 | Contractual services - Companies | 147,000 | 2□5,000 | 2□5,000 | 2□5,000 | 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 | □50,000 | 14 |
| | | | | 74500 | Miscellaneous Expenses | □,560 | □,560 | □,560 | □,560 | □,560 | 47,□00 | 15 |
| | | | | 75700 | Training, Workshops and Conferences | 5□,000 | 4□,000 | 24,000 | 1□,000 | 34,000 | 1□5,000 | 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,□54 | 323,□54 | 17 |
| | | | | 71400 | Contractual Services - Individuals | 23,□50 | 25,175 | 26,500 | 27,□25 | 2□,150 | 132,500 | 1□ |
| | | | | 72100 | Contractual services - Companies | 467,000 | 5□2,000 | 703,000 | 526,000 | 307,361 | 2,5□5,361 | 1□ |
| | | | | 72200 | Equipment and furniture | 77,500 | 127,500 | 67,500 | 17,500 | 10,000 | 300,000 | 20 |
| | | | | 74500 | Miscellaneous Expenses | □,000 | □,000 | □,000 | □,000 | □,000 | 40,000 | 21 |
| | | | | 75700 | Training, Workshops and Conferences | 60,000 | 50,000 | 30,000 | 15,000 | 25,□15 | 1□0,□15 | 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 | □,000 | 12,000 | 13,000 | □,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,□50 | □,175 | □,500 | □,□25 | □,150 | 42,500 | 25 |
| | | | | 74200 | Audiovisual □ Print Production Costs | 10,000 | 12,000 | 15,000 | 10,000 | 15,□50 | 62,□50 | 26 |
| | | | | 74500 | Miscellaneous Expenses | 2,100 | 2,100 | 2,100 | 2,100 | 2,100 | 10,500 | 27 |
| | | | | 75700 | Training, Workshops and | 35,□74 | 50,474 | 50,474 | 50,474 | 50,474 | 237,□70 | 2□ |

| | | | | Conferences | | | | | | | | |
|-----------------------|-----|-------|----|---------------------|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| | | | | 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 | 2□ |
| | | | | 71300 | Local consultants | - | - | □,000 | - | □,000 | 1□,000 | 30 |
| | | | | 71400 | Contractual Services - Individuals | 51,100 | 53,300 | 55,500 | 57,700 | 5□,□00 | 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 | 2□,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 |
| | | | | 72□00 | IT Equipment | □,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 | 3□ |
| | | | | 74200 | Audiovisual □ Print Production Costs | 4,□00 | 4,□00 | 4,□00 | 4,□00 | 4,□00 | 24,000 | 3□ |
| | | | | 74500 | Miscellaneous Expenses | 250 | 250 | 250 | 250 | 250 | 1,250 | 40 |
| | | | | 64300 | Service to Project - CO staff | 50,06□ | 50,06□ | 50,06□ | 50,06□ | 50,06□ | 250,347 | 41 |
| | | | | 74500 | Service to Project - GOE | 21,45□ | 21,45□ | 21,45□ | 21,45□ | 21,45□ | 107,2□2 | |
| | | | | 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 |
| | | | 6,000 | 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 |
| | | | 0,500 | 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 | 23,060 | Contract for international experts to conduct training in the use of SimCLIM |
| | | Contractual services - Companies | 30,500 | 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 |

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| | | 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 | 100,500 | 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 | | | | |
| □ | 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) |
| | | | 0,000 | 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 |
| □ | 71300 | Local consultants | 50,000 | Contract with local consultant for training of facilitators |
| 10 | 71400 | Contractual Services - Individuals | 0,500 | 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 |

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|----|-------|----------------------------------|---------|--|
| | | | 0,000 | 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 |
| | | | 0,000 | 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 |
| | | | 00,070 | 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 one, 1, 2, 3 and 4. |
| | | | 60,500 | 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 | 50,000 | Implementation of alternative livelihoods plans in one, 1, 2, 3 and 4.(i.e. sewing, carpet weaving, dried fruit processing, traditional aviculture, and dairy products, etc.) |
| 15 | 74500 | Miscellaneous Expenses | 47,000 | 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 |
| | | | 5,000 | 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 | 54 | Contract with national consulting companies to develop analysis at the target sub-basins based on IWM approach |
| | | | 0,000 | Cost of monitoring Output 3.1 activities in target watersheds |
| | | | 155,000 | Develop and implement a climate resilience action plan for the key species |
| 10 | 71400 | Contractual Services - Individuals | 500 | National Project Manager (NPM) -10% of contract charges to Output 3 |
| | | | 13,000 | Communication expert -20% of contract charges to Output 3 |
| | | | 0,000 | 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 |
| 10 | 72100 | Contractual services - Companies | 356,000 | Contracting to design and construct embankment dams and check-dams in target sub-basins |
| | | | 22,760 | 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 agro forest area |
| | | | 25,500 | Vegetation rehabilitation to combat desertification |

| | | | | |
|--|-------|-------------------------------------|---------|---|
| | | | 225,000 | Ecosystem monitoring in target areas |
| | | | 1□5,000 | 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 |
| | | | 37□,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 | 13,6□ | 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 | 5□,375 | Participatory workshops and meetings to define the scope of IWM results □ measures to be undertaken |
| | | | 4□,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 | International 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 | 7,000 | 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 | 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 | 62,500 | 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 | 15,170 | Cost of public awareness campaigns which includes training video, publications, brochures, posters, TV programs |
| | | | 5,000 | 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 | 1,000 | 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 | 72□00 | 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 | 357,63□23 | Financial and administrative services provided by UNDP (DPC) |
| | 74500 | Service to Project - GOE | | |

H. 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-1□ | Jan-1□ | Jan-20 | Jan-21 | Jan-22 | Jan-23 | |
| Project Funds | | 1,452,652 | 2,112,□02 | 2,172,402 | 1,□75,402 | 1,47□,40□ | 9,092,766 |
| Implementing Entity Fee | 30□,154 | 74,0□5 | 107,75□ | 110,7□3 | □5,645 | 75,450 | 772,885 |
| Total | 30□,154 | 1,526,737 | 2,220,660 | 2,2□3,1□5 | 1,□71,047 | 1,554,□5□ | 9,865,651 |

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government⁶³ *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:*

| | |
|---|--|
| <i>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</i> | <i>Date: August 2nd, 2018</i> |
|---|--|

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*

| |
|---|
| <p>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, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p> |
| |

⁶³ 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.

| | |
|--|--|
| <i>Adriana Dinu</i> <i>Director, Sustainable Development (Environment) a.i.</i> <i>Executive Coordinator, Global Environmental Finance</i> <i>Bureau for Policy and Programme Support</i> <i>United Nations Development Programme</i> Implementing Entity Coordinator | |
| Date: August 4 th , 2018 | Tel. and email: 212 06 5143 adriana.dinu@undp.org |
| Project Contact Person: Reis Lope Rello | |
| Tel. And Email: 662304 100 ext.52 6 reis.lope@undp.org | |



ADAPTATION FUND



ANNEXES DOSSIER:

**REDUCING VULNERABILITY TO CLIMATE CHANGE IN THE LAKE
BAKHTEGAN BASIN.**

ANNEXES

| | |
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ANNEX 1 - CURRENT CONTEXT IN THE BAKHTEGAN BASIN

Climate

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 13□1mm recorded at Abadeh to □53.6mm recorded at Choubkhale. Precipitation is distributed unevenly through the year with 24.5 percent in autumn, 5□3 percent in winter, 16.□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 □7.□ billion cubic meters¹. Temperatures vary seasonally and with altitude throughout the Bakhtegan Basin. A lowest absolute minimum temperature of -2□□C has been recorded at Kafer. Average minimum temperatures of 6.6□C, 11.5□C and 7.7□C have been observed at Abadeh, Dorood□an and □arghan Dam stations respectively with average maximum temperatures of 22.1□C, 23.□□C and 24.6□C recorded at the same sites. A daily maximum of 4□□C has been recorded at Kafer station in July.

Physical characteristics²

According to elevation maps of the Bakhtegan Basin the most elevated areas (higher than 3400 masl) are located in the □agros Mountains in the north and north-western parts of the basin, occupying 0.1 percent of the total basin area. The areas of lowest elevation (less than 1□00 masl) occupy 2□5 percent of the basin and occupy the western and southern parts of the basin, including most of the Kor and Sivan sub-basin areas. The remainder of the basin is divided into four elevation classes ranging from 1□00 to 3400 masl. 3□ percent of the Kor and Sivand sub-basins are located in mountainous terrain which makes up about 11 percent of the Bakhtegan Basin. Sloping land (greater than 5 degrees) in the mountainous area in the north and north-west makes up approximately 50 percent of the basin. Most of the remainder of the basin is made up of different types of plains areas. These plains areas consist of the upper plateaus and terraces which make up about 13 percent, the flat plains which make up 6 percent and river sediment plains which make up 7 percent. Funnel drainage forms make up about 4 percent, with the other landforms covering about 4 percent. In general, about 75 percent of the basin is made up of lands with a slope of less than 12 degrees and the rest are steep slopes and the Bakhtegan and Tashk lakes.

Table 1: Percentage land area of different slope classes in the Bakhtegan Basin

| Slope class | Percentage land area |
|-----------------|----------------------|
| □12 degrees | 21.7 |
| 5-12 degrees | 32.1 |
| 2-5 degrees | 17.1 |
| 0-2 degrees | 24.2 |
| 0 degree (lake) | 4.□ |

¹ Ibid

² Ibid

Assessments of current land use and land use capability³ indicate the need for adjustments in land use that are more in keeping with the potential of the land. Based on this information a total of 44.63 percent of the land area of the Bakhtegan Basin is identified as suitable for forestry and soil conservation measures. To achieve this potential would require a reduction of the current rangeland and irrigated land areas. The rangeland area would need to be reduced from the current 1,03,450 hectares (30.7 percent of the land area) to 44,335 hectares (31 percent of the land area). In contrast to the current irrigated land area of 50,064 hectares (21.3 percent of the land area), 15.1 percent and 3.0 percent of the basin is considered suitable for irrigated and rain-fed agriculture respectively. To achieve this would require removing 6.2 percent of the currently irrigated land area from irrigation and incorporating 2.3 percent of the current irrigated area into soil conservation land. The current total wetland area in the basin is about 13,014 hectares, with Tashk and Bakhtegan lakes covering a combined area of 5,424 hectares (Figure 1). According to the land use capability assessment about 135,700 ha (4.0 percent of the area) is saline and flood plains with high restriction on use due to salinity and alkalinity.

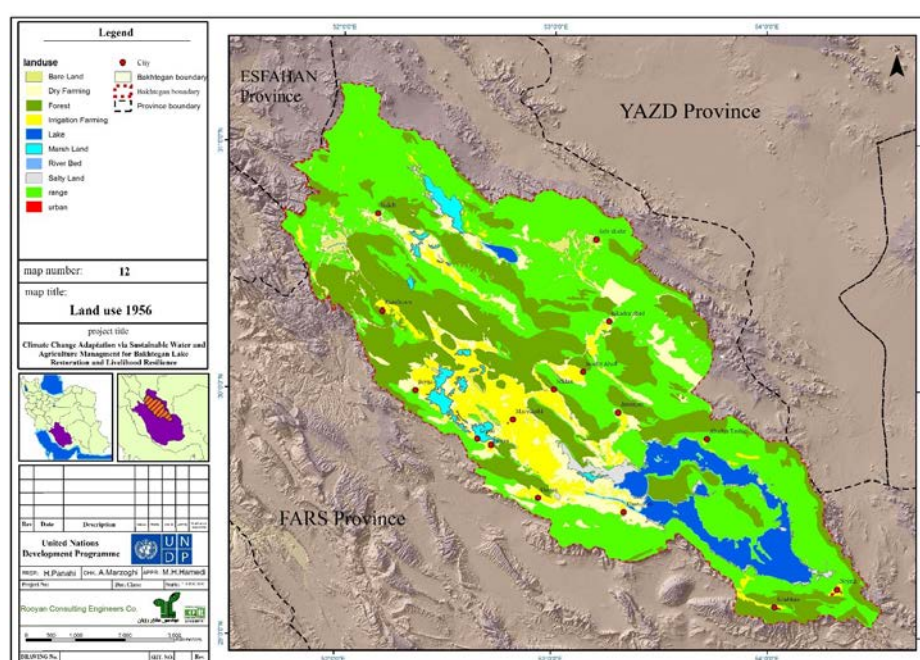


Figure 1: Land use distribution in the Bakhtegan Basin

The BLB is divided into the Kor and Sivand sub-basins (Figure 2) which form the main catchment area for the Kor-Sivand sub-basin where Lake Bakhtegan is located. These sub-basins are further divided into 22 hydrologic units from which annual surface water discharge data have been collected from 1974-2007 (Figure 3). The annual water yield in the Kor sub-basin ranges from a low of about 42.7 million cubic meters (MCM) recorded from the Manjan gauge in the Tang-e-Bostanek river to 1144 MCM recorded at the Pol-e-Khan gauge in the Kor river. The minimum and maximum coefficient of variation is about 35.3 percent and 60.2 percent in the White river at the Dehkadehsefid gauge and in Sivand river at the Dashtebal gauge respectively in the Sivand sub-basin. There are high seasonal variations in water discharge in both the Kor and Sivand sub-basins, with the highest discharges in winter and spring and the lowest in summer and autumn. Comparison of annual discharge from the Kor river at Pol-e-khan over two timeframes (1973-2006 and 1997-2006) shows a deficit of 167 MCM (1,144 MCM compared to 977 MCM) since 1997. This is attributable to increased water storage in the Doroodan dam network and additional storage and distribution upstream of the dam.

³ibid

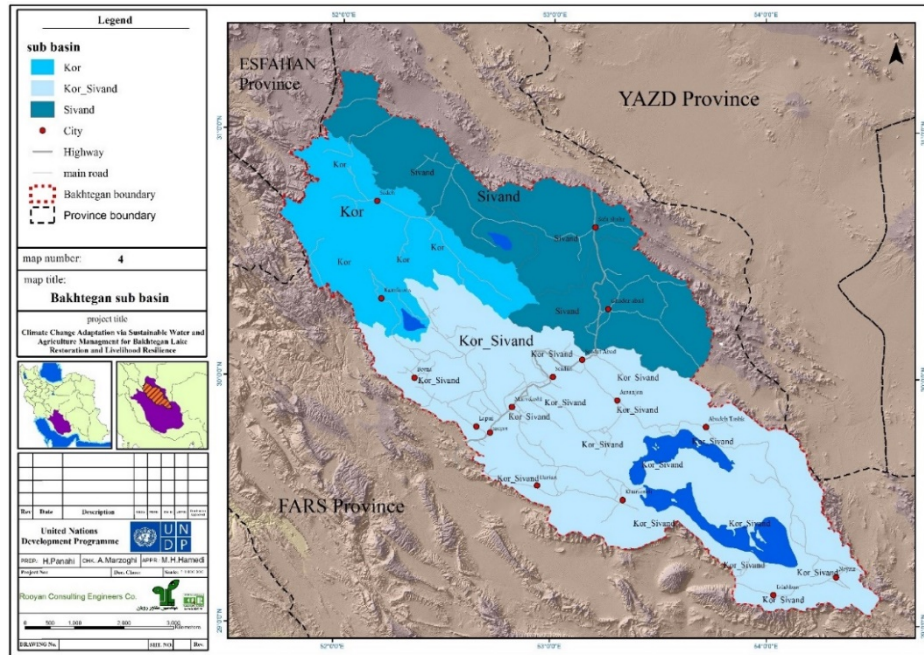


Figure 2: The main sub-basins in the Bakhtegan Basin

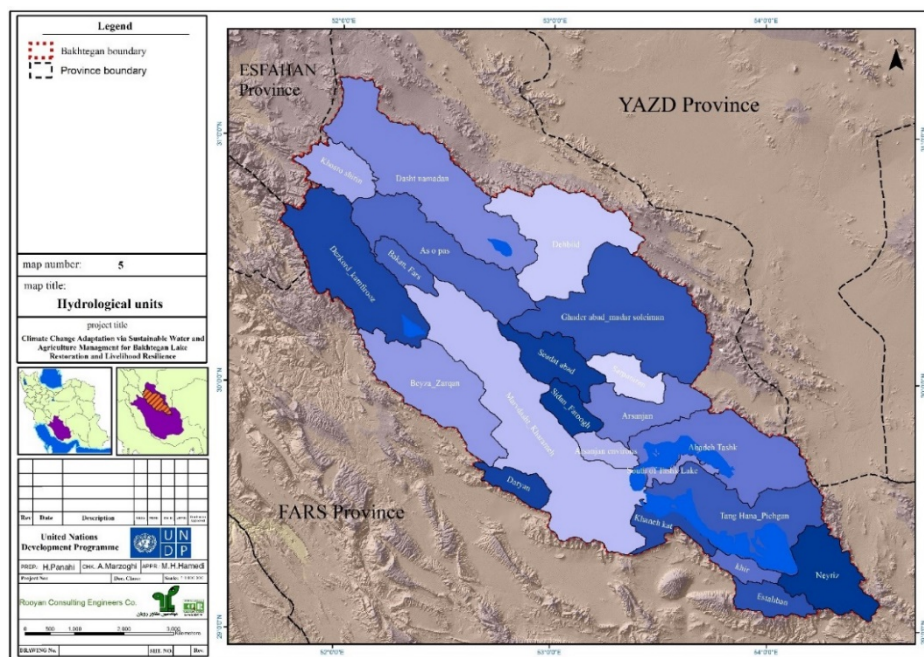


Figure 3: Hydrological units in the Bakhtegan Basin

The socio-economic situation

The Bakhtegan Basin includes parts of the provinces of Fars, Isfahan and Kohgiluyeh-o-Boyer Ahmad. It covers 14 districts, 31 sub-districts, 67 rural districts and also 717 settlements (recorded in 2006)⁴. These are made up of 16 urban and 701 rural settlements. Urban settlements include the towns of Marvdasht, Niri, Estahban, Arsanjan, Abadeh-Tashk, Argahan, Lapoui, Kharamah, Darian, Saadat Shahr, Beya, Kamfirou, Saydan, Safashahr, Gharabad. In 1356 there were 557 settlements with 552 villages and 5 towns. By 1376 there were 750 settlements including 743 villages and 7 towns. Increased

⁴Rooyan Consulting. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*, in Persian.

urbanization was apparent in 1996, with only 712 villages and 10 towns. In the following decade there was expansion of both rural and urban areas, with 744 villages and 10 towns recorded in 2006. Since that time there has been a very strong trend towards increased urbanization. Despite this trend nearly 44 percent of the population (374,795 people) is still in rural areas (Figure 4), the majority of whom are dependent on subsistence agriculture and access to water for their livelihoods. At the same time the urban population (400,263) is highly dependent on provision of food and water from the rural areas. Overall the demands on the natural environment of the Bakhtegan Basin and vulnerability to drought and climate change is high.

Table 2: Population in the Bakhtegan Basin

Number of families and urban and rural population figures in the Bakhtegan Basin (SCI, 2016)

| Settlement | Number of families | Population | | |
|------------|--------------------|------------|--------|--------|
| | | Total | Male | Female |
| Urban | 143136 | 480926 | 245091 | 235835 |
| Village | 111424 | 374795 | 191972 | 182823 |
| Total | 254560 | 855721 | 437063 | 418658 |

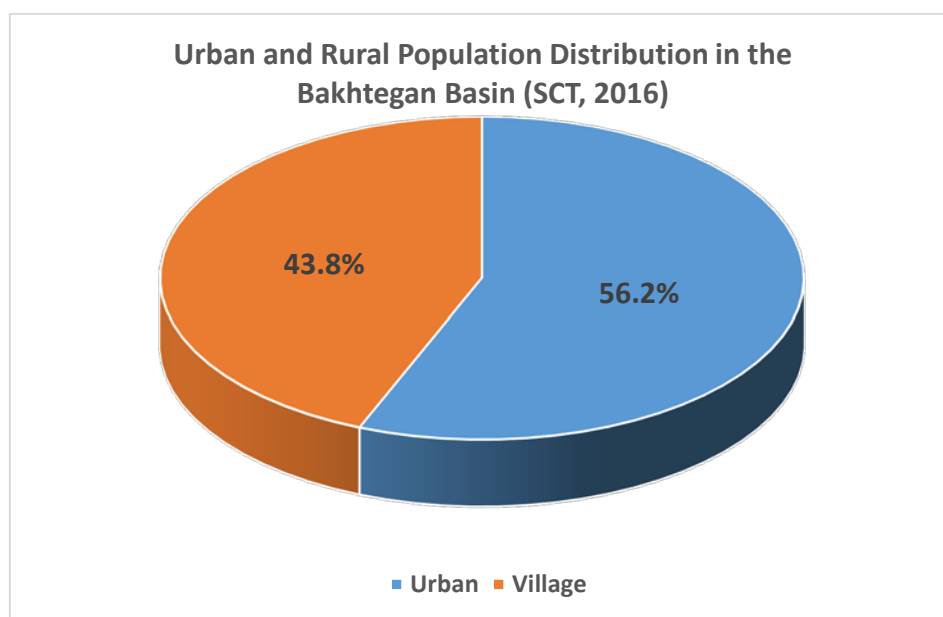


Figure 4: Urban and rural population distribution

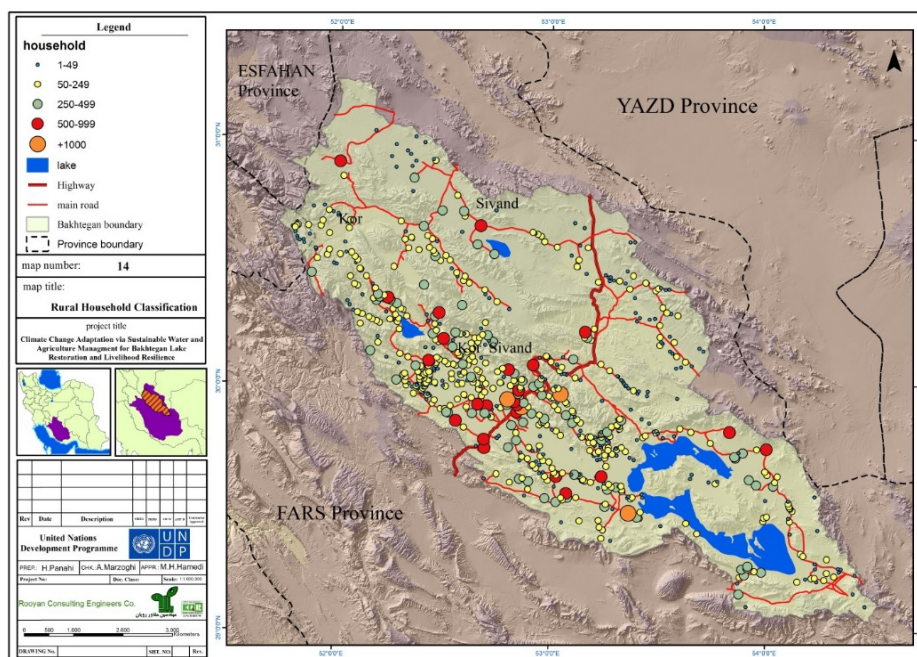


Figure 5: Distribution of villages in the Bakhtegan Basin

Agriculture and water use in the Bakhtegan Basin

The current total area of irrigated agriculture⁵ is about 500,000 hectares (21.2 percent of the Bakhtegan Basin area). About 35 percent of irrigated farmland is upstream of the Doroodan and Sivand dams and about 45 percent of irrigated farmland is located below the dams. The first area, upstream of the dams includes the Marvdasht, Marghan, Beya, Karbal, Kharameh, Murghab and Daryan plains. The second area, below the dams, includes Aspas, Kamifrouz, Sadeh, Khosrow -o- Shirin, Bekan, Kafer, Nemdan, Khorrami and Ghader Abad. This middle elevation plains area has a much shorter history of agriculture than the upper plains area and has experienced rapid development in recent years. The remainder of irrigated farmland, 16.5 percent of the total area, is located in Arsanjan, Farooq, Abadeh-Tashk, Estahban and Nayriz. These overlook the Bakhtegan Lake and are considered as marginal areas.

Arable land in the Bakhtegan Basin⁶ is comprised of 70 percent cereal, 4.7 percent industrial and 2.4 percent forage crops, and 2.4 percent in horticulture. Orchards, beans, vegetables and fruits make up the remainder, occupying 3.7 percent, 3.2 percent and 0.1 percent, respectively. The most extensive crop area is cereal, mostly wheat, covering 53.1 to 66.7 percent of the land area in different locations. The area dedicated to other crops also varies, for example with orchards covering as much as 10.2 percent in some parts and 1.3 percent other areas. Water availability is one of the most important factors determining the extent of different crops. Cereals are the most commonly grown crops in water short areas. Where water is readily available high water demanding crops such as rice are grown, such as in the Kamifrouz plain. Thus, greater diversity and more intensive cropping patterns are found in the areas where agricultural water supply is not severely restricted.

Water rights are divided into dry and wet years in the Korbale-Kharameh plain. A very intense drought was experienced in 2006 which resulted in water being released from Doroodan dam on only 13 days of the year, amounting to a total of 61 MCM. Twelve years of observation data (1994-2006) also show that the extent of cereal production fluctuated from 1,577 to 33,502 hectares and from zero to 17,000 hectares for vegetables due to fluctuations in agriculture water availability. The most drought impacted area is mainly located in the lower elevation plains, e.g. Korbale-Kharameh and other lands

⁵Rooyan Consulting. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*, in Persian.

⁶Ibid

which surround the Bakhtegan Lake—which are also affected by windblown salt particles and dust from the now mostly dry lake bed. Droughts then progress to the middle elevation plains. Overall, the impact of drought is observed in the rangeland and rain-fed lands first, then on the irrigated farmlands and orchards. However, there are insufficient data on the number of people that are affected by drought and the impacts that they experience.

Wildlife

Wildlife populations in the Bakhtegan Basin have declined dramatically during the last 50 years as a result of habitat degradation and reduced extent⁷. However, it has also been reported that the wildlife status is a bit better compared to other similar areas in Iran due to proper monitoring by the DOE. The basin is rich in fauna due to its large size and high habitat diversity. More than 51 species of mammals have been identified from 17 families. Important species include *Caracal*, Persian leopard, Capra, Rueppell's fox, jungle cat, sand cat, brown bear, black-tailed gazelle, mouflon, and wild goat. Eight species are classified in the IUCN, eight species in the CITES attachments, and eight species are protected by Iranian rules in the list of protected species. There are 51 species of reptiles and amphibians including 11 species of lizards, 26 species of snakes, 3 turtle species and 4 species of amphibians. One species is listed with the IUCN, two species are listed under CITES and four species are protected in accordance with Iranian rules. Most of the above wildlife is restricted to protected areas under DOE management due to destruction of their habitats and lack of presence in others. DOE protected areas (Figure 6) include: Bakhtegan national park, Mambou national park, Margoun waterfall protected area, Tang-e-Betanak protected area, Basiran hunting forbidden area and Kouhsiah-e-Arsanjan hunting forbidden area.

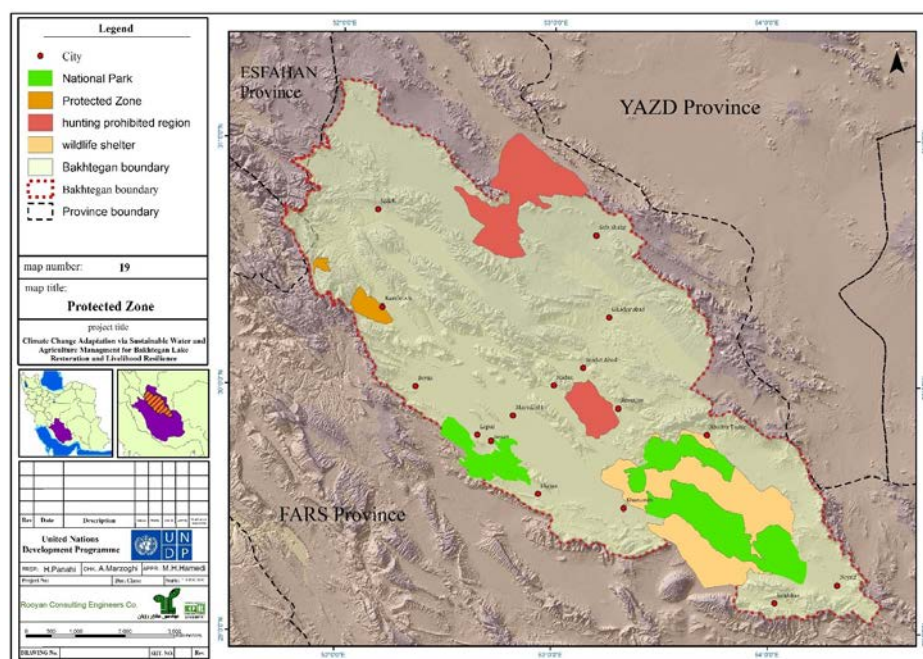


Figure 6: Location of national parks, protected area and hunting forbidden areas in the Bakhtegan Basin

Vegetation

⁷Rooyan Consulting. 2007. *Studies on Environmental Challenges on Bakhtegan Lake*, in Persian.

The major part of the Bakhtegan Basin is located in the Iran and Turanian vegetative region which is the largest vegetative region of Iran. *Pistacia atlantica* and *Amygdalus coparia* form the two dominant forest species. These are found in pure stands of each species, or either or both of these species mixed with *Acer monspessulanum*. There are also some forested areas dominated by Iranian oak with the Kor sub-basin. The importance of the various pure and mixed forest types in the Iranian and Touranian vegetative region in Iran, and in Bakhtegan Basin in particular, require special attention to ensure their protection from existing pressures and also under climate change conditions.

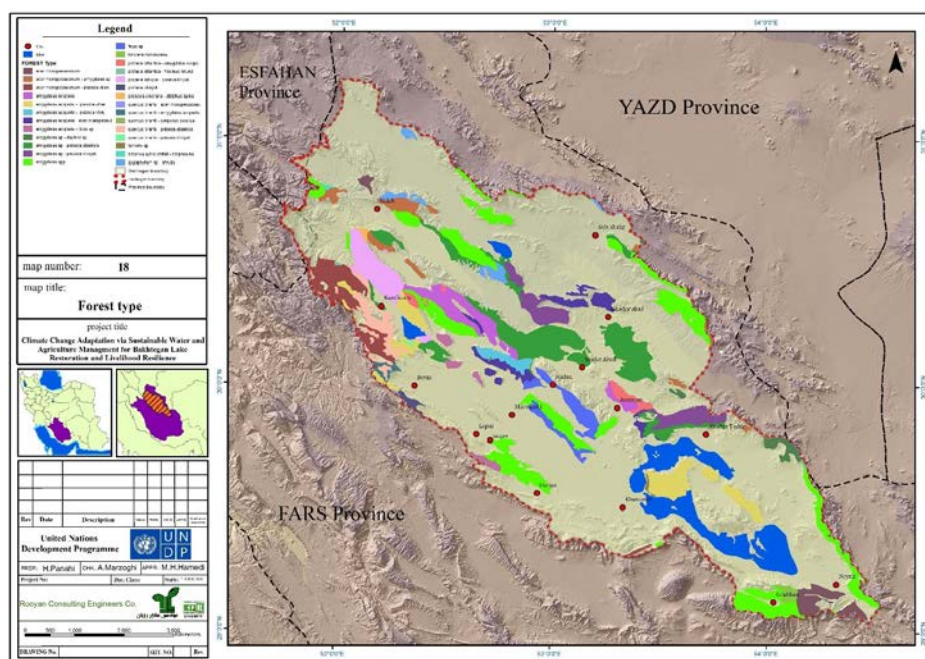


Figure 7: Main forest types in the Bakhtegan Basin

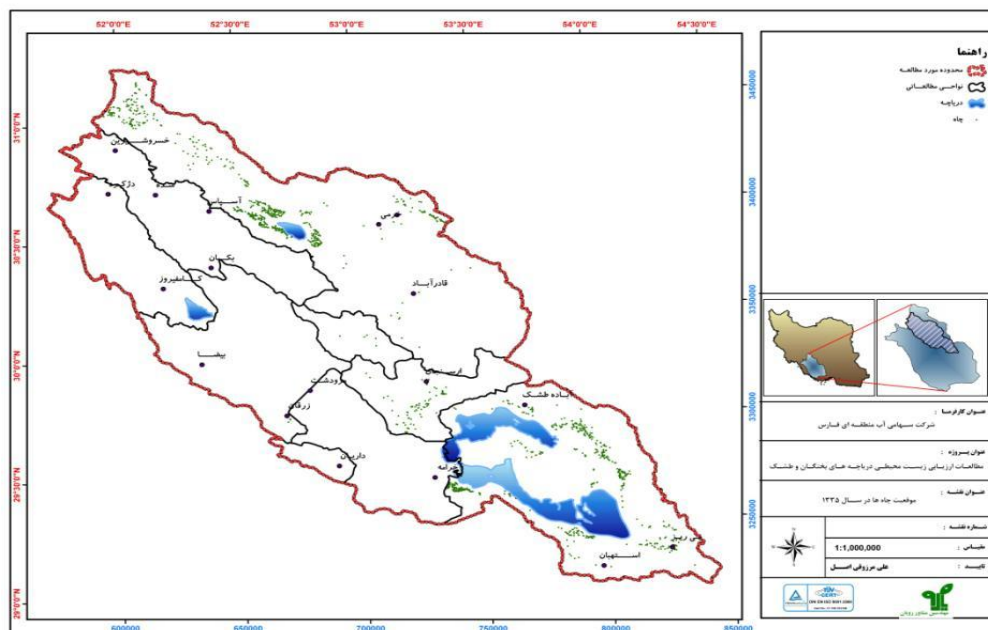
Comparing land-use change in 1956 to 2006 based on image processing and aerial photo analysis

| Land-Use | 2006 | | 1956 | | Change(ha) |
|-----------|----------|------------|----------|------------|------------|
| | Area(ha) | Percentage | Area(ha) | Percentage | |
| Barren | 37348 | 1.37 | 31128 | 1.142 | -6220 |
| Rain-fed | 59424 | 2.18 | 247125 | 9.070 | 187701 |
| Irrigated | 580063 | 21.29 | 223593 | 8.206 | -356470 |
| Forest | 742023 | 27.23 | 744631 | 27.330 | 2608 |
| Lake | 138014 | 5.07 | 173259 | 6.359 | 35245 |
| Wet land | 2609 | 0.10 | 46150 | 1.694 | 43541 |
| Rangeland | 1083445 | 39.77 | 1225466 | 44.978 | 142021 |
| River bed | 863 | 0.03 | 863 | 0.032 | 0 |

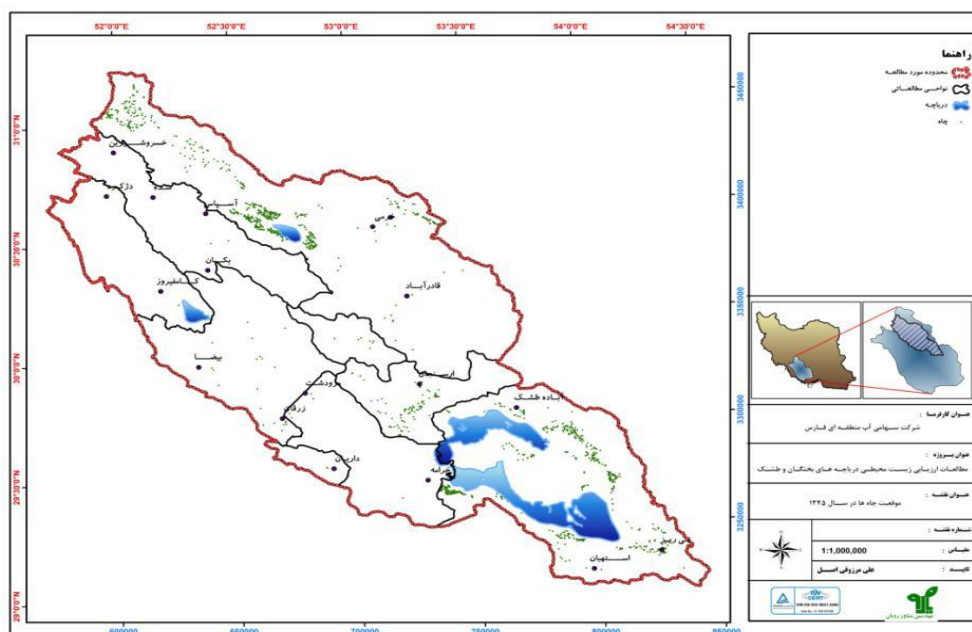
| | | | | | |
|-------------|---------|------|---------|-------|--------|
| Saline land | 74616 | 2.74 | 31138 | 1.143 | -43478 |
| Residual | 6187 | 0.23 | 1239 | 0.045 | -4948 |
| Total | 2724592 | 100 | 2724592 | 100 | 0 |

Number of Wells in the Bakhtegan Basin from 1956 to 2006

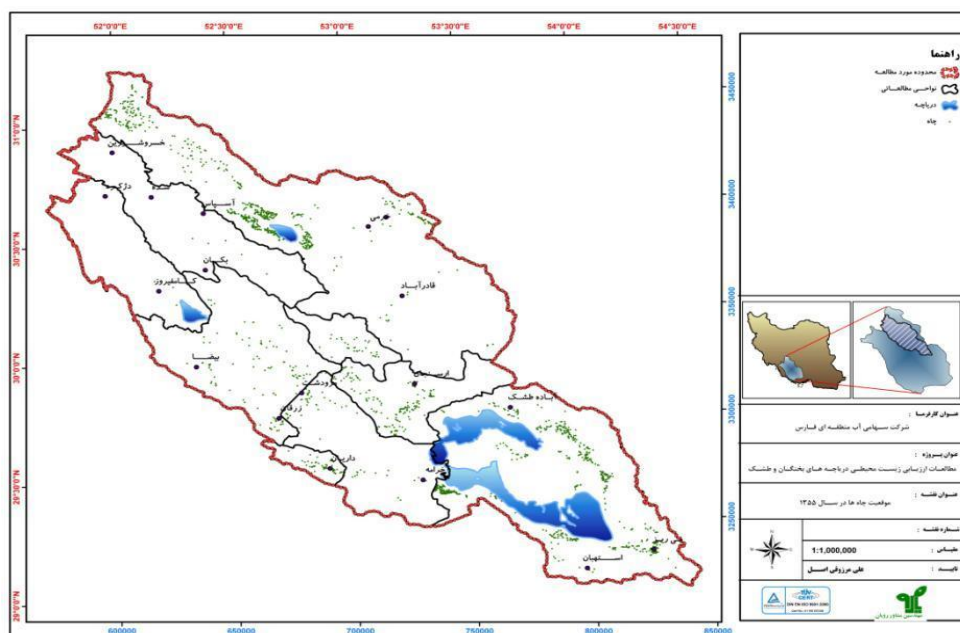
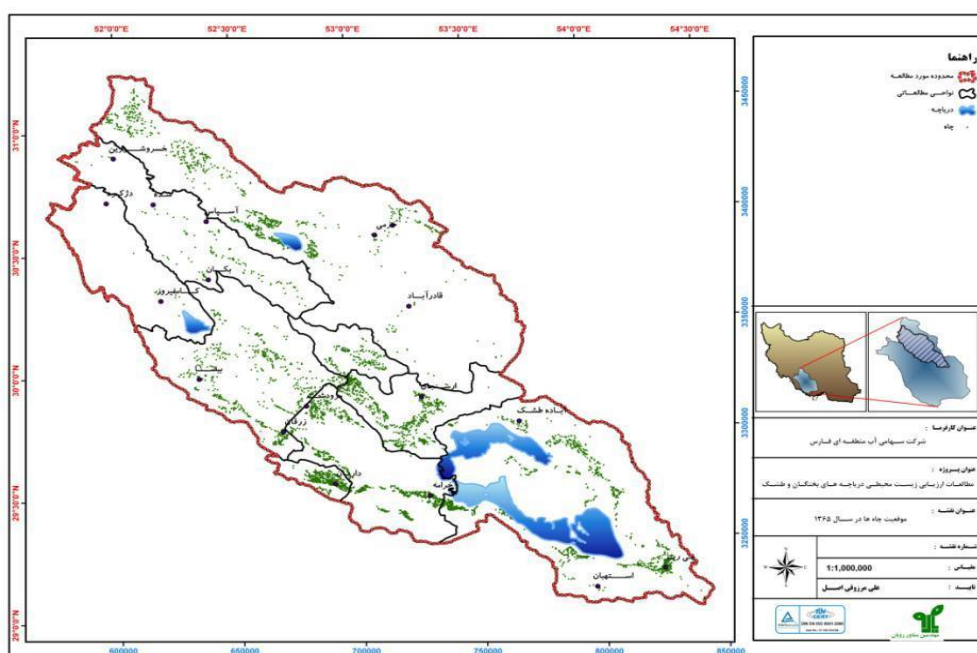
1□56



1□66



1□76

1 6

[illegible]

ANNEX 2 - TRENDS IN CLIMATE, SURFACE/SUB-SURFACE HYDROLOGY, FIG PRODUCTION AND WILDLIFE IN THE BAKHTEGAN BASIN

Climate Zoning⁸

The climatic zoning of the target area was carried out using the Trewartha - Koppen classification method because of high precision in determining the boundaries of temperature and precipitation. The selected classification method also has a high ability to distinguish ecological zones based on temperature and precipitation indices. Climatic zoning has been used network data from CCAFS-Climate Data Center with five-minute spatial resolution under the A2, B2 and A1B scenarios of HadCM3 model for the base time period of 1962 to 2012 the projected periods 2030s, 2050s, and 2080s.

The climate of Bakhtegan Basin is classified to seven types. The temperate class (D) is covered about 51% which is divided to four sub-classes: humid moderate, arid-hot moderate with winter precipitation regime, hot dry moderate and cold dry moderate that are covers 30%, 12.5%, 15% and 0.2% respectively. The semi-arid class (B) is dominated 30% of Bakhtegan Basin that are divide two sub-classes: cold and warm semi-arid climate sub-classes. The cold semi-arid class is expanded in western part of the Bakhtegan basin near to Yazd province and the warm semi-arid class dominated in south eastern part near to Kerman province. The subtropical with dry summer is the seventh climate class that is dominated about 1.7% of Bakhtegan Basin.

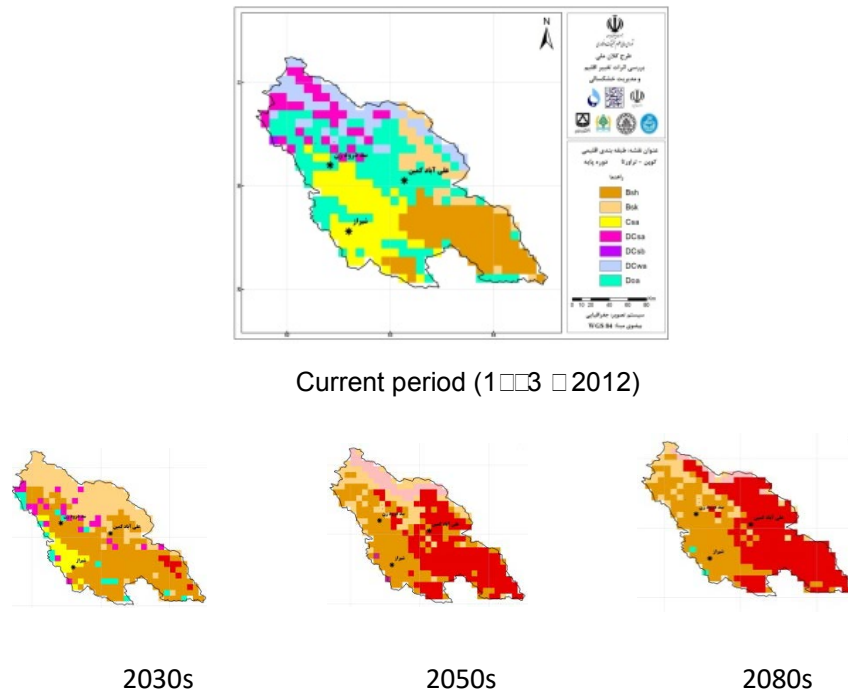
The detection of climate change was projected based on A2, B2 and A1B climate scenarios for seven existing climate classes. The projected results are summarized in table and figure 1 based on A1B scenario.

Table1: 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 |
| Humid moderate | 21.7 | 49.9 | 33.3 | 35.7 |
| Arid-hot moderate with winter precipitation regime | 8.3 | 31.7 | 17.7 | 11.3 |
| Hot dry moderate | - | 1.9 | 40.4 | 49.4 |
| Cold dry moderate | - | - | 8.0 | 3.1 |
| Subtropical with dry summer | 18.7 | 6.1 | - | - |
| Cold semi-arid | 8.5 | 6.1 | - | - |
| Warm semi-arid | 0.2 | - | - | - |
| Temperate | 12.5 | - | - | - |
| Semi-arid | 30 | 4.3 | 0.5 | 0.5 |

⁸ 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.

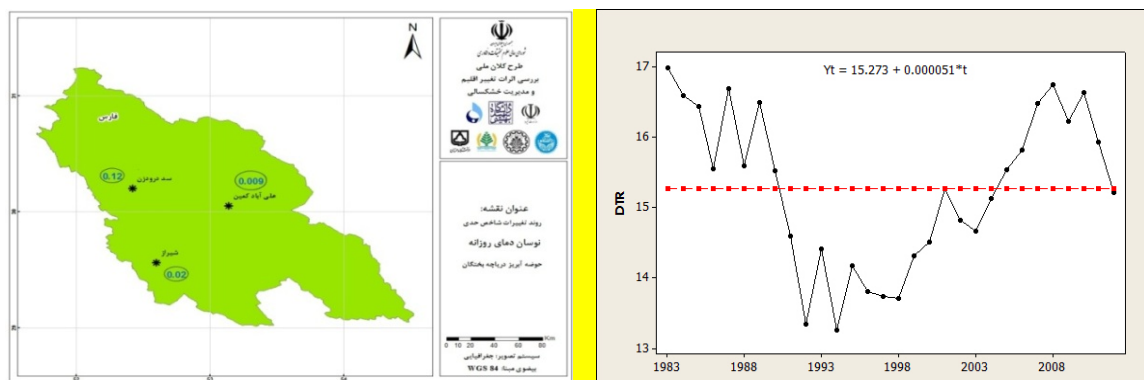
Figure 1: Comparing the spread changing of climate types in current period to the 2030s, 2050s and 2080s based on A1B scenario



Daily (Diurnal) Temperature Range (DTR)

The difference between daily maximum and minimum temperatures is the diurnal temperature range. It is one measure of changes in daily temperature distributions. These changes are affected by minimum and maximum temperature variations. The incremental trend of this index may be due to the increase in the maximum temperature or the decreasing of the minimum temperature and/or the simultaneous effect of these two factors both. In some cases, while one of the above two factors work inverse then we are faced with an increasing trend of DTR. Figure 2 is illustrated the slope and trend of DTR in Bakhtegan Basin.

Figure 2: The slope and trend of changes in DTR in Bakhtegan basin during the 1983-2012



The results of the Pettitt test shows that the DTR has a downtrend in 1990 in Bakhtegan basin during the observational period (1993-2012). Accordingly, the average daily temperature before 1990 was 16.23 °C and then 14.94 °C.

Statistical analyses indicate that the DTR is decreasing in all three (A2, B2 and A1B) scenarios in observed time periods in Aliabad rain gauge station. This indicator shows incremental trends in all time horizons in scenario A1B, A2 and B1 at the Doroodkan Dam rain gauge in the western part of the Bakhtegan basin.

Aridification

A study⁹ mapping drought hazards using SPI index 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.

The Standardized Precipitation Index (SPI) to measure drought has the following values associated to drought category classification:

Table 4. Annual Standardized Precipitation Index (SPI) $SPI = \frac{p_i - \bar{p}}{sd}$ Classification

| SPI value | Drought Category |
|---------------|------------------|
| ≥ 2 | Extremely Humid |
| 1.5 to 1.99 | Very Humid |
| 1.0 to 1.49 | Moderately Humid |
| 0.5 to 0.99 | Lightly Humid |
| -0.49 to 0.49 | Normal |
| -0.99 to -0.5 | Lightly drought |
| -1.0 to -1.49 | Moderate drought |
| -1.5 to -1.99 | Severe drought |
| ≤ -2 | Extreme drought |

*, p_i : Annual precipitation in each station \bar{p} : Average precipitation in each station
 sd : Standard deviation of precipitation in each station

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

⁹ 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.

Table 2. Annual Standardized Precipitation Index (SPI) for 10 station from 1994-2011

| Station Name | Abadeh | Fasa | ..... | Sadedorodzan | Zarghan |
|--------------|--------|-------|-------|--------------|---------|
| 1994 | 0.33 | 0.32 | ..... | 0.44 | 0.45 |
| 1995 | 0.42 | 0.84 | ..... | 0.19 | 0.63 |
| 1996 | -1.06 | -0.79 | ..... | -0.11 | -0.91 |
| | | | | | |
| 2007 | -0.85 | -0.96 | ..... | -0.74 | -0.04 |
| 2008 | -1.16 | -2.03 | ..... | -1.37 | -1.58 |
| 2009 | -0.21 | -0.12 | ..... | -0.34 | -0.56 |
| 2010 | -0.28 | -0.41 | ..... | -0.58 | -0.91 |
| 2011 | -3.46 | -2.81 | ..... | -3.61 | -3.15 |

Table 3. Annual Standardized Precipitation Index (SPI) for 7 stations from 2007-2011.

| Station Name | Arsenjan | Izadkhast | ..... | Neyriz | Noorabad |
|--------------|----------|-----------|-------|--------|----------|
| 2007 | 0.12 | 0.0089 | ..... | 0.27 | 0 |
| 2008 | -0.57 | -0.08 | ..... | -0.84 | -0.39 |
| | | | | | |
| 2011 | -2.22 | -2.33 | ..... | -2.14 | -2.02 |

ArcGIS coupled with drought index (SPI) is vital tool for drought monitoring and mitigation. ArcGIS supports visualization of scientific based results important for decision making process. Based on the results above, drought maps from Fars province have been developed 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.

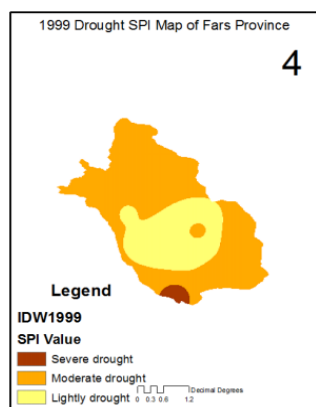


Fig 5. Hazard map of drought vulnerability in 1999.

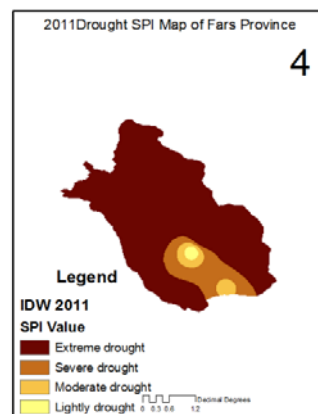
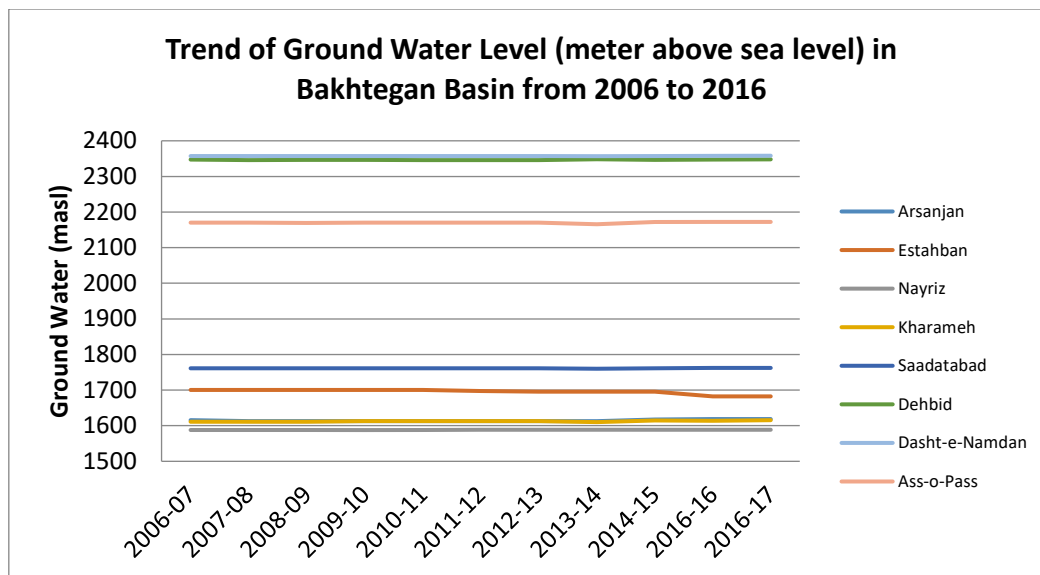


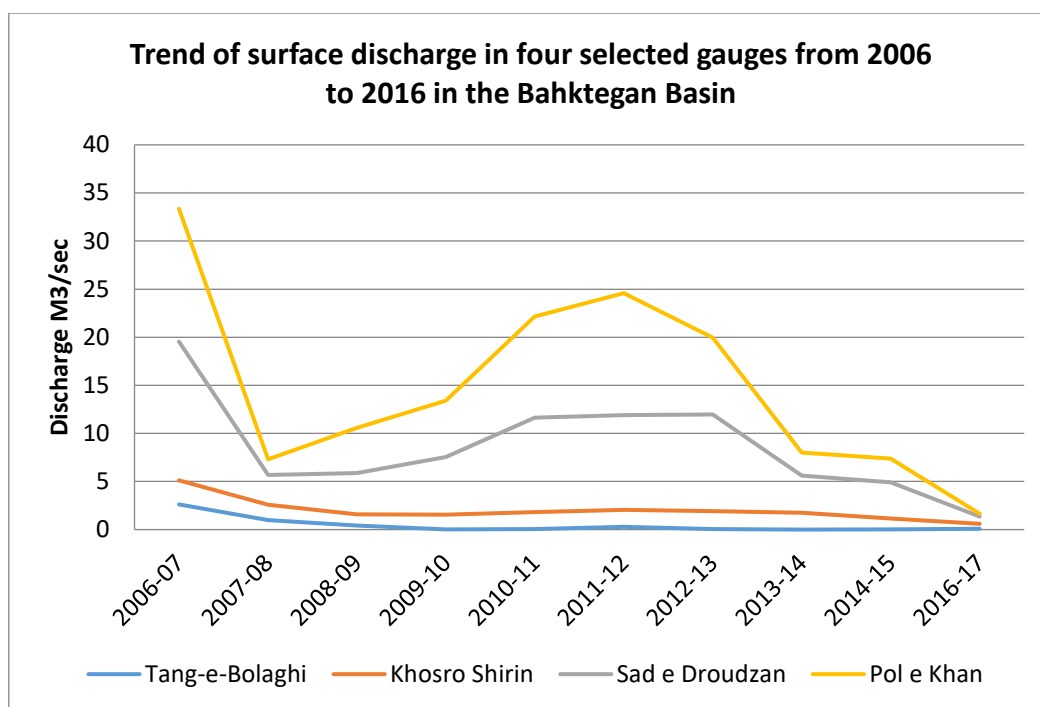
Fig 4: Hazard map of drought vulnerability in 2011

Climatic and surface/sub-surface water hydrologic trends

Trend of sub-surface water level changes analyzed based on MoE's observation data in nine plain areas in Bakhtegan Basin from 2006 to 2016. It has been observed no severely change in ground water level in all selected plains in Bakhtegan basin.



The river discharge has been shown the negative trend in four selected gauges—Tang e Bolaghi, Khsrow shirin, Sad e droudzan and Pol e khan. The highly dramatic reduce is observed in the above discharge gauges during last decade.



The average maximum and minimum temperature climate detection are also shown the negative trend from 1966 to 2015. The analysis has been done based on "Optimal Fingerprint Detection and Attribution" method (Hegerl et al, 1997)¹⁰ in Bakhtegan basin. The analysis has been done in eight

¹⁰ Hegerl, G., Hasselmann, K., Cubasch, U. et al. Climate Dynamics (1997) 13: 613. <https://doi.org/10.1007/s003820050106>

selected climatic gauges stations using the above method. The results are shown the positive trend in maximum and minimum average monthly temperature in Bakhtegan basin in observation period (1960–2015).

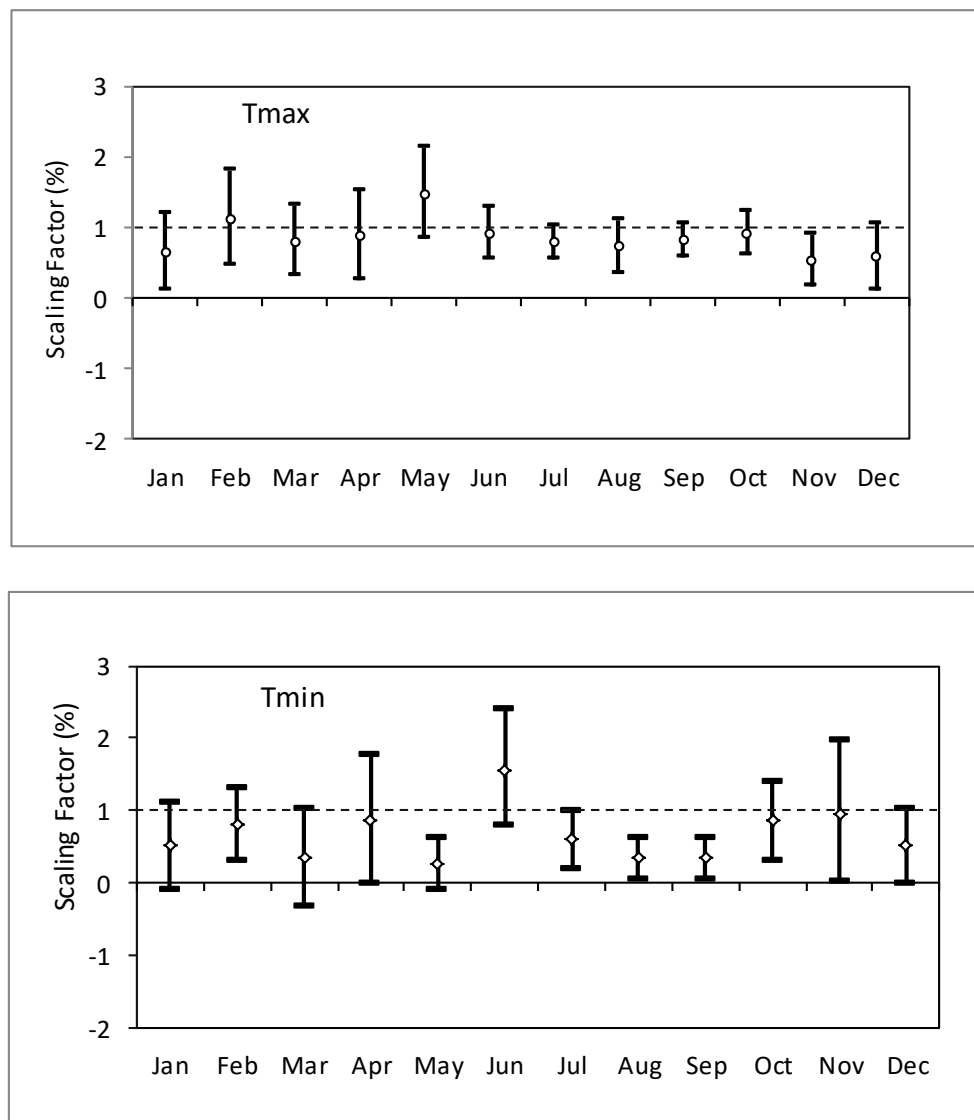
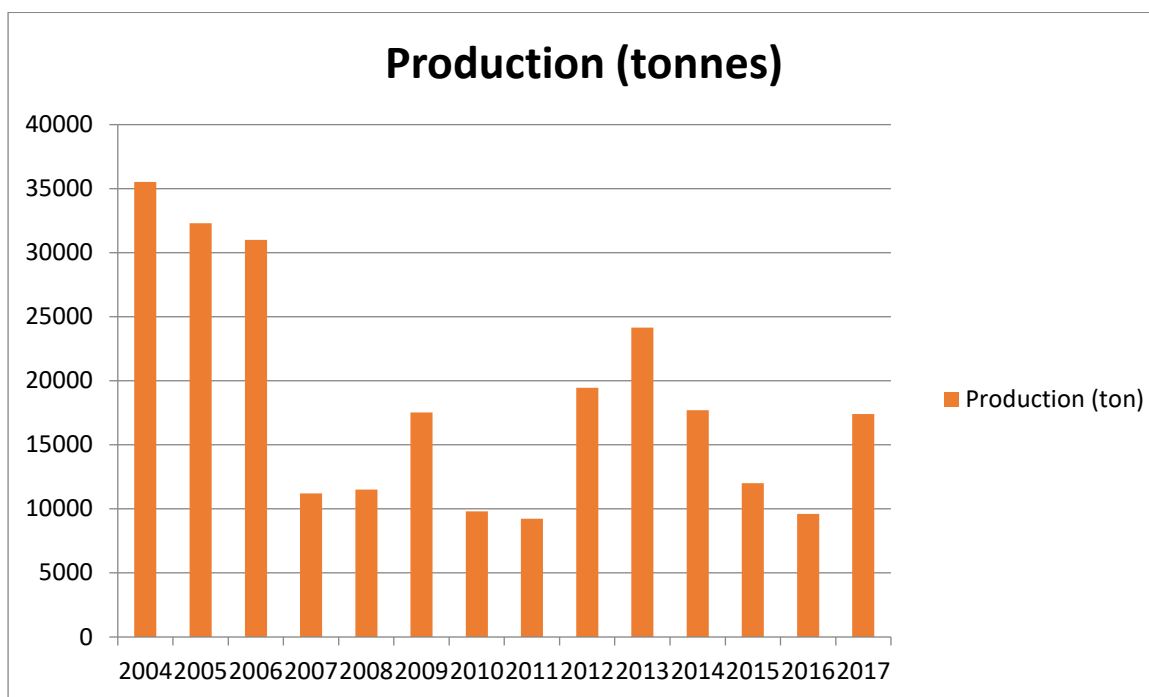
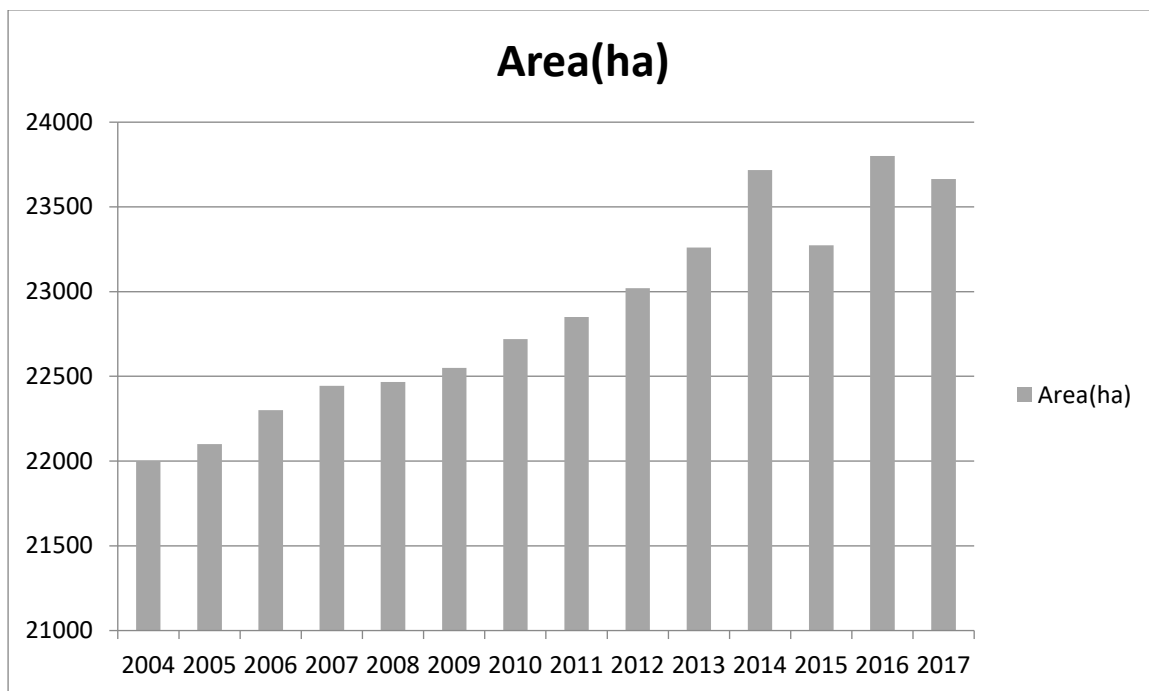
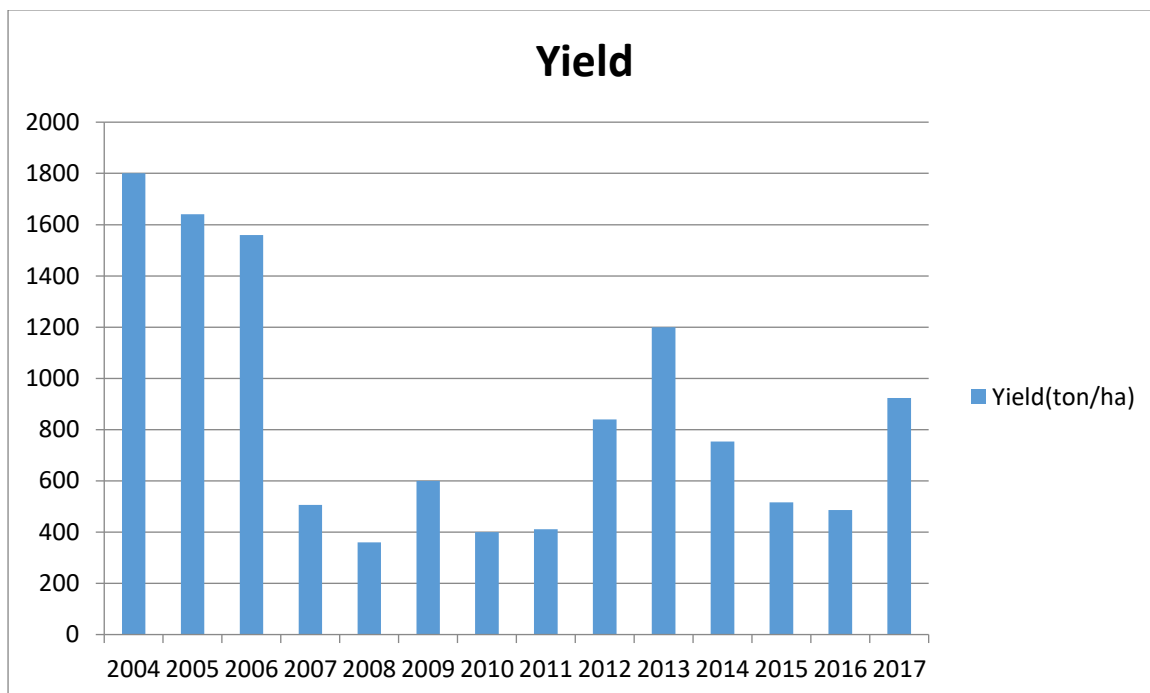


Fig production trend in the Bakhtegan Basin

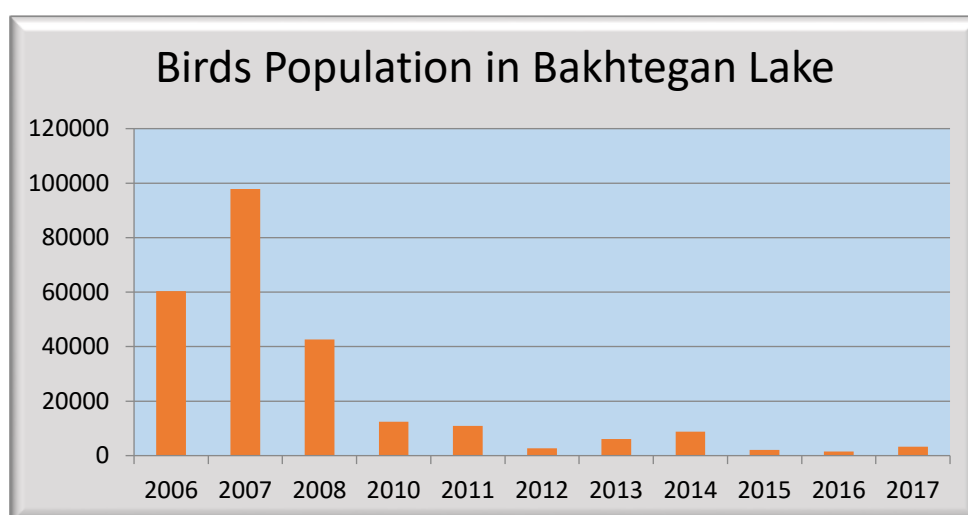
- The area in fig production in the Bakhtegan Basin has increased from 22,000 hectares in 2004 to an average of approximately 23,500 hectares over the 5 year period from 2013-2017
- Total production (in Tonnes) declined to a third of previous production during the severe drought in 2007/2008, from approximately 30,000 tonnes to approximately 10,000 tonnes. Subsequently total production has been at least half of production levels prior to 2007/2008 due to the effects of sustained drought conditions.
- Average yield (tonnes/hectare) declined to nearly a quarter of previous yield levels during the 2007/2008 drought and yields have subsequently remained low compared to previous levels due to sustained drought conditions.

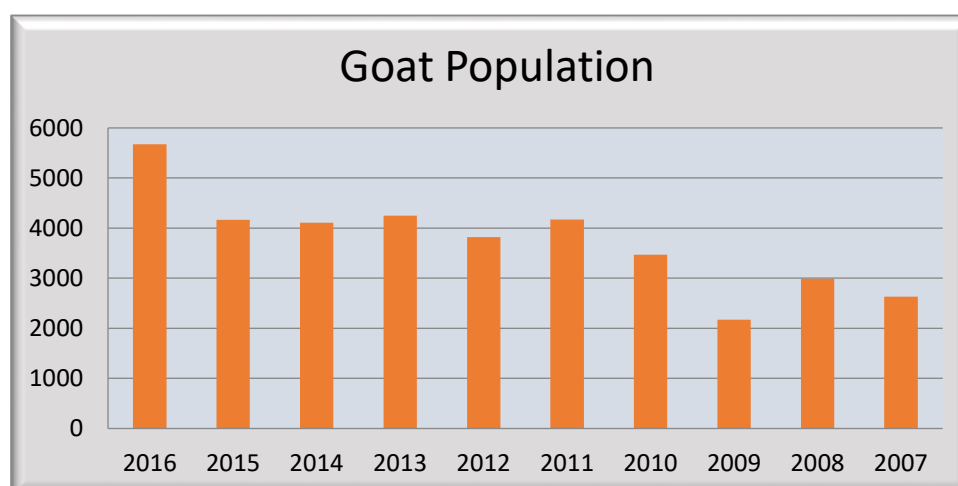
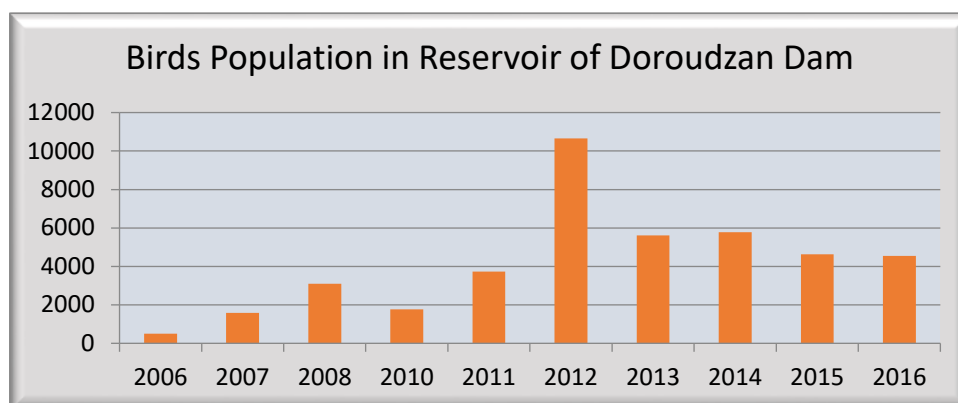
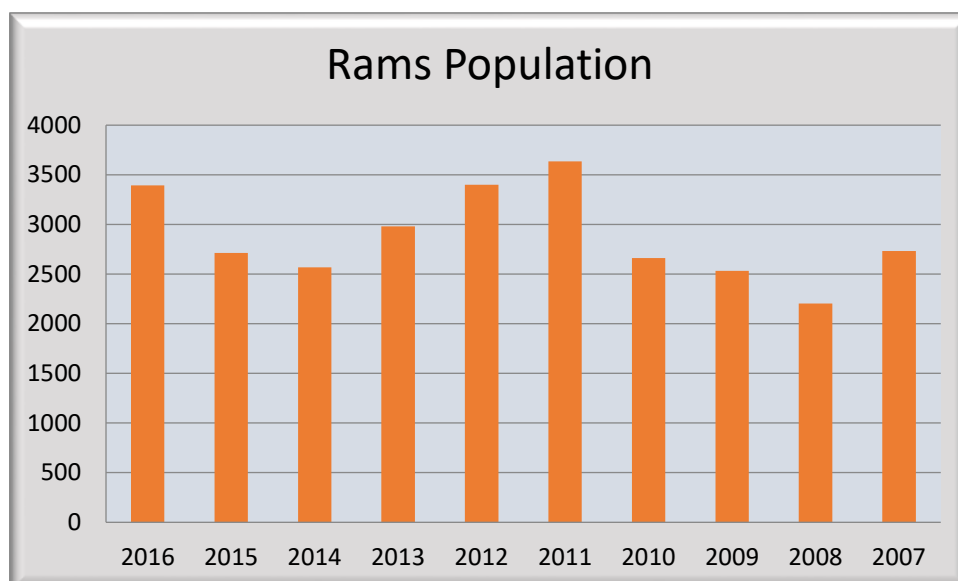


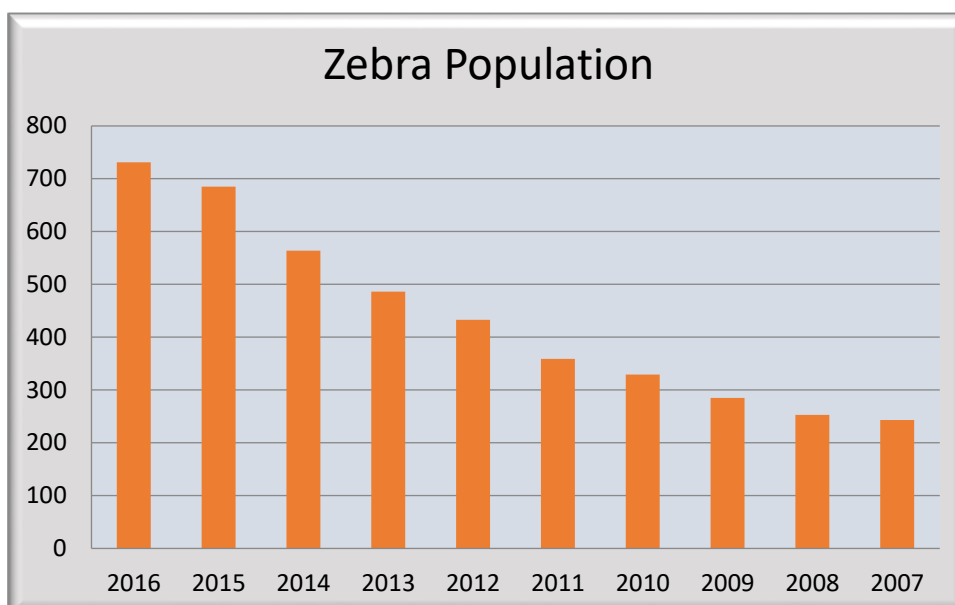
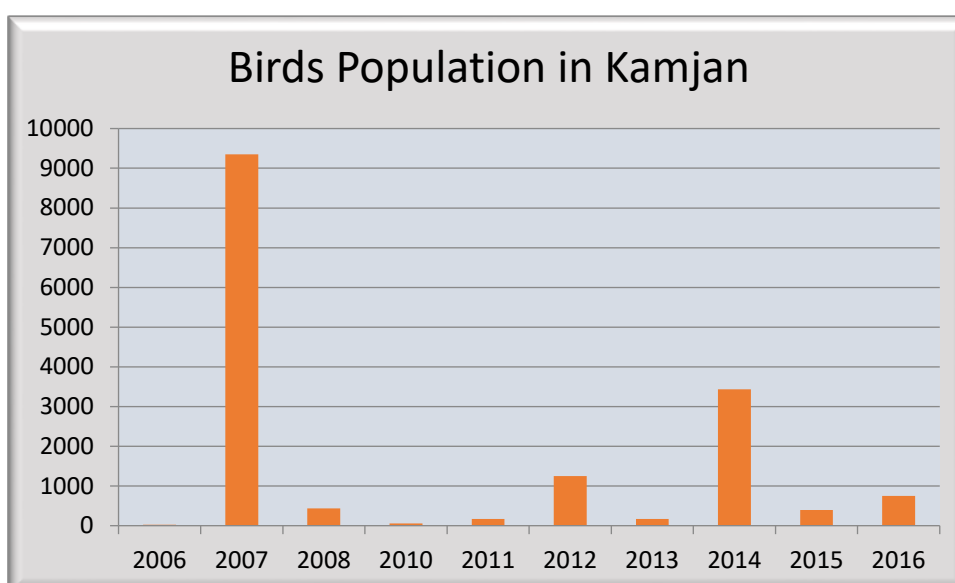
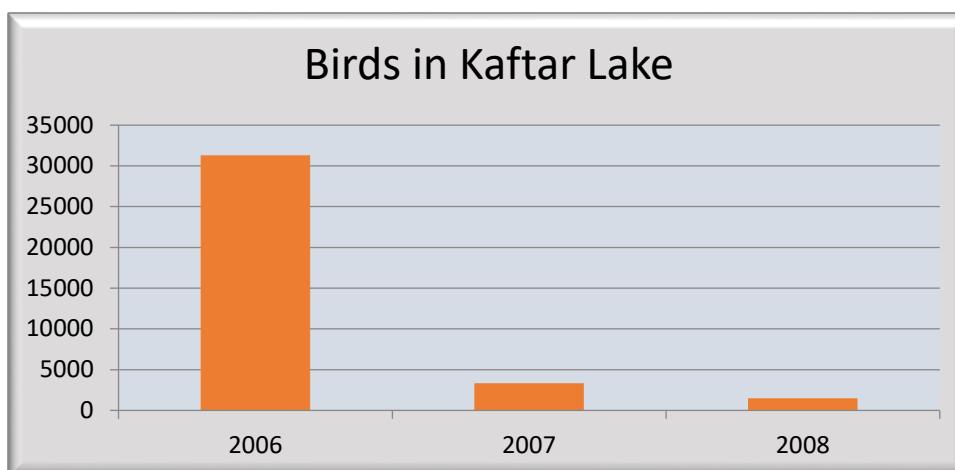


Wildlife population trend in Bakhtegan Basin

- The population of plain species have severely declined due to conflicts and scarcity of water resources, e.g. Quail and Chinkara
- The mountainous regions species are not severely affected, e.g., the goat that is less conflicts with drought constraints
- The population of wild birds are severely reduced in Bakhtegan and Tashk lakes and majority have been migrated to the reservoir of Doroud Dam.
- We have been observed a fairly good population of birds in Kamjan Lake.







ANNEX 3 NATIONAL LEGAL FRAMEWORK RELATED TO ADDRESSING WATER MISMANAGEMENT

The Law of the 6th Five-Year Development Plan of the Islamic Republic of Iran (enacted by the Islamic Consultative Assembly on 4 March 2017)

Article 35 - The government is required to take the following measures, in order to cope with the water crisis, release environmental water rights for land sustainability, sustainability and increased production in the agricultural sector, balance underground aquifers, and promote productivity and balance water levels to eleven billion cubic meters, in the year ending the implementation of the Law of the 6th Development Plan:

- A) Increase yield per unit area and increase productivity in agricultural production with priority assigned to products with relative advantages and high export value and products with low water consumption requirement and compatible with salt, drought resistant and observance of cropping methods compatible with the area
- B) Development of new irrigation methods, implementation of water and soil operations (structural and non-structural), and development of floodgates and pond systems, at least six hundred thousand hectares per year

Note - For the development of new irrigation methods, at least 5% of expenditures are financed and paid by the government within the framework of annual budget.

- C) Support the development of greenhouses and the transfer of cultivation from open to controlled space, and recycling of wastewater, unconventional water management and virtual water management
- D) Designing and implementing a cropping pattern with emphasis on strategic products and promoting water productivity in the framework of general policies of 'Resistive Economy' and providing resources and requirements within the framework of annual budget, and applying appropriate support and incentives only within the framework of the cropping pattern
- E) Revitalization, restoration and dredging of Qanats at an annual rate of 5% of the current situation during the implementation of the Law of the 6th Development Plan, with an emphasis on watershed management activities to revive Qanats
- F) Building the infrastructure needed to breed two hundred thousand fish in basins until the end of implementation of the Law of 6th Development Plan, and development of fisheries activities and establishment of infrastructure on major coasts of the country.
- G) Electrifying agricultural wells having exploitation licenses

Note - The resources required for the implementation of this clause shall be provided through saving fossil fuels subject matter of Article 12 of the Law on the Elimination of Barriers to Competitive Production and Enhancing the State Financial System, passed on 21.04.2015.

- H) Installing smart and volumetric water meters on agricultural wells having exploitation licenses, together with provision of facilities from the administered funds until the end of implementation of the Law of 6th Development Plan.
- I) Using water extracted from dams, with priority assigned to supplying drinking water in the catchment basin of the dam site.
- J) Providing farmers with irrigation right (the right of taking a fixed amount of water) from dams constructed on rivers, springs and aqueducts (Qanats).
- K) Re-structuring of water consumption in steel, alloys and minerals factories, and improving the systems of cooling and washing raw materials, by the end of the fourth year of implementation of the Law of 6th Development Plan
- L) The government is required to develop a cultivation pattern for all parts of the country by the end of the first year- and implement it during the years of, implementation of the Law of 6th Development Plan. The Ministry of Energy is required to allocate water to farmers in accordance with the cultivation pattern.

Ministry of Energy's Water Strategy

MoE's Water Strategy endorsed in May 2013 have clear guidelines related to the promotion of integrated management of water resources and re allocation of water rights as follows:

- Devising and implementing a comprehensive national document on managing water resources in collaboration with all stakeholders and authorities
- Recognizing that the past efforts to manage and preserve water resources in the long run, including a program introduced in 2004 as part of the country's Fourth Five-Year Economic Development Plan, have been insufficient or poorly implemented.
- Plans to restore balance to underground water reserves and help curtail drawdown of underground waters by 1 billion cubic meters
- Iran must take meaningful steps toward preserving its precious water resources in the face of a long spell of drought and dwindling rainfall by recycling wastewaters,
- Dam Construction Revisited: to revisit an excessive and imprudent trend of dam construction in the past several decades.
- New dam projects, which are being designed or constructed, will be reassessed based on hydrological changes, environmental impacts and economic feasibility.
- Plans to upgrade dilapidated irrigation systems in an agriculture sector that is responsible for more than 10% of Iran's annual water consumption.

ANNEX 4- SOCIO-ECONOMIC CONDITIONS IN THE FOUR ZONES IN THE BAKHTEGAN BASIN

Socio-economic and environmental status of the area in each of the four zones:

Zone1: the branches of the Kor River, which originate from Mount Bel in Eghlid, are located in this Zone. Kaftar wetland, the first entry point for aquatic migratory birds, is located in Zone 1 and has been dry due to the drought since 2007 and the biodiversity of this wetland has completely disappeared. On the other hand, the livelihood of the villagers in the region was dependent on the fishery, which is why there is no livelihood source at the moment. Reduction of precipitation in this area and uncontrolled water exploitation from the upstream areas of Kaftar wetland (Dasht-e-Nemdan) caused drought and decline in groundwater levels in Zone 1. In this Zone, the Sivand dam is built on the Sivand River and Mulla Sadra on the Kor River. The Sivand River is dry and Kor River has water in the rainy years. These cases in Zone 1 are summarized as follows:

Environmental conditions:

1. Dried Kaftar wetland
2. Reduction of flow into dams of Molla Sadra and Sivand
3. Reduction of biodiversity in the upstream
4. Reduction in precipitation and increased temperature, Evaporation and transpiration
5. Increased conflicts between wildlife and residents of the catchment area

Socioeconomics conditions:

1. Reduced income from aquaculture
2. Reduced farmer and dairy farmers' income
3. Increased unemployment
4. Increasing mental and psychological problems
5. Increased divorce rate
6. Increased migration from villages to the city margins
7. Increased poverty

Zone2. Although in the counties of Zone 2, water flow in water resources has decreased in recent years due to decreased precipitation, but compared to other parts of the basin, there is no crisis. However, rice farms and fish farming are threatening the water resources of this basin. Due to the size of the area under cultivation, wildlife habitats being captured and harvesting of forest products, there is conflict with hogs and bears. These cases in Zone 2 are summarized as follows:

Environmental conditions:

1. Decreased precipitation
2. Decreased water flow into the Doroodkan dam
3. Doroodkan dam lake became an alternative habitat for aquatic birds of the region
4. Increased water exploitation from water resources
5. The conflict between farmers and gardeners

Socioeconomic conditions:

1. Increased rice farms
2. Villagers preference to cultivate rice and have fish ponds
3. Conflict with downstream counties over water

Zone3:

In this Zone the water scarcity and its impact on the region's agriculture are being revealed. Agriculture in Zone 3 is moving towards changing the cultivation pattern and growing safflower. The proximity of Bamu National Park to some villages where having livestock is prevalent has created

conflicts between livestock breeders and leopards. In this zone Kor River, which joins the Siwand River at the Khan Bridge in Marvdasht, is dry most of the year.

These cases in zone 3 are summarized as follows:

Environmental conditions:

1. Dried Kor river
2. Destruction of the habitats of birds, pond turtles and aphanus fishes
3. Decreased springs flow
4. Conflicts between livestock breeders and leopards

Socioeconomic conditions:

1. Conflict with upstream farmers in spring when the water for agricultural purposes are being shared
2. Dried wells
3. Migration to cities
4. Increased unemployment rates
5. Tendency to change the pattern of cultivation toward safflower

Zone 4:

This zone is the most damaged part of the basin. In this zone the Bakhtegan, Tashk and Kamjan wetlands are located. The Tashk and Bakhtegan wetlands were dried since 2007 and the Kamjan wetland have dried up completely since the mid-1960s. Reduced rainfall amount in this zone, the physical changes in the basin, increased water harvesting, especially in the upstream, the construction of dams and upstream waterworks projects have caused severe crisis in the areas of biodiversity and economic in zone 4. Thousands of migratory birds used to come to these wetlands in winter, this population has been severely reduced or completely vanished over the past years. Wind erosion and dust storms in the area have damaged the crops and the health of the inhabitants of the wetland.

These cases in zone 4 are summarized as the following:

Environmental conditions:

1. Reduced precipitations
2. Dried wetlands
3. Severely reduced migratory birds
4. Destruction of hatching habitats
5. Dried springs
6. The increased conflicts between farmers and birds
7. Wind erosion and increased dust storms

Socioeconomic conditions:

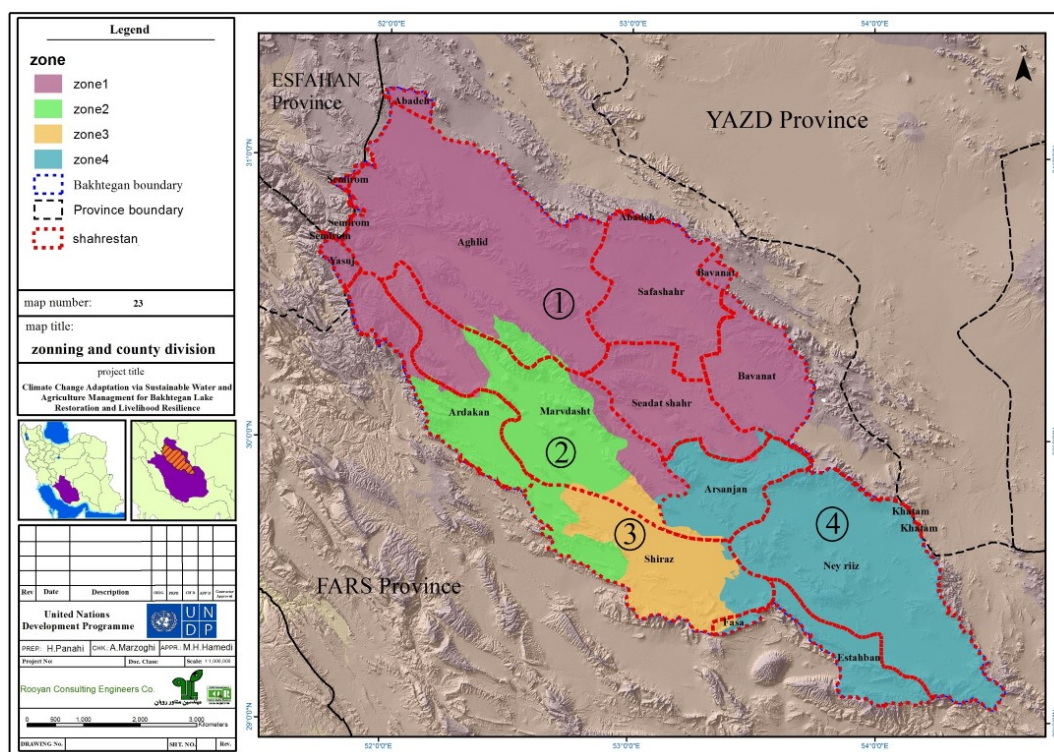
1. Unemployment
2. Increased migration
3. The growing trend of poverty
4. Increased divorce and crime rates
5. Decreased quality of farm crops and fruits such as fig
6. Increased rate of diseases (physical and mental)
7. Land destruction
8. Conflict with DOE, natural resources organization and water resources management organization

ANNEX 5 - TARGETING OF BENEFICIARIES

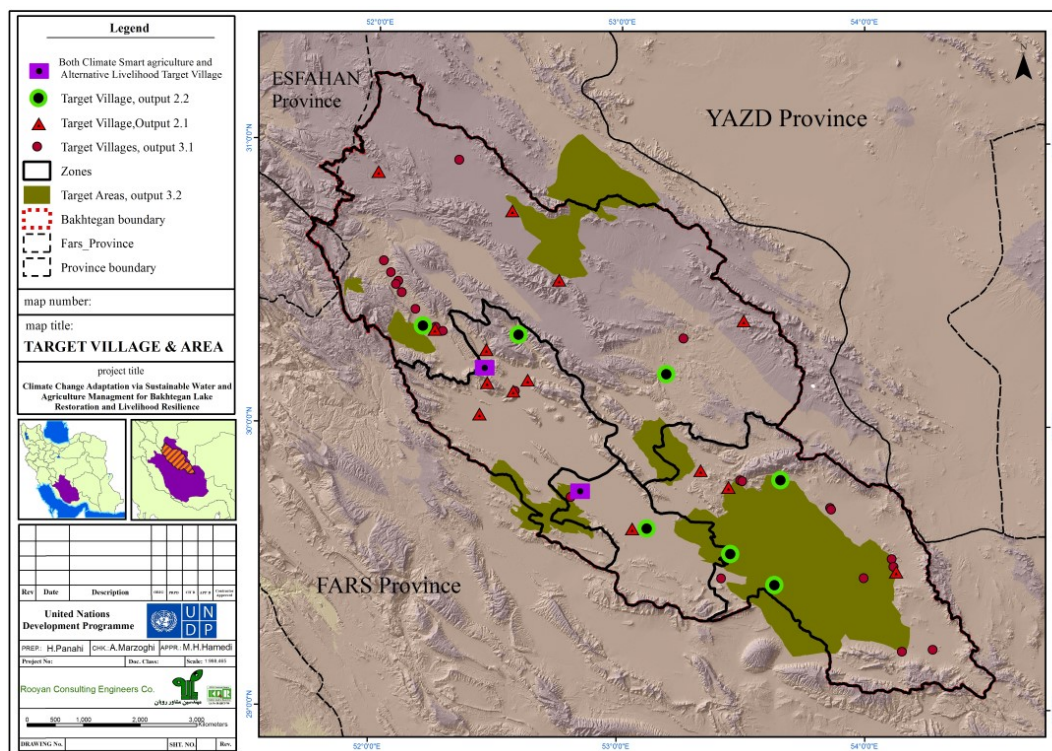
Summary of targeted villages by Outputs and Zones

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|--|---|---|--|
| Output 1.1 Integrated models for climate risks | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. |
| Output 1.2 Land and water use planning framework | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. |
| Output 1.3 Local Community Monitoring | All participating villages below | All participating villages below | All participating villages below | All participating villages below |
| Output 1.4 Education, capacity building, information and data management, communications | All participating villages below and throughout the Bakhtegan Basin | All participating villages below and throughout the Bakhtegan Basin | All participating villages below and throughout the Bakhtegan Basin | All participating villages below and throughout the Bakhtegan Basin |
| Output 2.1 Climate Smart Agriculture | Khosroshirin, Ali abad, Kaftar | Hosseini abad, Haji abad, Bakyan, Bidgol, Fotooh Abad, Hesar | Kuhak, Bandeamir | Sharghabad, Ali abad, Ali abadmalek |
| Output 2.2 Alternative Livelihoods | Emam Shahr, Kordeshul | Ali abad, Dorood Abad | Bandeamir | Kamajan, Jamishi, Jahanabad, Khanekhat, Shargh Abad |
| Output 3.1 Forests and Rangelands | Palangari, Bakian, Khaniman, Hajiabad, Allah Moradkhani, Dehdamchah, Sarmast, Cham-e-riz and Bolaghi | | | Charghalat, Kenare, Khatam (Mohamadabad), Chahrokni, Dochahi, Chahmaleki, Temshouli, Tang-e-hana, Ghasemabad, Koushkak and Jahanabad |
| Output 3.2 National Parks and Protected Areas (There are no communities in these areas). | Margoun waterfall protected area Basiran hunting prohibited area Tang-e-bostanak hunting prohibited area | | Bamou National Park Koushiah-e-arsanjan hunting prohibited area | Kamjan Marshes Bakhtegan National Park |

| | | | | |
|--|--|--|--|--|
| Output 4.1 Education and public awareness | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. |
| Output 4.2 Governance structure | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. | All participating villages throughout the Bakhtegan Basin. |



The four zones identified for project targeting



| Selected villages | | | | |
|-------------------|--------------------|------|--------------------------|--------|
| No. | Village name | □one | County | Output |
| 1 | Khosroshirin | 1 | Abade | 2.1 |
| 2 | Ali abad | 1 | Abade | 2.1 |
| 3 | Kaftar | 1 | Eghlid | 2.1 |
| 4 | Hossein abad | 2 | Marvdasht | 2.1 |
| 5 | Haji abad | 2 | Sepidan(Beyā district) | 2.1 |
| 6 | Bakyan | 2 | Marvdasht (Kor district) | 2.1 |
| 7 | Bi□jan Olya | 2 | Marvdasht | 2.1 |
| □ | Bidgol | 2 | Marvdasht | 2.1 |
| □ | Fotooh Abad | 2 | Marvdasht | 2.1 |
| 10 | Hesar | 2 | Marvdasht | 2.1 |
| 11 | Kuhak | 3 | Shira□ | 2.1 |
| 12 | Bandeamir | 3 | Shira□ | 2.1 |
| 13 | Sharghabad | 4 | Arsenjan | 2.1 |
| 14 | □in abad | 4 | Kherame | 2.1 |
| 15 | Ali abadmalek | 4 | Arsenjan | 2.1 |
| 16 | Emam□adeesmaili | 1 | Eghlid | 2.2 |
| 17 | Kordeshul | 1 | Pasargad | 2.2 |
| 1□ | Ali abad | 2 | Marvdasht | 2.2 |
| 1□ | Dorood□an | 2 | Marvdasht | 2.2 |
| 20 | Bandeamir | 3 | Shira□ | 2.2 |
| 21 | Kamajan | 4 | Kherame | 2.2 |
| 22 | Jamishi | 4 | Kherame | 2.2 |
| 23 | Ja□in | 4 | Neyri□ | 2.2 |
| 24 | Khanekat | 4 | Estahban | 2.2 |
| 25 | Shargh Abad | 4 | Arsanjan | 2.2 |
| 26 | Palangari | 1 | Kamfirou□ | 3.1 |
| 27 | Bakian | 1 | Kamfirou□ | 3.1 |
| 2□ | Khaniman | 1 | Kamfirou□ | 3.1 |
| 2□ | Hajabad | 1 | Eghlid | 3.1 |
| 30 | Allah Moradkhani | 1 | Kamfirou□ | 3.1 |
| 31 | Dehdamchah | 1 | Marvdasht | 3.1 |
| 32 | Sarmast | 1 | Kamfirou□ | 3.1 |
| 33 | Cham-e-□ir | 1 | Kamfirou□ | 3.1 |
| 34 | Bolaghi | 1 | Pasargad | 3.1 |
| 35 | Charghalat | 4 | Arsanjan | 3.1 |
| 36 | Kenare | 4 | Arsanjan | 3.1 |
| 37 | □ino (Mohamadabad) | 4 | Estahban | 3.1 |
| 3□ | Chahrokni | 4 | Nayri□ | 3.1 |
| 3□ | Dochahi | 4 | Nayri□ | 3.1 |
| 40 | Chahmaleki | 4 | Nayri□ | 3.1 |
| 41 | Temshouli | 4 | Nayri□ | 3.1 |
| 42 | Tang-e-hana | 4 | Nayri□ | 3.1 |
| 43 | Ghasemabad | 4 | Nayri□ | 3.1 |
| 44 | Koushkak | 4 | Nayri□ | 3.1 |
| 45 | Jahanabad | 4 | Nayri□ | 3.1 |

Output 2.1 Climate smart agriculture

The criteria for the selection of villages for Output 2.1 (Climate smart agriculture):

The selection of villages has been conducted on the basis of consultation with the county authorities, farmers, NGOs and also filed experiences. The following items were considered as well:

1. Successful experiences, such as low-water and drought resistant crop with high income: the villages that cultivate saffron, safflower and pistachio as an alternative for rice
2. Successful research and development experiences in reducing water consumption for agricultural purposes. We can have these villages' farmers' cooperation in implementing sustainable agriculture projects.
3. Existence of potentials, including the support of village officials and the presence of leading farmers
4. The location of the villages and their impact on the surrounding villages

The most vulnerable communities:

The vulnerable communities are consisted of farmers, owners of processing industries, livestock breeders, owners of agricultural machinery and etc.

The most vulnerable community is farmers. They have lost their source of income due to the drought. The farmers in Zone 2 are rice farmers and in the other Zones have dry farms of wheat and barley. Among these farmers the farmers of Zone 4 are the most damaged ones. In Zone 1 and 3 the gardeners are from damaged groups from the drought.

The most vulnerable groups are Farm payday workers including rural women, Construction workers in the agricultural sector, owners of processing industries and agricultural inputs such as fertilizers, seeds, pesticides and etc. the rural women and children are the second most vulnerable groups. Teens and young people left school because of poverty. The increased diseases especially in Zone 4 puts pressure on the families and especially women. Among livestock breeders, the ones in Zone 1 and 4 are more damaged due to the loss of rangelands.

| Village name: | Khosroshirin |
|---|---|
| Zone: | 1 |
| Population: | 2400 |
| Households: | □ |
| Women population: | 1100 |
| Children: | 330 |
| Number of Farmers: | □50 |
| Number of workers: | 150 |
| Farm area(ha): | Water farms:3000ha Dry farms: 7000 ha 700ha apple trees 10 ha walnut trees 200ha almond trees |
| Animal husbandry | Cattle breeding/40 households Sheep breeding/40 households |
| alternative livelihoods that are being practiced | Carpet weaving/□0 households Leather sewing/20 households |
| Number of women benefitting from Rural Women's Trust Fund | None |
| Sustainable agriculture techniques that has been already used | To use reduce water consumption, they cultivate beans |

| Village name | Ali abad |
|---|--|
| County/ Zone: | Abade/1 |
| Population: | 175 |
| Household: | 45 |
| Farm area: | 10 ha grapes, almond, apricot, walnuts, 7 ha saffron Water source: dredged qanat |
| Number of farmers: | 45 |
| Sustainable agriculture techniques that has been already used | Change in crop pattern Saffron as an alternative crop |

Note: Ali abad villages are not the same as you can see the zones and counties are different.

| Village name: | Kaftar |
|--|--|
| Zone: | 1 |
| Population: | 1700 |
| Households: | 450 |
| Women population: | 70 |
| Children: | 10 |
| Number of Farmers: | 450 |
| Farm area(ha): | 120 (20 ha apple gardens, 100 ha farms) |
| Number of workers: | 200 |
| Animal husbandry | 50 households |
| households that are already practicing alternative livelihoods | 0 households |
| alternative livelihoods that are being practiced | Carpet weaving |
| Number of women benefitting from Rural Women's Trust Fund | 30 women |
| Sustainable agriculture techniques that has been already used | Change in crop pattern |

| Village name | Hossein abad |
|---|---|
| County/ Zone: | Marvdasht/2 |
| Population: | 1200 |
| Household: | 150 |
| Women: | 510 |
| Children: | 160 |
| Farm area: | 200 ha |
| Number of farmers: | 200 |
| Sustainable agriculture techniques that has been already used | Water rationing and natural fertilizers |

| Village name | Haji abad |
|---------------|-----------|
| County/ Zone: | Beyza/ 2 |
| Population: | 31 |
| Household: | 131 |
| Women: | 170 |
| Children: | 67 |
| | 400ha |

| | |
|---|---|
| Farm area: | Crops: wheat, barley, corn, rice They do both the summer and winter cultivation on the same land |
| Number of farmers: | 134 |
| Number of workers: | 200 |
| Sustainable agriculture techniques that has been already used | none |

| | |
|---|---|
| Village name | Bakian |
| County/ Zone: | Marvdasht/2 |
| Population: | 2100, 500 of which live there but work somewhere else |
| Household: | 430 |
| Farm area: | 700 ha rice, wheat They do both summer and winter cultivation on the same land |
| Number of farmers: | 400 |
| Number of workers: | 100 |
| Sustainable agriculture techniques that has been already used | They ration water for their farms in this way: in 72 hours they just water their farms for 10 hours |

| | |
|---|--------------------------|
| Village name | Biqjan Olya |
| County/ Zone: | 2 |
| Population: | 345 |
| Household: | 100 |
| Women: | 164 |
| Farm area: | 50ha Rice, Wheat, Tomato |
| Number of farmers: | 110 |
| Sustainable agriculture techniques that has been already used | None |

| | |
|---|--|
| Village name | Bidgol |
| County/ Zone: | 2 |
| Population: | 1100 |
| Household: | 206 |
| Women: | 526 |
| Farm area: | 1000ha- Rice, Wheat, Tomato, corn 5 ha Peach, Apple, Apricot garden |
| Number of farmers: | 202 |
| Sustainable agriculture techniques that has been already used | None |

| | |
|---------------|-------------|
| Village name | Fotooh Abad |
| County/ Zone: | 2 |
| Population: | 34 |

| | |
|---|---|
| Household: | 234 |
| Women: | 352 |
| Farm area: | □00ha farms : Rice, Wheat,Tomato - 10 ha garden:Peach,Apple,Apicot |
| Number of farmers: | 230 |
| Sustainable agriculture techniques that has been already used | None |

| Village name | Hesar |
|---|---|
| County/ □one: | 2 |
| Population: | 1577 |
| Household: | 450 |
| Women: | 352 |
| Farm area: | 500 ha- Rice,Wheat,corn,Barley 350 ha garden:Almond,Walnut,Grape, Pomegranate |
| Number of farmers: | 440 |
| Sustainable agriculture techniques that has been already used | None |

| Village name | Kuhak |
|---|--|
| County/ □one: | Shira□ 3 |
| Population: | 3□0 |
| Household: | 70 |
| Women: | 1□0 |
| Farm area: | 1500 ha wheat, barley, alfalfa , safflower 3 ha pistachio |
| Number of farmers: | 77 |
| Sustainable agriculture techniques that has been already used | Changing crop pattern |

| Village name: | Bandeamir |
|---|---|
| □one: | 3 |
| Population: | 1470 |
| Households: | 360 |
| Women population: | 742 |
| Children: | 210 |
| Number of Farmers: | 250 |
| Number of workers: | 350 |
| Farm area(ha): | 2360 ha agricultural lands 100 ha apple, pomegranate, pistachio trees |
| Alternative livelihoods that are being practiced | Carpet weaving/ 50 households Mosaic workshops/ 1 households Quail raising/ 3 households Fisheries/ 2 households |
| Number of women benefitting from Rural Women's Trust Fund | 100 |

| | |
|---|------------------------|
| Sustainable agriculture techniques that has been already used | Change in crop pattern |
|---|------------------------|

| Village name: | Sharghabad |
|---|--|
| □one: | 4 |
| Population: | 7□0 |
| Households: | 232 |
| Women population: | 365 |
| Children: | 200 |
| Number of Farmers: | 150 |
| Number of workers: | 50 |
| Farm area(ha): | 200 ha agricultural lands 100 ha pomegranate trees |
| Animal husbandry | 102 households |
| alternative livelihoods that are being practiced | Carpet weaving/3□ Sewing/5 households Barbers/ 3 Beauty salon/3 |
| Number of women benefitting from Rural Women's Trust Fund | None |
| Sustainable agriculture techniques that has been already used | none |

| Village name | □in abad |
|---|---|
| County/ □one: | Kherame /4 |
| Population: | 243 |
| Women: | 153 |
| Children: | 33 |
| Farm area: | 1400 ha Wheat, barley, Alfalfa, Safflower 1ha pistachio |
| Number of farmers: | □2 |
| Sustainable agriculture techniques that has been already used | Changing Crop pattern Safflower as an alternative for wheat and rice |

| Village name | Ali abad malek |
|---|---|
| County/ □one: | Arsenjan/ 4 |
| Population: | 1□7□ |
| Household: | 600 |
| Women: | □□5 |
| Children: | 330 |
| Farm area: | □00ha wheat, barley, corn, tomato 40 ha pomegranate, peach |
| Number of farmers: | 615 |
| Number of workers: | 230 |
| Sustainable agriculture techniques that has been already used | 0 |

Output 2.2: Alternative livelihoods

The criteria for the selection of villages for Output 2.2 (Alternative livelihoods):

The selection of villages has been conducted on the basis of consultation with the county authorities, NGOs and also field experiences.

The first criteria for selection of these villages was based on covering each of the four defined zones. The other criteria include:

1. **Signs of engagement and initiatives from the communities**, especially women. We can see initiatives for development in some of these villages as a few progressive people have started their own small enterprises although these enterprises are not providing them with enough income. Also a concern about their environment can be seen in these villages, as a local NGO has started working in Aliabad village and they were participating in other environmental projects and reporting environmental invasions to the DOE office.
2. **The location of the villages** and their impact on the surrounding villages.
3. **Capacity**, it seems that no other project is presently making demands on the villagers.
4. **Accessibility**, by road the villages are accessible by all vehicles throughout the year.
5. **Village management**, the selected villages have cooperative and accessible village chairmen.
6. **Biodiversity**, the impact of the villages' livelihoods on their surrounding biodiversity was considered.

Zone 1

Emamzade Esmail village: the village has vast grape lands. They exploit forest resources (agros). There is a conflict between local community and wildlife (such as brown bear) due to the competition over food supplies. It can be predicted that the alternative livelihood in this village can be a help to the conservation of the forest and water resources.

Kordshul: this village which is located in zone 1, Pasargad County, is damaged in agriculture section due to the reduction of the groundwater level.

Zone 2

Aliabad: this village is located in Marvdasht County, Kamfiroo district. This region is famous for rice cultivation but due to the overuse of water resources some of the villages such as Aliabad has faced difficulties in agriculture, their livelihood used to rely on rice cultivation.

Doroodzan: this village uses surface water resources (Kor River), ground water resources, fertilizers and pesticides. They cultivate water consuming crops and the downstream water right is used for unsustainable agriculture in this region. Reduction of the livelihood reliability of this village on agriculture is one of the reasons for its selection.

Zone 3

Bande amir: Similar to Doroodzan this village uses surface water resources (Kor River), ground water resources, fertilizers and pesticides. They cultivate water consuming crops and the downstream water right is used for unsustainable agriculture in this region. Reduction of the livelihood reliability of this village on agriculture is one of the reasons for its selection.

Zone 4

Kamjan, Jamishi and Jazin are the downstream villages that are located in zone 4 and their livelihoods which rely on agriculture, animal husbandry and buffalo raising are completely lost, in other words people has lost their income sources. In these villages even providing drinking water for the residents

seems to be facing difficulties. Poverty, unemployment and migration is so obvious in these villages and their first priority is their livelihood. Earlier in Kamjan the alternative livelihoods were introduced to some extent so they are willing to cooperate in the upcoming relevant projects.

Jazin: it is located in □one 4 and is selected due to its proximity to Tashk wetland. It is located in a situation between downstream villages and □one 3 villages and the well water become saline and the local community has turned into cultivating pistachio.

Khane kat: this village is close to Bakhtegan wetland and has lost its groundwater resources, its fig lands has been severely damaged and every year the villagers invade Bakhtegan wildlife shelter lands and turn these lands to their fig farms. This cause a major conflict between local community and DOE.

Shargh abad: the reason for the selection of this village is that the water resource of this village is Gomban spring while this spring is the only existing water resource for Tashk wetland and also the fact that they invade wetland lands for agricultural purposes. It was intended to consider alternative livelihoods besides sustainable agriculture, so their livelihood would be less dependent on agriculture.

| Village name: | Kamjan | |
|---|--|---|
| □one: | 4 | |
| Population: | 2100 | |
| Households: | 370 | |
| Women population: | 1234 | |
| Children: | 365 | |
| Number of Farmers: | 317 | |
| Number of workers: | 620 | |
| Farm area(ha): | 1100 | |
| livelihoods | From | to |
| Livestock | Sheep breeding: 50 households Cattle breeding :110 households | 70 households 140 households |
| alternative livelihoods | Sewing /2 households Mushroom production/25 households Carpet weaving/35 households Beekeeping/1 household Guesthouse/ 1 household Block building workshop/ 1 household Homemade Tomato paste / 20 household Homemade Pomegranate sauce/20 household Local bread production/ 15 households Local vegetable production/20 households Local chicken production/10 households | 4 50 60 0 0 0 40 40 25 0 30 |
| Number of women benefitting from Rural Women's Trust Fund | 43 | 300 |

| Village name: | Jamishi |
|---------------|---------|
| □one: | 4 |

| | | |
|---|---------------------------------|----|
| Population: | 26 | |
| Households: | 6 | |
| Women population: | 0 | |
| Children: | 3 | |
| Number of Farmers: | 6 | |
| Farm area(ha): | 570 | |
| Number of stockmen: | 22 | |
| Stock | Cows- buffalos | |
| livelihood | From | To |
| Alternative livelihoods | Chicken and turkey breeding :24 | 40 |
| | Carpet weaving: 0 households | 10 |
| | Mushroom units: 0 | 5 |
| Number of women benefitting from Rural Women's Trust Fund | None | 60 |

| | | |
|--|---|---------------|
| Village name: | Khanekat | |
| one: | 4 | |
| Population: | 1250 | |
| Households: | 340 | |
| Women population: | 600 | |
| Children: | 0 | |
| Number of workers: | 100 | |
| Number of Farmers: | 400 | |
| Farm and garden area(ha): | 610 (600 ha fig gardens, 10 ha farms) | |
| households that are already practicing alternative livelihoods | None | |
| alternative livelihoods that are being practiced | None | |
| Number of women benefitting from Rural Women's Trust Fund | None | |
| Livelihood | From | To |
| alternative livelihoods | Products of fig(Sweet,Jam,sauce.etc): None | 100 household |
| | Fig packing & sorting:None | 40 |
| | Carpet weaving :None | 10 |

| | | |
|--------------------|-------------------|----|
| Village name: | EmamadeEsmail | |
| one: | 1 | |
| Population: | 2500 | |
| Households: | 560 | |
| Women population: | 110 | |
| Children: | 300 | |
| Number of Farmers: | 560 | |
| Farm area(ha): | 00 ha grape farms | |
| Number of workers: | 200 | |
| Animal husbandry | 60 households | |
| Livelihood | From | To |

| | | |
|---|---|-------------|
| alternative livelihoods that are being practiced | Packaging beans:1household | 5 household |
| | Carpet weaving : 20 households | 40 |
| | Block building workshop: 1 household | 5 |
| | Grain Sifting: 4 households | □ |
| | Sheep husbandry: 60 | □0 |
| | Green Grape juice and raisin products: None | 20 |
| Number of women benefitting from Rural Women's Trust Fund | | None |

| | | |
|---|--|-----|
| Village name: | Ja□n | |
| □one: | 4 | |
| Population: | 753 | |
| Households: | 235 | |
| Women population: | 366 | |
| Children: | 105 | |
| Number of Farmers: | 100 | |
| Farm area(ha): | □0 ha pomegranate 30 ha pistachio 2□0 ha farm lands(Barley, wheat) | |
| Livelihood | From | To |
| alternative livelihoods that are being practiced | Carpet weaving:10 households | 20 |
| | Block making unit: 1 | 2 |
| | Pomegranate sauce : None | 20 |
| | Pistachio processing: None | 10 |
| | Wheat sifting : None | 2 |
| Number of women benefitting from Rural Women's Trust Fund: None | | 1□0 |

| | | |
|--|--|--|
| Village name: | Sharghabad | |
| □one: | 4 | |
| Population: | 7□0 | |
| Households: | 232 | |
| Women population: | 365 | |
| Children: | 200 | |
| Number of Farmers: | 150 | |
| Number of workers: | 50 | |
| Farm area(ha): | 200 ha agricultural lands 100 ha pomegranate trees | |
| Animal husbandry | 102 households | |
| alternative livelihoods that are being practiced | Carpet weaving/3□ Sewing/5 households Barbers/ 3 | |

| | |
|---|----------------|
| | Beauty salon/3 |
| Number of women benefitting from Rural Women's Trust Fund | None |

| | | |
|---|--|----|
| Village name: | Kordeshul | |
| □one: | 1 | |
| Population: | 1100 | |
| Households: | 220 | |
| Women population: | 540 | |
| Children: | 120 | |
| Number of Farmers: | 1□0 | |
| Farm area(ha): | 1□00 ha | |
| Animal husbandry | | |
| Livelihood | From | To |
| alternative livelihoods that are being practiced | Mushroom production: 1 household | 5 |
| | Livestock food production: 1 household | 10 |
| | Salty Cucumber and pickles production: 2 household | 10 |
| | Flux weed packing: None | 10 |
| | Bean packing: None | 20 |
| | herbal plants packing: None | 20 |
| | 50 ha of herbal plants were cultivated but due to the lack of market the farmers are not willing to continue | |
| Number of women benefitting from Rural Women's Trust Fund:0 | 1□0 | |

| | | |
|--|---|----|
| Village name: | Ali abad | |
| □one: | 2 | |
| Population: | 1420 | |
| Households: | 3□7 | |
| Women population: | 3□7 | |
| Number of Farmers: | 215 | |
| Farm area(ha): | 435 ha 100ha has been dried 335 ha is already under cultivation 20 ha garlic | |
| Animal husbandry | 5 household | |
| Livelihood | From | To |
| alternative livelihoods that are being practiced | Carpet weaving: 3 household | 10 |
| | Mushroom production: 1 household | 3 |
| | Saffron packing : 0 | 2 |

| | | |
|---|-------------------|----|
| | Garlic pickles: 0 | 10 |
| Last year 2 households raised ducks but not this year | | |
| Number of women benefitting from Rural Women's Trust Fund: None | | 10 |

| Village name: | Doroodkan |
|---|---|
| one: | 2 |
| Population: | 160 |
| Households: | 700 |
| Women population: | 00 |
| Children: | 200 |
| Number of Farmers: | 1350 |
| Farm area(ha): | 00 |
| Number of workers: | 150 |
| Animal husbandry | households |
| alternative livelihoods that are being practiced | 1 households/carpet weaving Rice processing workshops/ 3 households Mosaic workshops/1 household Sewing/ 1 household Local chicken breeding/10 households |
| Number of women benefitting from Rural Women's Trust Fund | 50 |

| Village name: | Bande amir |
|---|---|
| one: | 3 |
| Population: | 1470 |
| Households: | 360 |
| Women population: | 742 |
| Children: | 210 |
| Number of Farmers: | 250 |
| Number of workers: | 350 |
| Farm area(ha): | 2360 ha agricultural lands 100 ha apple, pomegranate, pistachio trees |
| alternative livelihoods that are being practiced | Carpet weaving/ 50 households Mosaic workshops/ 1 households Quail raising/ 3 households Fisheries/ 2 households |
| Number of women benefitting from Rural Women's Trust Fund | 100 |
| Sustainable agriculture techniques that has been already used | Change in crop pattern |

| Village name: | Sharghabad |
|-------------------|------------|
| one: | 4 |
| Population: | 70 |
| Households: | 232 |
| Women population: | 365 |
| Children: | 200 |

| | |
|---|---|
| Number of Farmers: | 150 |
| Number of workers: | 50 |
| Farm area(ha): | 200 ha agricultural lands 100 ha pomegranate trees |
| Animal husbandry | 102 households |
| alternative livelihoods that are being practiced | Carpet weaving/3 Sewing/5 households Barbers/ 3 Beauty salon/3 |
| Number of women benefitting from Rural Women's Trust Fund | None |

Output 3.1- Ecosystem conservation in the Bakhtegan Basin

The criteria for the selection of villages for Output 3.1 (*A range of watershed management measures are implemented in target areas aimed at increasing resilience to drought risks*)

Zone 1

Palangari, Bakian, Khaniman, Hajiabad, Moradkhani, Dehdamcheh, Sarmast and Cham-e-riz villages under Marvdasht and Kamfirouz counties; the aforementioned villages are located in the Zagros mountain forest area. The selected forest degraded area has been under various threats during the last few decades due to over/illegal harvesting and the recent drought due to climate change. Continuation of current trends will lead to further destruction of forested areas in the Zagros Mountain. The suggested activities and improved management can help forest area survive and continue to sustain the livelihoods of people in the target village. Undeniably the forest also has a crucial role to play in conserving the soil and water resources as well as contributing to carbon sequestration.

Bolaghi Village under Pasargad county the main land-use of this village is the rangeland in the hilly area. There is firstly, an issue of livestock overgrazing and secondly, a reduction of quantity and quality of the rangeland due to the dry climate conditions which have been faced by the targeted people under threat. Available existing social and technical capabilities for medicinal plantation in the aforementioned villages will require financial and technical support to reduce the high pressure on the rangeland. The targeted people currently have some small traditionally planted medicinal plantation areas.

Zone 4

Charghalat & Kenare under Arsanjan county; These two villages are located in the lowest south-eastern part of Bakhtegan wetland. Rainfall reduction and the recent prolonged drought are the most important challenges faced by local people in these villages. The steep slope and hilly terrain conditions of the upper marginal lands causes high intensity, short duration, rainfall, with rapid surface runoff. Construction of artificial surface water recharge and checkdams will enable surface runoff to penetrate the shallow and deep aquifers. The suggested activities can also help compensate for the very high reductions in well water levels in the targeted villages.

Zino (Mohamadabad) village under Estahban county this village is located in an arid climate area which is under high pressure from the extended dry condition. The main land use is low quality rangeland and some small cultivated areas. The drought conditions have resulted in reduced income in the targeted village which has resulted in some villagers migrating to urban areas. Recently, the local farmers have planted rose flowers to help them survive economically and also to reduce the high pressure on ground water through cultivating a reduced area. The existing capabilities to develop the rose flower plantation in some rangeland and the arable areas is the main focus for this village.

Chahrokni and Dochahi villages under Nayriz county; these two villages are located in the side of the Bakhtegan wetland that has intensified desert conditions with degraded vegetation cover. The rehabilitation of the vegetation cover will help to reduce the intensity of desertification. The suggested

hoeing-sowing and pitting activities will improve the quality and quantity of rangeland conditions in the targeted villages/lands. The suggested activities will also rehabilitate the ecosystem conservation as well as the targeted farmers' livelihoods.

Chahmaleki, Temshouli, Tang-e-hana and Ghasemabad villages under Bakhtegan 1 county; Traditionally these villages have planted fig and almond. Both fig and almond trees are resistant to dry climate condition with the local people adapting autonomously to the changing climate. The targeted villages have the knowledge to develop the above species and just need some technical and economic supports to provide the production inputs. The existing participatory approach between the targeted people is the main advantage that will also guarantee success with the suggested activities. The existing plantation and caretaking of the plantation areas are one of the most successful methods for water and soil conservation in the targeted villages.

Koushkak and Jahanabad villages under Bakhtegan 2 county; both targeted villages are located on the eastern side of the Bakhtegan wetland. The salinity, alkaline and heavy soils as well as the weak drainage system plus the prolonged dry period and drought conditions in the poor rangelands have resulted in non-productive plantations in the face of desertification. The targeted site will protect the targeted villages/people against wind storm/erosion. Haloxylone and Tamarix and some similar varieties to be suggested by the national experts will be planted to protect the targeted sites. Another aspect benefit will be improvement of the landscape of the targeted areas.

Some more interpretations Output 3.1 activities and the relevant target villages

| Activity | Target Village(s) | Population |
|--|--|--|
| Executing the soil and water conservation with the Masonry Checkdams and Five water recharge ponds | Charghalat □ Kenare Villages under Arsanjan County | Charghalat: 303 people Kenare: 155 people |
| Rangeland rehabilitation by using: - hoeing sowing in 100 ha - Pitting for rainfall detention in 250 ha | Dochahi □ Chahrokni Villages under Nayri□ County | Dochahi □ Chahrokni: 70 and 40 households who are doing outdoor animal husbandry in the rangelands |
| Combat desertification with: - Fig and Almond plantation in 200 ha - Non-productive tress plantation in 250 ha | Chahmahaki, Temshouli, Tang-e-hana, Ghasemabad, Abasabad and Bestroum under Bakhtegan1 County Koushkak □ Jahanabad under Bakhtegan 2 County | Chahmahaki: 1000 people Temshouli: 1□□0 people Tang-e-hana: 1515 people Ghasemabad: 2035 people Abasabad: 513 people Bestroum: 31□7 people Koushkak: 1□6□ people Jahanabad: 1576 people |
| Development the medicinal plants: - Rose flower plantation in 200 ha - Prangos ferulacea (L.) Lindl plantation in 100 ha | □ino □ Bolaghi villages under Estahban and Pasargad Counties respectively | □ino □ Bolaghi: 1140 people |
| Protection and development of □agros forest with: - Seeding reforestation - Agro-forestry | Palangary, Bakian, Kaniman, Hajiabad, Moradkhani, Dehdamche, Sarmast, Chameri□and Dehdamche villages under Marvdasht County | Relevant villages total population: 107□0 people |

Output 3.2- Rehabilitation and conservation in protected areas

The criteria for the selection of villages for Output 3.2

Zone 1

Margoun waterfall protected area; the Margoun waterfall protected area is located in the north-western mountain part of the Bakhtegan Basin. The targeted site totally depends on water resources that were negatively affected by water shortage resulting from drought and the extended dry period over the last decade. The waterfall is not only a unique landscape feature in the Bakhtegan Basin but also is the main livelihood source for local people. The serious water resource reductions due to last decade of drought has resulted in a fragmented condition of the target protected area. The suggested biodiversity monitoring will improve the stakeholders' decisions and reactions towards following more resilience policies and management.

Basiran hunting prohibited area; the targeted area is located in the north-eastern part of the basin in a mountainous forest area. The extended drought period and the high frequency of hunting have increased the threats to wild life. Participatory engagement with local people, constructing the artificial wildlife watering, artificial wild feeding in the dry and hot summer and raising the level of protection from 'prohibited hunting area' to 'protected area' are the main project activities to enhance the resilience of wildlife in the targeted area.

Tang-e-bostanak hunting prohibited area; is one of the important shelters for the wildlife in Bakhtegan Basin. The human offenses and the high intense water shortage are the main threats for the wildlife and biodiversity in this area. Protecting endangered wild species through construction of the artificial watering and feeding in summer and improving the biodiversity monitoring system are the main proposed adaptation activities. The suggested activities will also improve the level of protection from 'prohibited hunting area' to 'protected area'.

Zone 3

Bamou national park; Bamou national park (BNP) is categorized as a dryland ecosystem in the Bakhtegan Basin which has been affected by both human impacts and climate change. The engagement with local people in a participatory manner and raising the level of protection are the main two approaches to increase the level of the resilience in BNP. This approach therefore recognizes rural communities as key partners in biodiversity management and seeks their participation in social development and biodiversity conservation. Some analysis results from independent sources revealed a moderate general knowledge about MNP and environmental issues, the lack of interaction between local people and government authorities, eagerness to participate in the activities of BNP, general support for the conservation cause, and important differences among the surrounding villages.

Kouhsiah-e-arsanjan hunting prohibited area; is another shelter for the wildlife in Bakhtegan basin which is located in the highest dryland ecosystem compared to the previous hunting prohibited area. The suggested activities follow the same approach that was explained for the Tang-e-bostanak hunting prohibited area. The main outcome of the suggested activities will be to increase the resilience of the targeted area against the climate change through development of a bottom-up participatory management system.

Zone 4

Kamjan wetland; is one of the registered wetlands under the Ramsar convention which has been adversely affected by the expansion of agriculture area along with the aggregated droughts in Zone 4. Kamjan wetland has become one of the most important wildlife shelters for the migrant birds, buffalo husbandry by the local targeted people in the surrounding targeted villages. Once one of the biggest wetlands in the Bakhtegan Basin, Bakhtegan and Tashk wetland, is now completely dried. The suggested two activities include: i) biological treatment of drainage inputs to the wetland and also engagement with surrounding farmers to encourage reductions in agro-chemical usage and ii)

reformation work to the bed of the wetland to increase its depth and capacity, which will help the sustainable resilience of the wetland through dry periods.

Bakhtegan National Park (BNP); BNP consisted of the both aquatic and dryland ecosystems in the Bakhtegan Basin with the aquatic part now dry. The dryland ecosystem habitat is also under serious threat and will require urgent rehabilitation work to sustaining it. The high competition between wildlife and livestock for limited water and food is one of the biggest challenges which will require engaging a bottom up participatory management system among the other suggested activities to build resilience of BNP against the now prevailing dryland conditions. These actions may help the survival of wildlife and assist the local people towards developing sustainable livelihoods.

ANNEX 6 - BACKGROUND TO SIMCLIM AND CLIMSYSTEMS

Background to SimCLIM and CLIMsystems

SimCLIM is the only available scenario generator which uses CORDEX RCM data (all bias corrected) that is integrated directly with GCM data so that master ensembles of RCM and GCM data can be applied. The ability to access this many models and to rapidly build ensembles and thus conduct statistical analysis on the ensembles (0th and 10th percentile or any percentile of your choosing) is not available with any other tools. This follows IPCC best practice guidance.¹¹

CLIMsystems, the company behind SimCLIM, are very transparent on the limitations of application of their software and data. They also have high quality daily extreme event analysis tools within the software that are driven off the results of daily GCM models. This is the only tool that permits such rapid assessment of extremes, not just rainfall but also heat events. These are site specific tools.

The only alternative approach to that available with SimCLIM is to do things from scratch, either by using GCM/RCM output data directly, or by following the methodology used in SimCLIM. Many researchers and consultants have developed their own software code to do this, but only for their own research or consultancy purposes. Working directly with RCM and GCM data is not advisable. Data first needs to be acquired and not just for a handful of models. The IPCC guidance recommends using as many models as possible. Then you need to check the data and clean it and process it using bias correction methodologies and so on. This is very time consuming and considerable expertise is required. It is very easy to make mistakes. Such work takes time, years in some cases, and a lot of bandwidth, computer storage and processing power.

A lot of the underlying work done by CLIMsystems over many years is documented in the following series of LinkedIn posts:

<https://www.linkedin.com/pulse/brief-introduction-how-apply-idf-information-chonghua-yin>
<https://www.linkedin.com/pulse/small-note-updating-short-duration-idf-curves-under-climate-yin>
<https://www.linkedin.com/pulse/do-get-confused-change-factor-method-bias-correction-when-yin>
<https://www.linkedin.com/pulse/bias-correct-methods-used-statistical-adjustment-gcmrcmsdsm-yin>
<https://www.linkedin.com/pulse/statistical-bias-correction-subdaily-daily-chonghua-yin>
<https://www.linkedin.com/pulse/what-governs-decision-making-process-when-moving-from-chonghua-yin>
<https://www.linkedin.com/pulse/analysis-extreme-precipitation-changing-climate-chonghua-yin>
<https://www.linkedin.com/pulse/pathways-regionalised-climate-change-informaton-chonghua-yin>

Also note that CLIMsystems are on the following lists:

<http://www4.unfccc.int/sites/nwp/Pages/item.aspx?ListItemId=22064&ListUrl=/sites/nwp/Lists/MainDB>
<http://www4.unfccc.int/sites/NWP/pages/item.aspx?ListItemId=22001&ListUrl=/sites/nwp/Lists/MainDB>
<http://www4.unfccc.int/sites/nwp/Pages/item.aspx?ListItemId=22000&ListUrl=/sites/nwp/Lists/MainDB>
<https://www.ctc-n.org/network/network-members/climsystems-ltd>

If you go to the UNFCCC site and inputs risk assessment tools you get a list:

¹¹ Knutti, R., G. Abramowitz, M. Collins, V. Eyring, P.J. Gleckler, B. Hewitson, and L. Mearns, 2010: Good Practice Guidance Paper on Assessing and Combining Multi Model Climate Projections. In: Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Assessing and Combining Multi Model Climate Projections [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, and P.M. Midgley (eds.)]. IPCC Working Group I Technical Support Unit, University of Bern, Bern, Switzerland.

<http://www4.unfccc.int/sites/nwp/Pages/Search.aspx?k=risk%20assessment%20tools>

Note that most on this list are service providers (consultants) and some of them are actually using SimCLIM and other CLIMsystem tools.

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Li, Y., Yin, C., Ulrich, P. (2016). Development of an integrated climate change impact assessment tool for urban policy makers (UrbanCLIM). APN Global Change Research. Final Report. p.77.

ANNEX 7 - SGP'S ELIGIBILITY CRITERIA FOR GRANTEES AND PROJECTS

- 1. Organization carrying out the project**
 - a. Registered NGO or recognized CBO in the village
 - b. Existence and effectiveness of decision-making structures/ board
 - c. Existence of a bank account
 - d. Required administrative attachments
 - e. Description of past experience and lessons learned from them
 - f. Influence on and other groups in the village involved in the project
 - g. Grassroots ownership (potential tensions for ownership of the project)
 - h. Identification of potential risks and barriers to the implementation
 - i. Scoping and designing an adaptation project
 - j. Engaging stakeholders in the adaptation process
- 2. Local vulnerability and resilience analysis**
 - a. Identification of climate related risks and their drivers
 - b. Analysis of ecosystems and land practices current and future vulnerability
 - c. Analysis of community current and future vulnerability
- 3. Adaptive capacity and resilience building**
 - a. Assessing vulnerability for climate change adaptation
 - b. Assessment of current and future adaptive capacity
 - c. Analysis of available coping strategies
 - d. Previous attempts to tackle environmental issues
 - e. Check if different options have been explored
 - f. Technical / scientific survey conducted
 - g. Viability of chosen option
 - h. Promotion of indigenous coping practices
 - i. Developing and formulating adaptation strategies
- 4. Compliance of the goal with targeted environmental areas**
 - a. GEF focal areas operational programme
 - i. Climate Change adaptation under the countries CPS for the phase
 - ii. CBA programme overall goal
 - b. Approved CBA Country Programme Strategy
 - i. Geographical sectors identified
 - ii. Thematic areas identified
 - c. Other National and Local Policies that should be influenced and or promulgated out of the project experiences
- 5. Benefits of the project**
 - a. Beneficiaries
 - i. Most vulnerable groups (youths, women, fishermen, other disadvantaged etc)
 - ii. Future generations
 - iii. Other secondary beneficiaries via capacity building / raising awareness activities
 - iv. Respect of gender equality, balance between socio economic groups, human rights etc
 - b. Measurable benefits
 - c. Long term and immediate benefits
 - d. Sustainable livelihoods provisions both for immediate and long terms agenda
 - e. Provision of Global Environmental Benefits (GEB)-optional but highly recommended
 - f. Resilience building around and to promote these GEBs

ANNEX 8 - REPORT ON CONSULTATIONS IN THE BAKHTEGAN BASIN

The outputs of the consultative meetings in the downstream counties

A. First workshop: 2017 December 15th

Venue: Kherame County (with the participation of both Kherame and Arsenjan counties stakeholders)

The participants profile:

| Name | Organization | Position | Phone number |
|---------------------------|--|--------------------------|--------------|
| Argive | Kherame County governmental office | County governor | |
| Alireza Ghaedi | Kherame County government office | Deputy | |
| Khoram | district, named Central, governmental office | head | |
| Korbal | district, named Korbale, governmental office, jihad-of-agriculture | head | |
| Gavin Kenny | UNDP | International consultant | |
| Reis Lope | UNDP | | |
| Ahmad ali Korbale | Arsenjan County governmental office | deputy | 09177157440 |
| Hassan Ebrahimi | Arsenjan DOE | chief | 0917211367 |
| Seyed Jafar Musavi | Arsenjan jihad agricultural organization | deputy | 09177217352 |
| Omid Farvardin | The representative of the gardeners and farmers of Fars province | | 09177017051 |
| Seyed Eynolabedin Hashemi | Ghalat-e-sabz association | NGO Secretary | 09171213255 |
| Seyed Ahmad Hashemi | Arsenjan Natural resources organization | deputy | 09176141511 |
| Hamidreza Ebrahimi | | NGO | 093762333004 |
| Mohammad ali Hamedi | Royan company National consultant | Project manager | 0912576012 |
| Mehdi Korbekani | Royan company National consultant | general manager | 09122015545 |
| Hossein Ranjbar | County Natural resources organization | expert | 09171313213 |
| Masume Mohammadi | Kherame County governmental office | expert | 09177173213 |
| Morteza Korbale | The representative of the county council in the province council | | 09171106476 |
| Hamid Karimi | The central district council | chief | 09171121211 |
| Mohammad Amin Bahmanpour | The Islamic council of Kherame County | chief | 09177071111 |
| Mansour Shiravani | Kherame DOE | chief | 09173301644 |
| Ali Marzoughi | Rooyan Company National consultant | expert | 09123264216 |

| | | | |
|-----------------------|---|--|-------------|
| Hamidreza Soleymani | Organization of Forests, Rangeland and Watershed Management | A member of the high council | 09123107715 |
| Abdolhossein Dehghani | Agricultural trade union | Vice president | 0917194130 |
| Kavoosi Hemati | Agricultural jihad Organization of the county | chief | 09173101914 |
| Behbood Jameshi | | A Village headman | 09179357935 |
| Saïde Ibrahimi | Irrigation office of the county | chief | 09177199040 |
| Leila Juliaie | Local consultant(Fars DOE) | Facilitator (head of the wildlife monitoring department of Fars DOE) | |
| Pardis Valavi | Local consultant | | 09171109134 |
| Sirous Karami | Local consultant | | |
| Mehrasha Mehrdadi | DOE | | |

The first workshop was held in Kherame governmental office with the participation of the governmental and local stakeholders from Kherame and Arsenjan counties. It was requested from the participants to discuss the impacts of drought on the natural resources and their livelihoods.

Participants' point of view on the impacts of climate change and drought on the cities and villages of the downstream of the basin:

1. Creation of new water rights from Kor river
2. Change in the local community livelihoods
3. Being obliged to have illicit jobs in the cities
4. Compulsory change of cultivation pattern
5. Conflicts between government and people
6. Water Conflicts among basin counties
7. not considering the environmental water rights in the allocation of water resources
8. Increase in divorce (according to available documents at the court counseling center), depression and crime rates
9. Increased dust winds
10. Increased water consumption(agriculture and household) due to low humidity because of lakes drying out
11. Increased digging new illegal wells
12. Increased agricultural production costs and lack of economic feasibility
13. Closure of the agricultural section
14. Farmers' debts to banks and compulsory escape from the region
15. Migration to Shiraz
16. The loss of immigrants' social structure and culture can cause a grief reaction. Depressive symptoms including significant decline in self-esteem and self-identity can be seen among them.
17. Increased crime
18. Damages to conversion industries
19. loss of livelihood avenues in Korbil
20. students are forced to leave school due to poverty
21. loss of agricultural insurances
22. Change in the usage of dams from power generation to agricultural water supply
23. Land degradation and land use change
24. Increased skin diseases

25. loss of the wetland biodiversity
26. groundwater-level declines of approximately 200 meters
27. Saltwater intrusion
28. Decrease in agricultural productions
29. Cultural bereavement, a paramount aspect of the migrant's experience
30. The area under cultivation has been declined, for example in some areas it has been declined to 1500 hectares from 4300 hectares
31. Livestock reduction, Hassan Abad village is a case that can be mentioned as an example .This village was famous for its buffalos, and now the number of buffaloes has dropped from 1,000 to 230.
32. Changes in wetland area with high fluctuations
33. Reduced wet surfaces
34. Temperature fluctuations between night and day
35. Increasing desertification
36. Overgrazing and rangeland destruction and deterioration
37. Indiscriminate exploitation of the forest products such as *Pistacia atlantica*, cumin and thyme

Management of Exploitation in rangelands and forests, monitoring forests and rangelands, and collaborative conservation are the proposed solutions for the conservation of forests and rangelands.

Proposed solutions by participants for Climate Adaptation in the Bakhteghan basin:

1. promote sustainable alternative livelihoods such as:
 - sewing
 - carpet weaving
 - local chicken raising(local chicken farming)
 - Local Bread Production
 - Packaging workshops
 - Local dairy production
 - Ornaments and leather productions(they should be trained first)
 - Horse training and launching riding clubs
2. Setting up rural small grants
3. Eco-tourism projects and attracting tourist considering the potentials of the region such as:
 - A place named Qanat in Arsenjan
 - Pomegranate festival in Arsenjan
 - Bird watching
 - Agro tourism and rural tourism
 - local foods festivals
 - traditional and religious ceremonies like Taa'ee
4. establishing private hunting districts
5. planting *Carthamus tinctorius*

The challenges of implementing these suggested solutions were discussed to be:

- Incompatibility with existing laws
- Inconsistencies between executive authorities
- The lack of license for selling local productions Due to the lack of sanitary and standard permits

So with trainings for the development of home-based businesses, doing feasibility studies and creating a market for more sustainable alternative businesses, these challenges can be overcome.

B. The second workshop: 2017 December 16th

Venue: Estahban County (with the participation of both Estahban and Neyri counties stakeholders)

The participants profile:

| Name | Organization | Position | Phone number |
|--------------------------------|---|-----------------|--|
| Ali Rahvar | Neyri County governmental office | deputy | |
| Hashem nia | district, named Central, governmental office | chief | |
| Hossein Momtazian | Neyri County governmental office | expert | |
| Fereydoon Heydari | The water resources office of Neyri county | | 0173234007 Faridonheydari@gmail.com |
| Nader Niyaei | district, named Roni, governmental office | chief | 0171323150 |
| Mohammad ali Hamedi | Royan company National consultant | Project manager | 012576002 |
| Hassan Baniasadi | Natural resources organization of Neyri | | 0173304503 |
| Hamid Elahi | The representative of Estahban county farmers | | 0171300274 Elahiamid47@gmail.com |
| Somaye Ranjbar | The representative of Estahban county women and also a member of the county council | | Ranjbarsomayeh63@gmail.com 0174350266 |
| Mohammad Mahdide | The water resource office of Estahban county | | 0163010450 |
| Mojahed Mehdi Alishahi | Natural resources organization of Estahban | | 0173316475 Estahban.gis@gmail.com |
| Mehrad Jangali | A member of Estahban council | | 0172572650 |
| Rasool Hajibagheri | Gorooh-e-mardomi dideban Estahban | NGO | 0171305074 |
| Seyed Esmail Jalali | Agricultural jihad Organization of Neyri | | 0177102200 |
| Javad Mehdipoor | Neyri DOE | chief | javadmahdepoor@yahoo.com |
| Mohammadhossein Malek Hosseini | Agricultural jihad Organization | | 0173320344 |
| Ali Marzoughi | Rooyan Company National consultant | expert | 0123264206 |
| Mehdi Marekani | Royan company National consultant | general manager | 0122005545 |

| | | | |
|---------------------|--|--|-------------|
| Gavin Kenny | UNDP | International consultant | |
| Reis Lope□ | UNDP | | |
| Hamidre□a Soleymani | Organization of Forests Rangeland and Watershed Management | A member of the high council | 0□123107715 |
| Aliakbar Safaii | DOE of Estahban | chief | 0□363637□15 |
| Leila Julaie | Local consultant(Fars DOE) | Facilitator (head of the wildlife monitoring department of Fars DOE) | |
| Pardis Valavi | Local consultant | | 0□17110□134 |
| Sirous □are | Local consultant | | |
| Mehrasa Mehrdadi | DOE | | |

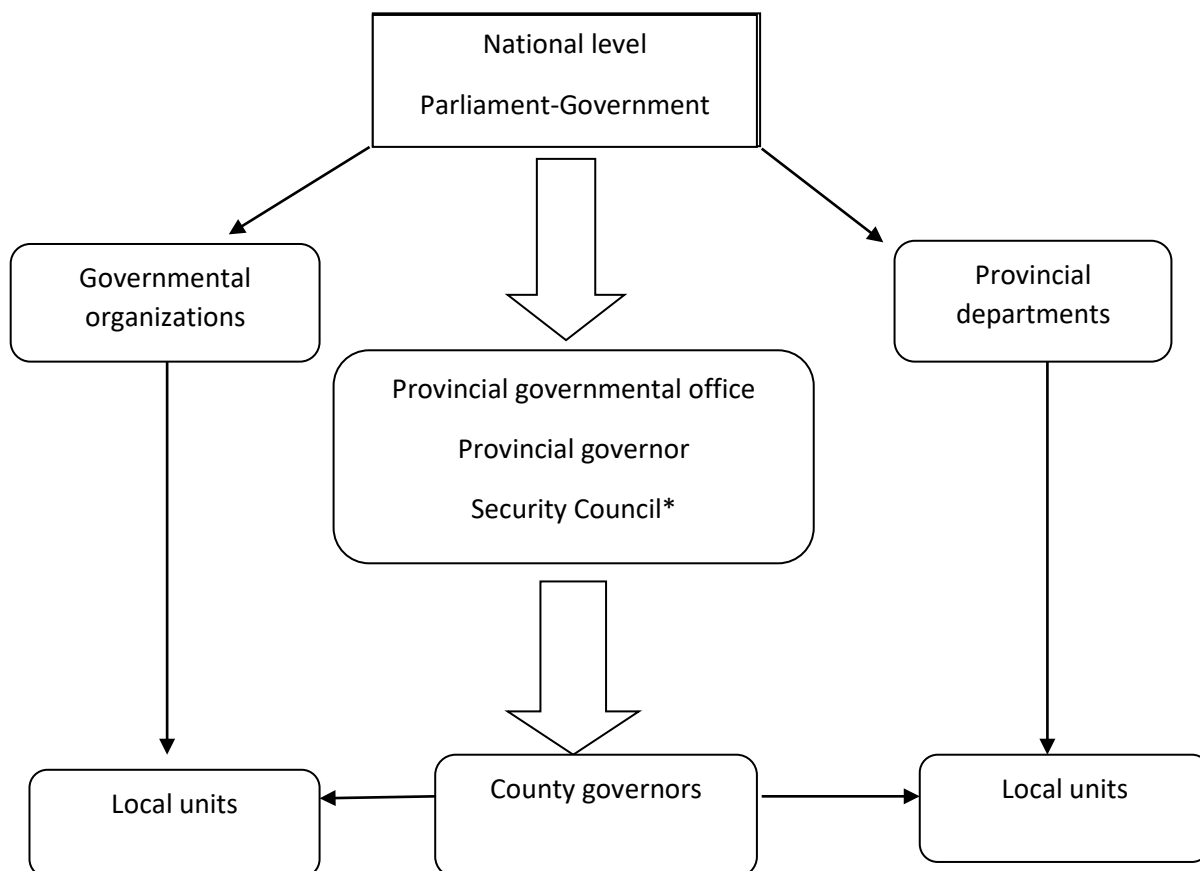
Based on the comment of the international consultants, in the second workshop the focus was on **Approaches to adaptation** based on current conditions. In the beginning, the existing approaches which have been used by the stakeholders for dealing with the situation caused by drought had been discussed (With a focus on the local community livelihood and the supports that they receive from authorities). Then it was requested from the participants to submit their solution suggestions. The challenges for implementing these solutions were also discussed. The outputs of this session are provided in Table 1.

Table1. The outputs of the first section of workshop

| The existing approaches to climate change adaptation in Estahban and Neyriz counties | The received supports for implementing approaches | Solution suggestions | Challenges for implementing the suggested approaches |
|--|--|--|--|
| Production and planting of medicinal plants (Mormak) <i>Commiphora molomo</i> | Getting loans from local small grants which is run by local communities(26 active grant boxes in the region) | Training (change in the consumption trend and putting new productions like mushroom in the household food basket | Lack of proper market for selling alternative crops and other local productions |
| Greenhouse cultivation of Cucurbitsand vegetables | Loans from aid committee (just for the supported members) | Organic productions | Lack of balance between supply and demand |
| At home jobs (Pomegranate sauce, dried herbs, sewing and cloth productions) | Labor office loans | Creating conversion and processing industries for fig | Dust is an obstacle in producing organic crops and it causes an increase in diseases and pests(tick) |
| Expanding the fig gardens in Neyri□ | Omid(Hope)Entrepreneurship Fund | Preventing the expansion of gardens and farm lands | The failure of the local fund in Neyri□ due to the inability of the recipients to pay the payments |
| Local dairy production (relying on rural small business loan) | Agricultural jihad organization loans for under pressure Irrigation | Dry farming in steep lands | Lack of Saffron Processing |

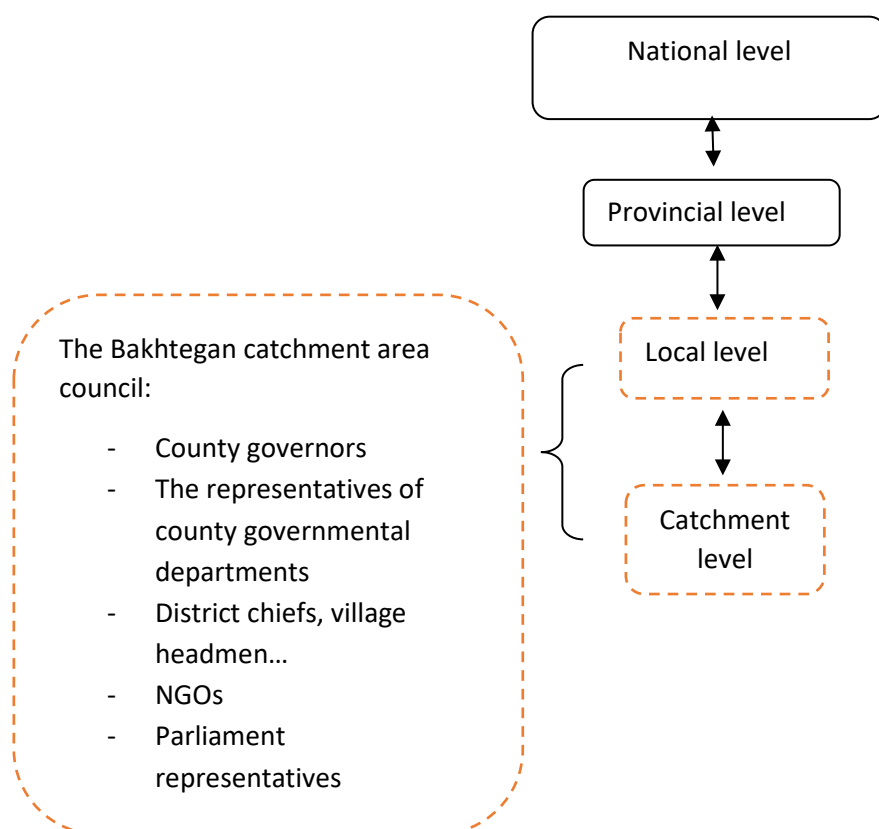
| | | | |
|--|--|--|--|
| saffron cultivation and its expansion | | Processing industry for pomegranate in Neyri □ | Not having the license for selling local productions Due to the lack of sanitary and standard permits |
| Industrial production by using Fig separator machine in Sohl Abad village | | Expansion of stone mining | The proximity of the villages with the National Park and the prohibiting rules for the establishment of small industries |
| Creating artificial habitat for the trapped in the dried wetland newborn flamingos | | Neyri □ white cement factory | |
| Implementation of Desertification Project in Tom Shuli region | | Using waste water in industry | |
| | | Using Channel Terraces to supply water and soil for figs | |

In the second part of the workshop, the Governance status, the legislation and the impact of different levels (national, provincial, local) on decision making was illustrated as in the following diagram. It was concluded from this part that in the current managing structure, no place has been considered for native communities and NGOs.



In the final section, we tried to reach a management-executive approach to engage all stakeholders in decision making and implementation of projects for sustainable livelihoods and resilience of natural resources in drought-compliant conditions at selected sites. To reach a structure in which decisions will be made with the participation of the beneficiaries of the Bakhtegan Basin, participants agreed on a local-level structural formation in the catchment area consisting of representatives of government stakeholders, local communities and NGOs. It was emphasized that stakeholders from both the upstream and downstream of the basin should be involved in the committee or council.

The security council is under the supervision of the provincial governor. In cases where enforcing laws and Executive actions results in social conflicts, they will have a meeting in which proper decisions, sometimes with more flexibility than the existing laws, will be made.



The outputs of the meeting in the counties located in the upstream of the Bakhtegan Basin

C. The third workshop: 2017 November 1st

Venue: Marvdasht County with the participation of both Marvdasht and Pasargad counties stakeholders

The list of the participants:

| Name | Organization | Position | Phone number |
|------------------------|---|--------------------|--------------|
| ShahrokhRostami | The Kor district, of Marvdasht County, government office | The district mayor | 02173243500 |
| Mohammad GhasemGhasemi | The central district of Marvdasht county, government office | The district mayor | 0217321636 |

| | | | |
|---------------------|---|--------|-------------|
| Mohammad ali□are | The Marvdasht county water resources organization | chief | 0□17303□6□3 |
| AbolhassanKeshavar□ | Marvdasht county DOE | chief | 0□1712721□1 |
| Hamid Rousta | Marvdasht county natural resources organization | chief | 0□17720610 |
| HoseinPourkave | Marvdasht county agriculture of Jihad organization | expert | 0□1732□0257 |
| Mehdi Baseri | Marvdasht county agriculture of Jihad organization | expert | 0□1710□22□1 |
| Mehr□adMokarami | Maravdasht county DOE | expert | 0□171271667 |
| Ali poursalehi | water resources organization | chief | 0□176706060 |
| RahimeHemati | A NGO from Pasargad County | | 0□175576467 |
| AbdolahAli□ade | NGO | | 0□171262□62 |
| BabakSarvari | NGO | | 0□17□2□7110 |
| Reis Lope□Rello | UNDP | | |
| Ali Mar□oughi | national consultant | | 0□1233643□6 |
| Hamidre□aSoleymani | The forests, rangelands and watersheds organization | | 0□123107715 |
| Majid Soufi | Local consultant | | 0□1711006□1 |
| Sirous□are | local consultant | | 0□17□1□171□ |
| Ghasem□are | NGO | | 0□173366326 |
| MehrasaMehrdadi | DOE | | |
| Mojdekhalife | NGO | | 0□17□672□15 |

The next workshop of the advisory workshops on adaptation strategies for climate change in the Bakhtegan Basin was held in the upstream of the basin in Marvdasht governorate on November 1□, 2017.

This workshop was held with the participation of the representatives of governmental organizations, local community, the representatives from UNDP, Gavin Kenny, the international consultant and Reis Lope□, Technical Director of Climate Change at UNDP Regional Office in Bangkok.

In this workshop each of the participants expressed their points of view on the existing problems of the upstream of the basin and the ways to adapt to climate change.

Challenges:

- Lack of water for agricultural purposes
- Major government policies for the employment of agriculture and horticulture
- The effects of under pressure irrigation projects are not clear for the farmers
- increased under cultivation area after saving water with drip irrigation
- the unsustainable development of agriculture
- consumption of water is 4 times more than the industrial production
- desertification in Ramjerd
- natural resources destruction
- Increased sediment load entering the Drood□an dam
- Land subsidence
- Cracked lands around cultural heritages (Persepolis and Naghsh-e-Rustam)
- Illegal well drilling (2000 illegal wells in the riverbed)

- Having different perspectives in water policies
- The conversion of dry farms to gardens (over 2 to 3 thousand hectares of Eghlid lands turned into gardens that caused the dryness of the Kor river)
- Unlimited issuance of greenhouse licenses
- Increased under cultivation agricultural lands (the under cultivation lands used to be fixed and everyone was satisfied with what they had. But now these lands are increased without considering the climate)
- high demand among farmers for drilling deep wells
- The lack of farmers awareness about the lack of water resources
- Cutting down trees for fuel in Kamfiroo□ due to the lack of gas
- households relying on agriculture for their livelihoods
- The lack of market for alternative crops (currently over 14,000 hectares and 14 herbal species are cultivated by local people in Kamfirou□ unfortunately, the products are stored in warehouses due to low sales.)
- Removing agricultural joint stock companies, which leads to land fragmentation and increased water consumption

The currently used solutions:

- Livestock and dairy production
- Conversion industries such as: tomato paste, Pickled cucumber
- Installing volumetric meters on wells
- Cultivation of low-water plants such as: saffron, pistachios

Suggestions:

- Granting no-cultivation subsidies to farmers for livelihood
- Crop Pattern Change Program
- Restoration of agricultural corporations
- Using local human resources for job opportunities
- Restoring the biodiversity of the region
- Construction of watering places
- Creation of the garment industry in the Counties
- Creation of ecotourism and handicrafts(carpet, killim , stones and etc.) as an alternative job
- Construction of tourist cottages
- Using urban sewage for petrochemical consumptions
- Recycling industrial water
- Giving licenses to food conversion businesses (pickles, tomato paste, salty cucumber)
- Developing handicrafts
- Subcultural training
- Using indigenous knowledge
- Development of household businesses
- Allocation of industrial stocks to farmers
- Restore and development of handicrafts
- Production workshops(processing, packaging, marketing)
- Low-water plants cultivation such as saffron and pistachio
- Local community training by agricultural Jihad organization
- Restoration of vegetation cover
- The presence of a sociologist in the region for training
- Watershed plans implementation
- Salt-tolerant plants cultivation
- Camel raising and breeding

ANNEX 9 - SOCIAL AND ENVIRONMENTAL SCREENING TEMPLATE

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the [Social and Environmental Screening Procedure](#) and [Toolkit](#) for guidance on how to answer the 6 questions.

Project Information

| Project Information | |
|-------------------------------------|---|
| 1. Project Title | Climate Change Adaptation via Sustainable Water and Agriculture Management for Lake Bakhtegan Restoration and Livelihood Resilience |
| 2. Project Number | 6190 |
| 3. Location (Global/Region/Country) | Iran |

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

The Bakhtegan Basin is located in the northeast of Fars Province in the south of Iran and is home to 854,093 people. It is the heart of Persian civilization and culture, with the ruins of Persepolis and other important archaeological sites located within the basin. The basin's hydrological system is collapsing, resulting already in a situation that is complex with negative environmental, social and economic impacts. The social costs of the drying of the Bakhtegan Basin are already manifesting. Migration is an important issue. In parts of Kharimeh, in the lower part of the basin, 100 percent of jobs have been destroyed. Social cohesion has been lost, with displaced farmers and their families moving to urban fringe areas where they no longer have their self-respect.

In this context, the 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.

The project will directly benefit families 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, violence and drug use.

The main opportunity for this project therefore is to provide a foundation for building resilience to climate change in the basin through a holistic, integrated, watershed management approach. To achieve this will require a completely different way of thinking and acting, with a shift in thinking required from the current mind-set of high water dependence 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 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.

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

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

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. 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.

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.

Consultation workshops have been held within the Bakhtegan Basin, along with visits to potential project sites and villages. 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. The needs of women were specifically identified in the workshops. This included an extended discussion in the Estabhan 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 gender equity, 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.

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 project will promote women's equality and 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.

| |
|---|
| <p>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 Womens's Trust Fund and other women's associations.</p> <p>For monitoring, disaggregated and measurable data related to gender equality and 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.</p> |
| <p>Briefly describe in the space below how the Project mainstreams environmental sustainability</p> |
| <p>The current crisis in the Bakhtegan Basin is first and foremost an environmental crisis. 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.</p> <p>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.</p> |

Part B. Identifying and Managing Social and Environmental Risks

| <p>QUESTION 2: What are the Potential Social and Environmental Risks? <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i></p> | <p>QUESTION 3: What is the level of significance of the potential social and environmental risks? <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p> | | | <p>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</p> |
|---|---|---|-----------------|--|
| <i>Risk Description</i> | <i>Impact and Probability (1-5)</i> | <i>Significance (Low, Moderate, High)</i> | <i>Comments</i> | <i>Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.</i> |
| Risk 1: There a risk that duty-bearers do not have the capacity to meet their obligations in the Project | I = 3 P = 3 | Moderate | | Capacity building will be undertaken |
| Risk 2: The Project could potentially reproduce discriminations against women based on gender, especially regarding | I = 3 P = 1 | Low | | The project will focus on having appropriate participation and involvement of women. Implement ESMF and Gender Action Plan. |

| | | | | |
|---|--|-------------------------------------|--|---|
| participation in design and implementation or access to opportunities and benefits if not given adequate focus. | | | | |
| Risk 3: Project activities are proposed within or adjacent to critical habitats and/or environmentally sensitive areas. | I = 1 P = 4 | Low | The Basin where the project is located is a sensitive area under duress, which is why the project has been formulated. | Project activities aim to reduce existing (and future) pressures on the lake. So probability of activities occurring in sensitive area high (4) but degree of adverse impact low (1). ESMF implementation will assist in avoiding impacts to sensitive areas. |
| Risk 4: the Project involve harvesting of natural forests, plantation development, or reforestation | I = 2 P = 4 | Moderate | | Severely degraded habitats are to be revegetated. |
| Risk 5: The potential outcomes of the Project could be sensitive or vulnerable to potential impacts of climate change | I = 2 P = 3 | Moderate | | The project is aiming to increase resilience of communities to climate change, however, the basin is already significantly impacted by both anthropogenic and climate impacts. The shift of livelihoods, particularly agricultural practices, will go a long way to increasing resilience, but none the less some risk of continuing climate change impacts exists. |
| [add additional rows as needed] | | | | |
| | QUESTION 4: What is the overall Project risk categorization? | | | |
| | Select one (see SESP for guidance) | | | Comments |
| | <i>Low Risk</i> | <input type="checkbox"/> | | |
| | <i>Moderate Risk</i> | <input checked="" type="checkbox"/> | | |
| | <i>High Risk</i> | <input type="checkbox"/> | | |
| | QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant? | | | |
| | Check all that apply | | | Comments |
| | <i>Principle 1: Human Rights</i> | <input checked="" type="checkbox"/> | | |
| | <i>Principle 2: Gender Equality and Women's Empowerment</i> | <input checked="" type="checkbox"/> | | |
| | <i>Principle 3: Environmental Sustainability</i> | <input checked="" type="checkbox"/> | | |
| | <i>1. Biodiversity Conservation and Natural Resource Management</i> | <input checked="" type="checkbox"/> | | |
| | <i>2. Climate Change Mitigation and Adaptation</i> | <input checked="" type="checkbox"/> | | |
| | <i>3. Community Health, Safety and Working Conditions</i> | <input type="checkbox"/> | | |

| | | | |
|--|--|--------------------------|--|
| | 4. Cultural Heritage | <input type="checkbox"/> | |
| | 5. Displacement and Resettlement | <input type="checkbox"/> | |
| | 6. Indigenous Peoples | <input type="checkbox"/> | |
| | 7. Pollution Prevention and Resource Efficiency | <input type="checkbox"/> | |

Final Sign Off

| Signature | Date | Description |
|---|-------------|---|
| Reis Lopez Rello Regional Technical Advisor QA Assessor | 14 May 2018 | UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have “checked” to ensure that the SESP is adequately conducted. |
| Anne Marie Sloth UNDP Resident Representative a.i. QA Approver | | UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have “cleared” the SESP prior to submittal to the PAC. |
| Anne Marie Sloth UNDP Resident Representative a.i. PAC Chair | | UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC. |

SESP Attachment 1. Social and Environmental Risk Screening Checklist

| Checklist Potential Social and Environmental <u>Risks</u> | | |
|--|--|----------------------------|
| Principles 1: Human Rights | | Answer (Yes/No) |
| 1. | Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups? | No |
| 2. | Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? ¹² | No |
| 3. | Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups? | No |
| 4. | Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them? | No |
| 5. | Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project? | Yes |
| 6. | Is there a risk that rights-holders do not have the capacity to claim their rights? | No |
| 7. | Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process? | No |
| 8. | Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals? | No |
| Principle 2: Gender Equality and Women's Empowerment | | |
| 1. | Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls? | No |
| 2. | Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits? | Yes |
| 3. | Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment? | No |
| 4. | Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i> | No |
| Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below | | |
| | | |
| Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management | | |

¹² Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

| | | |
|---|--|-----|
| 1.1 | Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? <i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i> | No |
| 1.2 | Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities? | Yes |
| 1.3 | Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5) | No |
| 1.4 | Would Project activities pose risks to endangered species? | No |
| 1.5 | Would the Project pose a risk of introducing invasive alien species? | No |
| 1.6 | Does the Project involve harvesting of natural forests, plantation development, or reforestation? | Yes |
| 1.7 | Does the Project involve the production and/or harvesting of fish populations or other aquatic species? | No |
| 1.8 | Does the Project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i> | No |
| 1.9 | Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development) | No |
| 1.10 | Would the Project generate potential adverse transboundary or global environmental concerns? | No |
| 1.11 | Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? <i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i> | No |
| Standard 2: Climate Change Mitigation and Adaptation | | |
| 2.1 | Will the proposed Project result in significant ¹³ greenhouse gas emissions or may exacerbate climate change? | No |
| 2.2 | Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change? | Yes |
| 2.3 | Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? <i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i> | No |

¹³ In regards to CO₂, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

| | | |
|--|---|----|
| Standard 3: Community Health, Safety and Working Conditions | | |
| 3.1 | Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities? | No |
| 3.2 | Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)? | No |
| 3.3 | Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)? | No |
| 3.4 | Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure) | No |
| 3.5 | Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions? | No |
| 3.6 | Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)? | No |
| 3.7 | Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning? | No |
| 3.8 | Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)? | No |
| 3.9 | Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)? | No |
| Standard 4: Cultural Heritage | | |
| 4.1 | Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts) | No |
| 4.2 | Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes? | No |
| Standard 5: Displacement and Resettlement | | |
| 5.1 | Would the Project potentially involve temporary or permanent and full or partial physical displacement? | No |
| 5.2 | Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)? | No |
| 5.3 | Is there a risk that the Project would lead to forced evictions? ¹⁴ | No |
| 5.4 | Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources? | No |

¹⁴ Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

| Standard 6: Indigenous Peoples | | |
|--|--|----|
| 6.1 | Are indigenous peoples present in the Project area (including Project area of influence)? | No |
| 6.2 | Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples? | No |
| 6.3 | <p>Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)?</p> <p><i>If the answer to the screening question 6.3 is “yes” the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.</i></p> | No |
| 6.4 | Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned? | No |
| 6.5 | Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples? | No |
| 6.6 | Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources? | No |
| 6.7 | Would the Project adversely affect the development priorities of indigenous peoples as defined by them? | No |
| 6.8 | Would the Project potentially affect the physical and cultural survival of indigenous peoples? | No |
| 6.9 | Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices? | No |
| Standard 7: Pollution Prevention and Resource Efficiency | | |
| 7.1 | Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts? | No |
| 7.2 | Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)? | No |
| 7.3 | <p>Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs?</p> <p><i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i></p> | No |
| 7.4 | Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health? | No |
| 7.5 | Does the Project include activities that require significant consumption of raw materials, energy, and/or water? | No |

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EXECUTIVE SUMMARY

A preliminary analysis and screening identified a number of limited potential social and environmental risks associated with the project activities. This Environmental and Social Management Framework (ESMF) has been prepared to address these risks during project implementation.

1. INTRODUCTION

2. This Environmental and Social Management Framework (ESMF) has been prepared in support of the project titled "Climate Change Adaptation via Sustainable Water and Agriculture Management for Lake Bakhtegan Restoration and Livelihood Resilience in Iran" that UNDP has prepared together with the Government of Honduras.
30. The project has been reviewed with UNDP's Social and Environmental Screening Procedure (SESP, see Annex 7). 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." The ESMF is designed to avoid, and where avoidance is not possible, mitigate and manage these limited potential impacts.

1.1 Overview of the Project

31. 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 watershed management.
32. 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 implementation of climate smart agriculture and alternative livelihoods
 3. The resilience of the natural environment of the Bakhtegan Basin is strengthened
 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.
33. 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. 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. 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.
34. The main opportunity for this project therefore is to provide a foundation for building resilience to climate change in the basin through a holistic, integrated, watershed management approach. This project seeks to implement such an approach through the following measures: 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 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.

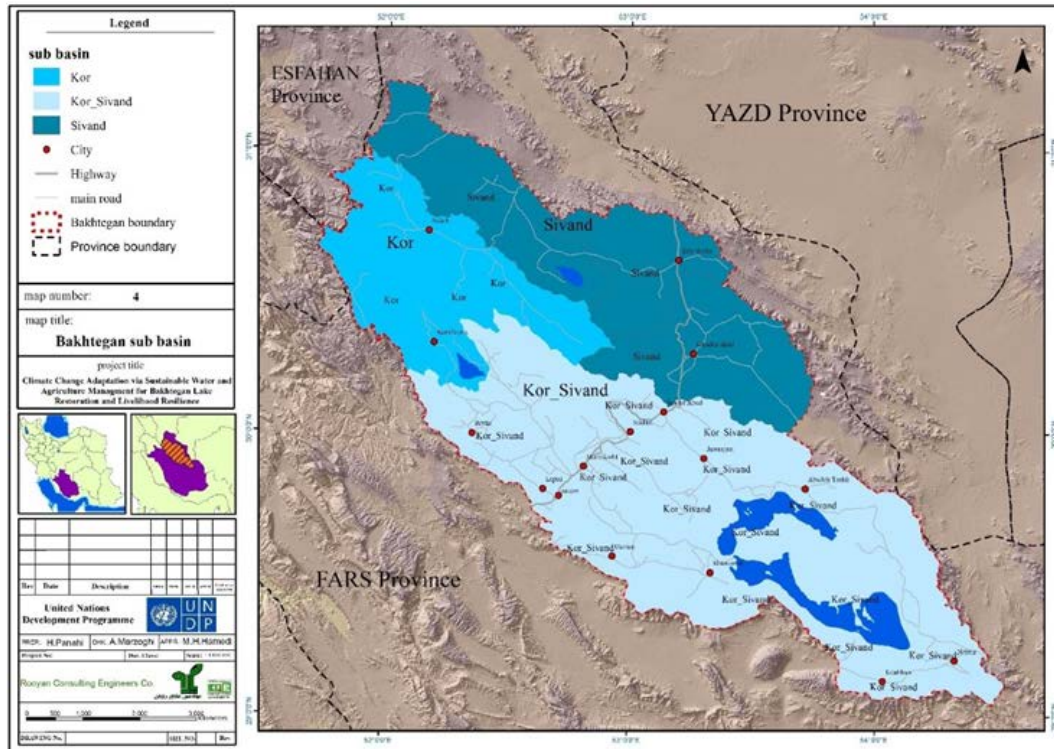


Figure 1 – The three main sub-basins within the Bakhtegan Basin (target area)

35. The project is compliant with the legislation, technical/implementation system under the Technical and Implementation System Bureau¹⁵ (TISB), and associated national standards, under the Institute of Standards □ Industrial Research of Iran (ISIRI)¹⁶, the Water Industrial Standard¹⁷ (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.
36. 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.

¹⁵ <http://isiri.gov.ir/portal/home/?331765/ISIRI-Portal>

¹⁶ <http://sama.mporg.ir/sites/publish/SitePages/Home.aspx>

¹⁷ <http://www.waterstandard.wrm.ir/>

Summary of Activities

37. The proposed project will have the following activities:

| Project Components | Expected Outputs | Project Activities |
|---|---|--|
| 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 Integrated model for climate risk and climate change assessment | <ul style="list-style-type: none"> The selected climate model will be customized for the Bakhtegan Basin. Training in the data applied and selected climate model will be undertaken to facilitate assessments of climate change and climate risk for the Bakhtegan Basin Application of selected climate and hydrologic models 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. |
| | 1.2 Water and land use planning | <ul style="list-style-type: none"> Public participation in planning process Development of an integrated WLUP framework for the Bakhtegan Basin Analysis of existing land-use and policies by using remote sensed data and GIS analysis Analysis of existing water resources (surface and sub-surface) and systems Analysis of data from existing water uses from both surface and ground water Projections of future water supply and demands based on the results of the future climate projections that will be formulated in Output 1.1 Identification, review and assessment (including costing) of water and land resource options Identification review and assessment (including costing) of supply side and demand side options |

| | | |
|--|--|---|
| | 1.3 Local community monitoring | <ul style="list-style-type: none"> • Participatory engagement with targeted communities, farmers and households to identify and agree on a set of vulnerability and resilience indicators which will be used for local community monitoring. • Development of a mobile app to facilitate reporting on the agreed indicators and provision of this to all 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 through the mobile apps. • In conjunction with Output 1.4, development and dissemination of information based on the local community monitoring |
| | 1.4 Data and information management for decision support | <ul style="list-style-type: none"> • 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. |
| 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 | <ul style="list-style-type: none"> • Development and implementation of Climate Smart Agriculture Plans • Market research, including value chain analyses, on alternative crops and cropping systems that are suited to a dryland environment under changing climate conditions. • Extension of existing knowledge and applied research results to participating farmers. • Development and implementation of a new applied research programme at the MOJA research station in Marvdasht. • 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. • 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. • Based on the results of the market research, development of a unique brand for the Bakhtegan Basin. |
| | 2.2 Alternative livelihoods | <ul style="list-style-type: none"> • A qualitative and quantitative livelihood assessment, including development and implementation of a livelihood monitoring system. • Off-farm technical and vocational training for all participating household members • Development of small micro-enterprises • Attracting effective support for establishment and operation of small and microenterprises. • Provide access to savings and credit services in rural communities to facilitate livelihood activities and improved quality of life. • Provide hygiene and quality certificates for local food products, including negotiating with the related organizations and providing legal assistance to get the required certificates. • Marketing and advertising for local products including: markets for local products in big cities; introducing goods to national and international festivals, website design. • Work with government agencies, through the mechanism of the Bakhtegan Basin Council (Output 4.2) to review trade and market related legislation. • Provide advisory services to the private sector through studies, workshops, training, identifying appropriate technologies and quality systems, and developing linkages with markets. |
| 3. The resilience of the natural environment of the Bakhtegan Basin is strengthened | | |

| | | |
|---|--|--|
| | 3.1 Ecosystem conservation in the Bakhtegan Basin | <ul style="list-style-type: none"> • Development and implementation of an Integrated Watershed Management (IWM) plan • Implementation of integrated watershed management adaptation activities by local people, with support from MOJA, involving a range of physical options and interventions. • A comprehensive extension, communication and education programme (through Output 1.4) to disseminate results and information as widely as possible throughout the Bakhtegan Basin. |
| | 3.2 Rehabilitation and conservation in protected areas | <ul style="list-style-type: none"> • Participatory engagement with communities to develop rehabilitation, monitoring and management plans for all the above wetland, national parks, protected areas and hunting prohibited areas • Biodiversity monitoring in Margoun waterfall and Tang-e-Bostank protected areas and wildlife monitoring in both Basiran and KouhSiah-e-Arsanjan hunting prohibited area (depth, quality and biological parameters) • Rehabilitation and conservation work in the Kamjan Wetland • Rehabilitation and conservation work in Bamou and Bakhtegan National Parks |
| 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 Communications, education and capacity building | <ul style="list-style-type: none"> • Education and capacity building will involve development of resource materials, training of facilitators, and facilitation of participatory workshops with all identified target groups and participating authorities • 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) |

| | | |
|--|---|---|
| | 4.2 A functional framework for Bakhtegan Basin management | <ul style="list-style-type: none"> • Conducting a thorough review of existing national frameworks and policies relating to climate change adaptation and land and water resources planning and management. • 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. • Development of a comprehensive plan for allocating water and land resources in a sustainable and climate resilient manner. • Promoting agricultural productivity while remaining attentive to the economic, security, and political concerns related to the harvesting and extraction, supplying, storage, and consumption of water in the Bakhtegan Basin. |
| | 4.3 Bakhtegan Basin Council | <ul style="list-style-type: none"> • Establishment of a Bakhtegan Basin Council under existing Fars Province structures. |

1.2 Potential Social and Environmental Impacts

- 3□ Preliminary analysis has identified a range of potential limited social and environmental impacts associated with various project activities. These potential impacts are summarized in the table below.
- 3□ The project has been reviewed with UNDP's Social and Environmental Standards Procedure (SESP). The Social and Environmental Screening Template was prepared (See Annex 5) and the project deemed to be a moderate risk (Category B) project. Discussions on the impact assessment are provided in the Social and Environmental Screening Template, which provided the rationale for the project being classified as a moderate risk. This ESMF provides further discussion below.

| Activity | Potential Social and Environmental Impact | Potential Project Benefit | Mitigation | Monitoring |
|--|--|---|---|--|
| Output 1.1 – Integrated model for climate risk and climate change assessment | | | | |
| <p>Customise appropriate climate model for the Bakhtegan Basin.</p> <p>Training in the data applied and selected climate model will be undertaken to facilitate assessments of climate change and climate risk for the Bakhtegan Basin.</p> <p>Application of selected climate and hydrologic models 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.</p> | <p>Selection of model - No physical impacts, but incorrect model will not provide reliable outputs</p> <p>Potential bias if training not equitable.</p> <p>Modelling does not have any physical or social impacts per se, however its use can have so models need to be appropriate, calibrated and tested</p> | <p>Appropriate modelling can provide those that have been trained with a powerful tool for planning and decision making.</p> | <p>Ensure training available to those that need it irrespective of gender or social status</p> | <p>Assessment of model prior to adoption</p> <p>Mid-term review</p> |
| Output 1.2 Water and land use planning (WLUP) | | | | |
| <p>Public participation –in the planning, design and implementation of this Output.</p> <p>Development of an integrated WLUP framework for the Bakhtegan Basin.</p> | <p>Potentially affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating in decisions that may affect them</p> <p>Lack of data for meaningful data</p> | <p>Improved buy-in/ownership through participation</p> <p>Basin-wide approach to water and land management</p> <p>Plans tailored to villages / sub-basins</p> | <p>All stakeholders, representing communities, authorities and industry, will be involved</p> <p>Initiate data collection and review early to identify any gaps/weaknesses</p> <p>Disseminate data widely</p> | <p>Consultation and capacity building workshops;</p> <p>supervision</p> <p>Mid-term review</p> |

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| <p>Analysis of existing land-use and policies by using remote sensed data and GIS analysis.</p> <p>Analysis of existing water resources (surface and sub-surface) systems.</p> <p>Analysis existing water uses data.</p> <p>Projections of future water supply and demands based on the results of the future climate</p> <p>Introduction of WLUP at the Bakhtegan Basin</p> <p>Identification, review and assessment (including costing) of water and land resource options.</p> <p>Identification review and assessment (including costing) of supply side and demand side options.</p> | <p>Resistance to WLUP</p> <p>Conflict between users</p> | <p>Assessments based on real data (remote sensing / GIS) therefore decisions based on reality rather than here-say</p> | <p>Ensure users know how to access and interpret data – capacity building</p> <p>Bring groups together to share data, stories and issues to reduce tensions and conflict and encourage ownership of issues and solutions.</p> | |
| Output 1.3 Local Community Monitoring | | | | |
| <p>Participatory engagement with targeted communities, farmers and households to identify and agree on a set of vulnerability and resilience indicators which will be used</p> | <p>Risk that if process not sufficiently inclusive that not all community adequately represented and full agreement with indicators may not be achieved. This could lead to bias.</p> | <p>Community buy-in on monitoring indicators</p> <p>App will provide two way reporting.</p> <p>Site visits will assist in maintaining veracity of reporting.</p> | <p>Involve full range of stakeholders in agreeing indicators, design of app, and reporting.</p> <p>Ensure app is designed for easy use by all stakeholders.</p> | <p>Consultation and workshops;</p> <p>Site visits</p> <p>Annual reviews;</p> <p>Mid-term review</p> |

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| <p>for local community monitoring.</p> <p>Development of a mobile app to facilitate reporting of indicators.</p> <p>Installation of water monitoring system.</p> <p>Quarterly site visits to verify and review information provided through the mobile apps.</p> <p>Development and dissemination of information based on the local community monitoring.</p> | <p>App only available to those with access to appropriate technology.</p> <p>Site visits are unlikely to have any adverse impacts – need to ensure appropriate sites are visited to minimise bias.</p> <p>Information needs to be in a form that is easily understood by community.</p> | <p>Community stays informed. Data and information will be accessible to all project stakeholders, from individual householders and farmers through to national level policy makers</p> | <p>Site visits must capture range of communities/issues – ensure sufficient data is verified.</p> <p>Develop reporting tools in consultation with end users.</p> | |
| Output 1.4 Data and information management for decision support | | | | |
| <p>Development of a GIS platform.</p> <p>Establishment of an information/data portal system (TIPS).</p> | <p>No adverse impacts anticipated from the development of GIS or TIPS as long as data is sufficiently accessible to users.</p> <p>Not all users will have access to GIS software</p> <p>Risk that needs of all users not met.</p> | <p>GIS gives a readily understood spatial representation of results/data. GIS is a universal tool, so can be up-scaled.</p> <p>A multi-user platform will be developed so that information will be available to wide range of stakeholders.</p> | <p>Develop reporting tools in consultation with end users</p> | <p>Consultation</p> <p>Mid-term review</p> |
| Output 2.1 Climate Smart Agriculture | | | | |

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| <p>Development and implementation of Climate Smart Agriculture Plans and alternative livelihood practices.</p> <p>Market research, including value chain analyses, on alternative crops and cropping systems that are suited to a dryland environment.</p> <p>Research on new crops and cropping systems for dryland environments.</p> <p>Extension of the results of the new research programme to farmers.</p> <p>Development of a unique brand for the Bakhtegan Basin.</p> <p>A comprehensive extension, communication and education programme.</p> | <p>Risk of non-acceptance of changes/alternate livelihoods.</p> <p>New crops inappropriate</p> <p>Misunderstanding of Bakhtegan Basin brand or failure to appropriately target brand</p> | <p>Maladaptive practices will be reduced/ceased.</p> <p>Diversification of livelihoods</p> <p>Reduced pressure on land and water resources.</p> <p>Builds on existing initiatives.</p> <p>New market chains developed and Basin brand developed enabling wider recognition of produce from the region.</p> <p>Migration from rural areas reduced</p> | <p>Participatory engagement with farmers will be designed to ensure that they are committed to such changes - participation, empowerment and ownership building are keys to success.</p> <p>Identify suitable markets in which to develop value chains. Ensure market chains get end-to-end support.</p> <p>Research programme to be as action focused as possible.</p> <p>Make Bakhtegan Basin brand something that local communities can relate to and be proud of, as well as meet marketing needs.</p> <p>Establish working groups in each Zone.</p> | <p>Consultation workshops</p> <p>Mid-term review</p> <p>Market survey</p> <p>Community survey</p> |
| Output 2.2 Alternative Livelihoods | | | | |
| <p>Qualitative and quantitative livelihood assessment and development/implementation of a livelihood monitoring system.</p> <p>Off-farm technical and vocational training for all</p> | <p>Micro-enterprises can have physical impacts if not appropriately managed eg waste by-products, prevention of child labour etc</p> <p>Access to credit if not adequately supported can lead to debt</p> | <p>Communities will have a greater understanding of livelihood options available.</p> <p>Capacity will be built.</p> | <p>Adopt participatory approach, ensure vulnerable groups not excluded.</p> <p>Assess village needs (eg. labour supply and demand)</p> | <p>Annual reviews</p> <p>Mid-term review</p> <p>Market survey</p> |

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| <p>participating household members.</p> <p>Development of small micro-enterprises and attraction of support for them, including access to savings and credit services.</p> <p>Provide hygiene and quality certificates for local food products, including negotiating with the related organizations and providing legal assistance to get the required certificates.</p> <p>Marketing and advertising for local products.</p> <p>Work with government agencies to review trade and market related legislation.</p> <p>Provide advisory services to the private sector.</p> | <p>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</p> | <p>Existing capacity will be drawn - 'training the trainers' and mentoring approach.</p> <p>Access to finance will assist micro-enterprises to flourish</p> <p>Communities will have more diversified economic bases</p> <p>Appropriate technologies and quality systems introduced.</p> <p>Linkages with markets improved.</p> <p>Local brand recognition increased and markets expanded.</p> <p>Migration from rural areas reduced, with consequent reduction in health issues and crime.</p> | <p>Assess options, opportunities and capacities for livelihoods diversification at the local level.</p> <p>Provide specific support to women eg via Rural Women's Trust Fund</p> <p>Support viable, up-scalable livelihood options</p> <p>Enterprises will need to meet applicable laws and requirements so that they do not have negative social or environmental impacts.</p> | |
| Output 3.1 – Ecosystem Conservation in the Bakhtegan Basin | | | | |
| <p>Development and implementation of an Integrated Watershed Management (IWM) plan.</p> <p>Implementation of integrated watershed management adaptation activities by local</p> | <p>Development of IWMP can have adverse impacts if the plan does not consider the needs of the wider community and particularly marginalised people.</p> <p>Implementation of the IWMP will include a range of physical options eg small earth dams, check dams,</p> | <p>Development of plan will be participatory, which will result in a holistic plan that meets the expectations of the broader community.</p> <p>An integrated, multi-faceted, approach will provide the necessary conditions to support conservation</p> | <p>Develop IWMP in a participatory manner involving broad range of stakeholders, including women and vulnerable groups.</p> <p>Revegetation to utilise appropriate species – avoid introduction of potential weed species.</p> | <p>Annual reviews</p> <p>Mid-term review</p> |

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| <p>people, with support from MOJA.,</p> <p>A comprehensive extension, communication and education programme to disseminate results and information as widely as possible throughout the Bakhtegan Basin.</p> | <p>groundwater recharge, revegetation and changed agricultural practices. These activities can have adverse impacts if not appropriately managed, this can be achieved through the development of environmental management practices or plans as part of the IWMP.</p> | <p>of the soil and water resources of the Bakhtegan Basin.</p> <p>Enhancement of the natural environment - ecological service provided by Bakhtegan basin improved.</p> <p>Awareness and ownership by communities of the need to continue protecting the natural environment</p> | <p>Incorporate good environmental management practices into IWMP – develop separate ESMPs if required.</p> <p>Improve agricultural practices eg contour and strip cropping, introduction of permits systems, cooperative grazing and rangeland conservation measures.</p> <p>Communicate results regularly to communities</p> | |
| Output 3.2 Rehabilitation and Conservation in Protected Areas | | | | |
| <p>Participatory engagement with communities to develop rehabilitation, monitoring and management plans for all the above wetland, national parks, protected areas and hunting prohibited areas</p> <p>Biodiversity monitoring in Margoun waterfall and Tang-e-Bostank protected areas and wildlife monitoring in both Basiran and KouhSiah-e-Arsanjan hunting prohibited area (depth, quality and biological parameters)</p> <p>Rehabilitation and conservation work in the Kamjan Wetland</p> | <p>Potential to exclude some members of community.</p> <p>Not all community members may agree to required approach / solutions.</p> <p>Risk of agrochemicals entering wetlands</p> <p>Poor monitoring will lead to spurious data and may result in poor decision making</p> <p>Physical disturbance of wetland bed</p> | <p>Internationally important (Ramsar) wetlands improved.</p> <p>Community tensions reduced and collective understanding of solutions achieved</p> | <p>Ensure fully participatory approach that includes all relevant stakeholder groups.</p> <p>Aim for consensus and buy in of management plan so community owns problems and solutions.</p> <p>Select appropriate indicators for monitoring</p> <p>Undertake biodiversity monitoring at appropriate time intervals dependent upon indicators</p> <p>Training in monitoring techniques and dissemination of methodology so that consistency in approach is achieved between observers.</p> | <p>Consultation workshops</p> <p>Annual reviews</p> <p>Mid-term review</p> |

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| Rehabilitation and conservation work in Bamou and Bakhtegan National Parks | | | | |
| Output 4.1 Education, capacity building and communications | | | | |
| <p>Education and capacity building</p> <p>Communicate data and information relating to the project widely throughout the Bakhetegan Basin.</p> | Potential to marginalise some stakeholders | <p>Capacity of provincial officials, farmers, households and communities increased</p> <p>All stakeholders in Basin have a deeper understanding of the issues and challenges they face and solutions required.</p> <p>Results generated by project will be widely communicated</p> | <p>Assessment of training/capacity needs and identification of all target groups and participating authorities.</p> <p>Conduct education and capacity building in a participatory manner</p> <p>Communications to use multi-media platforms.</p> | <p>Mid-term reviews</p> <p>Capacity building workshops</p> <p>Supervision missions</p> |
| Output 4.2 A functional framework for Bakhtegan Basin management | | | | |
| <p>Review of existing national frameworks and policies relating to climate change adaptation and land and water resources planning and management.</p> <p>Establish an integrated water and land management system that incorporates considerations of climate change and natural elements of the total water cycle</p> | <p>No physical impacts associated with the undertaking of the activity, however the outcomes can result in adverse impacts if tasks not appropriately undertaken:</p> <p>Risk of duplication or creation of bias or gaps if review is not comprehensive and considers interaction between various frameworks and policies.</p> | <p>Any deficiencies or weaknesses in national frameworks and policies will identified and amended as appropriate so that governance mechanisms are more efficient and effective.</p> <p>IWLMS - This will involve the use of a “national spatial strategy plan” approach based on natural water basins. IWLS will guide and inform the provincial environmental working group under the</p> | <p>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.</p> <p>Ensure development of IWLMS is fully participatory among all stakeholders in the Bakhtegan Basin.</p> <p>IWLS plan to be work from the ground up, be informed by climate change and natural resource issues and constraints</p> | <p>Capacity building workshops;</p> <p>Annual reviews;</p> <p>Gender assessment;</p> <p>Use of disaggregated indicators related to gender equality and women’s empowerment;</p> <p>Mid-term review</p> |

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| <p>alongside the realities of human resource use.</p> <p>Develop a comprehensive plan for allocating water and land resources in a sustainable and climate resilient manner.</p> <p>Promote agricultural productivity while remaining attentive to the economic, security, and political concerns.</p> | <p>Inequity of allocation of water and land resources if development of plan is not fully participatory.</p> <p>Women may be excluded from decision-making or not adequately participate in the design/implementation of the project</p> <p>Women might have unequal access to resources and/ or access to opportunities and benefits</p> <p>If not appropriately informed, the IWLMS may fail to take into account appropriate climate, natural processes and economic realities.</p> | <p>Environmental High Council of Iran at the highest national scale.</p> <p>Women receive an equitable share of benefits and that their status and interests are not marginalized</p> <p>Promoting ag productivity - The main function of this activity is to ensure that agricultural water resources are used not only efficiently but in a socially, economically and climate resilient manner</p> | <p>and the national policy and planning context.</p> <p>Promotion of measures and techniques that reduce inequality between men and women</p> <p>Participatory processes to include specially designed methodologies that enhance the participation of</p> <p>Work village by village and between villages to develop water and land resources allocation plan</p> | |
| Output 4.3 – Bakhtegan Basin Council | | | | |
| <p>Establish Bakhtegan Basin Council (BCC) under existing Fars Province structures.</p> | <p>BCC may not be given sufficient authority or be accepted.</p> <p>Bakhtegan Basin Council may not be representative of all stakeholders</p> <p>Potentially affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating in decisions that may affect them</p> | <p>Builds on existing Fars provincial structures and also the existing management plan for the Bakhtegan wetland.</p> <p>Functions of taskforce will be extended to incorporate adaptation to climate change.</p> | <p>Ensure BCC has mandate to undertake necessary tasks.</p> <p>BBC to take account of national, provincial and local realities eg alignment with national plans and policies, address the need for food and water security, need for protection of natural resources.</p> <p>Promote inclusive consultation by Council</p> <p>Build capacity of BCC members</p> | <p>Inception assessment;</p> <p>mid-term review;</p> <p>consultation workshops;</p> <p>supervision missions</p> |

2. LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

2.1 Legislation, Policies and Regulations

40. The Islamic Republic of Iran has a semi-democratic political system established after the Islamic Revolution of 1979. The political system is based upon governance by an Islamic jurist.

41. The following legislation is relevant to the project:

| National Legislations | Objective/Relevance | Authority |
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| 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." | National Constitution |
| 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 has to determine the water needs of wetlands and ministry of energy is obligated to supply the water need based on an approved plan. | DOE |
| National Regulation for Conservation, Restoration and Management of Wetlands National Strategy 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. | DOE |
| Environmental Protection and Enhancement 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. | DOE |
| 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 | DOE |

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| | environmental education and formulation of standards for improving environmental quality with cooperation of relevant organization are also included in this text. | |
| 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. | MOJA |
| 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. | DOE |
| 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. | MOJA MOE |
| 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. | MOJA |
| 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. | MOE |
| 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. | MOE |

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| 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. | MOJA |
| 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. | MOJA MOE MOH |
| 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. | MOJA |

2.2 Environmental Impact Assessment Regulations

42. Iran's parliament (Majlis) on Thursday approved bills, mandating the administration to ensure the implementation of strategic environmental assessment (SEA) and environmental impact assessment (EIA).
43. Within the framework of the sixth five-year national development plan (2017-2021) are bills, mandating the administration to ensure the implementation of strategic environmental assessment (SEA) and environmental impact assessment (EIA).
44. SEA is a systematic decision support process, aiming to ensure that environmental and possibly other sustainability aspects are considered effectively in policy, plan and program making, while EIA is the assessment of the environmental consequences of a plan, policy, program, or concrete projects prior to the decision to move forward with the proposed action by individuals or companies in all aspects of the projects run by the private or the public sector.
45. . The Department of Environment (DoE) is the main government body in Iran responsible for assessing environmental impacts. The Department operates under the Environmental Protection and Enhancement Act (1372, as amended in 1381). Under Article 6 of the Guidelines on Environmental Impact Assessment (1387), the implementing bodies of major development projects should prepare an EIA report covering the points required by the DoE and related by-laws. Article 7 states that reports on EIA shall cover both the construction period and the operation period.
46. All project activities will be assessed for risk and the DoE consulted regarding the need for SEA or EIA, which will be undertaken if required.

2.3 Multilateral Environmental Agreements

47. Iran is a signatory to a number of international and regional agreements and conventions, which are relevant to the project. They include:
 - 1382 United Nations Framework Convention on Climate Change
 - 1387 Kyoto Protocol to the United Nations Framework Convention on Climate Change
 - 1372 Convention Concerning the Protection of the World Cultural and Natural Heritage
 - 1382 Convention on Biological Diversity
 - 1371 Convention on Wetlands of International Importance (Ramsar)

- 2000 Cartagena Protocol on Biosafety on the Convention on Biological Diversity
- Paris Agreement 2015 - The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework.
- 2001 Memorandum of Understanding concerning the Conservation of Migratory Birds of Prey in Africa and Eurasia
- 2001 International Treaty on Plant Genetic Resources for Food and Agriculture
- 2001 Stockholm Convention on Persistent Organic Pollutants
- 1993 Memorandum of Understanding concerning Conservation Measures for the Siberian Crane
- 1998 Rotterdam Convention on the Prior Informed Consent for Certain Hazardous Chemicals and Pesticides in International Trade
- 1994 Memorandum of Understanding concerning Conservation Measures for the Slender-billed Curlew
- 1994 United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly Africa.
- 1979 Convention on the Conservation of Migratory Species of Wild Animals
- 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora
- 1951 International Plant Protection Convention

2.4 References, Standards, ToRs, and Guidelines

4. The following are references, standards, Terms of Reference and guidelines that govern the implementation of climate change adaptation measures in the Bakhtegan Basin:

| Guideline/Standard/ToR | Year | Category |
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| 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 |

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| A Revision on the Current Studies of EIA,SEA and the Proposed Adaptive Needs | CZM ¹⁸ (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 |

2.5 UNDP Social and Environmental Standards

4. UNDP's Social and Environmental Standards (SES) have been applied during development of the project. The SES objectives are to: (i) strengthen the social and environmental outcomes of programmes and Projects (ii) avoid adverse impacts to people and the environment (iii) minimize, mitigate, and manage adverse impacts where avoidance is not possible (iv) strengthen UNDP and partner capacities for managing social and environmental risks and (v) ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people.
50. UNDP will not support activities that do not comply with national law and obligations under international law, whichever is the higher standard (hereinafter "Applicable Law"). UNDP seeks to support governments to adhere to their human rights obligations and empower individuals and groups, particularly the most marginalized, to realize their rights and to ensure that they fully participate throughout UNDP's programming cycle.
51. 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.
52. The project was screened with UNDP's Social and Environmental Screening Procedure (see Annex 5) which resulted in a "Moderate" (e.g. Category B) overall project social and environmental risk categorization. It was determined that the following UNDP Social and Environmental Standards were particularly relevant to the project:
- Principle 1: Human Rights
 - Principle 2: Gender Equality and Women's Empowerment
 - Standard 1: Biodiversity Conservation and Natural Resource Management
 - Standard 2: Climate Change Mitigation and Adaptation
 - Standard 3: Community Health, Safety and Working Conditions
 - Standard 6: Indigenous Peoples
 - Standard 7: Pollution Prevention and Resource Efficiency

¹⁸ These guidelines have resulted from the Central Zagros Mountain Project (CZMP)

3. ESMF REQUIREMENTS AND PROCEDURES FOR SCREENING, ASSESSMENT AND MANAGEMENT

3.1 Objectives and Requirements of the Environmental and Social Management Framework

53. An ESMF is a management tool used to assist in addressing potential adverse social and environmental impacts associated with project activities. To ensure the environmental and social objectives of the projects are met and adverse impacts are avoided and/or mitigated, this ESMF will be used by the project implementers.
54. The ESMF identifies steps for screening potential social and environmental issues and impacts of particular project activities as their specific locations are further defined and for preparing and approving appropriate action plans for avoiding, and where avoidance is not possible, reducing, mitigating, and managing adverse impacts.
55. The environmental and social objectives of the project and ESMF are to:
- increase climate resilience and adaptive capacity of stakeholders in the Bahktegan Basin□
 - protect forest, rangeland and important ecosystems related to water resources□
 - implement on the ground adaptation measures for forest, land and water resources management in the targeted areas□
 - improve national , regional and local capacities□
 - strengthen knowledge, information management, and monitoring systems on climate change vulnerability and adaptive capacity□
 - promote sustainable livelihoods and management practices in utilization of natural resources□
 - adopt the best practicable means available to prevent or minimise environmental impact and ensure compliance with applicable laws, regulations and standards□
 - describe monitoring procedures required to identify social and environmental impacts.

3.2 Screening Procedures of the Environmental and Social Management Framework

56. All project activities with a physical footprint will be screened and assessed according to DOE is responsible to assess any SEAs or EIAs that may be required.
57. No activities considered potentially "high risk" will be permitted.
58. In addition, project activities will be screened against the following "negative list". The following subprojects or activities will be deemed ineligible for the Adaptation of Communities for the Bakhtegan Basin in Iran if they:
- Involve significant conversion or degradation of natural habitats and/or may cause measureable adverse impacts to critical natural habitats□
 - Risk the introduction of alien and potentially invasive alien species□
 - May negatively affect endangered species□
 - Involve physical displacement of people□
 - Could result in damage or loss to cultural heritage□
 - Do not meet minimum design standards with poor design or construction quality, particularly if located in vulnerable areas□
 - Require or involve:
 - Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements□

- Purchase, application or storage of harmful pesticides or hazardous materials
- Production or activities involving forced labor / harmful child labor
- Production or trade in wood or other forestry products from unmanaged forests
- Trade in wildlife or wildlife products regulated under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

3.3 Environmental and Social Assessment Procedures of the ESMF

5. All project activities that are determined to present potential moderate risks will be assessed according to DOE environmental assessment regulations and procedures. Targeted forms of assessment are to be undertaken, addressing the specific potential social and environmental risks presented by the activity. No high risk activities are permitted.
60. All such project activities will be required to obtain the appropriate permits from the regulatory authorities.
61. The Project's stakeholder engagement plan (section 4) will be fully implemented.
62. In addition, the following targeted assessments and mitigation/management measures will be required:
- Gender assessment in the initial phase of the project to assess divisions of labor and women's role and access to resources in order to develop recommendations on how the project will promote women's equality and empowerment.
 - Marginalized and vulnerable groups assessment in the project inception to prioritize communities and groups for adaptation interventions.
 - Appropriate erosion and sediment control for micro water infrastructure and will be undertaken during all stages of the project.
 - There will be no release of pollution and/or chemicals as a result of the project activities.
 - Appropriate waste management procedures will be followed.
 - Community safety measures will be employed regarding construction and micro water infrastructure activities.
 - No project activities will take place on lands and/or territories claimed by indigenous peoples without their Free, Prior Informed Consent (FPIC).
63. **Timing of assessments:** In all cases, social and environmental assessments and adoption of appropriate mitigation plans/measures must be completed, disclosed, and discussed with stakeholders prior to initiation of any project activities that may cause adverse social and environmental impacts.
64. The ESMF will be updated from time to time by the project team/PMU in consultation with the UNDP staff to incorporate any needed changes as particular project activities are designed in detail and any needed assessments are undertaken.

3.4 Emergency Management Measures

65. In the event of actions occurring which may result in serious health, safety and environmental damage, emergency response or contingency actions will be implemented as soon as possible to limit the extent of environmental damage.
66. The delivery organisation will need to incorporate emergency responses into the project complying with the requirements under the Occupational, Health and Safety Policy of the delivery organisation and the relevant Iranian legislation.

3.4.1 Performance Criteria

67. The following performance criteria are set for project construction activities:
- no incident of fire outbreak

- no failure of water retaining structures□
- no major chemical or fuel spills□
- no preventable industrial or work related accidents□
- provide an immediate and effective response to incidents that represent a risk to public health, safety or the environment□and
- minimise environmental harm due to unforeseen incidents.

3.4.2 Reporting

- 6□ Responsible authorities and UNDP staff must be notified immediately in the event of any emergency, including fire or health related matter including those that have resulted in serious environmental harm.

4. STAKEHOLDER ENGAGEMENT PLAN

4.1 Introduction

- 6□ The Adaptation of Communities for the Bakhtegan Basin in Iran involves a wide range of stakeholder engagement activities. These are outlined below.
70. The project was discussed with a wide range of stakeholders including relevant government organisations, NGOs, and individual community members and approved by the Government. On-ground consultation has been undertaken during the design of the project, including:

| 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 |
| Kharameh County Government and community representatives | Responsible for local decision making in relation to land and water resources management Coordination between different County authorities and assisted with the workshops | Provided information of the issues being experienced in Kharameh County, actions that are already being taken and what additional support is required | Components 2 and 3 |
| Estabhan County Government and community representatives | Responsible for local decision making in relation to land and water resources management Coordination between different County authorities and assisted with the workshops | Provided information of the issues being experienced in Estabhan 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 assisted with 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 |

4.2 Project Stakeholders

The stakeholders in the table will continue to be informed and/or engaged by the project along with the following:

- Farmers and community producer associations
- Villagers
- Protected area managers
- Educational institutions
- International NGOs and partner organisations (i.e. World Vision, Habitat for Humanity, etc.)
- Agriculture schools
- Religious institutions
- Women's groups
- Technology providers
- Financial institutions
- Produce markets and manufacturers
- Water associations
- Forestry cooperatives

4.3 Stakeholder Engagement Program

71. The Stakeholder Engagement Program seeks to set the procedures for ensuring consultation and stakeholder engagement during assessment, development of action plans, and monitoring of social and environmental impacts associated with specific project activities, including information disclosure requirements.
72. The UNDP and DOE will develop and release project-related information to communities, organisations and municipalities where the project is implementing its activities. In order to do so, the project will make use of:
 - Newspapers, local radio podcasts, and local television
 - Brochures, leaflets, non-technical summary documents and technical reports
73. In addition, UNDP information disclosure requirements are to be addressed. The draft UNDP Social and Environmental Screening Procedure (SESP) will be made available to project stakeholders prior to project approval, and the final SESP will be made available upon approval. If/when site-specific, targeted

environmental and social assessments are required, the draft assessment and findings, including specific management measures, will be made available to project stakeholders for public comment. Final assessments and plans will be disclosed upon completion. Summary reports of assessment findings should be disclosed. Stakeholders will be notified on the availability of draft and final documents.

74. The project will ensure that women and other relevant groups such as indigenous groups, elderly, and youth receive an equitable share of benefits and that their status and interests are not marginalised. Participatory processes will include specially designed methodologies that enhance the participation of women and these other groups—therefore, it is expected to enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing their views such as the municipal units and units, community-based organisations, community development associations, forestry cooperatives. The project does not foresee any change or negative impact on the current livelihood of indigenous groups or their natural resource base. In case any project activity requires a formal process of Free and Informed Prior Consent (FIPC), then the project will follow due process either under existing national mechanisms or current international standards, eg the 16th ILO Convention, the Declaration by United Nations on the Rights of Indigenous Peoples, and Jurisprudence produced by the Inter-American Human Rights system.
75. The Stakeholder Engagement Program will build on various activities and methods, including the promotion of participatory processes, joint decision-making, and partnerships undertaken with local communities, NGOs, and local governments. The project will support the operationalisation and formalisation of the Bakhtegan Basin Council, which is envisaged as a key multi-stakeholder coordination, consultations and information sharing mechanism involving national and municipal entities, as well as community based- and civil society organisations. The project will also support exchange visits, training, and capacity building initiatives.
76. Stakeholder engagement activities and required technical assistances will be funded by the project's budget as part of specific Outputs.
77. The project team will develop and release updates on the project on a regular basis to provide interested stakeholders with information on project status. Updates may be via a range of media (e.g. print, radio, social media or formal reports).
78. Key project materials are to be made available in Persian and local languages if appropriate.

4.4 Complaints Register and Grievance Redress

79. The project will include a complaints and grievance redress process. A publicised telephone number will be maintained throughout the project to serve as a point of contact for enquiries and concerns. All enquiries, concerns and complaints will be recorded on a register and the appropriate manager will be informed. Where there is a community issue raised, the following information will be recorded:
 - time, date and nature of enquiry, complaint or concern
 - type of communication (e.g. telephone, letter, personal contact)
 - name, contact address and contact number
 - response and investigation undertaken as a result of the enquiry, complaint or concern
 - actions taken and name of the person taking action.
80. All enquiries, complaints and concerns will be investigated and a response given to the complainant in a timely manner. The National Project Coordinator will be responsible for undertaking a review of all enquiries, complaints and concerns and ensuring progress toward resolution of each matter.
81. Some enquiries, complaints and concerns may require an extended period to address. The complainant(s) will be kept informed of progress towards rectifying the concern.
82. Wherever possible, the project team will seek to resolve the complaint as soon as possible, and thus avoid escalation of issues.
83. Any complaint will be advised to the UNDP within 24 hours of receiving the complaint.

- 4. A summary list of complaints received and their disposition must be published in a report produced every six months.
- 5. 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. The Grievance Redress Mechanism will as far as practicable, try to resolve complaints and/or grievances on terms that are mutually acceptable to all parties. When making a complaint and/or grievance, all parties must act at all times, in good faith and should not attempt to delay and or hinder any mutually acceptable resolution.
- 6. 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. The Social and Environmental Compliance Unit is mandated to independently and impartially investigate valid requests from locally impacted people, and to report its findings and recommendations publicly.
- 7. The Stakeholder Response Mechanism offers locally affected people an opportunity to work with other stakeholders to resolve concerns about the social and environmental impacts of a UNDP project. Stakeholder Response Mechanism is intended to supplement the proactive stakeholder engagement that is required of UNDP and its Implementing Partners throughout the project cycle. Communities and individuals may request a Stakeholder Response Mechanism process when they have used standard channels for project management and quality assurance, and are not satisfied with the response (in this case the project level grievance redress mechanism). When a valid Stakeholder Response Mechanism request is submitted, UNDP focal points at country, regional and headquarters levels will work with concerned stakeholders and Implementing Partners to address and resolve the concerns. Visit www.undp.org/secu-srm for more details. The relevant form is attached at the end of the ESMF.
- . See Appendix 1 for further guidance on accessing UNDP's Accountability Mechanism.

5. IMPLEMENTATION AND OPERATION

5.1 General Management Structure and Responsibilities

- . The proposed governance structure for the project and beyond is based on the existing management plan for the Bakhtegan-Tashk wetlands 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.
- 0. 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, Neyri□, 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.
- 1. 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 Council to objectively and independently oversee and monitor the project.

5.1.1 Administration of ESMF

- ☐2. DOE (as national executing agency) will be responsible for the revision or updates of this document during the course of work.
- ☐3. The ESMF will be part of the project documentation.
- ☐4. UNDP is accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (eg contractors and/or NGOs). During operations the delivery organisations will be accountable for implementation of the ESMF measures. Personnel working on the projects have accountability for preventing or minimising environmental and social impacts.
- ☐5. The delivery organisation (e.g. contractor) will maintain and keep all administrative and environmental records, which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.
- ☐6. The delivery organisation will be responsible for the day to day compliance of the ESMF. Any incidents, including non-conformances to the procedures of the ESMF are to be recorded using an Incident Record and the details entered into a register. For any incident that causes or has the potential to cause material or serious environmental or social harm, the delivery organisation shall notify the Project Manager as soon as possible. The delivery organisation/contractor must cease work until remediation has been completed.

5.1.2 Monitoring, review and auditing

- ☐7. The ESMF and its procedures are to be reviewed at least every 6 months by the Project Board/Steering Committee. The objective of the review is to update the document to reflect knowledge gained during the course of project delivery/construction and to reflect new knowledge and changed community standards (values).
- ☐8. The ESMF will be reviewed and amendments made if:
 - There are relevant changes to environmental conditions or generally accepted environmental practices ☐or
 - New or previously unidentified environmental risks are identified ☐or
 - Information from the project monitoring and surveillance methods indicate that current control measures require amendment to be effective ☐or
 - There are changes to environmental legislation that are relevant to the project ☐or
 - There is a request made by a relevant regulatory authority ☐or
 - Any changes are to be developed and implemented in consultation with UNDP Staff.

5.2 Capacity building and training

- ☐9. Delivery organisations have the responsibility for ensuring systems are in place so that relevant employees, contractors and other workers are aware of the environmental and social requirements for construction, including the ESMF.
100. All project personnel will attend an induction that covers health, safety, environment and cultural requirements.
101. All workers engaged in any activity with the potential to cause serious environmental harm (e.g. handling of hazardous materials) will receive task specific environmental training.

5.3 Budget for ESMF Implementation

102. The ESMF implementation will rely on funding from specific activities within the project's total budget, and will be considered in the stakeholder or site-specific design of the activities. ESMF activities are also aligned with the Monitoring ☐ Evaluation framework, particularly those for the inception assessment, mid-term and final reviews and site visits and supervision missions.

Appendix 1



Guidance for Submitting a Request to the Social and Environmental Compliance Unit (SECU) and/or the Stakeholder Response Mechanism (SRM)

Purpose of this form

- **If you use this form, please put your answers in bold writing to distinguish text**
- **The use of this form is recommended, but not required. It can also serve as a guide when drafting a request.**

This form is intended to assist in:

- (1) Submitting a request when you believe UNDP is not complying with its social or environmental policies or commitments and you are believed you are being harmed as a result. This request could initiate a 'compliance review', which is an independent investigation conducted by the Social and Environmental Compliance Unit (SECU), within UNDP's Office of Audit and Investigations, to determine if UNDP policies or commitments have been violated and to identify measures to address these violations. SECU would interact with you during the compliance review to determine the facts of the situation. You would be kept informed about the results of the compliance review.

and/or

- (2) Submitting a request for UNDP "Stakeholder Response" when you believe a UNDP project is having or may have an adverse social or environmental impact on you and you would like to initiate a process that brings together affected communities and other stakeholders (e.g., government representatives, UNDP, etc.) to jointly address your concerns. This Stakeholder Response process would be led by the UNDP Country Office or facilitated through UNDP headquarters. UNDP staff would communicate and interact with you as part of the response, both for fact-finding and for developing solutions. Other project stakeholders may also be involved if needed.

Please note that if you have not already made an effort to resolve your concern by communicating directly with the government representatives and UNDP staff responsible for this project, you should do so before making a request to UNDP's Stakeholder Response Mechanism.

Confidentiality If you choose the Compliance Review process, you may keep your identity confidential (known only to the Compliance Review team). If you choose the Stakeholder Response Mechanism, you can choose to keep your identity confidential during the initial eligibility screening and assessment of your case. If your request is eligible and the assessment indicates that a response is appropriate, UNDP staff will discuss the proposed response with you, and will also discuss whether and how to maintain confidentiality of your identity.

Guidance

When submitting a request please provide as much information as possible. If you accidentally email an incomplete form, or have additional information you would like to provide, simply send a follow-up email explaining any changes.

Information about You

Are you...

1. A person affected by a UNDP-supported project?

Mark "X" next to the answer that applies to you:

Yes:

No:

2. An authorized representative of an affected person or group?

Mark "X" next to the answer that applies to you:

Yes:

No:

If you are an authorized representative, please provide the names of all the people whom you are representing, and documentation of their authorization for you to act on their behalf, by attaching one or more files to this form.

3. First name:
4. Last name:
5. Any other identifying information:
6. Mailing address:
7. Email address:
8. Telephone Number (with country code):
9. Your address/location:
10. Nearest city or town:
11. Any additional instructions on how to contact you:
12. Country:

What you are seeking from UNDP: Compliance Review and/or Stakeholder Response

You have four options:

- Submit a request for a Compliance Review;
- Submit a request for a Stakeholder Response;

- Submit a request for both a Compliance Review and a Stakeholder Response;
 - State that you are unsure whether you would like Compliance Review or Stakeholder Response and that you desire both entities to review your case.
13. Are you concerned that UNDP's failure to meet a UNDP social and/or environmental policy or commitment is haWHEREng, or could harm, you or your community? Mark "X" next to the answer that applies to you: Yes: No:
14. Would you like your name(s) to remain confidential throughout the Compliance Review process?

Mark "X" next to the answer that applies to you: Yes: No:

If confidentiality is requested, please state why:

15. Would you like to work with other stakeholders, e.g., the government, UNDP, etc. to jointly resolve a concern about social or environmental impacts or risks you believe you are experiencing because of a UNDP project?

Mark "X" next to the answer that applies to you: Yes: No:

16. Would you like your name(s) to remain confidential during the initial assessment of your request for a response?

Mark "X" next to the answer that applies to you: Yes: No:

If confidentiality is requested, please state why:

17. Requests for Stakeholder Response will be handled through UNDP Country Offices unless you indicate that you would like your request to be handled through UNDP Headquarters. Would you like UNDP Headquarters to handle your request?

Mark "X" next to the answer that applies to you: Yes: No:

If you have indicated yes, please indicate why your request should be handled through UNDP Headquarters:

18. Are you seeking both Compliance Review and Stakeholder Response?

Mark "X" next to the answer that applies to you: Yes: No:

19. Are you unsure whether you would like to request a Compliance Review or a Stakeholder Response? Mark "X" next to the answer that applies to you: Yes: No:

Information about the UNDP Project you are concerned about, and the nature of your concern:

20. Which UNDP-supported project are you concerned about? (if known):
21. Project name (if known):
22. Please provide a short description of your concerns about the project. If you have concerns about UNDP's failure to comply with its social or environmental policies and commitments, and can identify these policies and commitments, please do (not required). Please describe, as well, the types of environmental and social impacts that may occur, or have occurred, as a result. If

more space is required, please attach any documents. You may write in any language you choose

-
-
-
-

23. Have you discussed your concerns with the government representatives and UNDP staff responsible for this project? Non-governmental organisations?

Mark "X" next to the answer that applies to you: Yes: No:

If you answered yes, please provide the name(s) of those you have discussed your concerns with

Name of Officials You have Already Contacted Regarding this Issue:

| First Name | Last Name | Title/Affiliation | Estimated Date of Contact | Response from the Individual |
|------------|-----------|-------------------|---------------------------------|---------------------------------|
|------------|-----------|-------------------|---------------------------------|---------------------------------|

24. Are there other individuals or groups that are adversely affected by the project?

Mark "X" next to the answer that applies to you: Yes: No:

25. Please provide the names and/or description of other individuals or groups that support the request:

| First Name | Last Name | Title/Affiliation | Contact Information |
|------------|-----------|-------------------|---------------------|
|------------|-----------|-------------------|---------------------|

Please attach to your email any documents you wish to send to SECU and/or the SRM. If all of your attachments do not fit in one email, please feel free to send multiple emails.

Submission and Support

To submit your request, or if you need assistance please email: project.concerns@undp.org



MINISTRY OF FOREIGN AFFAIRS
OF THE ISLAMIC REPUBLIC OF IRAN

Letter of Endorsement by the Islamic Republic of Iran

Date: 1 August 2018

To: The Adaptation Fund Board
C/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 20252232405

Our Ref. No.: 622/1-8-2018

Date: 1 Aug. 2018

Subject: Endorsement for reducing vulnerability to climate change in the Lake Bakhtegan Basin

In my capacity as designated authority for the Adaptation Fund in the Islamic Republic of Iran, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce impacts of, and risks, posed by climate change in the Islamic Republic of Iran.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Development Programme (UNDP) and executed by Department of Environment.



Yours sincerely

Seyed Alimohammad MOUSAVI

Director General for
International Environmental and
Sustainable Development Affairs

LETTER OF AGREEMENT BETWEEN UNDP AND GOVERNMENT OF IRAN FOR THE PROVISION OF SUPPORT SERVICES

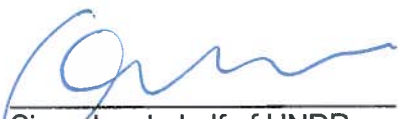
1. Reference is made to consultations between officials of the Government of Islamic Republic of Iran Department of Environment (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document, as described below.
2. UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the "Reducing vulnerability to climate change in the Lake Bakhtegan Basin" project.
3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme:
 - (a) Financial Management/Payment Process
 - (b) HR Services
 - (c) Procurement Services
 - (d) Travel Services
 - (e) General Services
4. The provision of support services as per paragraph 3 above by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document, project document or the AWP, as negotiated and agreed upon by both parties. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.
5. The relevant provisions of the Legal Annex to Project Documents including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document, project document or the AWP.
6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the Legal Annex to Project Documents.
7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall refer to the enhanced UNDP UPL (Universal Price List) effective date 1 January 2017.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,


Signed on behalf of UNDP
Anne Marie Sloth Carlsen
Resident Representative a.i.
[Date: 15/7/2018]

For the Government
Hamid ZOHRABI
Deputy Head for Natural Environment and Biodiversity
Department of Environment
[Date: 15.07.2018]

Attachment

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between Department of Environment, the institution designated by the Government of Islamic Republic of Iran and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project "Reducing vulnerability to climate change in the Lake Bakhtegan Basin".

2. In accordance with the provisions of the letter of agreement signed on 15.07.2018 and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

| 2017 Universal Price List and Local Price List - UNDP Iran | | Total number of items throughout the Project lifetime | Total Cost to UNDP of providing such support services (where appropriate) |
|--|--------------------|---|---|
| Valid as of 1 January 2017 | | | |
| Services | UPL/LPL 2017 (USD) | | |
| Financial Management/Payment Process | | | |
| Payment process | 38.79 | 7,400 | 287,046.00 |
| GLJE Creation and approval | 32.76 | 25 | 819.00 |
| AP Journal (APJV) | 22.72 | 60 | 1,363.20 |
| Approve PO only (below \$30000) | 9.64 | 60 | 578.40 |
| Approve PO only (over \$30,000) | 37.79 | 60 | 2,267.40 |
| HR Services | | | |
| Recruitment Process _Advertisement (20%) | 126.61 | 80 | 10,128.80 |
| Procurement Services | | | |
| Full Procurement Process | 566.56 | 36 | 20,396.16 |
| Travel Services | | | |
| Incoming visa process | 99.46 | 27 | 2,685.42 |
| Ticket booking | 16.73 | 37 | 619.01 |
| Hotel Reservation | 26.61 | 32 | 851.52 |

| | | | |
|---|--------------|-------|-------------------|
| F10 settlement per case (for local travel without advance payment) | 12.93 | 1,240 | 16,031.12 |
| General Services | | | |
| Vendor profile (Creation or Modification) * | 20.92 | 710 | 14,853.20 |
| Total | | | 357,641.31 |

Note: DPC budget charged to AF shall not exceed US\$357,639.

4. Description of functions and responsibilities of the parties involved:

This project is implemented through UNDP's National Implementation Modality (NIM), with the Department of Environment as the designated national executing agency ("Implementing Partner") of the project. DoE shall have the technical and administrative responsibility for applying Adaptation Fund (AF) inputs in order to reach the expected Outcomes/Outputs as defined in the Project Document. DoE is responsible for the timely delivery of project inputs and outputs, and in this context, for the coordination of all other responsible parties, including other line ministries, local government authorities and/or UN agencies.

UNDP serves as the Multilateral Implementing Entity (MIE) and Responsible Party for this project. Services requested by the implementing partner in support of achieving project Outcomes will be provided by staff in the UNDP Country Office in the Islamic Republic of Iran. Recovery of costs for such services will be calculated based on actual costs in accordance with UNDP's Cost Recovery Policy. When determining actual costs is not possible, or when it is specifically indicated, the Universal Price List/ Local Price List will be applied. The Annual Work Plans will specify in more detail the requested services on ad hoc basis.

Additional support services to the Project will be provided only upon request to UNDP from the implementing partner based on this LoA.



MINISTRY OF FOREIGN AFFAIRS
OF THE ISLAMIC REPUBLIC OF IRAN

To: H.E. Ms. Patricia ESPINOSA

Fax No.: +49-228-815-1855

Executive Secretary
UNFCCC secretariat

Date: 21 February 2018

From: Mr. Majid BIZMARK

Fax No.: +98-21-66704176

Director General for
International Environmental and
Sustainable Development Affairs

Our Ref. No.: 622/21-2-2018

Subject: Introduction of the new focal point of the Islamic Republic of Iran for UNFCCC and the relevant agreements and protocols

Dear Madame,

I would like to inform you that due to the new assignment I could not continue my task as the focal point for UNFCCC and the relevant agreements and protocols. In this regard, I am pleased to introduce **Mr. Seyed Alimohammad MOUSAVI** as the new focal point of the Islamic Republic of Iran for UNFCCC and the relevant agreements and protocols. His Contact information for your kind attention is as follows:

Mr. Seyed Alimohammad MOUSAVI

Director General for International Environmental and Sustainable Development Affairs,

Ministry of Foreign Affairs,
Kooshk Mesri St., Ferdowsi Ave., Tehran

Islamic Republic of Iran

Tel: +982161154475

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Email: irfocal@yahoo.com

Yours sincerely

Majid BIZMARK