BIODIVERSITY MAINSTREAMING REPORT

KINGDOM OF BAHRAIN

Project title: Bahrain NBSAP (Biodiversity Mainstreaming Report)
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Executing Agency: Supreme Council for Environment, Kingdom of Bahrain
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Number of pages: 95
Year of publication: 2015
Version: Final

Acknowledgment

The author would like to thank the Supreme Council for Environment especially Dr. Mohamed Mubarak Bin Daina and the NBSAP Project Team that includes Ms. Reem Al Mealla, Ms. Eman Husain and Ms. Tamera Alhusseini and also the NBSAP commissioned consultants: Dr. Elsa Sattout and Dr. Ameer Abdulla for their valuable and constructive comments throughout the project. I would also like to thank the United Nations Environment Programme - Regional Office for West Asia, particularly Ms. Diane Klaimi for her guidance and support, in addition to all the NBSAP workshops participants and their organizations for their valuable participation, feedback, and genuine contributions. Further thanks goes to all the stakeholder that have participated in the various focus groups and consultation meetings thereby aiding the process in accumulating local knowledge that might not otherwise have been documented thereby creating a baseline platform for all future studies and generations. Special thanks to the NBSAP National Reviewing Committee members Dr. Abdelmawgoud Ragab (Directorate of Agricultural Affairs), Mr. Bassam Al Shuwaikh (Directorate of Fisheries), Dr. Humood Naser (University of Bahrain) and Mrs. Nouf Al Wasmi (Supreme Council for Environment).

Government Sector

Bahrain Authority for Culture and Antiquities (BACA)
Central Informatics Organisation (CIO)
Chamber of Commerce and Industry
Economic Development Board
Electricity and Water Authority
National Oil and Gas Authority
Ministry of Education
Ministry of Finance
Ministry of Interior
    Customs
    National Coast Guard
Ministry of Transport
Ministry of Works, Municipality and Urban Planning
    Directorate of Fisheries
Directorate of Agriculture Affairs
Supreme Council for Environment
Supreme Council for Women
Survey and Land Registration Bureau
    Topographic Survey Directorate
    Hydrographic Survey Directorate

Private Sector

Environment Arabia Consultancy Services
Gulf Petrochemical Industries CO. (GPIC)
Mattar Jewelry
The Bahrain Petroleum Company (Bapco)

The National Initiative for Agricultural Development

Academic Sector
Arabian Gulf University
Bahrain Center for Strategic, International and Energy Studies
University of Bahrain

Civil Society & NGO's
Arab Youth Climate Movement, Bahrain Chapter
Bahrain Environment Society
National Institute for Human Rights
Youth and Environment Association

Intergovernmental
United Nations Development Programme (UNDP)
United Nations Environmental Programme – Regional Office of West Asia (UNEP-ROWA)

Executive Summary

"Biological diversity" means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. In other words, biodiversity includes the number of species of plants, animals, and microorganisms, the enormous diversity of genes in these species, the different ecosystems on the planet, such as deserts, rainforests and coral reefs. Appropriate conservation and sustainable development strategies attempt to recognize this as being integral to any approach to preserving biodiversity.

Biological diversity provides many services and benefits to humans, nature, and Planet Earth at large. Services falls under four main categories: Provisioning, Supporting, Cultural, Regulating. As a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. Species extinction caused by human activities continues at an alarming rate.

National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the Convention of Biological Diversity at the national level to fulfill the main objectives of the convention, which are:

1. The conservation of biological diversity
2. The sustainable use of the components of biological diversity
3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources

Bahrain has recognized the importance of biological and environmental resources and the need to protect them. Since the early 20th Century, Bahrain introduced a number of laws prohibiting the destruction of habitats and the hunting of animals. Acknowledging the importance of this matter, the Kingdom of Bahrain ratified the International Convention on Biological Diversity Convention (CBD) in 1996 based on Decree (18) 1996.

Mainstreaming biodiversity was developed as a mean of addressing the fact that biodiversity conservation goals are viewed as distinct from, and sometimes even contradictory to, the goals of development and economic growth. The higher priority put on development means that biodiversity work does not receive the political, social and financial support it needs to succeed. Though mainstreaming has been referred to as “integrating” biodiversity into development, it has been integrated into various sectors.

According to NBSAP, “Mainstreaming” means that: the integration of the conservation and sustainable use of biodiversity in both cross-sectoral plans such as sustainable development, poverty reduction, climate change adaptation/mitigation, trade and international cooperation, and in sector-specific plans such as agriculture, fisheries, forestry, mining, energy, tourism, transport and others. It implies changes in development models, strategies and paradigms.

Accordingly, this Mainstreaming Biodiversity Report was prepared with the following expected outcomes (deliverables):

1. Identification of biodiversity elements of biodiversity for mainstreaming.
2. Identification of production sectors and cross-sectors development plans where mainstreaming will be implemented.
3. Identification of expected biodiversity mainstreaming outcomes.
4. An outline of communication strategy for mainstreaming.
5. A mapping between Aichi Targets, mainstreaming outcomes and actions.
6. An outline of monitoring and evaluation system for biodiversity mainstreaming.

The report was prepared based on The Ten Steps to Biodiversity Mainstreaming guide UNEP-WCMC model. Hence, the report sections include:

- An introduction about the Convention of Biological Diversity and the Mainstreaming of Biodiversity.
- Methodology, which cover the approach followed in preparing the report.
- Mainstreaming: this is the main section of the report. It discusses in some details the assessment of the biodiversity in Bahrain and mainstreaming; elements of biodiversity that will be included, i.e. ecosystems, species; main biodiversity-related sectors and the national development issue in Bahrain; stakeholders involved; expected outcomes from mainstreaming process; and how the mainstreaming will be monitored and evaluated.

ABBREVIATIONS

ARCWH:	Arab Regional Centre for World Heritage
ALBA:	Aluminium Bahrain
AGU:	Arabian Gulf University
ASRY:	Arab Shipbuilding and Repair Yard
AYCM:	Arab Youth Climate Movement
BACA:	Bahrain Authority for Culture and Antiquities
BDB:	Bahrain Development Bank
BAPCO:	The Bahrain Petroleum Company
BANAGAS:	Bahrain National Gas
BALEXECO:	Bahrain Aluminium extrusion Co.
BASREC:	Bahrain Ship Repairing and Engineering Company
BAS:	Bahrain Airport Services
BCCI:	Bahrain Chamber of Commerce &Industry
BWS:	Bahrain Women Society
CBD:	Convention on Biological Diversity
CIO:	Central Informatics Organization
EWA:	Electricity & Water Authority
EDB:	Economic Development Board
GEF:	Global Environment Facility
GOYS:	General Organization for Youth and Sport
GPIC:	Gulf Petrochemical Industries Co.
GIIC:	Gulf Industrial Investment Co.
GARMCO:	Gulf Aluminium Rolling Mill Company
IAA:	Information Affairs Authority
NIHR:	National Institution for Human Rights
NOGA:	National Oil & Gas Authority
UNEP:	United Nations Environment Programme
UOB:	University of Bahrain
RUW:	Royal University for Women
SCW:	Supreme Council for Women

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1. INTRODUCTION

1.1 Context of the Project:

"Biological diversity" means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (CBD, 2015). In other words, biodiversity includes the number of species of plants, animals, and microorganisms, the enormous diversity of genes in these species, the different ecosystems on the planet, such as deserts, rainforests and coral reefs. Appropriate conservation and sustainable development strategies attempt to recognize this as being integral to any approach to preserving biodiversity.

Biological diversity provides many services and benefits to humans, nature, and Planet Earth at large. Services fall under four main categories: Provisioning, Supporting, Cultural, Regulating (Fig. 1).

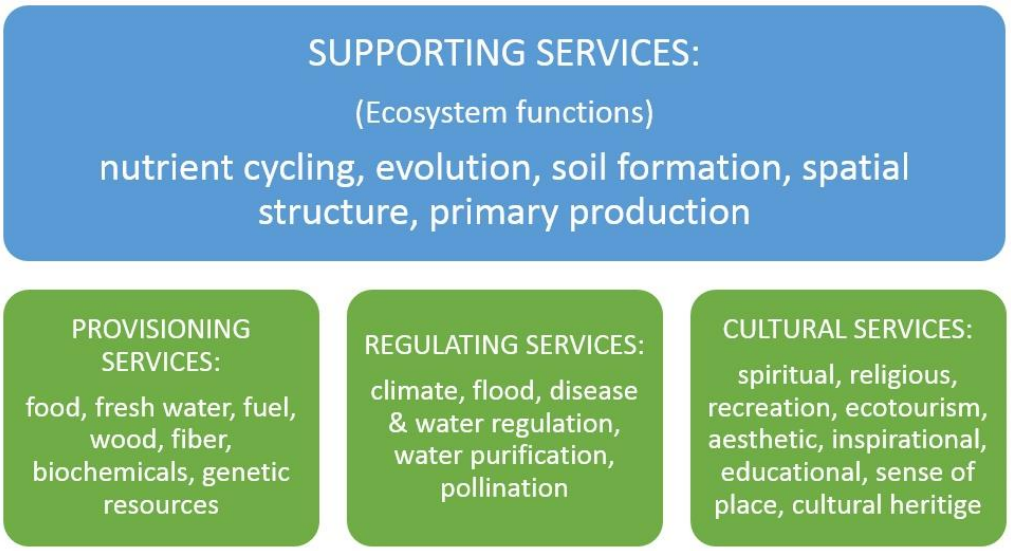


Fig. 1 Ecosystem services (Source: Millennium Ecosystem Assessment, 2005)

Provisioning services – products obtained from ecosystems (food, such as crops, fruit, fish, fuel and fiber, such as timber and wool, biochemicals, natural medicines, pharmaceuticals, genetic resources for plant/animal breeding and biotechnology and ornamental resources such as flowers, shells etc.).

Regulating services – benefits obtained from the regulation of ecosystem processes (maintenance or air quality, climate and water regulation, erosion control, water purification and detoxification, natural hazard protection and bioremediation of waste).

Cultural services – the non-material benefits that people obtain through spiritual enrichment, cognitive development, recreation etc. (spiritual and religious value, inspiration for art, social relations, aesthetic values, cultural heritage values, recreation and ecotourism).

Supporting services – the services that are necessary for the production of all other ecosystem services (soil formation and retention, water cycling, nutrient cycling, primary production, production of atmospheric oxygen and provision of habitat). The Millennium Ecosystem Assessment (Millennium Ecosystem Assessment, 2005) concluded that 15 out of the 24 measured ecosystem services are in serious decline, only 4 are improving and 5 are stable but threatened in some parts of the globe.

As a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. In response, the United Nations Environment Programme (UNEP) explored the need for an international convention on biological diversity.

The Convention on Biological Diversity (CBD, 2015) was inspired by the world community's growing commitment to sustainable development. It has 3 main objectives:

1. The conservation of biological diversity
2. The sustainable use of the components of biological diversity
3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources

National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the convention at the national level (CBD, Article 6). The Convention requires countries to prepare a national biodiversity strategy (or equivalent instrument) and to ensure that this strategy is mainstreamed into the planning and activities of all those sectors whose activities can have an impact (positive and negative) on biodiversity. Bahrain, being aware of the importance of this matter, ratified the International Convention on Biological Diversity Convention (CBD) in 1996 based on Amiri Decree (18) 1996.

1.2 Biodiversity and Mainstreaming

One definition of mainstreaming is “to cause (someone or something) to be included in or accepted by the group that includes most people”. Mainstreaming as used in conservation and development can be directed at the incorporation of a variety of issues such as climate change, gender, disaster management, refugee settlement, and education and learning. Mainstreaming can also involve a process of layering multiple objectives into a single activity. This calls for mainstreaming integrated issues such as poverty and environment into development planning or national forestry legislation. The sector that mainstreaming activities are designed to affect is often not clearly specified, though it usually seems to refer to economic development policies and practices (Huntley and Redford, 2014).

Mainstreaming biodiversity was developed as a means of addressing the fact that biodiversity conservation goals are viewed as distinct from, and sometimes even contradictory to, the goals of development and economic growth. The higher priority put on development means that biodiversity work does not receive the political, social and financial support it needs to succeed (UNDP and UNEP, 2008). Though mainstreaming has been referred to as

"integrating" biodiversity into development, it has been integrated into various sectors (Fig.2).

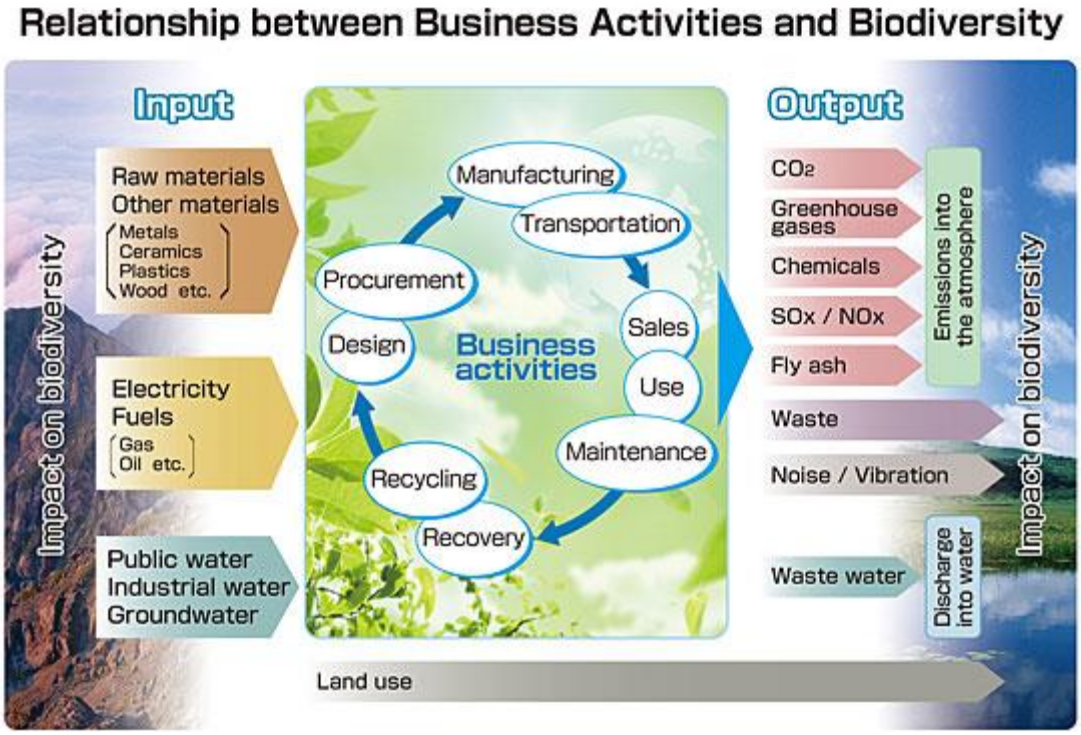


Fig. 2. Mitsubishi Electric visualization of the relationship between business activities and biodiversity (Mitsubishi Electric, 2015)

The concept of mainstreaming was included in article 6(b) of the Convention on Biological Diversity, which called on the Parties to the Convention to "integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies" (CBD, 2011). Mainstreaming also contributes toward fulfilling article 10(a), which calls on the Parties to "integrate consideration of the conservation and sustainable use of biological resources into national decision-making" (CBD, 2011).

The STAP/GEF Cape Town expert meeting on mainstreaming biodiversity in October 2013 (Huntley and Redford, 2014) brought together mainstreaming professionals who developed the following definition:

Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that biodiversity is conserved, and sustainably used, both locally and globally.

According to NBSAP Module 3 (Secretariat of the Convention on Biological Diversity, 2011), "Mainstreaming" means that: the integration of the conservation and sustainable use of biodiversity in both cross-sectoral plans such as sustainable development, poverty reduction, climate change adaptation/mitigation, trade and international cooperation, and in sector-

specific plans such as agriculture, fisheries, forestry, mining, energy, tourism, transport and others. It implies changes in development models, strategies and paradigms.

Mainstreaming is not about creating parallel and artificial processes and systems, but about integrating biodiversity into existing and/or new sectoral and cross-sectoral structures, processes and systems.

It is hoped that mainstreaming will help Parties recognize the value of biodiversity and ecosystem services and act to maximize the positive and minimize the negative impacts of human activities on biodiversity. Through mainstreaming, biodiversity concerns will be internalized into the way development efforts operate, shifting responsibility and ownership for conservation and sustainable use from solely the hands of the environment ministry/authority to those also of economic sectors. This sharing of ownership and responsibility presents the opportunity of freeing up resources traditionally used by environment authorities to counter and neutralize damaging policies and actions, and of substantially increasing the financial, human and technical capacity to implement the Convention (Secretariat of the Convention on Biological Diversity, 2011).

According to Article 6b of the Convention, Parties have an obligation to:

"Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies."

In addition, COP V endorsed the Ecosystem Approach, which provides for the integrated management of land, water and living resources and promotes a balance in the achievement of the three objectives of the Convention, as the primary framework for action under the Convention.

The third edition of the Global Biodiversity Outlook reports that while addressing biodiversity loss requires addressing the underlying causes or indirect drivers of that decline, there has been insufficient integration of biodiversity issues into broader policies, strategies and programmes. It states that better decisions for biodiversity must be made at all levels and in all sectors, in particular the major economic sectors, with a key enabling role played by government.

Given the importance of mainstreaming, it is not surprising that it is one of the main drives z of the Convention's Strategic Plan for Biological Diversity 2011-2020. Strategic Goal A is to:

Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Targets **2**, **3**, and **4** of Strategic Goal A specify:

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

1.3 Expected Outcomes of the Mainstreaming of Biodiversity Report:

The 2011-2020 Biodiversity Strategy Goals are:

- **Strategic Goal A**: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- **Strategic Goal B**: Reduce the direct pressures on biodiversity and promote sustainable use
- **Strategic Goal C**: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- **Strategic Goal D**: Enhance the benefits to all from biodiversity and ecosystem services
- **Strategic Goal E**: Enhance implementation through participatory planning, knowledge management and capacity building

Strategic Goal A specifically concentrates on addressing causes of biodiversity loss by mainstreaming biodiversity across government and society. To achieve this goal causes of biodiversity loss should be identified, priorities and policies should be established; and stakeholders' capacities should be acknowledged. Consequently, gaps in stakeholders' policies and actions should be bridged and integrated into common cause and national policy for the protection and sustainable use of biodiversity (CBD, 2011).

Accordingly, this Mainstreaming Biodiversity Report was prepared with the following expected outcomes (deliverables):

1. ***Identification of biodiversity elements of biodiversity for mainstreaming.***
2. ***Identification of production sectors and cross-sectors development plans where mainstreaming will be implemented.***
3. ***Identification of expected biodiversity mainstreaming outcomes.***
4. ***An outline of communication strategy for mainstreaming.***
5. ***A mapping between Aichi Targets, mainstreaming outcomes and actions.***
6. ***An outline of monitoring and evaluation system for biodiversity mainstreaming.***

2. METHODOLOGY

Mainstreaming in this report was based on ecosystem services as indicated in the NBSAP Training Package (Version 2.1) guidelines for mainstreaming and on The Ten Steps to Biodiversity Mainstreaming guide (IIED, 2013) derived from the experience and good practice of participants of the first NBSAPs 2.0 Mainstreaming Biodiversity and Development project workshop held in Maun, Botswana in November 2012, and SANBI (2008). Figure 3 illustrates the ten guiding steps for biodiversity mainstreaming.

Figure 3. Ten steps to biodiversity mainstreaming

3. MAINSTREAMING:

3.1 Problem Assessment

Biodiversity mainstreaming in Bahrain is a new concept and it is proposed as part of the NBSAP development. There are some elements in the policies, regulations, and MEAs that could be used for mainstreaming. However, there is no national biodiversity mainstreaming strategy or stated vision.

Vision (Proposed):

By 2020, biodiversity is fully integrated across all sectors, particularly the production sectors, and incorporated in national policies, budget, and reflected into human well- being.

3.1.1 Pressures and Impacts:

During the first NBSAP workshop (2013) and the second NBSAP workshop (2015), stakeholders have identified and assessed pressures affecting biodiversity protection and sustainability in Bahrain. These pressures were specifically highlighted and listed according to priority for the main ecosystems in Bahrain by Alkhuzai (2015):

A. Marine and Coastal Ecosystems

A.1 Pressures

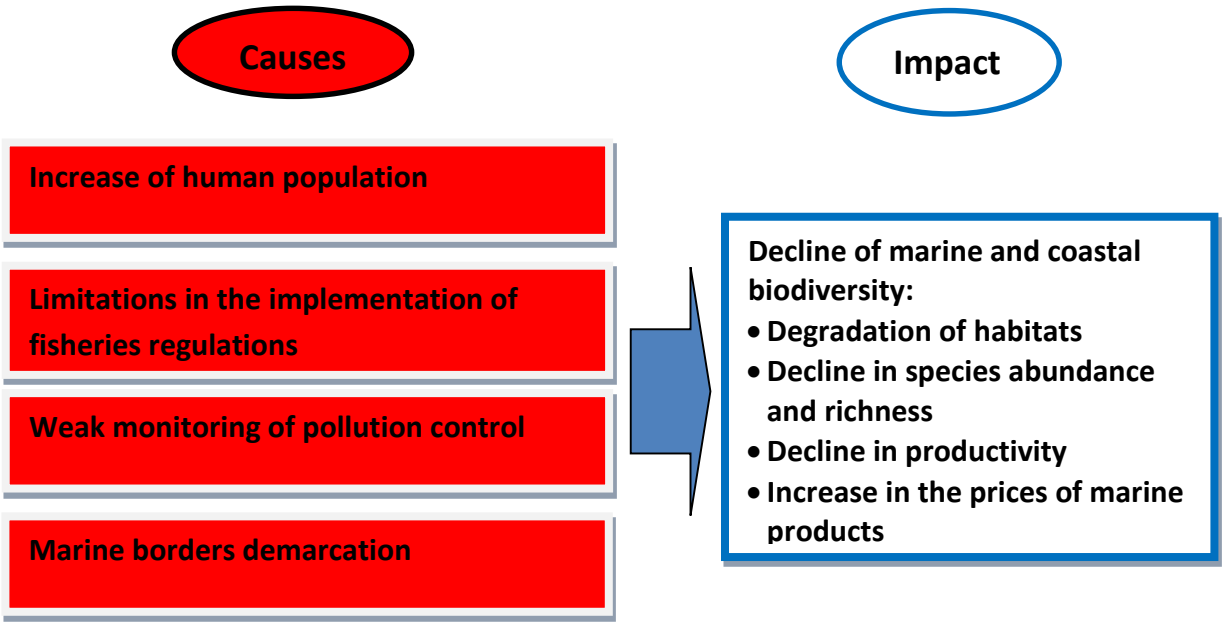
1. Dredging and reclamation
2. Illegal, unregulated, and unreported fishing
3. Pollution and industrial wastes
4. Climate change
5. Ballistic waters
6. Desalinization plants

A.2 Impacts

As a result of these pressures, impacts on marine and coastal ecosystems include:

- Degradation of marine ecosystems and habitats
- Decline in the species abundance and richness
- Decrease in the productivity of marine ecosystems
- Increase in the prices of marine products
- Decline of fishermen socioeconomics

The degradation of marine ecosystems and habitats and the decline in the number of species and their abundance and thus the productivity of marine ecosystems, and increase in the prices of fishes and seafood could be traced down to the following causes:



B. Agriculture Ecosystem (including Freshwater Springs and Agricultural Channels)

B.1 Pressures

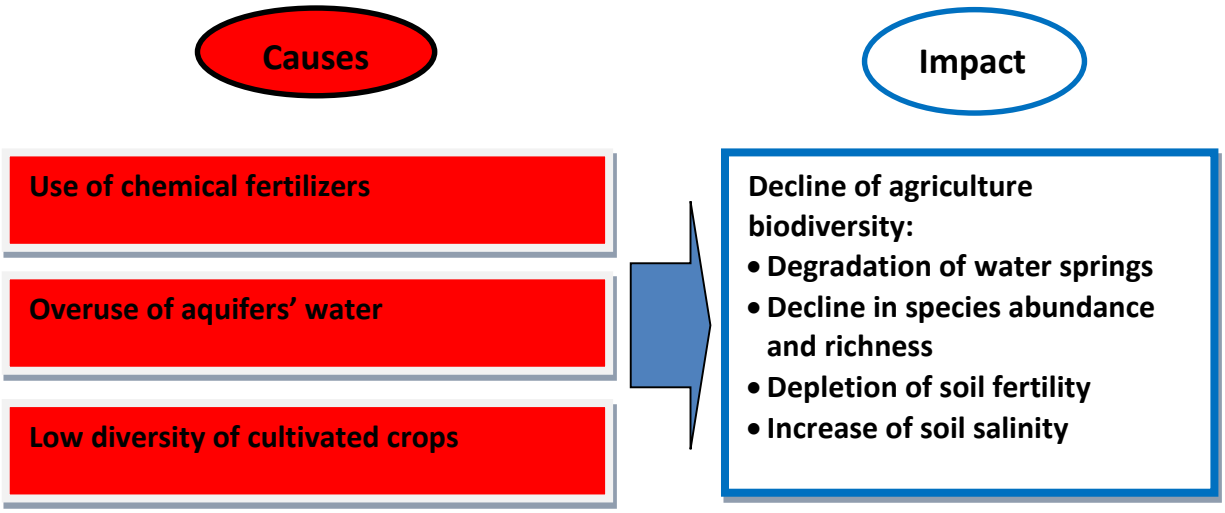
1. Urbanization
2. Pollution
3. Climate change
4. Introduced insects

B.2 Impacts

As a result of these pressures, impacts from agriculture practices on biodiversity include:

- Decline of species richness and abundance
- Increase of soil salinity
- Depletion of soil fertility
- Degradation of water springs

The decline of agriculture biodiversity could be traced down to the following causes:



C. Desert Ecosystem

C.1 Pressures

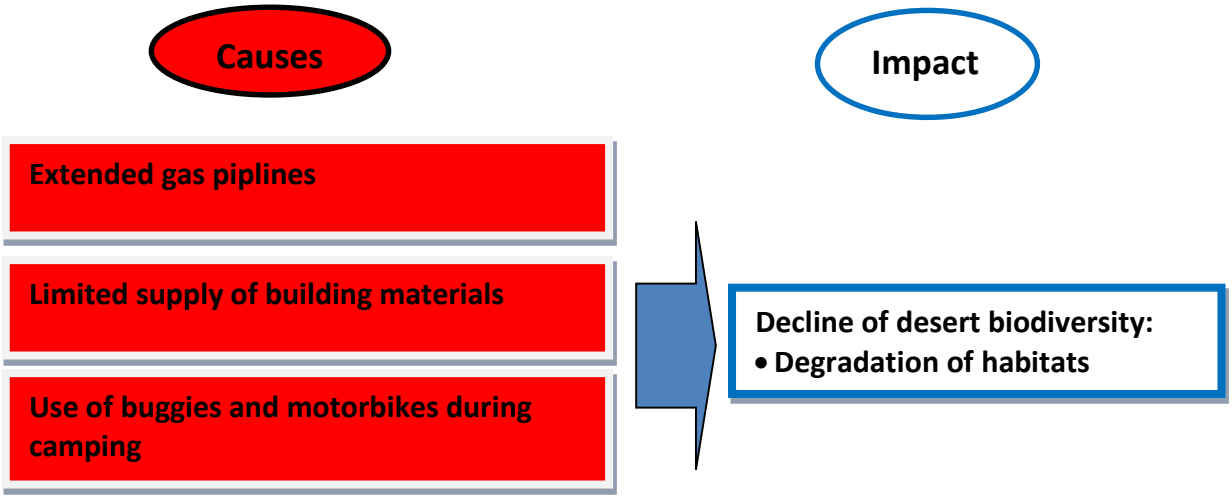
1. Oil and gas industry
2. Urbanization
3. Camping
4. Rock and sand excavation

C.2 Impacts

As a result of these pressures, impacts on desert ecosystem include:

- Degradation of habitats
- Decrease in biodiversity
- Erosion

The decline of desert biodiversity could be traced down to the following causes:



3.1.2 Laws and Decisions

There are many laws and decisions issued to reduce the impact of pressure on the various aspects of the environment, including biodiversity, but it seems that the implementation was not up to the expectations. Committees are usually formed to deal with specific environmental problems. However, there is usually a lack in strategies and processes integrating the stakeholders into a common mainstream, and a lack of implementation of monitoring systems.

Annex 1 is a short account of the national laws and decisions related directly or indirectly to marine ecosystem, coastal ecosystem, agricultural ecosystem, and desert ecosystem, which were issued by Royal (Amiri) decree or by governmental (ministerial) decision. Despite the numerous laws and decisions, little impact has been touched on reducing the negative pressures on biodiversity. It seems the lack of national mainstreaming strategy, implementation plans, and follow-ups have kept laws with minimal effect.

3.2 Elements of Biodiversity Mainstreaming

Ecosystems: Functions, Services, and Values:

Ecosystem functions are the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of an ecosystem; in other words, what the ecosystem does. Some examples of ecosystem functions are provision of wildlife habitat, carbon cycling, or the trapping of nutrients.

Ecosystem services are the beneficial outcomes, for the natural environment or people, which result from ecosystem functions. Some examples of ecosystem services are support of the food chain, harvesting of animals or plants, and the provision of clean water or scenic views.

Ecosystem values are measures of how important ecosystem services are to people – what they are worth. Economists measure the value of ecosystem services to people by estimating the amount people are willing to pay to preserve or enhance the services (Ecosystem Valuation, 2015).

3.2.1 MARINE ECOSYSTEM

3.2.1.1 Functions, services, and values:

Marine ecosystem in this report context is represented by the subtidal zone. The subtidal zone is the area below the low tide water line. The vast majority of this area is submerged most of the time, and it includes an array of habitats such as coral reefs and pearl oyster beds.

Marine ecosystems are integrated systems where a number of processes such as primary production by phytoplankton and macroalgae, secondary production, energy transfer through marine organisms, and nutrients cycling through organisms and sediments. The marine ecosystem provides services to people in Bahrain. Examples of such services are food

from fish and other marine organisms, jewels from pearl oysters, recreation through diving in coral reefs and sailing (Table. 1).

Table 1. Functions and services of marine ecosystem (Abdulla, 2015)

Ecosystem	Habitat	Function/ Service
Marine	Seagrass	• Feeding and breeding for finfish, mollusks, crustaceans, sea turtles, and dugong • Buffer against storms • Stabilizes sea floor • Fixing carbon and sequestering in soil
	Algal beds	• Support a wide array of species • Influence water quality • Sequester carbon.
	Coral reefs	• Diving and other recreation • Sequestering carbon • Supporting biodiversity • Supporting fisheries
	Pearl beds	• Shoreline stabilization • Water quality maintenance • Pearling trade

The economic values of these ecosystem services have not been estimated yet (Abdulla, 2015). However, hypothetical use values based on studies from other regions have been utilized such as carbon stock measurements in Abu Dhabi (Table 2).

Table 2. Carbon stock measurements from the Abu Dhabi Blue Carbon Demonstration Project (Abdulla, 2015)

Habitat	Median	Mean	StDev	S.E.	± 95% C.I.	n
Algal flat	133.83	129.07	40.98	11.36	22.27	5
Mangrove	98.29	115.49	64.16	7.04	13.80	15
Sabkha	72.41	75.55	40.61	7.96	15.61	4
Saltmarsh	69.15	81.07	50.12	9.15	17.93	5
Seagrass	51.62	49.56	29.56	6.97	13.66	18

3.2.1.2 Marine Biodiversity Elements for Mainstreaming

Based on the assessment of marine services at the ecosystem, species, and genetic diversity levels, pressures and impacts, an action for its protection and sustainability is required through mainstreaming. The following are selected marine elements for mainstreaming:

a. Coral reefs
b. Seagrass, algal, and pearl oysters beds
c. Fisheries as marine ecosystem service.
d. Animal species including: orange spotted grouper (Hamoor), streaked rabbit fish (Safi Senayfi, white-blotched grouper (Bertam), Green Sawfish (Bu Sayyaf), and blue swimmer crab (gob gob).

Coral Reef Mainstreaming:
Coral reef is an important habitat in Bahrain. It provides a number of services in Bahrain including being a habitat for fishes, support of biodiversity, diving and recreation, waves' barrier, in addition to its role sequestering of carbon. A number of stakeholders are involved in the utilization of these services. The management team should include the Supreme Council for Environment, the Directorate of Fisheries, the Coast Guards, the Ministry of Culture and Antiquities, the diving centres, higher education institutes and research centres, dredging companies, and media. Therefore, a mainstreaming management plan should aim to protect and sustainably use the coral reefs. The plan could include an establishment of protected reef area for replenishment and restoration. The different stakeholders should play a role in the collaborative implementation of the plan.

3.2.2 COASTAL ECOSYSTEM

3.2.2.1 Functions, services, and values:

Coastal ecosystem in the context of this report is represented by the intertidal zone, mangrove, rocky shores, and salt marshes. Physical and chemical processes occur in the habitats of coastal ecosystem. Intertidal waves cause changes in the water depth and light intensity received by benthic animals and algae. Sedimentation is a consequence of wave's action. Nutrients are brought up to surface water where phytoplankton dominates. Sediments and nutrients are trapped in the mangrove swamps and many crustaceans spend at least part of their life cycle in this habitat. Coastal habitats including beaches provide a recreation and aesthetic areas for people; intertidal zone is a feeding habitat for waders and migratory birds such as flamingos. Salt marshes provide a habitat for many birds such as the reef heron (Table 3). The economic values of these ecosystem services have not been estimated yet (Abdulla, 2015).

Table. 3. Functions and services of coastal ecosystem (Abdulla, 2015)

Ecosystem	Habitat	Function/ Service
Coastal	Coastlines and beaches	• Swimming and picnicking • Support diverse fauna • Primary production
	Mangrove	• Stabilizes navigation channels • prevents inundation from sea level rise • Buffers against catastrophic flooding • Exports nutrients to the near shore environment • Traps sediments and heavy metals and other toxins • Maintains water quality • Supports a variety of fisheries species through provision of nursery habitat • Supports broader avian, fish, crustacean, mollusc, and sponge diversity • Fixes carbon and sequesters it in soils
	Sabkhas	• Provides valuable habitat for migratory, transient, and resident fish species, as well as birds and other taxa Sequestering carbon • Acts to safeguard valuable coastal sites from erosion • Plays a role in climate change mitigation through carbon fixation • Cyanobacteria fix atmospheric nitrogen
	Salt marsh	• Filtration of water • Stabilization of the shoreline

3.2.2.2 Coastal Biodiversity Elements for Mainstreaming

Based on the assessment of ecosystems and ecosystem services, species, and genetic diversity under pressure and threatened and need an action for its protection and sustainability, the following are coastal elements for mainstreaming:

a. Mangrove
b. Salt marshes
c. Rocky shores

Mangrove Mainstreaming:
Mangrove provides a number of supporting, provisioning, regulating, and cultural services in Bahrain. It acts as nurseries for shrimps and other marine animals, protection of coasts from waves and high currents, trapping of sediments, habitat for birds, and part of the cultural value especially along the north eastern coasts where villages intermingled with the mangrove ecosystems. The mangrove habitat is becoming particularly vulnerable during the last few decades. Reclamation, private land ownership of most of the coastal Tubli Bay area, disposal of rubbish, sand washing industries, sewage treatment plant, and the construction of the old Sitra Causeway have all led to the diminishing of the mangrove habitat and the

associated biodiversity. A management team for the mainstreaming of various activities in the Bay with the aim of protection and restoration of the mangrove habitat and its sustainable use could involve the Supreme Council for Environment, the Directorate of Fisheries, Capital Secretariat Council, Directorate of Planning, sand industry, Ministry of Education, and media. The integrated coastal zone management approach (ICZM) could be adopted for the mainstreaming.

3.2.3. AGRICULTURAL ECOSYSTEM

3.2.3.1 Functions, services, and values:

Agricultural ecosystem in the context of this report is represented by the plantations (particularly date palms), remnants of freshwater springs, and streams. This ecosystem play important role in supporting biodiversity through its physical and chemical processes which include nutrient recycling, stabilization of soil, wind breaker, and water cycling. It is also a support for species biodiversity including many birds such as the white check bulbul and Grey Hypocolius, the fresh water frog, and the Caspian turtle.

Agricultural ecosystem has been a settlement area for Bahraini people throughout history, a source of food, for recreation, air filter, and other (Table 4). The economic values of these ecosystem services have not been estimated yet (Abdulla, 2015).

Table. 4. Functions and services of agriculture ecosystem (Abdulla, 2015)

Ecosystem	Habitat	Function/ Service
Agricultural	Plantations	• Food • Fiber • Habitat for diverse animals including white cheek bulbul and grey hypocolius • Recreation • Provision of water • Nutrient cycling • Soil fertility • Wind breaker
	Freshwater springs and agricultural channels	• Maintain freshwater biodiversity including the fresh water frog, and the Caspian turtle • Irrigation • Traps sediments

3.2.3.2 Agricultural Biodiversity Elements for Mainstreaming

Based on the assessment of ecosystems and ecosystem services, species, and genetic diversity under pressure and threatened and need an action for its protection and sustainability, the following are agricultural elements for mainstreaming:

a. Freshwater springs and agricultural channels
b. Agricultural habitats
c. Animal species including: White-cheeked bulbul (bulbul), Freshwater frog (Dhifdaa), and Caspian turtle (Ghailam).

Agricultural Biodiversity Mainstreaming:
Agriculture has been part of the history of Bahrain Islands for thousands of years since the times of Delmon. It was use as a source of food, resource of materials for shelter, household tools, recreation, and as support for an array of animal and plant species. Agricultural channels are microhabitats for freshwater fishes, frogs, and turtles. The agriculture and its related habitats has come under pressure in the last few decades. Much of the agricultural land and associated native species were highly impacted by urbanization. The agricultural land has decreased tremendously. Many of the agricultural channels were destructed and only few are in existence currently. Despite decline in their numbers, date palm trees, with their many varieties of date cultivars, are still the main agricultural species in Bahrain. Effort should be exerted to protect and maintain the agricultural ecosystems in Bharian with their associated native species. Mainstreaming plan for agricultural protection and sustainable use should be introduced. Main players including Agriculture Affairs, Supreme Council for Environment, National Initiative for Agriculture Development, Ministry of Education, Higher Education Institutes, Directorate of Planning, Farmers, and media should be part of a national committee for mainstreaming activities and introducing agriculture practices that support biodiversity and sustainable use.

3.2.4. DESERT ECOSYSTEM

3.2.4.1 Functions, services, and values:

Desert ecosystem includes physiographic features and habitats including some elevated areas of sedimentary rocks, inland sabkhas, runnels, and small sand dunes. During winter, rainfall through runnels lead to increased moisture and some dense vegetation, temporary lakes (playas) are formed in some areas. Ephemeral plants emerge after rainfall. Alluvial fans and pediments are seen down slopes the small jabals.

Desert in Bahrain supports a variety of plants and animals. Sand gazelle, spiny-tailed lizard, scorpions, and different kinds of insects are found. Desert in Bahrain provides some services including recreation during winter months, collection of herbal plants, grazing by animals, and food by some plants (Table 5). The economic values of these ecosystem services have not been estimated yet (Abdulla, 2015).

Table. 5. Functions and services of desert ecosystem (Abdulla, 2015)

Ecosystem	Habitat	Function/ Service
Desert	Sand dunes (phytogenic mounds)	• Sand fixation by phytogenic mounds (e.g *Zygophullym qatarense*) • Carbon fixation • Habitat for insects and lizards
	Jabals	• Habitat for xeric vegetation including Lycium Shawii which produces berries fruits eaten by hubara birds • Habitat for diverse animals • Habitat for perennial medicinal plants
	Runnels	• Water retention • Dense vegetation which support variety of animal life • Habitat for ephemeral and annual medicinal plants

3.2.4.2 Desert Biodiversity Elements for Mainstreaming

Based on the assessment of ecosystems and ecosystem services, species, and genetic diversity under pressure and threatened and need an action for its protection and sustainability, the following are desert elements for mainstreaming:

a. Plant species including: truffle (Zubaidi) and Felty Germander (Etra)
b. Animal species including: Desert rabbit , Hubara bustard, Sooty Falcon, Spiny-tailed lizard, and the Arabian Oryx

Camping Mainstreaming:
Camping is an annual activity in the desert that usually takes in the southern region of Bahrain, particularly Sakhir area. It is the main outdoor recreational activities the people of Bahrain carryout during winter months. Hundreds of tents can be seen in the landscape. This activity is administrated by the Southern Governance. People usually rent an area where they erect their tents, usually in a form of fenced camp. Many of the campers remove the vegetation and cover the ground with sand or gravel and flatten it for easy access and use. A number of stakeholders are involved in this activity starting with the Southern Governance, and including the Ministry of Interior, Ministry of Health, the campers, and many temporary businesses including cafeterias, merry go rounds, buggy rentals, and others. Despite the effort to control the negative impact on the environment due to camping and associated activities, there is a need to integrate and mainstream the activities in a way to minimize the negative impacts on the environment.

3.3. Sectors and Development Goals for Biodiversity Mainstreaming

3.3.1 Production Sectors:

Bahraini people through many ages were linked to sea and agriculture (Alkhuzai, 2015). In his assessment of ecosystem services, Abdulla (2015) highlighted the main ecosystem services in Bahrain. These services are mainly based on marine ecosystem. Participant of the 3rd NBSAP workshop, held in 2015, agreed that marine ecosystem is the main ecosystem in Bahrain followed by agriculture ecosystem. Furthermore, tourism is a major service sector in Bahrain. There are many opportunities to strengthen tourism through strengthening ecotourism and link it to the biodiversity mainstreaming. Therefore, based on problems assessment, ecosystem services, and ecosystem elements that need to be addressed in a mainstreaming approach, fisheries, agriculture, and tourism were selected as the main sectors that could be used for biodiversity mainstreaming. There are of course other sectors that could be integrated into biodiversity but it is believed that these selected sectors will require the contribution of many authorities and stakeholders and hence will provide the driving force for a comprehensive mainstreaming in Bahrain.

3.3.1.1 Fisheries:

Fisheries involve the industry of catching, processing, or selling of fish, shellfish, or other aquatic animals. Bahrain's fisheries are categorized into three fishing grounds; northern, eastern and western areas. The northern area comprised the majority of the total fisheries accounting, as overall, 51.3% followed by the eastern area (38.7%) and the lowest (10%) from the western area (Thamer and Abahussain, 2013). The main habitats that are used by fishes and crustaceans throughout their life or as part of their life cycle are the coral reefs, seagrass beds, and mangrove. Stakeholders include fishers and fishing industries, the administrative authority, and NGOs. Comparison of the overall quantities and values of the main fish groups between the years 2000 and 2012 are shown in Table 6 (Directorate of Fisheries, 2013)

Pressures on fisheries include dredging and land reclamation, overfishing, pollution, and insufficient enforcement of regulations safeguarding this resource.

Table. 6 Comparison of the overall quantities and values of the main fish groups between the years 2000 and 2012.

Fisheries	Quantity (Metric Tonnes)		Value (BD)	
	2000	2012	2000	2012
Finned fish	7147	5913	6.217 m	6.991 m
Crustaceans	4486	6809	3.166 m	5.875 m
Molluscs	85	264	0.049 m	0.295 m
Total	**11,718**	**12,986**	**9.432 m**	**13.161 m**

One of the main concerns in Bahrain is the limited land area. This has led to dredging seafloor and refilling favourable areas to construct public and private housing projects such as Amwaj, Durrat Al Bahrain, Bahrain Bay, Diyar Al Muharraq, and others. These huge projects had the most impact on marine and coastal environments.

Fishing and seafood is part of Bahraini people history and culture. The diminishing fishing grounds, the increase in fishing companies and industry, and the illegal fishing, accompanied by sharp increase in population, is believed to have applied tremendous pressure on the stock. Being a semi-closed water body, and a major route for oil transport, the Arabian Gulf is prone to oil spill incidents. Also, major wars in recent history have caused pollution to the gulf reaching the waters of Bahrain. Furthermore, pollution from land-based industry is a possible addition. As a result of deterioration in fish stock due to overfishing and increasing in population growth rate by ~ 7% during 2000-2010, the per capita fish consumption substantially declined to less than 10 kg/year in 2009 in comparison with ~25 kg/year in the 1980s (Thamer and Abahussain, 2013).

3.3.1.2. Agriculture:

Agriculture is the occupation of harvesting land, producing crops, and raising livestock. Agriculture as an industry involves arable land, irrigation and fertilizing technologies, and an array of stakeholders. Stakeholders include farmers and farming companies, agriculture authorities, consumers, and NGOs.

Arable land is quite limited in Bahrain and is steadily decreasing. In 1985, there were about 11,000 hectares of arable land. In 2009, just 8,360 hectares of land were arable. This represents only 11% of total land area and a loss of available arable land at a rate of about 1.1% per year. Figure 4 shows trends in land use change in Bahrain (SCE, 2012). The contribution of agriculture to total national income is 0.23%. The total number of employees is 950 Bahrainis and 9120 non-Bahrainis. Today, agriculture represents just 0.6% of GDP in Bahrain. This is due to poor soils, limited manpower and continuing conversion of land for urban, industrial and recreational development. Major crops are dates, fruits, vegetables, alfalfa, and other forage crops. Date palms are cultivated on nearly 60% of available arable land while vegetables and alfalfa/forage crops are cultivated on about 18% and 24%, respectively (Al-Masri, 2009).

During the last few decades, there has been an increase in urbanization to accommodate the need for housing and developmental projects. This was at the expense of agricultural area which has decreased gradually (Fig. 4). For example, number of date palm trees decreased from 545,700 (2007) to 534,600 (2008) to 511,330 (2010). In addition, the low income from farming and the shift in job opportunities from farming to finance, industry, and services sector has led to a decline in the number of local farmers (PCPMREW, 2012).

Despite efforts to combat the loss of arable land, it continues to decrease. This is attributed to adverse climatic conditions, scarcity of irrigation water, agricultural land abandonment

and/or conversion to other economic uses, as well as the lack of interest of young Bahrainis to work in the agricultural sector (FAO, 2002, Annual Agricultural Statistics Bulletin, 2007).

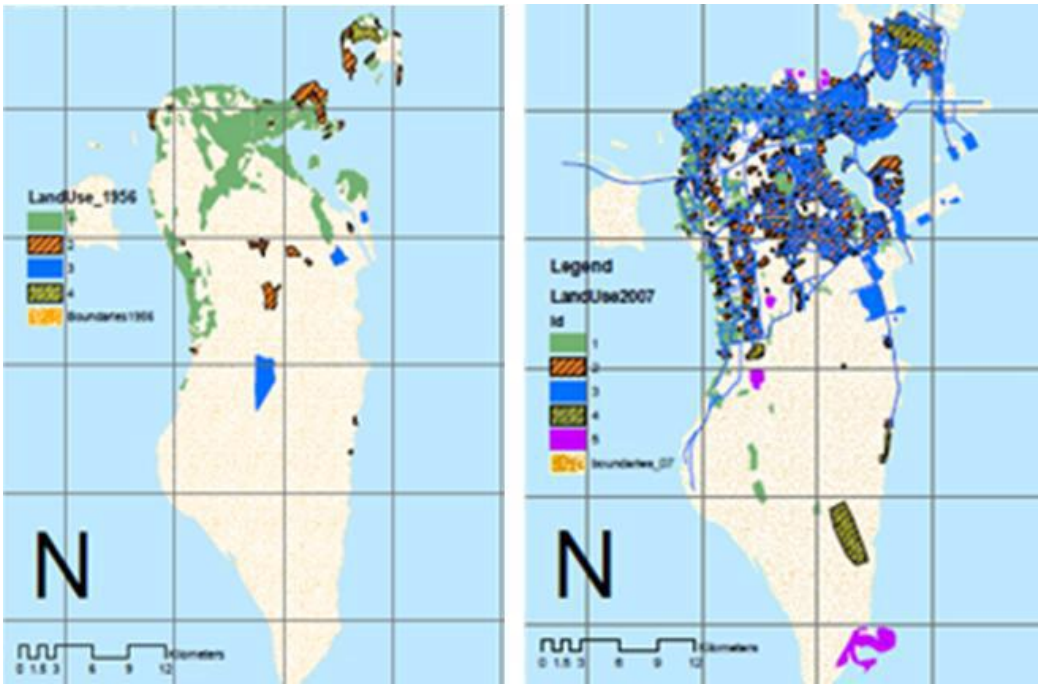


Fig. 4 The map on the left corresponds to 1956 and shows extensive agriculture (green shaded areas) in the northern parts of Bahrain. The map on the right corresponds to 2007 and shows the replacement of these agricultural areas with urban infrastructure (blue-shaded areas). Source: SCE, 2012.

In reference to water, Bahrain relies on the Dammam aquifer for more than 30% of its water supply. However, the aquifer is now in a state of severe decline and quality deterioration due to decades of unsustainable use. Hence, the main water resource management challenge is how to balance decreasing water supply and increasing water use (i.e., the supply-demand gap) on a long-term sustainable basis while promoting national development with the least social, economic, environmental and other costs (SCE, 2012).

From biodiversity context, conversion of natural habitat to agricultural use substantially reduces its biodiversity. Naturally occurring plant species are replaced by a small number of introduced species (usually non-native and identical to crops produced elsewhere); wildlife is displaced; and insects and microorganisms are decimated by pesticides. There is also a change in functions, especially in energy and nutrient cycling and storage, as well as in water infiltration and storage (Pagiola, 1998). The ecosystem services provided by a healthy agricultural landscape include: the conservation of soil and generation and renewal of soil fertility, pollination of crops and natural vegetation, natural control of potential agricultural pests, detoxification and decomposition of wastes, and maintenance of watershed functions. These services are provided by many natural cycles operating at different rates and scales-such as biogeochemical cycles of carbon, occurring on a global scale, or life cycles of soil organisms, occurring in a handful of soil. Understanding these cycles and fostering their

proper functioning and communicating this information to stakeholders are means to conserving agricultural ecosystem services (CBD, 2011).

3.3.1.3. Ecotourism

Ecotourism is a tourism directed toward exotic, often threatened, natural environments, especially to support conservation efforts and observe wildlife. It involves education of both staff and guests. Stakeholders include Tourism Affairs at the Ministry of Industry and Commerce, Bahrain Culture and Antiquities Authority, travel agents, tour operators, NGOs, , environment authority, and local people.

The Bahrain Culture and Antiquities Authority mandate includes overseeing the culture sector in the Kingdom. The Culture and National Heritage Sector, is responsible for setting all plans and programs related to culture, arts, and heritage in the Kingdom of Bahrain, with a vision to update and develop the cultural infrastructure, and activate the role of culture in social and economic development.

The sector also supports cultural movements of Bahrain through developing the role of museums, folklore, and other cultural components within Bahraini society with the aim of enhancing the local community's knowledge about its origins and civilization which date back to several millennia.

Bahrain has a very rich history. It has been a crossroad of trading routes between Asia, Europe and Africa since ancient times. Dilmun, an advanced civilization, thrived here already 3000 BC and played a role of a trading link between Indus Valley civilizations and Mesopotamia. Throughout centuries foreign powers fought over the control of this area. Assyrians, Babylonians, Persians, Arabs, Portuguese and British occupied the islands in order to secure their domination in the Gulf. Given the early development of civilization in the area, historic sites from different periods abound in Bahrain. The first UNESCO World Heritage site is Qal'at al Bahrain (Bahrain Fort), the site of the capital of Dilmun, subsequently populated and built on by the coming civilizations. The longstanding pearling tradition in the Arabian Gulf is displayed in the pearl traders' houses of Muharraq Island, which were recently recognized by UNESCO as the second World Heritage site in Bahrain (Karolak, 2014).

The following is an account by the Bahrain Authority for Culture and Antiquities (BACA, 2015) of some of the tourism sites related to biodiversity and ecotourism:

Qalat al Bahrain site

Known as Dilmun in ancient times, Bahrain's rich trading history is reflected in numerous archaeological digs around the island. Qalat al-Bahrain site (Bahrain Fort site) is among the most exciting of them and is registered as a UNESCO World Heritage Site. The fort is located at a 17.5 hectare artificial hill that has been built while enduring over 4,000 years of continuous occupation. It is also the site of the former capital of Dilmun and is one of the most prolific archaeological digs in the Arabian Gulf.

Qalat al Bahrain

Al Dar Island

Al Dar Island is the nearest island getaway to Bahrain. It offers beautiful beaches and a variety of facilities, such as palm leaf huts, tents, or chalets, and a restaurant. Visitors to the island can also enjoy pearl dives and cruises to the stunning Jarada Island which affords one the opportunity to see up to 30 different types of coral, more than 200 species of fish, and the chance to watch the always delightful dolphins.

Al Dar Island

Ain Umm Al-Sujur

Ain Umm Al-Sujur is the largest fresh water spring in Bahrain. The archaeological findings near the well and its chamber dates the site to the 2nd millennium BC. It is not accessible to the public in order to protect the site

Ain Umm Al-Sujur

Jabal Al Dukhan

Situated at 134 m (440 ft.) above sea level, Jabal Al Dukhan, "Mountain of Smoke", is Bahrain's highest hill. It is named in reference to the haze which often surrounds it on humid days. The mountain is surrounded by a number of caves and is rich in petrol and natural gas. Prehistoric artefacts have been recovered nearby. The open area is popular among families as a camping site.

Jabal Al Dukhan

Al Areen Wildlife Reserve

Al Areen Wildlife Reserve houses rare and endangered species in a 16 sq. km area. Persian gazelle, Impala and Arabian Oryx (nearly extinct in the wild) are among the featured

enclosures in this small wildlife reserve that cares for over 500 different species. For agricultural lovers the park offers over a 100 different species of plants and trees to enjoy**.**

Al Areen Wildlife Reserve

Bu Maher Fort

The Bu Maher Fort Visitor's Center is the starting point to discovering more about the Pearling Path that has been designated a UNESCO World Heritage Site. The center contains a three-dimensional display that guides the viewer though the history of the path and the houses which formed it from the early beginnings to the main pearling traders.

Bu Maher Fort, which was built in 1840, is steeped in seafaring and pearling history and forms the first stop in the historical pearling path having once served as the main fishing harbor and gateway to and from the sea.

Bu Maher Fort

Hawar Islands

Located 20 kms south of Bahrain, the Hawar Islands are a renowned wildlife reserve of international significance. The islands are home to pristine beaches, indigenous fauna and flora, and migratory birds.

Hawar Islands

The direct contribution of Travel & Tourism to GDP in 2013 was BHD500.2mn (4.1% of GDP). This is forecast to rise by 8.0% to BHD540.1mn in 2014.This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). But it also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. The direct contribution of Travel & Tourism to GDP is expected to grow by 5.0% pa to BHD882.7mn (5.1% of GDP) by 2024 (WTTC, 2014).

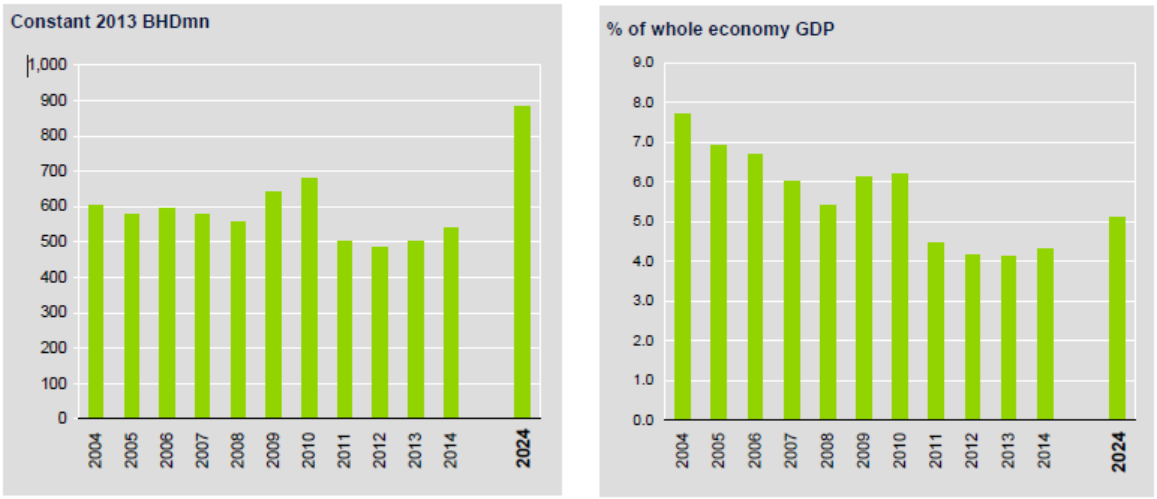


Fig. 5. Direct contribution of travel and tourism to GDP

Promoting ecotourism through proper participation of primary and secondary stakeholders and establishment of a national ecotourism strategy could help reach NBSAP goals through sector-specific tools, for example, tours to protected areas, Hawar Islands sightseeing (Socotra cormorant colony, sooty falcon, etc.), and seawater submarine springs near Bahrain Fort.

3.3.2 National Development Projects and Issues:

3.3.2.1. Sustainable Development:

Millennium Development Goals and Sustainable Development Goals (MDGs and SDGs):
The MDGs are 8 goals to be achieved by 2015 that were introduced to address the varied development challenges confronting the world today. With the UN Millennium Declaration, 189 nations took the first step towards reducing the burden of poverty that prevents people, irrespective of colour or creed to reach their full potential. The 8 MDGs break down into 18 quantifiable targets that are measured by 48 indicators.

Goal 7: Ensure Environmental Sustainability

UNDP has implemented a National Environmental Strategy Project that serves as a framework towards addressing the issues of environmental sustainability in light of Bahrain's commitment to steady economic growth and development. The strategy involves stakeholders from various departments further solidifying environmental issues as cross cutting and urgent. The Project has led to the preparation of a concept paper on creating a National Energy Efficiency Centre (UNDP, 2015).

Ensuring environmental sustainability is one of the most pressing priorities for the Kingdom. Environmental sustainability and good governance of natural resources are important areas of work for the government and civil society.

The quality of water available and salinity levels, as well as treatment of sewage water and recycling it for local uses are currently being addressed. Bahrain's topography is flat and low and it is, therefore, vulnerable to the danger of large areas being submerged if the sea level rises due to climatic change. Various precautions against the potential rise in sea level in the future are taken by imposing more stringent conditions on reclamation and on projects near to the sea (UNDP, 2015).

As part of the inclusive sustainable development, two programmes were launched with the Ministry of Industry and Commerce:

- Enhancing Institutional Capacity for Global Economic Environment and Governance:
  This programme is aimed at strengthening the national capacity of Bahrain's governmental departments and stakeholders through technical cooperation and addressing key areas in relation to law, policy formulation and administration with an overarching objective in attracting further international economic activity.

- Provision of Sustainable Micro-Finance Credit and Services to Needy Citizens of the Kingdom of Bahrain:

- This Project expands upon the number of beneficiaries who benefited under the earlier project (Microstart) in order to achieve a significant impact on reducing unemployment and poverty in Bahrain.

The government of the Kingdom of Bahrain has embraced the challenge of meeting the Millennium Development Goals (MDGs) by 2015 and is potentially on track to meet all the MDG targets. However, the Review of the Progress of the Millennium Development Goals in the Kingdom of Bahrain (CIO, 2008) indicates that the environmental problem, as expressed in the proposed indicators, or by being a structural problem in Bahrain, requires enormous efforts to find proper solutions for, including adaptation and acclimatization, particularly in view of the aggravating problem of climate change and its impact.

More recently, Bahrain has hosted the Second Arab High-Level Forum on Sustainable Development (May, 2015). The forum addressed a number of topics including the transition of the Arab region from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs). There are 17 sustainable development goals compared to the 8 millennium development goals (Fig.6)

Fig. 6. Sustainable Development Goals

The new Global Goals, and the broader sustainability agenda, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people. Among the SDGs, there are six goals related to biodiversity. These goals are:

GOAL 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

GOAL 6: Ensure availability and sustainable management of water and sanitation for all

GOAL 7: Ensure access to affordable, reliable, sustainable and modern energy for all

GOAL 13: Take urgent action to combat climate change and its impacts

GOAL 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

GOAL 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Bahrain, through its active involvement in the MDGs and hosting of the Arab Forum on Sustainable Development in May 2015, has shown its commitment for the local, regional, and global sustainable development initiatives. This commitment to implement the SDGs, including those linked to biodiversity, should be utilized as a support for the national biodiversity mainstreaming. The Ministry of Labour and Social Development is a key player in this regard and should be engaged in the process of mainstreaming.

Economic Vision 2030:

The Economic Vision 2030, which was launched in October 2008 by His Majesty King Hamad bin Isa Al Khalifa, is a comprehensive economic vision for Bahrain, providing a clear direction for the continued development of the Kingdom's economy and, at its heart, is a shared goal of building a better life for every Bahraini:

> **We aspire to shift from an economy built on oil wealth to productive, globally competitive economy, shaped by the government and driven by a pioneering private sector- an economy that raises a broad middle class of Bahrainis who enjoy good living standards through increased productivity and high-wage jobs.**
>
> **Our society and government will embrace the principles of sustainability, competitiveness and fairness to ensure that every Bahraini has the means to live a secure and fulfilling life and reach their full potential.**

The launch of the Vision followed four years of extensive discussions with a range of opinion leaders in the public and private sectors, including governmental institutions and specialized organizations, as well as international consultancies and bodies.

The Economic Vision 2030 focuses on shaping the vision of the government, society and the economy, based around three guiding principles; sustainability, fairness and competitiveness. The 2030 Vision emphasizes actions that should be taken to provide a safe and secure environment and protecting the environment including:

- Conserving our natural spaces for future generations to enjoy
- Implementing energy-efficiency regulations
- Enforcing laws on cultural preservation
- Encourage new generations of Bahrainis to gain experience and in-depth knowledge of our cultural heritage

Tamkeen is the financial arm of Economic Development Board. It has two primary objectives: Firstly, fostering the creation and development of enterprises, and secondly, providing support to enhance the productivity and growth of enterprises and individuals. It provides many training and development programmes that improve personal skills needed to activate and develop entrepreneurial business including support for start-ups among the youth, improving their existing skills. Tamkeen also strives towards providing growth initiatives, funding schemes, and consultancies to Bahraini enterprises. Therefore, Tamkeen should play a major role in the mainstreaming of biodiversity particularly when it comes to ecosystem services and related jobs and professions.

Government Action Plan (2015-2018):

In the preamble of the Government Action Plan (2015-2018), six challenges facing Bahrain were highlighted. The second challenge on the agenda is the limited natural resources of lands, oil derivatives, and water, due to the small area of the kingdom, limited lands allocated for agriculture, with the increase in the consumption of food, in line with the expected diminishing of oil and natural gas fields, and the increasing demand for water resources in the shadow of the limited supply and attrition of ground waters.

Accordingly, one of the six strategic actions in the Government Action Plan (GAP) is the sustainable management of strategic resources while ensuring a sustainable urban development.

Under this action, there are a number of policies, initiatives, and actions. The second policy under this action plan is presented in Table 7.

Table 7. Government Action Plan (2015-2018) and Environment

Policy No. 2	**PROVIDING SAFE AND APPROPRIATE ENVIRONMNET FOR THE PEOPLE**
Initiative No 2	**Protection of Environment**
Action No.1	Priority is especially given to projects aiming at protecting coastal and marine protected areas, and supporting greenery and tree-planting projects
Action No. 2	Developing means of protecting the environment, species, strains and varieties of ecological, economical, and cultural importance
Action No. 3	Developing new regulations; strengthen monitoring, and frequency of inspection processes
Action No. 4	Revising and update constitutional framework of environmental issues to be in line with rapid changes, guaranteeing the protection of natural habitats and plant and animal life in both desert and sea
Action No. 5	Developing environmental awareness and education projects, and strengthen partnership with local community in all environmental fields
Action No. 6	Increasing the networks of biodiversity protected areas, and regain lost critical and sensitive biodiversity areas, and protect main species in their natural territories, and regain number of species threatened with extinction through raising animals in captivity and establish nurseries for plants
Action No. 7	Updating monitoring systems of environmental violations, and improve the mechanisms of EIA for environmental projects and economical activities, to uncover bypassing of industrial waste and untreated domestic waste and other dumps.
Action No. 8	Environmental compliance of dredging and reclamation activities

The Government Action Plan is the main vehicle for all governmental ministries and departments. It requires approval by the Parliament before it is implemented. Therefore, any action listed is approved by the highest authorities in the country which gives the owners of the actions (in this case the Supreme Council for Environment for the above mentioned action) the support and legal power for implementation. This means, when biodiversity mainstreaming is concerned, the SCE, has the required support to coordinate mainstreaming.

Mainstreaming of the National Development Projects:

The various, policies, and action plans, as exemplified mainly by the Economic Vision 2030 and the Government Action Plan 2015-2018, provide opportunities to support and implement the NBSAP. The actions specified in the Government Action Plan 2015-2018 are directives for the relevant ministries and departments to provide their own strategies for the implementation of these actions. The opportunities are represented by the goals and actions set by these major drivers and relevant ministries and are linked to the Aichi Targets (Table B). Economic Development Board (Tamkeen) should be represented in the national mainstreaming teams as shown in section (3.9). The main government authorities responsible for the implementation of these actions are the SCE, Agriculture Affairs, and Marine Resources Affairs. These authorities should be included in the NBSAP mainstreaming efforts and teams as shown in section (3.9). In addition, the Ministry of Labour and Social Development is responsible for the fulfilment of the Sustainable Development Goals. This ministry is also one of the key players in the mainstreaming national teams (section 3.9).

Table 8. Mainstreaming NBSAP to National Development Plans and Policies (1)

AICHI Targets	Economic Vision 2030	Government Action Plan 2015-2018	Agriculture Affairs Strategy 2010	CIO MDG Target 2015	Ministry of Labour and Social Development SDG Post 2015
Target 1 Understand values		Developing environmental awareness and education projects, and strengthen partnership with local community in all environmental fields			
Target 2 Mainstream biodiversity				Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources	**Focus on Benefiting from the International Cooperation MLSD**
Target 4 Sustainable production			Achieve relative food security		End hunger, achieve food security and improved nutrition and promote sustainable agriculture SDG
Target 5 Halve rate of loss		Increasing the networks of biodiversity protected areas, and regain lost critical and sensitive biodiversity areas, and protect main species in their natural territories, and regain number of species threatened with extinction through raising animals in captivity and establish nurseries for plants			

Table 8. Mainstreaming NBSAP to National Development Plans and Policies (2)

AICHI Targets	Economic Vision 2030	Government Action Plan 2015-2018	Agriculture Affairs Strategy 2010	CIO MDG Target 2015	Ministry of Labour and Social Development SDG Post 2015
Target 6 Sustainable fisheries		Environmental compliance of dredging and reclamation activities			
		Developing new regulations; strengthen monitoring, and frequency of inspection processes	Conservation of natural resources		Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt reverse land degradation and halt biodiversity loss SDG
		Revising and update constitutional framework of environmental issues to be in line with rapid changes, guaranteeing the protection of natural habitats and plant and animal life in both desert and sea			
		Updating monitoring systems of environmental violations, and improve the mechanisms of EIA for environmental projects and economical activities, to uncover bypassing of industrial waste and untreated domestic waste and other dumps.			
Target 9 Reduce invasive species			Combating animal and plant diseases and strengthen the abilities to deal with cross boundary diseases		

Table 8. Mainstreaming NBSAP to National Development Plans and Policies (3)

AICHI Targets	Economic Vision 2030	Government Action Plan 2015-2018	Agriculture Affairs Strategy 2010	CIO MDG Target 2015	Ministry of Labour and Social Development SDG Post 2015
Target 10 Minimize reef loss					Take urgent action to combat climate change and its impacts SDG
Target 11 Protected area	Conserving our natural spaces for future generations to enjoy	Priority is especially given to projects aiming at protecting coastal and marine protected areas, and supporting greenery and tree-planting projects			
Target 13 Conserve gene pools		Developing means of protecting the environment, species, strains and varieties of ecological, economical, and cultural importance			
Target 14 Reserve ecosystems					Ensure availability and sustainable management of water and sanitation for all SDG Ensure access to affordable, reliable, sustainable and modern energy for all SDG

Table 8. Mainstreaming NBSAP to National Development Plans and Policies (4)

AICHI Targets	Economic Vision 2030	Government Action Plan 2015-2018	Agriculture Affairs Strategy 2010	CIO MDG Target 2015	Ministry of Labour and Social Development SDG Post 2015
Target 15 Enhance resilience	Implementing energy-efficient regulations Directing investments to technologies that reduce carbon emissions, minimize pollution and promote the sourcing of more sustainable energy				Conserve and sustainably use the oceans, seas and marine resources for sustainable development SDG
Target 18 Respect and conserve traditional knowledge	Encouraging new generations of Bahrainis to gain experience and in-depth knowledge of our cultural heritage		Support small farming businesses		**Preparing the Climate for the Development of " Social Economy" in Bahrain MLSD**

3.3.2.2 Climate Change:

Bahrain is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), having become a party on 28 March 1995. The convention aims at combating desertification to ensure the long-term productivity of inhabited dry lands. Its ultimate objective is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

With climate change, it is expected that future increases in climatic variability will lead to adverse impacts on a number of vulnerable sectors, systems, and livelihoods in Bahrain. A national team was formed under the umbrella of the environment authority to prepare Bahrain's National Communication. Two reports were prepared. Four key sectors were assessed for impact; coastal zones, water resources, human health, and biodiversity. Stakeholders' participation was carried to provide the basis for initial efforts to incorporate climate change into planning decisions made by policymakers, national agencies, and other stakeholders. The following account is extracted from Bahrain's Second National Communication (PCPMREW, 2012):

Coastal Zones:
The Kingdom of Bahrain is a small island state where almost all of the population and development activities are located in close proximity to the coastline, with very limited capacity to adapt to sea-level rise (SLR). Most of the coastal areas of the islands do not exceed 5 meters above current mean sea level and it will be physically and economically difficult, if not impossible, to establish zoning setbacks for new development or for marine habitats to migrate toward higher land elevations.

Table 9 summarizes the results of the long—term inundation analysis under three scenarios for the years 2050 and 2100: no accelerated deglaciation, low deglaciation rate, and extreme deglaciation rate. Even under the "no accelerated deglaciation" scenario, 83 km^2, or 11% of the total land area, would be lost by 2050 from a 0.3-meter increase in mean sea level. Approximately 18 km^2 of built-up and industrial areas would be under water. These areas account for about 7% of these areas, about 2% of the country's entire land area, and a substantial portion of its socioeconomic activity (SCE, 2012).

Table 9. Results of the long-term inundation scenario analysis (SCE, 2012)

		No accelerated deglaciation				Low deglaciation rate				Extreme deglaciation rate			
		2050 *(SLR=0.3 m)*		2100 *(SLR=1.5 m)*		2050 *(SLR=0.5 m)*		2100 *(SLR=2.0 m)*		2050 *(SLR=1.0 m)*		2100 *(SLR=5.0 m)*	
Land use type	Total area (km2)	Inundation (km2)	(%)	Inundation (km2)	(%)	Inundation (km2)	(%)	Inundation (km2)	(%)	Inundation (km2)	(%)	Inundation (km2)	(%)
Built Up	209	10	5%	46	22%	10	5%	64	31%	46	22%	126	60%
Industrial	46	8	17%	29	63%	8	17%	32	69%	29	63%	38	82%
Vacant	79	5	7%	24	30%	5	7%	27	34%	24	30%	38	48%
Agriculture	71	5	7%	15	21%	5	7%	23	32%	15	21%	57	80%
Wetland	2	1	69%	1	77%	1	70%	1	80%	1	74%	2	100%
Barren	304	29	10%	52	17%	29	10%	68	22%	51	17%	122	40%
Heritage	2	0	0%	0	0%	0	0%	0	0%	0	0%	0	1%
Sabkhs	35	26	75%	33	97%	26	76%	34	98%	33	97%	35	100%
Total	**748**	**83**	**11%**	**200**	**27%**	**84**	**11%**	**248**	**33%**	**199**	**27%**	**418**	**56%**

The entire coastline of Bahrain's main island was classified into four levels of vulnerability (Fig. 7); low, moderate, high, and very high based on the development of a coastal vulnerability index (CVI).

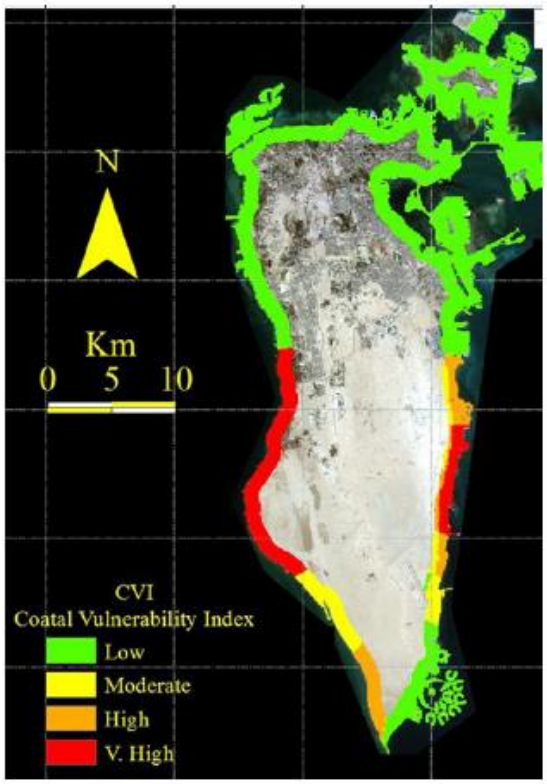


Fig. 7 Bahrain coastal areas classified according to coastal vulnerability index (SCE, 2012) .

Water Resources:

Bahrain is a water-scarce country characterized by an extremely arid environment, high average annual temperatures, erratic and scanty rainfall, high evapo-transpiration rates, and no perennial rivers. Groundwater is the only natural relatively freshwater source available to Bahrain.

Bahrain relies on the Dammam aquifer, a large trans-boundary groundwater system that extends from central Saudi Arabia to the Arabian Gulf waters, for more than 30% of its water supply. However, the aquifer is now in a state of severe decline and quality deterioration due to decades of unsustainable use (SCE, 2012).

With climate change, the challenge of water scarcity becomes even more urgent and pressing, particularly regarding seawater intrusion into groundwater supply due to sea level rise. Figure 8 shows scenarios of the magnitude of seawater intrusion into the aquifer up through 2025. Without considering the impact of sea level rise, the amount of seawater intrusion increases under each of the three scenarios (solid lines) due to unsustainable groundwater consumption. With sea level rise, there will be additional pressure placed on already stressed groundwater resources (SCE, 2012).

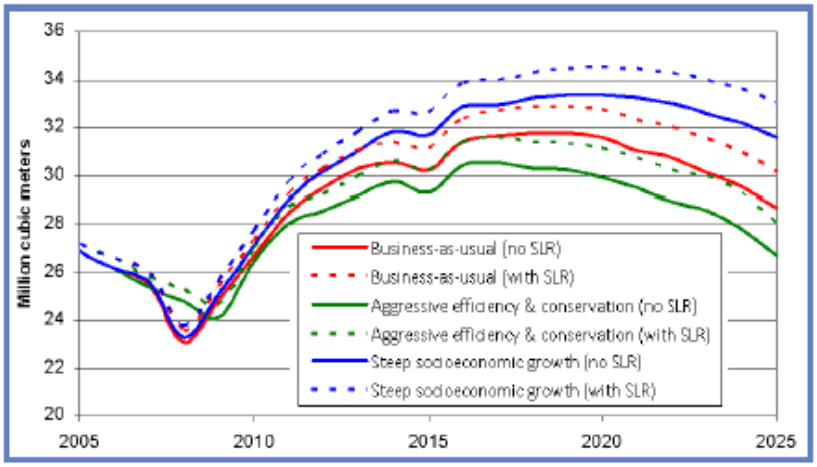


Fig. 8. Seawater intrusion in the Bahrain aquifer, with and without sea level rise (SCE, 2012)

Biodiversity and climate change:

The terrestrial landscape in Bahrain is predominately arid desert with virtually no inland waters. Its marine environment is very diverse and includes extensive sea grass beds, mudflats, coral reefs as well as offshore islands. Seagrass beds are important foraging grounds for some threatened species such as dugongs and the green turtle.

With climate change, these and other elements of biodiversity in Bahrain will experience additional stress. Coastal ecosystem and its habitats will be under the highest impact of a possible sea level rise due to climate change. Of these, there are six for which a strong consensus exists within Bahrain scientific community to be considered as priority systems for any subsequent climate change adaptation action planning, namely algae beds, coral reefs, seagrass beds, oyster beds, mangrove forests, mudflats, and salt marshes/coastal dunes. In addition, there are a number of species classified as being *vulnerable* to *critically endangered* by the IUCN. A key concern for future adaptation planning in Bahrain is the tolerance of species toward projected changes in the marine environment. Systems that may be under the greatest threat from climate change were identified as a way to prioritize future vulnerability risk assessment and adaptation planning activities. These vulnerable hotspots include fish stock levels, coral reefs, mangroves, coastal date plantations, and migratory birds (SCE, 2012).

Core principles that should underlie the development of a future adaptation planning framework include conserving existing biodiversity, minimizing socio-economic activity impacts on key ecosystems and species, maintain/restoring biodiversity, establish ecological networks, Applying integrated ecosystem management approaches, and mainstreaming biodiversity in planning processes and decisions made across sectors, departments and economic activities (SCE, 2012).

The Bahrain's Second National Communication proposes a number of key actions that should be undertaken in the near-term including knowledge sharing, awareness-raising, impacts research, protected area network development/support, rehabilitation of sensitive habitats, installation of artificial coral reef areas, and the development of programmes to reduce anthropogenic stresses.

National Adaptation Programmes of Actions (NAPA):

The National Biodiversity Strategy and Action Plan (NBSAP) and the United Nations Framework Convention on Climate Change (UNFCCC) have some common grounds. The use of natural resources, for example in forestry, agriculture, and energy production, can lead to Greenhouse gas emissions when natural greenhouse gas sinks are destroyed. The UNFCCC promotes the protection and the enhancement of greenhouse gas sinks and reservoirs and the sustainable use of natural resources. The CBD and UNFCCC also have strong linkages to sustainable development objectives. The continued progress of poverty reduction initiatives requires communities to be able to adapt to changing climatic conditions and successfully mitigate the negative effects of climate change whilst ensuring that the adaptation capacities of humans and ecosystems are not exceeded (IUCN, 2004).

The National Adaptation Programmes of Actions (NAPA) was proposed by the UNFCCC to specify a list of priority activities that will communicate immediate and urgent needs, taking into account their high vulnerability and low adaptive capacity to climate change. Therefore, a NAPA document should be prepared with the main outcome of the NAPA process is to identify activities that should be pursued immediately, because further delay in implementing the activities could lead to increased vulnerability, or higher costs for delayed implementation. A National Adaptation Programmes of Actions in Bahrain will be a mean of integrating efforts and mainstreaming administrative, human, technical, and financial resources to achieve a common goal. Stakeholders representing Agriculture Affairs, Marine Resources, Supreme Council for Environment, climate change specialists, urban planning, farmers, fishers, and others could be part of developing and implementation the NAPA for Bahrain. The development process could follow the guidelines (Fig. 9) set by UNFCCC (IUCN, 2004).

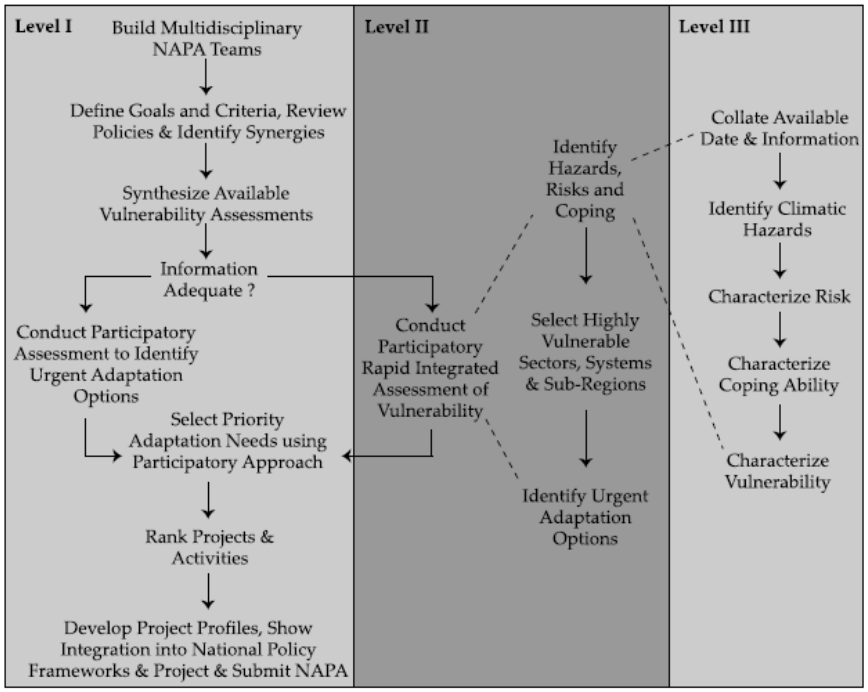


Fig. 9 Main steps in participatory process of developing NAPA (IUCN, 2004)

3.3.2.3 Dredging and Reclamation:

Coastal and marine environments in the Arabian Gulf are the prime target for most of the major housing, recreational, and economic developments (Naser et al., 2008). According to Madany (1991), a number of sites along the coast of Bahrain down to the coast of Sitra Island have been either dredged or reclaimed since 1930s. These activities increased significantly in the 1970s, serving both industrial and residential purposes, and lead to clear changes in the area of Bahrain. Figure 8 shows changes in coastal areas due to reclamation from 1962 to 2008 (SCE, 2012).

Habitat destruction due to intensive reclamation and dredging activities is the prime threat for biodiversity loss and ecosystem degradation (Fig. 10). Examples of large-scale coastal developments in Bahrain include 'Durrat Al Bahrain', 'Amwaj', and 'Dyar Al Muharraq'.

Fig. 10. Land area change due to reclamation activities in Bahrain, 1962-2008 (SCE, 2012)

It is likely that reclamation will accelerate in the coming decades in order to secure land for large-scale projects and housing as populations continue to grow (Table 10). For instance, Bahrain National Land Use Strategy 2030 recognizes reclamation as the major option for

securing the future needs for land, indicating that coastal environment will continue to be the major focus for developmental projects in the coming future (Naser, 2011).

Governorate	Area	Number of units	Housing type
Capital	Juffair	60	Apartment
	Um al Hassam (Phase 2)	160	Apartment
	Nabih Salih	225	House
Muharraq	Arad	183	House
	Muharraq 207	48	Apartment
	Samaheej (Phase 3)	105	House
Northern	Jannusan	92	House
		16	Land plot
	Hamala	233	House
	Karranah	139	House
	Shahrakan	202	House
	Shakhora	300	House
Central	Isa Town	288	Apartment
	Tubli	291	House
		320	Apartment
	Sitra (Phase 1,2,3)	1,500	House
Southern	Jaw (Phase 2)	95	House
	Askar	550	House
	Bar Al Dur	1,560	-
	Al Jazayer	2,350	-
Total		8,717	

Table 10. Bahrain future social housing projects (EDB, 2013)

Given its limited land area (762 km^2), Bahrain has markedly been affected by coastal developments. Presently, reclamation activities in Bahrain resulted in the addition of around 95 km^2 representing an increase of 12% of the total land area (Naser, 2011). Additionally, more than 80% of Bahrain's coastline has extensively been modified due to reclamation activities (Fuller, 2005).

Figure 11. Sand and mud materials are pumped from a marine burrow area into the reclamation site. 'Dyar Al Muharraq' development in Bahrain- 2013 (Naser, 2014).

Figure 12. Rocks and sands extracted from nearby quarries are used to reclaim a coastal area along the eastern coastline of Bahrain-2012 (Naser, 2014).

Naser (2014) suggested a number of conservation management actions including: conservation approaches and management strategies that might contribute to the protection of the fragile marine ecosystems in the Arabian Gulf, including marine protected areas, Environmental Impact Assessment (EIA), strategic environmental Assessment (SEA) and environmental regulations, ecological restoration, and environmental monitoring and scientific research. Some of these measurements are already been implemented in Bahrain like EIA and protected areas but they need to be more effective.

3.3.3 Synergies of MEAs:

With the adoption of the Strategic Plan for Biodiversity 2011-2020, the Conference of the Parties to the CBD has reached out to other conventions, inviting them to contribute to the collaborative implementation of the Plan, stressing synergies with the national implementation of MEAs. Other conventions have begun to acknowledge the opportunities the Strategic Plan for Biodiversity 2011-2020 offers for enhancing collaboration and synergies. The Strategic Plan has also been taken up by the Environment Management Group and the UN General Assembly, lending their support to the implementation of the Plan (UNEP-WCMC, 2012).

NBSAPs and Aichi targets guide national authorities on synergizing biodiversity strategic plan as an instrument of the Convention of Biological Diversity and other related conventions.

COP 10 adopted Decision X/ II Article 3(f) which states as follows:

Support the updating of national biodiversity strategies and action plans as effective instruments to promote the implementation of the Strategic Plan and mainstreaming of biodiversity at the national level, ***taking into account synergies among the biodiversity-related conventions*** *in a manner consistent with their respective mandates*

The biodiversity-related MEAs provide opportunities for mainstreaming the biodiversity cross cutting areas as stated in the goals of these MEAs into a national effort among the authorities responsible for their implementation. Annex (2) illustrates the strategic goals and targets of the five main biodiversity-related conventions (SIB, 2015). Table 11 illustrates a matrix between Aichi Targets, conventions goals, and focal points of the conventions in Bahrain. There are common areas or opportunities for mainstreaming arising from the similar targets among the six conventions. These opportunities are listed below and are represented in Table 12.

- **Understand values and raise awareness**
- **The need for mainstreaming**
- **Ecosystem services and sustainable use**
- **Reduction of stress on ecosystems**
- **Protect and reserve ecosystems**
- **Conserve traditional knowledge**
- **Economic incentives**

Table 11. Mainstreaming NBSAP to MEAs (1)

AICHI Targets	SCE CMS	SCE RAMSAR	SCE CITES	Agriculture Affairs ITPGRFA	BACA WHC
Target 1 Understand values	Goal 1: Address the underlying causes of decline of migratory species by mainstreaming relevant conservation and sustainable use priorities across government and society	GOAL 1: Addressing the drivers of wetland loss and degradation GOAL 4. Raised awareness and involvement in wetlands			
Target 2 Mainstream biodiversity				Goal 2: These objectives will be attained by closely linking this Treaty to the Food and Agriculture Organization of the United Nations and to the Convention on Biological Diversity (Sustainable Use of Plant Genetic Resources)	Goal 5: Link up with the international biodiversity conservation agenda Goal 6: Mainstream the *Convention* and convey the World Heritage message

Table 11. Mainstreaming NBSAP to MEAs (2)

AICHI Targets	SCE CMS	SCE RAMSAR	SCE CITES	Agriculture Affairs ITPGRFA	BACA WHC
Target 5 Halve rate of loss	Goal 2: Reduce the direct pressures on migratory species and their habitats		Goal 3: Contribute to significantly reducing the rate of biodiversity loss and to achieving relevant globally-agreed goals and targets by ensuring that CITES and other multilateral instruments and processes are coherent and mutually supportive		Goal 2: Counter threats to World Heritage in Danger sites
Target 7 Manage within limits				Goal 1: The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security (Conservation, Exploration, Collection, Characterization, Evaluation and Documentation of Plant Genetic Resources for Food and Agriculture)	

Table 11. Mainstreaming NBSAP to MEAs (3)

AICHI Targets	SCE CMS	SCE RAMSAR	SCE CITES	Agriculture Affairs ITPGRFA	BACA WHC
Target 11 Protected area		GOAL 2. Effective conservation and management of the Ramsar Sites Network			Goal 4: Apply the Ecosystem Approach
Target 14 Reserve ecosystems		GOAL 3. Wise use of all wetlands through partnerships			
Target 15 Enhance resilience	Goal 3: Improve the conservation status of migratory species and the ecological connectivity and resilience of their habitats				
Target 16 Implement Nagoya Protocol	Goal 4: Enhance the benefits to all from the favourable conservation status of migratory species				

Table 11. Mainstreaming NBSAP to MEAs (4)

AICHI Targets	SCE CMS	SCE RAMSAR	SCE CITES	Agriculture Affairs ITPGRFA	BACA WHC
Target 18 Respect and conserve traditional knowledge					Goal 1: Continually improve World Heritage site management capacities
Target 19 Improve knowledge	Goal 5: Enhance implementation through participatory planning, knowledge management and capacity building				
Target 20 Mobilize resources			Goal 2: Secure the necessary financial resources and means for the operation and implementation of the Convention		

Table 12. Biodiversity related MEAs opportunities

Opportunity	SCE CMS	SCE RAMSAR	SCE CITES	Agriculture Affairs ITPGRFA	BACA WHC
Understand values and raise awareness					
The need for mainstreaming Ecosystem					
Ecosystem services and sustainable use					
Reduction of stress on ecosystems					
Protect and reserve ecosystems					
Conserve traditional knowledge					
Economic incentives					

Synergizing the 6 conventions in Bahrain requires collaboration among the focal points of these conventions, United Nations relevant organizations, potential donors, and key stakeholders to set common priorities, manage and coordinate financial resources, and propose strategy and action plans (Fig.13).

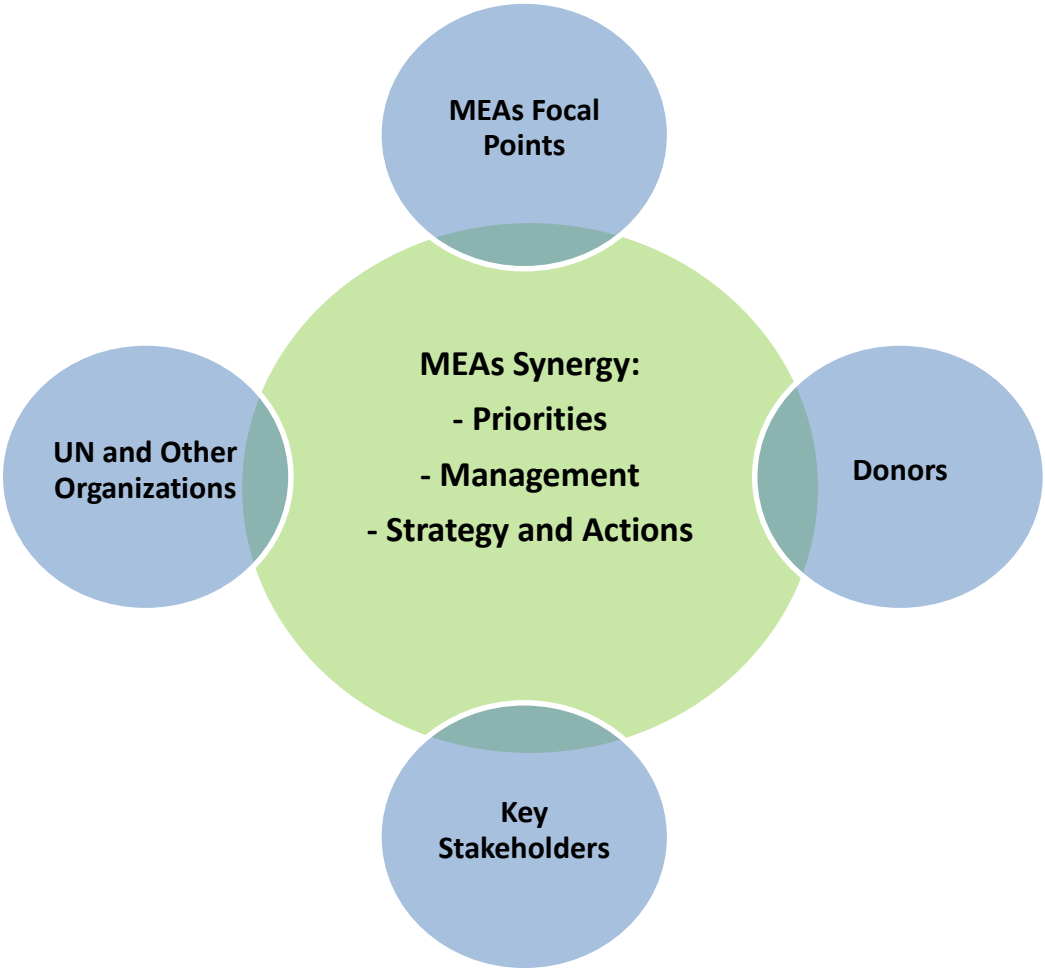


Fig. 13. Outline of MEAs Synergy

3.4. Biodiversity and development sectors outcomes

Biodiversity mainstreaming can result in a spectrum of outcomes, ranging from influencing a policy, plans, budget or decision, to impacts in changing behaviour and delivering environmental improvements on the ground (Table 13).

Table 13. Upstream and downstream outcomes of biodiversity main streaming (IIED and UNEP-WCMC, 2012)

UPSTREAM	Governance outcomes	e.g.improved consideration of stakeholder's and rightholders' concerns (particularly those who are directly dependent on biodiversity)
	Policy and political outcomes	e.g. high-level sector, fiscal, development and social policies, constitutions and statements of national vision, include biodiversity considerations, and vice versa
	Plan outcomes	e.g.inclusion of biodiversity-poverty linkages in development and poverty reduction strategies and in biodiversity strategies
	Budget and accounting outcomes	e.g. evidence of public-private sector resource mobilisation, inclusion of development-biodiversity linkages in national public and sector budgets; inclusion of ecosystem services in national accounting systems
	Institutional and capacity outcomes	e.g. strengthened capacity within biodiversity-related institutions to understand development and economic processes and interact in a constructive manner ; valuation of the economic importance of biodiversity and ecosystem services in the economic outcomes undertaken and used in decision making
	Investment and economic outcomes	e.g. improved domestic resource mobilisation for poverty-biodiversity investments or recognition of potential trade-offs in sector investments such as mining
	Behavioural outcomes	e.g. key patterns and processes of production, consumption and waste treatment in sectors and localities are informed by biodiversity and poverty considerations
DOWNSTREAM	Pro-poor biodiversity management outcomes	e.g. pro-poor management of ecosystem services, such as medicinal, cosmetic or edible plants; healthcare, wild foods, soil fertility; traditional breeds and crop varieties; water purification; cultural or religious benefits from biodiversity realised
	Ultimate (biodiversity and developmental) impacts of these outcomes	e.g. improved productivity and sustainability of use of biodiversity assets on which the poor depend; protection and management of targeted species populations

The following is a list of outcomes expected to result from mainstreaming biodiversity in Bahrain by 2020 (Table 14):

Table 14. Expected outcomes from biodiversity mainstreaming in Bahrain by 2020

Outcome 1	*An increased awareness about the values of biodiversity among various stakeholders and public at large*
Outcome 2	*Integrated biodiversity values are integrated into the national budgeting and accounting system and in sustainable development*
Outcome 3	*Regulations for the fair compensation of fishers and other biodiversity-related professions are introduced*
Outcome 4	*Degradation of sensitive (important) habitats is reduced*
Outcome 5	*Integrated approach is implemented to manage fisheries stock sustainably and impact on coastal habitats and fisheries is reduced*
Outcome 6	*Introduced biodiversity friendly practices in agriculture*
Outcome 7	*Pollution affecting ecosystem functions and biodiversity is reduced.*
Outcome 8	*Increased percentage of protected areas*
Outcome 9	*Marine habitats important for fisheries and fishers are restored*
Outcome 10	*An NBSAP is developed and adopted*
Outcome 11	*Capacity of higher education and biodiversity-related research centers is strengthened*
Outcome 12	*Financial resources for the appropriate implementation of NBSAP are mobilized from Government, private sector, industry, and donating*

3.5 Communication Strategy

For the mainstreaming to be a successful process, it is essential that communication with stakeholders and society at large is effective and public awareness is high. One of the major tools for effective communication is the communication, education, and public awareness approach (CEPA) by CBD and IUCN (2007). Figure 14 illustrates this communication strategy.

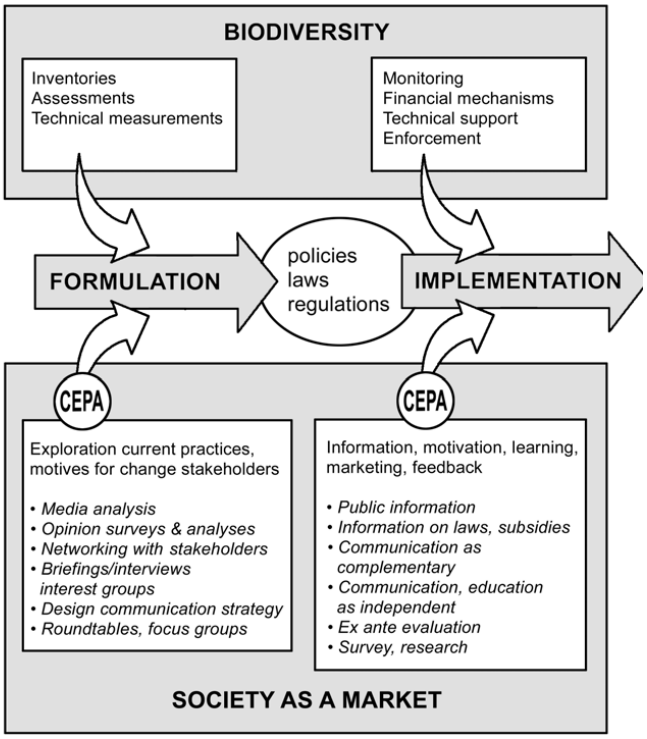


Fig. 14. Communication, education, and public awareness approach (CEPA)

Based on the CEPA approach, the following mainstreaming communication strategy (MCS) in Bahrain could be adopted.

Strategy Aim:
Effectively and efficiently communicate, educate, and propagate public awareness about mainstreaming biodiversity among stakeholders and public at large.

Strategy Goals:

Goal 1: Effectively communicate and network with stakeholders and community

Goal 2: Propagate awareness among public about protection and sustainable use of biodiversity and ecosystem services for the well-being of the people of Bahrain.

Goal 3: Raise the awareness of key stakeholders about the importance of mainstreaming of biodiversity to achieve NBSAP at the national level.

Strategy Actions:

Goals	Actions
Goal 1	Track biodiversity activities through social media, visits, attending conferences and media, etc.
	Inform by establishing an electronic newsletter, lectures, discussion groups, etc.
	Consult with stakeholders through meetings, surveys, interviews, etc.
Goal 2	International Day for Biological Diversity
	Newspapers advertisements
	Brochures
	Interviews in media
	Educational materials for schools
Goal 3	Organize workshops for stakeholders about mainstreaming biodiversity
	Establish a website for MEAs focal points to share information related to biodiversity (data, regulations, etc.)
	Prepare business cases to showcase benefits of mainstreaming

3.6 Stakeholders Supporting or Undermining Desired Outcomes

Stakeholders are of different categories (Fig. 15). Direct stakeholder (Tables 15-18) should be included in any mainstreaming process. For example a number of stakeholders should be involved in fisheries mainstreaming. They should be on board the fisheries mainstreaming team.

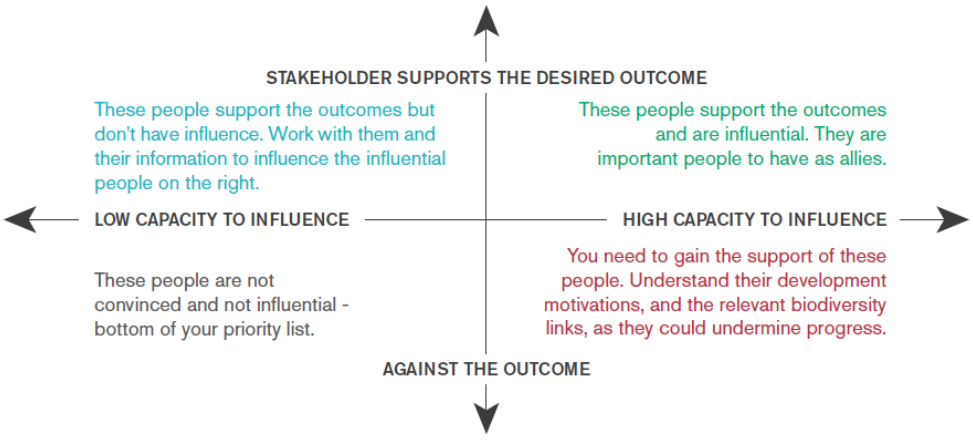


Fig. 15. Stakeholders Matrix

3.6.1 Marine Ecosystem Stakeholders:

Many direct and indirect stakeholders of the marine ecosystem were identified (Alkhuzai, 2015a). The following table (Table 15) summarizes the stakeholders (Direct or indirect). A stakeholder is considered direct if its mission, vision, ToR, or its activities indicates or impact the marine ecosystem.

Table 15. Marine Ecosystem Stakeholders: Direct and Indirect with ToR and Impact

STAKEHOLDERS	DIRECT	INDIRECT	ToR	IMPACT
GOVERNMENT				
Marine Resources Affairs	+	-	+	+
Supreme Council for Environment	+	-	+	+
Ports and Maritime Affairs	+	-	+	+
Directorate of Coast Guards	+	-	+	+
Custom Affairs	+	-	+	+
Meteorological Directorate	+	-	+	+
Economic Development Board	+	-	+	+
Parliament	+	-	+	+
Arab Regional Centre for World Heritage	-	+	-	+
Bahrain Authority for Culture	-	+	-	+
Bahrain Development Bank	-	+	-	+
Budget Directorate	-	+	-	+
Central Informatics Organization	-	+	-	+
Directorate of Curriculum	-	+	-	+
DERASAT	-	+	-	+
e Government Authority	-	+	-	+
General Organization for Youth and Sport	-	+	-	+
Information Affairs Authority	-	+	-	+
National Institution for Human Rights	-	+	-	+
National Oil & Gas Authority	-	+	-	-
INDUSTRY				
Environment Arabia	+	-	+	+
Shell Fisheries Company	+	-	+	-
Jaradah Fish	+	-	+	-
Bahrain Fishing Company	+	-	+	-
Atlas Fish Company	+	-	+	-
Professional Fishermen Society	+	-	+	-
Al Hassanain Dredging Company	+	-	+	-
Scubamasters	+	-	+	-
The Bahrain Petroleum Company	+	-	-	-
TATWEER	+	-	-	-
Bahrain Chamber of Commerce & Industry	+	-	-	-
HIGHER EDUCATION				
University of Bahrain	+	-	+	+
Arabian Gulf University	+	-	+	+
NGOs				
Arab Youth Climate Movement	+	-	+	+
Bahrain Society for Environment	+	-	+	+
Environment Friends Society	+	-	+	+
Malkyia Rangers	+	-	+	+
Mother and Child Society	-	+	-	+
Bahrain Women Society	-	+	+	+

3.6.2 Coastal Ecosystem Stakeholders:

Many direct and indirect stakeholders of the coastal ecosystem were identified (Alkhuzai, 2015). The following table (Table 16) summarizes the stakeholders (Direct or indirect). A stakeholder is considered direct if its mission, vision, ToR, or its activities indicates or impact the coastal ecosystem.

Table 16. Coastal Ecosystem Stakeholders: Direct and Indirect with ToR and Impact

STAKEHOLDERS	DIRECT	INDIRECT	ToR	IMPACT
GOVERNMNET				
Marine Resources Affairs	+	-	+	+
Supreme Council for Environment	+	-	+	+
Ports and Maritime Affairs	+	-	+	+
Directorate of Coast Guards	+	-	+	+
Custom Affairs	+	-	+	+
Economic Development Board	+	-	+	+
Parliament	+	-	+	+
Sanitary Engineering Planning & Projects Directorate	+	-	-	-
Electricity and Water Authority	+	-	-	-
Structural Planning Directorate	+	-	-	+
Curriculum Directorate	-	+	-	+
Survey and Land Registration Bureau	-	+	-	+
Bahrain Authority for Culture	-	+	-	+
Bahrain Development Bank	-	+	-	+
General Organization for Youth and Sport	-	+	-	+
Information Affairs Authority	-	+	-	+
National Institution for Human Rights	-	+	-	+
INDUSTRY				
Environment Arabia	+	-	+	+
Arab Shipbuilding and Repair Yard	+	-	+	-
Bahrain Ship Repairing and Engineering Company	+	-	+	-
GPIC	+	-	+	-
Professional Fishermen Society	+	-	+	-
Al Hassanain Dredging Company	+	-	+	-
Bahrain Chamber of Commerce & Industry	+	-	-	-
HIGHER EDUCATION				
University of Bahrain	+	-	+	+
Arabian Gulf University	+	-	+	+
Royal University for Women	-	+	-	+
NGOs				
Arab Youth Climate Movement	+	-	+	+
Bahrain Society for Environment	+	-	+	+
Environment Friends Society	+	-	+	+
Malkyia Rangers	+	-	+	+
Bahrain Women Association	-	+	+	+
Mother and Child Society	-	+	-	+

3.6.3 Agricultural Ecosystem Stakeholders:

Many direct and indirect stakeholders of the agricultural ecosystem were identified (Alkhuzai, 2015). The following table (Table 17) summarizes the stakeholders (Direct or indirect). A stakeholder is considered direct if its mission, vision, ToR, or its activities indicates or impact the agricultural ecosystem.

Table 17. Agricultural Ecosystem Stakeholders: Direct and Indirect with ToR and Impact

STAKEHOLDERS	DIRECT	INDIRECT	ToR	IMPACT
GOVERNMNET				
Agriculture Affairs	+	-	+	+
Supreme Council for Environment	+	-	+	+
Ports and Maritime Affairs	+	-	+	+
Custom Affairs	+	-	+	+
Economic Development Board	+	-	+	+
Parliament	+	-	+	+
Supreme Council for Women	+	-	+	+
Sanitary Engineering Planning & Projects Directorate	+	-	-	-
Electricity and Water Authority	+	-	-	-
Structural Planning Directorate	+	-	-	+
Curriculum Directorate	-	+	-	+
Survey and Land Registration Bureau	-	+	-	+
Arab Regional Centre for World Heritage	-	+	-	+
Bahrain Authority for Culture	-	+	-	+
Bahrain Development Bank	-	+	-	+
National Institution for Human Rights	-	+	-	+
INDUSTRY				
Environment Arabia	+	-	+	+
Farmers Society	+	-	+	+
Bahrain Chamber of Commerce & Industry	+	-	-	-
GPIC	-	+	+	+
HIGHER EDUCATION				
University of Bahrain	+	-	+	+
Arabian Gulf University	+	-	+	+
NGOs				
Arab Youth Climate Movement	+	-	+	+
Bahrain Society for Environment	+	-	+	+
Environment Friends Society	+	-	+	+
Malkyia Rangers	+	-	+	+
Bahrain Women Association	-	+	+	+

3.6.4 Desert Ecosystem Stakeholders:

Many direct and indirect stakeholders of the desert ecosystem were identified (Alkhuzai, 2015). The following table (Table 18) summarizes the stakeholders (Direct or indirect). A stakeholder is considered direct if its mission, vision, ToR, or its activities indicates or impact the desert ecosystem.

Table 18. Marine Ecosystem Stakeholders: Direct and Indirect with ToR and Impact

STAKEHOLDERS	DIRECT	INDIRECT	ToR	IMPACT
GOVERNMNET				
Supreme Council for Environment	+	-	+	+
Custom Affairs	+	-	+	+
Economic Development Board	+	-	+	+
Parliament	+	-	+	+
Supreme Council for Women	+	-	+	+
Structural Planning Directorate	+	-	-	+
Southern Governance	+	-	+	+
TATWEER	+	-	-	-
Curriculum Directorate	-	+	-	+
Survey and Land Registration Bureau	-	+	-	+
General Organization for Youth and Sport	-	+	-	+
Arab Regional Centre for World Heritage	-	+	-	+
Bahrain Authority for Culture	-	+	-	+
Bahrain Development Bank	-	+	-	+
National Institution for Human Rights	-	+	-	+
National Oil & Gas Authority	-	+	-	-
INDUSTRY				
Environment Arabia	+	-	+	+
Bahrain National Gas Company	-	+	-	-
Bahrain Petroleum Company	-	+	-	-
Aluminium Bahrain	-	+	-	-
Balaxeco	-	+	-	-
Garmco	-	+	-	-
Bahrain Chamber of Commerce & Industry	+	-	-	-
Rocks Excavation Industry	+	-	-	-
HIGHER EDUCATION				
University of Bahrain	+	-	+	+
Arabian Gulf University	+	-	+	+
NGOs				
Arab Youth Climate Movement	+	-	+	+
Bahrain Society for Environment	+	-	+	+
Environment Friends Society	+	-	+	+
Malkyia Rangers	+	-	+	+

3.7 Enabling factors for mainstreaming

A. Bahrain is a signatory of the Convention on Biological Diversity and other related conventions (CMS: Non-Party member; RAMSAR: Member State; CITES: Member State; ITPGRFA: Non-contracting Party; WHC: State Party).

B. Constitution, in addition to many laws and decisions support environmental protection and sustainable use of biological resources.

C. Major governmental bodies such as Economic Development Board (EDB) in its Economic Vision 2030, and the Government Action Plan (2015-2018) include in the importance of natural resources management and sustainable use.

D. A number of NGOs societies are engaged in environmental awareness and voluntary activities.

3.8. Approaches to achieve outcomes

The diversity of expected outcomes and the level of mainstreaming from upwards mainstreaming to downward mainstreaming require the application of variety of approaches at different entry points to achieve the required goals and objectives.

Approaches and entry points may include the following:

Approach	**Entry Point**
Environmental Impact Assessment	National Level
Strategic Environmental Assessment	National Level
Valuation of Ecosystem Services	National Level
Communication Strategy	National Level
Education and Curricula	Ministry of Education and Universities
Spatial Planning	Ministry of Municipal Affairs and Urban Planning
Protected Areas	Supreme Council for Environment
Research Strategy	Higher Education Council

Suggested Actions and Activities:

The following actions (Table 19) should be included in a national budgeting through mainstreaming with the government, national companies, and international donors as possible contributors.

Table 19. Suggested Actions and Activities

Action	
A	**National Level**
1	Adopt a communication strategy and conduct public awareness studies.
2	Introduce a national policy to integrate environmental considerations into decision-making processes.
3	Introduce a national policy and system for assessment of ecological values of ecosystem services.
4	Introduce a national policy and a system to integrate biodiversity values into the national budgeting and accounting system.
5	Include biodiversity protection and sustainable development considerations in production sectors and related stakeholders strategies.
6	Include protected areas in the national planning strategy.
7	Introduce curricula in schools and higher education that include biodiversity components and ecosystem services in Bahrain.
8	Update and strengthen Environmental Impact Assessment regulations.
9	Introduce a plan to regulate dredging and reclamation activities leading to loss of freshwater, mangrove, and coral reef habitats.
10	Introduce and implement an integrated approach to reduce pollution negatively impacting ecosystem functions and biodiversity
11	Prepare and implement an NBSAP through participatory process
12	Introduce curricula in schools and higher education that include biodiversity components and ecosystem services in Bahrain.
13	Prepare a financial strategy for the mobilization of resources and the implementation of the NBSAP with mechanisms such as eco-taxation and payments for ecosystem services
B	**Sector Level**
Fisheries	
14	Introduce a fair and just compensation system for fishers during shrimp non-fishing period.
15	Introduce and implement an Integrated Coastal Zone Management policy.
16	Introduce an efficient monitoring and accounting mechanisms for breaching rules of sustainable fisheries.
17	Marine habitats services are valued and its importance for fishers as a sources of living is taken into consideration
Agriculture	

18	Introduce practices of biodiversity friendly practices in agriculture.
19	Strengthen agricultural experimentation of native plant species.
20	Reduce the use of introduced tree species and increase the use of traditional and native plant species in landscaping and roads.
21	Revise and strengthen the pest control and alien species management system.
22	Establish new or strengthen existing botanical gardens with native species through integration approach among relevant stakeholders.
Ecotourism	
23	Establish a network of ecological-cultural projects or sites with multidimensional prospective through integration approach among relevant stakeholders.
24	Increase the number of protected areas and sites of cultural importance.
25	Protect and maintain ecologically and culturally important spots such as freshwater springs, freshwater streams, nesting sites of nationally or internationally important birds and other animals.
26	Introduce or strengthen ecotourism components in university curricula.

The proposed outcomes and actions for biodiversity mainstreaming in Bahrain are mapped to Aichi Targets to ensure the alignment with the Strategic Plan for Biodiversity 2011-2020 (Table 20).

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
1	**By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.**	*An increased awareness about the values of biodiversity among various stakeholders and public at large*	1	Adopt a communication strategy and conduct public awareness studies.
2	**By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.**	*Integrated biodiversity values are integrated into the national budgeting and accounting system and in sustainable development projects*	2	Introduce a national policy to integrate environmental considerations into decision-making processes.
			3	Introduce a national policy and system for assessment of ecological values of ecosystem services.
			4	Introduce a national policy and a system to integrate biodiversity values into the national budgeting and accounting system.
			5	Include biodiversity protection and sustainable development considerations in production sectors and related stakeholders strategies.
			6	Include protected areas in the national planning strategy.
			7	Introduce curricula in schools and higher education that include biodiversity components and ecosystem services in Bahrain.

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
2			8	Update and strengthen Environmental Impact Assessment regulations.
			9	Establish a network of ecological-cultural projects or sites with multidimensional prospective through integration approach among relevant stakeholders.
3	**By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.**	*Regulations for the fair compensation of fishers and other biodiversity-related professions are introduced*	10	Introduce a fair and just compensation system for fishers during shrimp non-fishing period.
4	**By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.**			
5	**By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.**	*Degradation of sensitive (important) habitats is reduced*	11	Introduce a plan to regulate dredging and reclamation activities leading to loss of freshwater, mangrove, and coral reef habitats.

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
6	**By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.**	*Integrated approach is implemented to manage fisheries stock sustainably and impact on coastal habitats and fisheries is reduced*	12	Introduce and implement an Integrated Coastal Zone Management policy.
			13	Introduce an efficient monitoring and accounting mechanisms for breaching rules of sustainable fisheries.
7	**By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.**	*Introduced biodiversity friendly practices in agriculture*	14	Introduce practices of biodiversity friendly practices in agriculture.
			15	Strengthen agricultural experimentation of native plant species.
			16	Reduce the use of introduced tree species and increase the use of traditional and native plant species in landscaping and roads.
			17	Revise and strengthen the pest control and alien species management system.

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
7			18	Establish new or strengthen existing botanical gardens with native species through integration approach among relevant stakeholders.
8	**By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.**	*Pollution affecting ecosystem functions and biodiversity is reduced.*	19	Introduce and implement an integrated approach to reduce pollution negatively impacting ecosystem functions and biodiversity
9	**By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.**			
10	**By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.**			

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
11	**By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wide r landscape and seascape.**	*Increased percentage of protected areas*	20	Increase the number of protected areas and sites of cultural importance.
			21	Protect and maintain ecologically and culturally important spots such as freshwater springs, freshwater streams, nesting sites of nationally or internationally important birds and other animals.
12	**By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.**			
13	**By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.**			
14	**By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.**	*Marine habitats important for fisheries and fishers are restored*	22	Marine habitats services are valued and its importance for fishers as a sources of living is taken into consideration

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
15	**By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.**			
16	**By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.**			
17	**By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.**	*An NBSAP is developed and adopted*	23	Prepare and implement an NBSAP through participatory process
18	**By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.**			

Table 20. Mapping of Mainstreaming Outcomes and Actions to Aichi Targets

Aichi Targets		Mainstreaming Outcomes	Actions	
19	**By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.**	*Capacity of higher education and biodiversity-related research centers is strengthened*	24	Introduce curricula in schools and higher education that include biodiversity components and ecosystem services in Bahrain.
			25	Introduce or strengthen ecotourism components in university curricula.
20	**By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.**	*Financial resources for the appropriate implementation of NBSAP are mobilized from Government, private sector, industry, and donating agencies*	26	Prepare a financial strategy for the mobilization of resources and the implementation of the NBSAP

3.9 Developing a Business Case

Biodiversity is often unrecognised, unvalued and considered unimportant in economic and development decision making. This is partly because biodiversity is a difficult concept to communicate (IIED, 2014). Therefore, services and economic values of biodiversity at the ecosystem, species, and genetic levels should be properly identified, calculate, and communicated effectively to ministries and government agencies relating to finance, planning and production, financial institutions including development banks and investment banks, the relevant private sectors, civil society organisations and those that represent or influence civil society (parliamentarians and journalists, for example). Unique benefits that are critical for socioeconomic development are highlighted. Value proposition to stakeholders from a business prospective should be highlighted. Overall analysis of value or benefits of biodiversity in relation to national priorities, e.g. economic growth, GDP, employment, exports, household income, poverty reduction should be carried out.

Biodiversity and ecosystem service markets are emerging. Effective responses to biodiversity loss and the decline in ecosystem services require changes in economic incentives and markets. New markets for biodiversity 'credits' and intangible ecosystem services are emerging, providing new environmental assets with both local and international trading opportunities (TEEB, 2010). Examples of emerging markets include certified agricultural products, and payment for water-related ecosystem services. However, it is necessary to identify pre-requisites for developing markets for biodiversity and ecosystem services (Table 21) as shown in TEEB (2010).

Table 21. The Economics of Ecosystems and Biodiversity: Executive Summary. UNEP (TEEB, 2010).

Pre-requisites for developing markets for biodiversity and ecosystem services (BES)		
Financial	Regulatory	Market
Clearly defined BES credits and debits	Secure use and/or property rights over ecosystem assets and services Legal authority to trade ecosystem credits/debits (including internationally)	Clearly defined asset classes
Insurability of BES assets	Clear baselines in order to assess the 'additionality' of BES investments	Efficient project approval processes
Investor awareness and support for commercial ventures	Approved standards and methods for assessing debits and credits	Modest transaction costs
Competitive risk/reward profile	Fiscal incentives (e.g., tax credits for conservation)	Widely accepted monitoring, verification and enforcement systems
Combined ecosystem, business development and financial expertise	Legal authority to trade ecosystem credits/debits (including internationally)	Linked registries to record transactions (especially for intangibles, e.g., offsets)
	Adequate regulatory capacity to enforce	Competitive intermediary services (e.g., brokers, validators)

Example of business cases that could be studied among stakeholders and represent a model for mainstreaming with win-win situation for all is fish farming. Fish biodiversity is largely affected by fishing grounds degradation, demarcation of borders, and illegal, unregulated and unreported fishing. Aquaculture business could minimize these effects and provide opportunity for employment in an important sector.

3.10 Monitoring and Evaluation (M&E) System for Biodiversity Mainstreaming

NBSAP is a major strategy in any one country. When appropriately prepared, it should reflect interest and believes of a wide array of stakeholders about the importance of biodiversity and the actions to be taken for its protection and sustainable use. It is a strategy for preserving the biological, cultural, and social richness of the past, the needs of people in the present time, and a tool to sustain resources for future generations. Therefore, the diversity of outcomes, actions, and activities mean there is a need to coordinate the implementation of the strategy and the action plan at the national level. Stakeholders should be partners. The main environment authority (SCE) could be a coordinator for the implementation and monitoring of the strategy.

The following chart (fig.16) represents the structure of the Monitoring and Evaluation teams of the mainstreaming activities.

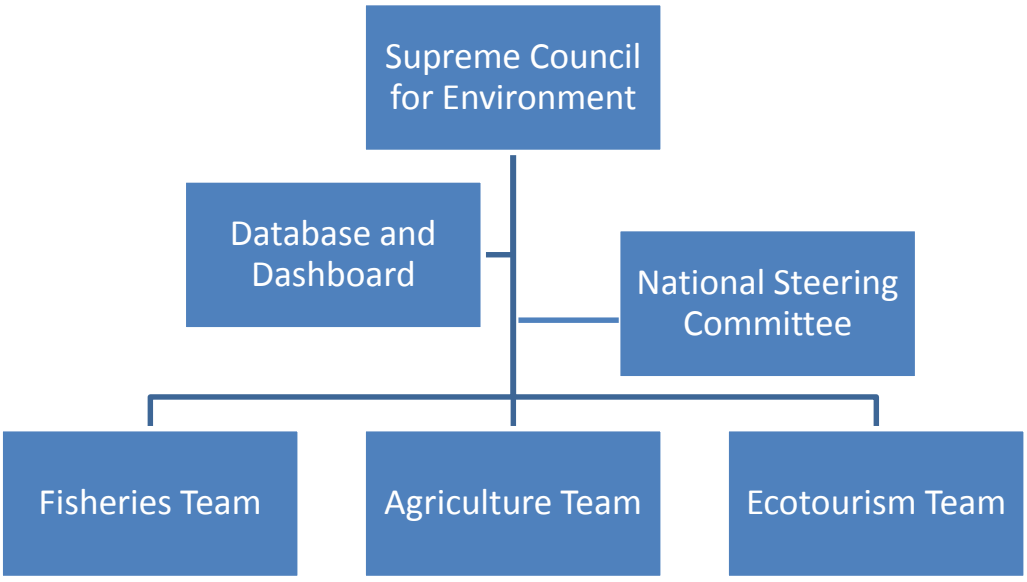


Fig. 16. Structure of Monitoring and Evaluation

Members of the National Steering Committee:
A national steering committee needs to be established through a high level governmental decision:

1. Supreme Council for Environment
2. Directorate of Fisheries
3. Directorate of Agriculture
4. Bahrain Authority for Culture and Antiquities
5. General Directorate of Urban Planning
6. Directorate of Budget
7. Bahrain Development Bank
8. Tamkeen
9. Bahrain Chamber for Commerce and Industry
10. GPIC
11. BAPCO
12. University of Bahrain
13. Media

The main task of the Steering Committee is to supervise the monitoring and evaluation of NBSAP implementation and mainstreaming of activities.

Technical Teams are: Fisheries, Agriculture, Ecotourism. The main task of each of these teams is to prepare the detailed action plans and ensure the inclusion of the mainstreaming activities within each sector.

Members of the Fisheries Team:

1. Directorate of Fisheries
2. Supreme Council for Environment
3. Ports and Maritime Affairs
4. Directorate of Coast Guards
5. Directorate of Curriculum
6. Bahrain Fishing Company
7. Professional Fishermen Society
8. University of Bahrain (College of Science)

Members of the Agriculture Team:

1. Directorate of Agriculture
2. Supreme Council for Environment
3. National Initiative for Agricultural Development
4. Electricity and Water Authority
5. Curriculum Directorate
6. Structural Planning Directorate
7. Farmers Society
8. Arabian Gulf University

Members of the Ecotourism Team:

1. Bahrain Authority for Culture and Antiquities
2. Supreme Council for Environment
3. Association of Bahrain Travel and Tour Agents
4. Ministry of Interior
5. Directorate of Coast Guards
6. Southern Governance
7. University of Bahrain (College of arts)

4. CONCLUSIONS

Basic components of biodiversity mainstreaming of Bahrain are available. At the national level, the Kingdom of Bahrain has signed the Convention of Biodiversity and a number of related MEAs. Internally, Bahrain issued a number of laws and decisions supportive of environmental protection. Many stakeholders, public, private, or NGOs are supportive of biodiversity protection and sustainable development. However, there is no national biodiversity mainstreaming plan. The commitment of Bahrain to prepare an NBSAP containing a mainstreaming plan is an opportunity to integrate all the governmental and non-governmental efforts to protect biodiversity and use it sustainably.

This report proposes a plan for the mainstreaming of biodiversity in Bahrain across sectors and in three selected main production sectors which are: fisheries, agriculture, and ecotourism. It includes a number of outcomes and actions linked with Aichi Targets.

5. REFERENCES

Abdulla, A. (2015). Ecosystem Services Assessment, Bahrain. Supreme Council for Environment. Kingdom of Bahrain.

Alkhuzai, J. (2015). Biodiversity Baseline Assessment Report. Supreme Council for Environment. Kingdom of Bahrain.

Al-Masri, N. (2009). Water Uses: Bahrain Kingdom. Bahrain Center for Studies and Research, Electricity and Water Authority.

Annual Agricultural Statistics Bulletin, 2007.Extension and agricultural relation directorate, Ministry of Municipalities and Agriculture.

BACA (2015). Bahrain Authority for Culture and Antiquities. http://culture.gov.bh/en/

CBD (2015). Convention of Biological Diversity. https://www.cbd.int/convention/articles/default.shtml?a=cbd-02

CBD (2011). Updating National Biodiversity Strategies and Action Plans in line with the Strategic Plan for Biodiversity 2011-2020and the Aichi Biodiversity Targets Training Package (Version 2.1). Module 3. https://www.cbd.int/doc/training/nbsap/b3-train-mainstream-revised-en.pdf

CBD and IUCN (2007). Communication, Education and Public Awareness (CEPA)

Directorate of Fisheries (2013). Annual Fishery Statistics Report No. (96). Fisheries Resources in Kingdom of Bahrain – 2012.

Ecosystem Valuation (2015). http://www.ecosystemvaluation.org/1-02.htm

EDB, 2013. Kingdom of Bahrain Economic Year Book 2013. Economic Board of Bahrain.

FAO (2002). Multidisciplinary programming mission for sustainable agricultural development in the Kingdom of Bahrain. Ministry of housing and Agriculture, Final Report.

Fuller, S. (2005). Towards a Bahrain national report on the Convention on Biological Diversity. Report prepared for the General Directorate of Environment and Wildlife Protection, Kingdom of Bahrain and Unite Nations Development Program country office, Manama, Bahrain.

Huntley, B.J. and Redford, K.H. (2014). 'Mainstreaming biodiversity in Practice: a STAP advisory document'. Global Environment Facility, Washington, DC.

IIED (2014). Developing a 'business case' for biodiversity Tips and tasks for influencing government and the private sector.

IIED (2013). Ten steps to biodiversity mainstreaming Tips for NBSAPs 2.0 and beyond. http://pubs.iied.org/pdfs/14625IIED.pdf

IIED and UNEP-WCMC (2012). Biodiversity Mainstreaming: Integrating biodiversity, development and poverty reduction.

IUCN (2004). A Guiding Frame for Mainstreaming Biodiversity and Development into National Adaptation Programmes of Action (NAPAs).

Karolak, M. (2014). The Heritage Boom in the Gulf; Critical and Interdisciplinary Perspectives, Exeter, 1-2 September 2014. Tourism in Bahrain: A Continuous Search for Economic Development and for Preservation of Cultural Heritage.

Madany, I. (1991). Dredging and Reclamation Activities in Bahrain. IABSE reports, Vol. 63.

Millennium Ecosystem Assessment (2005). http://www.unep.org/maweb/en/index.aspx

Ministry of Municipalities and Agriculture (2007). Annual Agricultural Statistics Bulletin. Extension and agricultural relation directorate. Bahrain.

Mitsubishi Electric (2015). http://www.mitsubishielectric.com/company/environment/

Naser (2014). Marine Ecosystem Diversity in the Arabian Gulf: Threats and Conservation. In: Biodiversity - The Dynamic Balance of the Planet (Ed: Grillo, O.). Intech.

Naser, H. (2011). Effects of reclamation on macrobenthic assemblages in the coastline of the Arabian Gulf: A microcosm experimental approach. Marine Pollution Bulletin, 62: 520-524.

Naser, H. Bythell, J. & Thomason, J. (2008). Ecological assessment: an initial evaluation of the ecological input in environmental impact assessment reports in Bahrain. Impact Assessment and Project Appraisal, 26: 201-208.

Pagiola, S., Kellenberg, J., Vidaeus, L., Srivastava, J. (1998). Mainstreaming Biodiversity in Agricultural Development. Finance and Development.

PCPMREW (2012). Bahrain's Second National Communication. Kingdom of Bahrain, Public Commission for the Protection of Marine Resources, Environment and Wildlife.

SANBI (2008). *Mainstreaming Biodiversity. Key Principles from the Grasslands Programme.* Department of Environmental Affairs, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute, Pretoria, South Africa. http://www.grasslands.org. za/document-archive/category/22-mainstreaming-biodiversity-lessons-learnt

Secretariat of the Convention on Biological Diversity (2011) NBSAP training modules version 2.1 – Module 3. Mainstreaming biodiversity into national sectoral and cross-sectoral strategies, policies, plans and programs. Montreal, June 2011.

SIB (2015). Swiss Information System Biodiversity. http://www.sib.admin.ch/en/index.html

TEEB (2010). Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB.

Thamer , S.A.; Abahussain, A.A. (2013). Status of Commercial Fisheries in the Kingdom of Bahrain. Basrah J. Agric. Sci., 26 (Special Issue 1) Basrah J. Agric. Sci., 26 (Special Issue 1)

UNDP 2015. http://www.bh.undp.org/content/bahrain/en/home/ourwork/inclusive-sustainable-development/overview.html

UNDP and UNEP (2008). Making the Economic Case: A Primer on the Economic Arguments for Mainstreaming Poverty-Environment Linkages into National Development Planning. United Nations Development Programme and the United Nations Environment Programme Poverty-Environment Initiative, Nairobi, Kenya.
http:// www.unpei.org/sites/default/files/PDF/primer-complete-LR.pdf>

UNEP-WCMC, 2012. Promoting synergies within the cluster of biodiversity-related multilateral environmental agreements.

WTTC (2014). Travel & Tourism Economic Impact 2014: Bahrain.

6. ANNEXES

Annex 1. Laws and decisions pertaining to environment and biodiversity.

1 Marine Ecosystem:

A. Laws

Law No. 17/ 1978	Approval of Kuwait ROPME agreement
	The objective of the Protocol, which was signed on 24 April 1978 and entered into force on 1 July 1979, is to provide cooperative and effective preventive and response measures to deal with marine emergencies caused by oil and other harmful substances.

Law No. 9/ 1990	Ratification of Protocol on Marine Pollution arising from Exploration and Exploitation of Continental Drift
	The objective of the Protocol is to coordinate regional activities towards protection of the marine environment against pollution from exploration and exploitation of oil and gas in the continental shelf.

Law No. 11/ 1992	Ratification of Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal
	The Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries.

Law No. 7/ 1994	Ratification of United Nations Framework Agreement on Climate Change
	The ultimate objective of the Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system."

Law No. 2/ 1995	Protection of Wildlife
	A national committee for the protection of wildlife affiliated to His Highness the Crown Prince to be formed to protect wildlife

Law No. 18/ 1996	Ratification of the Convention of Biodiversity
	The Convention has three main goals: conservation of biological diversity (or biodiversity); sustainable use of its components; and. fair and equitable sharing of benefits arising from genetic resources.

Law No. 21/ 1996	Environmental Law
	The Law aims to protect the environment from polluting sources and factors, stop its degradation, through introducing and implementing plans and policies, from activities harmful to human health, agricultural crops, marine and desert life, and other resources.

Law No. 20/ 2002	Regulating the fishing and using and protection of marine resources
	Regulating and licensing fishing, protecting marine resources, including methods of fishing and excavation of sand, marketing and manufacturing of fisheries

Law No. 32/ 2005	Joining the International Convention for the Prevention of Pollution from Ships (MARPOL)
	The convention was brought about in an effort to minimize pollution of the oceans and seas, including dumping, oil and air pollution. The objective of this convention is to preserve the marine environment in an attempt to completely eliminate pollution by oil and other harmful substances and to minimize accidental spillage of such substances.

Law No. 39/ 2005	Ratification of Stockholm Convention on Persistent Organic Pollutants
	The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.

Law No. 43/ 2005	Reorganization of National Commission for the Protection of Marine Resources, Environment and wildlife
	Reorganization of the commission to include 8 directorates covering public relations, protection of marine resources and fisheries, monitoring, planning, protected areas, and others.

Law No. 2/ 2011	Joining Cartagena Protocol on Biosafety to the Convention on Biological Diversity
	The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.

Law No. 47/ 2012	Establishment and organization of the Supreme Council for Environment
	The SCE is responsible of setting the future Strategy of Environment and Sustainable Development in the Kingdom of Bahrain and its implementation follow up with relevant ministries, commissions, and establishments.

Law No. 91/ 2012	Organization of the Supreme Council for Environment
	Establishment of 5 directorates including the Directorate of Biodiversity.

Law No. 37/ 2014	Regulation of Sea sand excavation
	Prohibiting the excavation or exporting of marine sand without the permission of the minister for the first and the Council of Ministers for the latter.

Date 6/1/2015	2015-2018 Government Action Plan
	Strategic priority sustainable management of strategic resources and protecting the environment (Develop tools for the protection of the environment and conserving species, strains, and cultivars of ecological, economical, and cultural importance).

B. Decisions

Decision No. 3/ 2003	Banning the hunting of all kinds sea cows, sea turtles, and dolphins
	Banning of the hunting of all kinds of sea cows, sea turtles, and dolphins within the hunting borders of the Kingdom of Bahrain. Also, punishment of for breaching this law.

Decision No. 1/ 2007	Banning of fishing or circulate or sell shrimp
	Example of an annual decision stating the no fishing period of shrimp, the existence of fishing gears on boats, and exhibiting fresh shrimp for sale.

Decision No. 8/ 2007	Pearl oysters beds protected areas
	Establishment of Hayr Bulthama natural marine protected area and banning fishing with floating or trawling nets.

Decision No. 11/ 2009	Stopping of fish and shrimp catchment license issuance
	Temporarily banning issuing fishing license (fish and shrimp)

Decision No. 1/ 2011	Permission to use floating net to catch Mackerel fish
	Permission to use floating net to catch mackerel fish temporarily with the exception of the area around Hawar Islands.

Decision No. 44/ 2011	Establishment of National Steering Committee for Biodiversity
	Supervising the preparation and implementation of biodiversity protection policies and programs, and assuring the implementation of Bahrain commitments towards bilateral and multilateral agreements.

Decision No. 1/ 2012	Protecting sword fish
	To protect and sustainably conserve the sword fish, it is terminally banned to catch this fish by any mean. It is prohibited to exhibit, sell, or use this fish or any of its parts in the Kingdom of Bahrain.

Decision No. 44/ 2011	Banning the catch or sell crab
	Temporarily banning the catch or exhibit the crab in market or any other public place during the ban period.

2 Coastal Ecosystem:

A. Laws

Law No. 11/ 1992	Ratification of Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal
	The Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries.

Law No. 2/ 1995	Protection of Wildlife
	A national committee for the protection of wildlife affiliated to His Highness the Crown Prince to be formed to protect wildlife

Law No. 18/ 1996	Ratification of the Convention of Biodiversity
	The Convention has three main goals: conservation of biological diversity (or biodiversity); sustainable use of its components; and. fair and equitable sharing of benefits arising from genetic resources.

Law No. 18/ 1996	Ratification of the Convention of Biodiversity
	The Convention has three main goals: conservation of biological diversity (or biodiversity); sustainable use of its components; and. fair and equitable sharing of benefits arising from genetic resources.

Law No. 21/ 1996	Environmental Law
	The Law aims to protect the environment from polluting sources and factors, stop its degradation, through introducing and implementing plans and policies, from activities harmful to human health, agricultural crops, marine and desert life, and other resources.

Law No. 3/ 1997	Joining convention on Wetlands of International Importance, especially as Waterfowl Habitat (RAMSAR)
	An international treaty for the conservation and sustainable utilization of wetlands[1] *recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.*

Law No. 1/ 1998	Projects Environmental Impact Assessment
	All new and current projects under development are required to provide EIA forms and the environment authority decide if there is a need to provide an EIA report.

Law No. 20/ 2006	Protection of beaches, coasts, and marine entries
	Controlling or banning the use, reclamation, and determining the limits of beaches, coasts, and marine entries and setting the fines for any breach of this law.

Law No. 33/ 2006	Domestic waste water and disposal of surface water

	This law covers giving permission for domestic water disposal into public facilities and the treatment and use of domestic water in agriculture.

Law No. 53/ 2006	Considering Tubli Bay as natural protected area
	Tubli Bay is considered a natural protected area(National Park). All kinds of filling and reclamation are prohibited.

Law No. 91/ 2012	Organization of the Supreme Council for Environment
	Establishment of 5 directorates including the Directorate of Biodiversity.

Law No. 37/ 2014	Regulation of Sea sand excavation
	Prohibiting the excavation or exporting of marine sand without the permission of the minister for the first and the Council of Ministers for the latter.

Date 6/1/2015	2015-2018 Government Action Plan
	Strategic priority sustainable management of strategic resources and protecting the environment (Develop tools for the protection of the environment and conserving species, strains, and cultivars of ecological, economical, and cultural importance).

B. Decisions

Decision 16/ 2005	Banning reclamation of submerged land by seawater without license
	Owners of marine submerged properties are not allowed to start any reclamation without getting permission from the relevant municipality.

Decision No. 70/ 2011	Reclamation line in Tubli Bay
	A map with reclamation line in Tubli By was issuedin accordance with the bay being a natural protected area.

3. Agricultural Ecosystem:

A. Laws

Law No. 12/ 1980	Regulating the use of ground water
	Controls the digging of new wells and determine the areas in which wells are allowed.

Law No. 21/ 1983	Date palm protection
	Prohibits cutting date palms, regulates number of trees, incentives for farmers, import and export, inspection by authorized staff.

Law No. 4/ 1985	Regulation of agriculture drainage

	Control the construction of agricultural drainage systems

Law No. 11/ 1989	Pesticides
	Controlling the use of pesticides in agriculture

Law No. 2/ 1994	Urban Planning
	Prepare the planning projects for cities and villages based on environmental, sociological, economical, and urban studies.

Law No. 2/ 2005	Banning of hunting and trade of all species of hubara and Bahraini bulbul
	Prohibits the hunt and trade of species of hubara and the Bahraini bulbul

Law No. 37/ 2005	Approval of Law of fertilizers and agriculture soil amendments in GCC
	Control the production, import, and use of pesticides in the GCC

Law No. 38/ 2005	Approval of Law of fertilizers and agriculture soil amendments in GCC
	Control the production, import, and use of fertilizers and soil amendments in the GCC

Law No. 18/ 1996	Ratification of the Convention of Biodiversity
	The Convention has three main goals: conservation of biological diversity (or biodiversity); sustainable use of its components; and. fair and equitable sharing of benefits arising from genetic resources.

Law No. 21/ 1996	Environmental Law
	The Law aims to protect the environment from polluting sources and factors, stop its degradation, through introducing and implementing plans and policies, from activities harmful to human health, agricultural crops, marine and desert life, and other resources.

Law No. 47/ 2012	Establishment and organization of the Supreme Council for Environment
	The SCE is responsible of setting the future Strategy of Environment and Sustainable Development in the Kingdom of Bahrain and its implementation follow up with relevant ministries, commissions, and establishments.

Law No. 91/ 2012	Organization of the Supreme Council for Environment
	Establishment of 5 directorates including the Directorate of Biodiversity.

B. Decisions

Law No. 4/ 1983	Banning obtaining water form Allat and Khubar layer and stopping the issue of license to clean old neglected springs or wells

	Renewal of Decision 23/ 1980 banning obtaining water form Allat and Khubar layer and stopping the issue of license to clean old neglected springs or wells

Law No. 13/ 1983	Tariffs of consumption of ground water
	Introducing tariffs on the use of ground waters

Decision No. 20/ 1983	Agriculture quarantine
	All imported or exported agricultural shipments are quarantined.

Decision No. 3/ 2006	Banning date palm and others from countries infested by date palm insects
	Controls the entry of date palm and ornamental palm trees from countries infested by palm trees insects

Decision No. 44/ 2011	Establishment of National Steering Committee for Biodiversity
	Supervising the preparation and implementation of biodiversity protection policies and programs, and assuring the implementation of Bahrain commitments towards bilateral and multilateral agreements.

Supreme Council for Woman: March 2010	National Initiative for Agricultural Development
	One objective is to conserve water and natural resources

4 Desert Ecosystem:

A. Laws

Law No. 11/ 1992	Ratification of Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal
	The Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries.

Law No. 2/ 1994	Urban Planning
	Prepare the planning projects for cities and villages based on environmental, sociological, economical, and urban studies.

Law No. 2/ 1995	Protection of Wildlife
	A national committee for the protection of wildlife affiliated to His Highness the Crown Prince to be formed to protect wildlife

Law No. 21/ 1996	Environmental Law
	The Law aims to protect the environment from polluting sources and factors, stop its degradation, through introducing and implementing plans and policies, from activities harmful to human health, agricultural crops, marine and desert life, and other resources.

Law No. 9/ 1997	Joining The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
	A Convention to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.

Law No. 2/ 2005	Banning of hunting and trade of all species of hubara and Bahraini bulbul
	Prohibits the hunt and trade of species of hubara and the Bahraini bulbul

Law No. 2/ 2011	Joining Cartagena Protocol on Biosafety to the Convention on Biological Diversity
	The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.

Law No. 47/ 2012	Establishment and organization of the Supreme Council for Environment
	The SCE is responsible of setting the future Strategy of Environment and Sustainable Development in the Kingdom of Bahrain and its implementation follow up with relevant ministries, commissions, and establishments.

Law No. 91/ 2012	Organization of the Supreme Council for Environment
	Establishment of 5 directorates including the Directorate of Biodiversity.

B. Decisions

Announcement 2014	Best camp competition
	The Southern Governance announced HH Sheikh Nasser Bin Hamad Prize for best camp. Criteria include conservation of wildlife

Announcement 2014	Camping requirements
	The Southern Governance announced conditions for camping including protection of the environment

Annex 2. Strategic Goals and Targets

1. Convention on the Conservation of Migratory Species of Wild Animals (CMS)

Convention	Strategic Goals and Targets
CMS	Goal 1: Address the underlying causes of decline of migratory species by mainstreaming relevant conservation and sustainable use priorities across government and society
	Target 1: People are aware of the multiple values of migratory species and their habitats and migratory systems, and the steps they can take to conserve them and ensure the sustainability of any use.
	Target 2: Multiple values of migratory species and their habitats have been integrated into international, national, and local development and poverty reduction strategies and planning processes, and are being incorporated into national accounting, as appropriate, and reporting systems.
	Goal 2: Reduce the direct pressures on migratory species and their habitats
	Target 5: Governments, key sectors and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption, keeping the impacts of natural resource use on migratory species well within safe ecological limits to promote the favourable conservation status of migratory species and maintain the quality, integrity, resilience, and connectivity of their habitats and migratory routes.
	Target 6: Fisheries and hunting have no significant direct or indirect adverse impacts on migratory species, their habitats or their migration routes, and impacts of fisheries and hunting are within safe ecological limits.
	Target 7: Multiple anthropogenic pressures have been brought to levels that are not detrimental to the conservation of migratory species or to the functioning, integrity, ecological connectivity and resilience of their habitats.
	Goal 3: Improve the conservation status of migratory species and the ecological connectivity and resilience of their habitats
	Target 8: The conservation status of threatened migratory species has considerably improved throughout their range.
	Target 10: All key habitats and sites for migratory species are identified and included in area -based conservation measures so as to maintain their quality, integrity, resilience and functioning in accordance with the implementation of Aichi Target 11.
	Goal 4: Enhance the benefits to all from the favourable conservation status of migratory species
	Target 11: Migratory species and their habitats which provide important ecosystem services are maintained at or restored to favourable conservation status, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
	Target 12: The genetic diversity of wild populations of migratory species is safeguarded, and strategies have been developed and implemented for minimizing genetic erosion.
	Goal 5: Enhance implementation through participatory planning, knowledge management and capacity building
	Target 13: Priorities for effective management and conservation of migratory species and migratory systems have been included in the development and implementation of national biodiversity strategies and action plans, where relevant, with reference to regional CMS agreements and action plans and their regional implementation bodies.
	Target 15: The science base, information, awareness, understanding and technologies relating to migratory species, their habitats and migratory systems, their value, functioning, status and trends, and the consequences of their loss, are improved, widely shared and transferred, and effectively applied.

2. Convention on Wetlands of International Importance (RAMSAR)

Convention	Strategic Goals and Targets
RAMSAR	GOAL 1: Addressing the drivers of wetland loss and degradation
	Target 1: By 2021, rate of wetland loss and degradation is reduced by 50%
	Target 2: By 2021, 80% of Contracting Parties report integration of wetlands into national / local policy / strategies and plans relating to water
	Target 3: By 2021, 80% of Contracting Parties report integration of wetlands into other sector policies and plans
	Target 4: By 2021, water efficiency in agricultural production improved leading to a 50% increase in water productivity
	Target 5: By 2021, 50 % of Contracting Parties reporting introduction of investments and insurance –related incentives within the agricultural, water and mining sectors to promote the restoration of wetlands and the maintenance of their ecological character
	Target 6: 80% of Contracting Parties have completed an inventory of invasive alien species and have prepared and implemented management responses by 2021.
	Target 7: By 2021, orienting the investment of $1billion to support wetland restoration and wise use
	GOAL 2. Effective conservation and management of the Ramsar Sites Network
	Target 8: 0% of Ramsar sites are updated within a 6 year period on RSIS
	Target 9: By 2021, 80% of sites in the Ramsar Sites network have management plans under implementation
	Target 10: By 2021, 80% of Ramsar sites are effectively managed without loss of ecological character
	Target 11: By 2021, Ramsar site network reaches a total of 2,500 sites and 250 million hectares , taking account of under-represented types of wetlands
	Target 12: By 2021, resolution of sites that are at risk of loss of ecological character within one calendar year of when they are notified as being at risk
	Target 13: By 2021, the Ramsar Site Information System (RSIS) offers comprehensive information on the Ramsar Site Network and providing reference to other relevant information and data, is accessible and available to Contracting Parties, other Conventions and interested Stakeholders
	GOAL 3. Wise use of all wetlands through partnerships
	Target 14: By 2021, 80% of Contracting Parties have adopted wetland policies that promote wise use principles and integrated water resources management
	Target 15: By 2021, a dynamic balance between water extraction and water flows that maintains ecological character of wetlands is in place in major river basins
	Target 16: By 2021, wetland governance platforms including relevant actors at river basin level are in place in 50% of river basins
	Target 17: By 2021, services and benefits of wetlands for poverty eradication and livelihoods are widely demonstrated and documented
	Target 18: By 2021, the values of wetlands for disaster risk reduction are clearly understood, leading to the repair and restoration of 50 million hectares of mangroves
	Target 19: By 2021, 50 million hectares of peatlands are protected and/or restored in recognition of their carbon capture and land retention ability

2. Convention on Wetlands of International Importance (RAMSAR)

Convention	Strategic Goals and Targets
RAMSAR	Target 20: By 2021, The values of wetlands for leisure and recreation is appreciated by a broad spectrum of wetlands enthusiasts leading to greater investment in wetland management, policies and conservation
	Target 21: By 2021, the values of wetlands to water users is recognised in changed behaviour with respect to wetlands, and the setting up of payment for ecosystem services and other systems to secure continuity of quantity and quality of water
	Target 22: By 2021, the ability of wetlands to purify and detoxify contaminated waters is respected by the water treatment and sanitation industry, leading to increased artificial wetlands and the maintenance of natural wetlands
	Target 23: By 2021, additional funding flows to support wetland conservation, management and restoration are secured notably through access to the $500 million GEF
	Target 24: By 2021 industry associations apply guidelines and practices for wise use of water and wetlands within the supply chain
	GOAL 4. Raised awareness and involvement in wetlands
	Target 25: By 2021, comprehensive guidance, based on science and best practices (for the conservation, management, restoration and river basin level integration of wetlands,) is available to policy makers and practitioners in an appropriate format and language
	Target 26: By 2021, 80% of Contracting Parties report that major sectors impacting on wetlands acknowledge wetland services and ecological infrastructure in plans and investments
	Target 27: By 2021, 80% of Contracting Parties report enhanced participation of the public in wetland conservation, management, restoration and monitoring

3. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Convention	Strategic Goals and Targets
CITES	Goal 1: Ensure compliance with and implementation and enforcement of the Convention
	Target 1.1: Parties comply with their obligations under the Convention through appropriate policies, legislation and procedures.
	Target 1.2: Parties have in place administrative procedures that are transparent, practical, coherent and user-friendly, and reduce unnecessary administrative burdens
	Target 1.3: Implementation of the Convention at the national level is consistent with decisions adopted by the Conference of the Parties.
	Target 1.4: The Appendices correctly reflect the conservation needs of species.
	Target 1.5: Best available scientific information is the basis for non-detriment findings.
	Target 1.6: Parties cooperate in managing shared wildlife resources.
	Target 1.7: Parties are enforcing the Convention to reduce illegal wildlife trade.
	Target 1.8: Parties and the Secretariat have adequate capacity-building programmes in place.
	Goal 2: Secure the necessary financial resources and means for the operation and implementation of the Convention
	Target 2.1: Financial resources are sufficient to ensure operation of the Convention.
	Target 2.2: Sufficient resources are secured at the national and international levels to ensure compliance with and implementation and enforcement of the Convention
	Target 2.3: Sufficient resources are secured at the national and international levels to implement capacity-building programmes.
	Goal 3: Contribute to significantly reducing the rate of biodiversity loss and to achieving relevant globally-agreed goals and targets by ensuring that CITES and other multilateral instruments and processes are coherent and mutually supportive
	Target 3.1: Cooperation between CITES and international financial mechanisms and other related institutions is enhanced in order to support CITES-related conservation and sustainable development projects, without diminishing funding for currently prioritized activities.
	Target 3.2: Awareness of the role and purpose of CITES is increased globally.
	Target 3.3: Cooperation with relevant international environmental, trade and development organizations is enhanced.
	Target 3.4: The contribution of CITES to the relevant Millennium Development Goals, the sustainable development goals set at WSSD, the Strategic Plan for Biodiversity 2011-2020 and the relevant Aichi Biodiversity Targets, and the relevant outcomes of the United Nations Conference on Sustainable Development is strengthened by ensuring that international trade in wild fauna and flora is conducted at sustainable levels.
	Target 3.5: Parties and the Secretariat cooperate with other relevant international organizations and agreements dealing with natural resources, as appropriate, in order to achieve a coherent and collaborative approach to species which can be endangered by unsustainable trade, including those which are commercially exploited.

4. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

Convention	Strategic Goals

ITPGRFA	Goal 1: The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security (Conservation, Exploration, Collection, Characterization, Evaluation and Documentation of Plant Genetic Resources for Food and Agriculture)
	Target 1: Survey and inventory plant genetic resources for food and agriculture, taking into account the status and degree of variation in existing populations, including those that are of potential use and, as feasible, assess any threats to them;
	Target 2: Promote the collection of plant genetic resources for food and agriculture and relevant associated information on those plant genetic resources that are under threat or are of potential use;
	Target 3: Promote or support, as appropriate, farmers and local communities' efforts to manage and conserve on-farm their plant genetic resources for food and agriculture;
	Target 4: Promote in situ conservation of wild crop relatives and wild plants for food production, including in protected areas, by supporting, inter alia, the efforts of indigenous and local communities;
	Target 5: Cooperate to promote the development of an efficient and sustainable system of ex situ conservation, giving due attention to the need for adequate documentation, characterization, regeneration and evaluation, and promote the development and transfer of appropriate technologies for this purpose with a view to improving the sustainable use of plant genetic resources for food and agriculture;
	Target 6: Monitor the maintenance of the viability, degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture.
	Goal 2: These objectives will be attained by closely linking this Treaty to the Food and Agriculture Organization of the United Nations and to the Convention on Biological Diversity (Sustainable Use of Plant Genetic Resources)
	Target 7: pursuing fair agricultural policies that promote, as appropriate, the development and maintenance of diverse farming systems that enhance the sustainable use of agricultural biological diversity and other natural resources;
	Target 8: strengthening research which enhances and conserves biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers, especially those who generate and use their own varieties and apply ecological principles in maintaining soil fertility and in combating diseases, weeds and pests;
	Target 9: promoting, as appropriate, plant breeding efforts which, with the participation of farmers, particularly in developing countries, strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas;

5. Convention concerning the Protection of the World Cultural and Natural Heritage (WHC)

Convention	**Strategic Goals and Targets**
WHC	Goal 1: Continually improve World Heritage site management capacities
	Target 1: Management standards and capacities at World Heritage sites are improved in a way that indicators are developed for World Heritage values and site integrity, threats are identified

	and management interventions implemented in response to them, and that they are monitored for management effectiveness.
	Target 2: Develop World Heritage sites into exemplary models demonstrating best practice that would positively influence the development of other protected areas and contribute to the overall biodiversity conservation effort.
	Goal 2: Counter threats to World Heritage in Danger sites
	Target 3: Includes a process whereby sites with particularly acute threats to their outstanding universal values or integrity can be placed on the "List of World Heritage in Danger", as a means to mobilize increased national and international support for dealing with these threats.
	Target 4: Give priority to setting up conservation programmes that address the imminent threats to these sites and mitigate their impacts, in view of preventing the loss of their World Heritage values, leading to the site's removal from the list of World Heritage in Danger.
	Goal 3: Complete the World Heritage List
	Target 5: Recent studies by IUCN point to the following biomes as gaps in the current World Heritage list: tropical/ temperate grasslands, savannas, lake systems, tundra and polar systems, and cold winter deserts. IUCN has also recommended several marine systems as worthy of consideration for inclusion on the List. Work in this area will primarily be guided by the continuing global strategy and gap analysis work of the IUCN and in partnership with them.
	Goal 4: Apply the Ecosystem Approach
	Target 6: The WHC recognizes that World Heritage sites are part of a larger and complex mosaic of multiple ecosystems with multiple uses. It also understands that, just as World Heritage sites are subject to events taking place outside their boundaries, so can areas outside World Heritage site boundaries benefit from the ecosystem goods and services provided by the site. Under these circumstances, the WHC promotes the tighter integration of World Heritage site management agencies into the decision-making processes affecting landscape/ seascape level actions.
	Goal 5: Link up with the international biodiversity conservation agenda
	Target 7: Although the *World Heritage Convention* is recognized as one of the five biodiversity related conventions, its potential in achieving the 2010 biodiversity target has not yet been sufficiently harnessed. The Centre intends to actively promote the role of the *Convention* as a tool for in situ biodiversity conservation by establishing strong links with the international biodiversity agenda, and in particular the CBD.
	Goal 6: Mainstream the *Convention* and convey the World Heritage message
	Target 8: The *World Heritage Convention* continues to be poorly understood in terms of its biodiversity conservation potential. It is generally perceived as a simple listing mechanism whereas its full potential as a robust tool to galvanize national and international attention remains under-utilised by key conservation and sustainable development stakeholders. Incorporating the *Convention* into the standard conservation toolbox of these stakeholders is a priority objective of the WHC, as is the forging of private and public sector partnerships. The nature team of the Centre will work closely with the Communications and Partnerships unit of the Centre and others in advancing these objectives.