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Fifth National Report to the Convention on Biological Diversity



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ملك مملكة البحرين

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The Crown Prince, Deputy Supreme Commander
and First Deputy Premier

Forward



The Kingdom of Bahrain has been blessed with an array of diverse biological elements, many of which hold regional and international significance. Unfortunately with the Kingdom's rapidly accelerating development trend, many of these elements have come under mounting pressure from human activities. As such, the Kingdom of Bahrain has undertaken efforts in order to conserve biodiversity elements and ensure the sustainability of the environmental, economic, cultural, and educational benefits that they provide.

As these efforts require a concerted response from all stakeholders, the National Biodiversity Steering Committee in Bahrain was established under the Ministerial Orders (44) and (81) for the year 2011. This step sets the framework for the cooperation required to be put in by Bahrain's sectors, institutions, and individuals in order to enhance biodiversity conservation and meet the relevant regional and international commitments made.

The Kingdom of Bahrain was one of the first countries in the region to respond to the initiative launched by the United Nations Environment Programme calling for embracing the Ecosystem Based Approach on the national and regional levels. This initiative aims at conserving ecosystems and their services through adopting holistic approaches built upon sustainable development and the participation of stakeholders. In this spirit, Bahrain has implemented an ambitious project which adopts the ecosystem based approach in national environmental policies.

Forward

In accordance with Article 26 of the Convention on Biological Diversity, "Each Contracting Party shall, at intervals to be determined by the Conference of the Parties, present to the Conference of the Parties, report on measures which it has taken for the implementation of the provisions of this Convention and their effectiveness in meeting the objectives of this Convention." Within this frame work Bahrain has prepared "The Fifth National Report to the Convention on Biological Diversity for The Kingdom of Bahrain".

This report has been prepared to reflect the Kingdom of Bahrain's commitment to complying with the obligations and decisions of the Convention on Biological Diversity agreed upon in 1992, and sheds light on the pace of progress in implementing the programmes and decisions of the convention based on the CBD's guidelines for the Fifth National Reports, whilst utilising the Fourth National Report to the Convention on Biological Diversity prepared in 2012 as a baseline.

In hope that we have been successful in presenting all aspects of biodiversity in our beloved Kingdom, and we ask Allah Almighty to help in the ongoing and tireless quest for the preservation of biodiversity in the Kingdom of Bahrain for a better tomorrow and for our future generations.

Shaikh Abdullah bin Hamad Al Khalifa
Personal Representative of His Majesty the King
President of the Supreme Council for Environment

Message from the Chief Executive



Biodiversity provides the building blocks of a healthy environment and as such the Kingdom of Bahrain has joined the international community in recognising its importance to sustainable social and economic development. Hence, limiting biodiversity loss and reducing the harmful impacts is a national priority. Bahrain formally ratified the Convention on Biological Diversity in 1996 and to this day remains steadfast in its commitment to it as well as to the Strategic Plan for Biodiversity 2011-2020 and the 2020 Aichi Targets.

In accordance with this commitment, we are pleased to submit the Fifth National Report to the Convention on Biological Diversity. This report was prepared by national experts with the support of various institutions, academics and governing bodies, and reviewed by all national stakeholders in addition to an international consultant. It highlights the status of Bahrain's biodiversity at the ecosystem, species and genetic level as well as gives an overview of the steps it has taken to conserve it.

Bahrain's unique biogeography has played a large role in shaping its history, culture and traditions. The people of Bahrain have long relied on the ecosystem services gained from having healthy, biodiverse systems particularly in the agricultural and marine sectors. On the international level, Bahrain has been awarded with two Ramsar sites and two UNESCO World Heritage Sites that encompass parts of Bahrain's notable natural heritage. Yet, biodiversity faces a myriad of threats emerging from the pressures of population expansion and urban growth and development.

Message from the Chief Executive

Embracing our responsibility to protect the environment for future generations, Bahrain takes pride in the achievements it has made so far in the field of biodiversity conservation and towards meeting the 2020 Aichi Targets. Bahrain is the first in the region to embrace the Ecosystem Based Approach and currently boasts six nationally protected areas with the intent to declare a seventh. Moreover, most biodiversity related activities, programmes and projects are underscored by the participation of stakeholder representatives from across all sectors. Shortly hereafter, Bahrain looks forward to submitting its updated National Biodiversity Strategy and Action Plan (NBSAP) to the Convention on Biological Diversity which takes into consideration the Aichi Targets and feeds into the Strategic Plan 2011-2020.

In closing, we take this opportunity to reiterate Bahrain's dedication to the Convention on Biological Diversity and will continue to strive to meet its obligations.

Dr. Mohamed Mubarak Bin Daina
Chief Executive
Supreme Council for Environment, Bahrain

Acknowledgements

The Supreme Council for Environment (SCE) would like to extend its sincere thanks and appreciation to the various authorities who provided data and information upon which the preparation of this report were based, most notably: the Directorate of Agriculture Affairs and Marine Resources at the Ministry of Works, Municipalities Affairs and Urban Planning, the Central Informatics Organisation, the University of Bahrain and members of civil society. The SCE also thanks all the individuals who have contributed directly or indirectly to providing technical advice and information in addition to reviewing text all of which has contributed largely to enriching this report.

Further gratitude goes to the Global Environment Fund (GEF) for their financial aid in preparing, publishing and printing of this report and the United Nations Environment Programme – Regional Office of West Asia (UNEP-ROWA) in particular Ms. Diane Klaimi for her technical support as part of the project with the aim of updating the National Biodiversity Strategy and Action Plan (NBSAP) and the preparation of the Fifth National Report of the Kingdom of Bahrain to the Convention on Biological Diversity.

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3	Mrs. Nouf Ali Al Wasmi	Environmental Specialist
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The final report was reviewed by Dr. Elsa Sattout, the international consultant of the NBSAP Project. In an effort to strengthen stakeholder engagement in decision making processes along with national reporting, the draft of this report was shared with all national stakeholders two weeks prior to the second NBSAP national workshop. Moreover, during the workshop, this report was presented to all stakeholders with a period of two weeks given for receiving any feedback and comments before the finalisation and official submission of this report. The report was officially submitted (in Arabic) to the Convention on Biological Diversity in March 2015 and was launched on the 2nd of August 2015.

Translated by:
Reem Khalifa Al Mealla and Tamera Ihsan Alhusseini

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Abbreviations

ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
CBD	Convention on Biological Diversity
CIO	Central Informatics Organisation
COP	Conference of Parties
EBA	Ecosystem Based Approach
EIA	Environmental Impact Assessment
GCC	Gulf Cooperation Council
GEF	Global Environment Facility
MSTP	Muharraq Sewage Treatment Plant
NBSAP	National Biodiversity Strategy and Action Plan
RECOFI	Regional Commission for Fisheries
ROPME	Regional Organisation for the Protection of the Marine Environment
SCE	Supreme Council for Environment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP-ROWA	United Nations Environment Programme – Regional Office of West Asia
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework for the Convention on Climate Change

Executive Summary



Despite its limited geographical area and harsh climatic conditions, the Kingdom of Bahrain holds vital aspects of biodiversity at both the regional and international level: the Hawar Islands are home to the largest breeding colony of Socotra Cormorant (*Phalacrocorax nigrogularis*) in the world while Bahrain's territorial waters hosts the world's second largest herd of dugongs (*Dugong dugon*) following Australia.

Moreover, the Kingdom's wetlands are also highly unique, whereby, two of its wetland sites are of international importance and are listed as RAMSAR sites (Hawar Islands and Tubli Bay). Furthermore, Bahrain has a total of six protected areas of high biological diversity and is in the process of designating its seventh protected area – The Northern Oyster Beds Site which consists of three oyster beds and a reef namely *Najwat & Hayr Bul Thamah*, *Hayr Shtayyah* and *Hayr Bu Am'amah* - following their inscription as a UNESCO World Heritage Site in 2012.

It is important to note that Bahrain's biodiversity is of valuable socio-economic and cultural importance due to the numerous ecosystem services provided which are vital for human well-being such as food, water, air purification and coastal protection to name just a few. In addition, various habitats such as the freshwater springs and palm groves have also contributed towards defining Bahrain's identity and name today.

Despite the many efforts made to promote conservation and sustainable use of resources, biodiversity in Bahrain remains vulnerable to various anthropogenic pressures resulting from population expansion, urban sprawl, groundwater depletion, pollution, invasive species, overfishing and climate change. In general, most ecosystems, particularly those on the main island, have witnessed a sharp decline due to various pressures. Nonetheless, existing ecosystems on other islands which are uninhabited have remained undisturbed and in their pristine conditions, especially Hawar Islands.

At the species level, a preliminary total number of 1361 species belonging to various taxonomic groups have been identified in Bahrain. Although there is a lack of recent studies and surveys to help reflect current abundance of species, observations of local experts indicate that the number of species are facing a rapid decline due habitat loss caused by increasing pressures on habitats. Similarly, there are no specialised studies to shed light on the status of genetic diversity of wild and domesticated national breeds. In general, despite the lack of studies, Bahrain has succeeded in maintaining some it's endemic and domesticated species, such as its breeds of Arabian horses.

Furthermore, the Kingdom of Bahrain has worked hard to strengthen and promote the implementation of the Convention of Biological Diversity (CBD) through a number of national projects such as a leading pilot project which aims at integrating the Ecosystem Based Approach (EBA) into national strategies, planning and legislations in order to protect the integrity of ecosystems and the services they provide through holistic methods based on the principles of sustainable development and widespread stakeholder engagement. This project included assessing the implementation of the EBA to enhance environmental protection in

Najwat & *Hayr Bul Thamah*, *Hayr Shtayyah* and *Hayr Bu Am'amah*. Moreover, studies were conducted in order to assess the economic, social and cultural value of the ecosystem services provided by these oyster beds. Moreover, The Directorate of Fisheries at the Ministry of Works, Municipalities Affairs and Urban Planning has undertaken a large scale project that aims at increasing the level of fish stocks in Bahrain through the deployment of artificial reefs in an attempt to contribute towards the recovery of fish stocks to a safe level.

Bahrain has put in enormous and consistent effort in contributing towards achieving the Aichi Biodiversity Targets which are included in the Global Strategic Plan for Biodiversity (2011-2020) in addition to the Millennium Development Goals (2000 - 2015). Examples include engaging civil society in various programs aimed at rehabilitating degraded habitats such as coral reefs and the expansion of cultivating native plants used in folk medicine at Al Areen Wildlife Park Garden.

During the period 2011-2014, Bahrain has made continuous efforts to mainstream biodiversity in national policies, programmes, activities, and initiatives across all sectors. In this light, the Directorate of Agriculture Affairs at the Ministry of Works, Municipalities Affairs and Urban Planning has supported and encouraged farmers to favour local varieties in addition to propagating different varieties of palm trees of high economic value through tissue cultivation techniques. In an effort to preserve genetic diversity, a genetic collection named the Budaiya Botanical Garden has been established. It consists of an open garden that hosts around 200 trees belonging to approximately 19 varieties where various endemic trees in addition to selected varieties of fruit trees adapted to Bahrain's environmental conditions are grown.

In 2007, in an effort to preserve biodiversity, Bahrain prepared its first National Biodiversity Strategy and Action Plan (NBSAP) in collaboration with the United Nations Development Programme (UNDP) along with a wide participation from various stakeholders in the public and private sectors and members of civil society. Stakeholders identified nine key national goals that reflect the priorities relating to biodiversity at the national, regional and international level. Bahrain has made many efforts to implement the key programs outlined in the initial NBSAP. For example, in 2012, the National Steering Committee for Biological Diversity was established comprising of representatives from governmental institutions, the private sector, academic and research institutions. Moreover, in 2013, the Directorate of Biodiversity was established under the umbrella of the Supreme Council for Environment and is responsible for biodiversity related matters, including the implementation of the Convention.

Furthermore, the Kingdom has begun developing its national indicators and targets for the year 2020 in line with the global Aichi Biodiversity Targets which are incorporated in the Strategic Plan for Biodiversity 2011-2022 with broad participation from national stakeholders from various sectors who will adopt a list of National targets and biodiversity indicators. The project to revise the NBSAP and preparation of the Fifth National Report of the Kingdom of Bahrain will adopt a list of national biodiversity targets and indicators, which shall develop the updated NBSAP administrative, legislative and regulatory measures to reduce the various threats and pressures faced by biodiversity.

Introduction



Introduction

The Kingdom of Bahrain signed the Convention on Biological Diversity (CBD) on the 9th of June 1992 and formally ratified it on the 30th of August 1996 in its effort to contribute towards international efforts to preserve biodiversity. In accordance with Article (26) of the Convention on Biological Diversity, parties are required to submit periodic national reports to the Executive Secretariat of the Convention, highlighting efforts made to implement the Convention. In this light, "the Fifth National Report of the Kingdom of Bahrain" was prepared in response to the decision (VIII / 14) of the Conference of the Parties (COP) which calls on states who ratified the agreement to submit their reports to the Executive Secretariat.

The preparation of the Fifth National Report adopted a stakeholder involvement approach whereby stakeholders were invited to approve the preparation plan for this report at the First (Opening) Workshop on "Updating the National Biodiversity Strategy and Action Plan and the Preparation of the Fifth National Report of the Kingdom of Bahrain to the CBD" which was held on the 2nd and 3rd of October, 2013. Participants included a total number of 48 representatives from various relevant organisations from the public and private sectors in addition to academic institutions as well as civil society organisations, media and those interested in environmental issues. Following this workshop, the draft of the fifth national report was prepared by national experts through consultations with relevant authorities and organisations. Subsequently, the draft the report was circulated and shared with stakeholders for their valued opinion and review.

The Fifth National Report reviews the current status and trends of biodiversity in the Kingdom of Bahrain in addition to the progress made in the implementation of the National Biodiversity Strategy and Action Plan (NBSAP) and the decisions and programs arising from the Convention. This report was prepared based on the requirements outlined in the "guidance document for the preparation of the fifth national reports" whilst marking the year 2010 as its baseline and line of reference. This document builds on a previous assessment that was conducted during the preparation of the Fourth National Report to the Convention on Biological Diversity for the Kingdom of Bahrain repetition has been avoided by adopting an abbreviated approach towards presenting the information and by referring readers to Fourth National Report for more details. The report consists of three main chapters along with two appendices which outline and discuss the following:

- **Chapter I : Biodiversity Status, Trends, Threats and Implications for Human Wellbeing**

This chapter highlights the economic, social and cultural importance of biodiversity nationally, its status and trend during the period 2011-2014 in addition to the main threats faced and impacts of this change on human well-being in the Kingdom of Bahrain.

- **Chapter II: Progress Made in the Implementation of the National Biodiversity Strategy and Action Plan**

This chapter briefly reviews the progress and efforts made in implementing the National Biodiversity Strategy and Action Plan (NBSAP) whilst highlighting the efforts made by the Kingdom of Bahrain to integrate biodiversity conservation into national policies and initiatives within all sectors along with efforts made to implement the Convention.

- **Chapter III: Progress Towards the 2020 Aichi Biodiversity Targets and Contributions to the 2015 Targets of the Millennium Development Goals**

This chapter includes a brief overview of the efforts made to integrate considerations towards achieving the Aichi Biodiversity Targets (2020) and the 2015 goals related to the Millennium Development Goals (MDGs) into policies, projects, national activities and initiatives.

- **Appendix I:** Information related to those responsible for the Fifth National Report.

This section lists the contact details for the national focal point for the CBD.

- **Appendix II:** Sources of additional information available and references

This section lists the additional available documentation which can be referred to for more information and explanations about the technical content of this report.

Chapter 1



Biodiversity Status, Trends, Threats and Implications for Human Wellbeing

1. Introduction

This chapter presents the importance of biodiversity in the Kingdom of Bahrain whilst highlighting the contributions of ecosystems and their services along with their impacts on human well-being and socio-economic development. Moreover, this chapter evaluates the current status of biodiversity in the kingdom and the change seen over time on all three biodiversity levels (i.e. ecosystems, species and genetic) utilising 2010 as its chosen baseline. Finally, this chapter sheds light on the driving forces and factors that threaten and contribute towards biodiversity degradation and their implications on human well-being.

2. Geographic Location & Climate

The Kingdom of Bahrain is an archipelago consisting of more than 84 islands which are situated in the middle of the southern coast of the Arabian Gulf in between the eastern shore of Saudi Arabia and the western coast of the Qatar Peninsula. Bahrain's land mass covers a total area of 769.6 km2 whilst it's surrounding regional waters extends to a total area of 7497.1 km2 (Figure 1-1) (Central Informatics Organisation, 2013).

Due to Bahrain's location within the sub-tropical desert strip of the Arabian Peninsula, its climate is characterised as arid with scarce rainfall accompanied by high temperature and humidity levels. The average summer and winter temperatures recorded during the period of 2009-2013 are 35.14ºC and 18.82ºC respectively whilst the annual rainfall noted during this period ranged between 20.2 to 98.9 mm (Central Informatics Organisation, 2013).

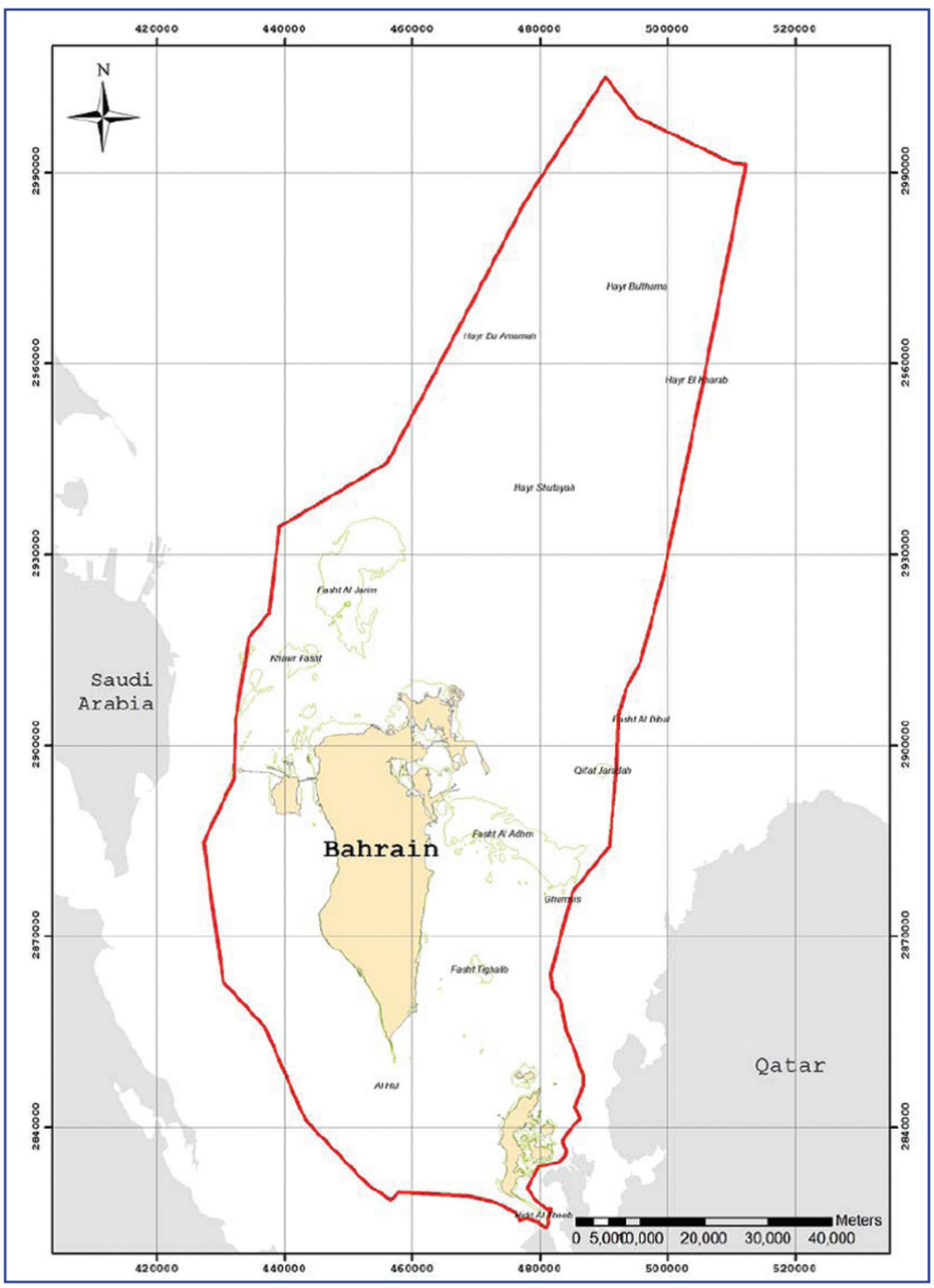


FIGURE (1-1) LOCATION OF THE KINGDOM OF BAHRAIN AND ITS TERRITORIAL WATERS INCLUDING SOME IMPORTANT CORAL REEFS (FASHTS) AND OYSTERBEDS (HAYRAT) LOCATIONS (SOURCE: BCSR, 2006).

3. The Importance of Biodiversity and Ecosystems in Bahrain

3.1 Regional and International Importance

Despite being characterised by limited land mass and harsh climatic conditions, Bahrain hosts important diverse biotic ecosystems which are of high regional and international importance. Two of which are listed on the List of Wetlands of International Importance under the Ramsar Convention due to their unique features, namely Tubli Bay and Hawar Islands. Furthermore, the Northern Oyster Bed site which is comprised of three oyster beds and a coral reef namely *Najwat* & *Hayr Bul Thamah, Hayr Bu Am'ammah* and *Hayr Shtayyah* – which is also known to be the largest oyster bed site in the region were inscribed as a UNESCO World Heritage Site in June 2012.

On the species level, the breeding colony of the Socotra cormorant (*Phalacrocorax nigrogularis*) on Hawar islands is the largest in the world. The largest breeding colony of the western reef heron (*Egretta gularis*) in the Middle East is also hosted here (Birdlife International, 2014). Moreover, Bahrain's territorial waters are also host to the second largest population of dugongs (*Dugong dugon*) in the world following Australia.



FIGURE (1-2): THE BREEDING COLONY OF SOCOTRA CORMORANTS (PHALACROCORAX NIGROGULARIS) ON HAWAR ISLAND, KINGDOM OF BAHRAIN (SOURCE: JUHANI KYYRO, 2006)

3.2 Socio-economic Importance

Bahrain's biodiversity provides valuable ecosystem services which are crucial for human wellbeing such as food, water, raw materials, renewable energy, primary production, coastal protection, climate regulation, nutrient cycling in addition to others (Figure 1-3). In 2013, "*A preliminary and rapid assessment of ecosystem services associated with the pearling area & UNESCO World Heritage Serial Site in the Kingdom of Bahrain*" was conducted by UNEP-ROWA highlighted that the three northern oyster bed sites (*Najwat* & *Hayr Bul Thamah*, *Hayr Bu Am'ammah* and *Hayr Shtayyah*) contribute between $3.4 - 227.14 billion/year due to their provision of many direct and indirect ecosystem services some of which include biodiversity, fisheries resources, ecotourism, recreation, scientific research, coastal protection, water purification and carbon sequestration.

Figure (1-4) illustrates the national economic importance provided by the marine resources whereby the total fisheries landing recorded in 2012 attained a total of 12,986 mt which was valued at BD 13.161 million (Directorate of Fisheries, 2013). Bahrain's territorial waters also harbour important food sources which are of high economic value including the green tiger prawn (*Penaeus semisulcatus*) who's average price amounted to BD 2073/mt and the forktail rabbitfish (*Siganus canaliculatus*) which amounted to BD 1922/mt in 2012 (Directorate of Fisheries, 2013).

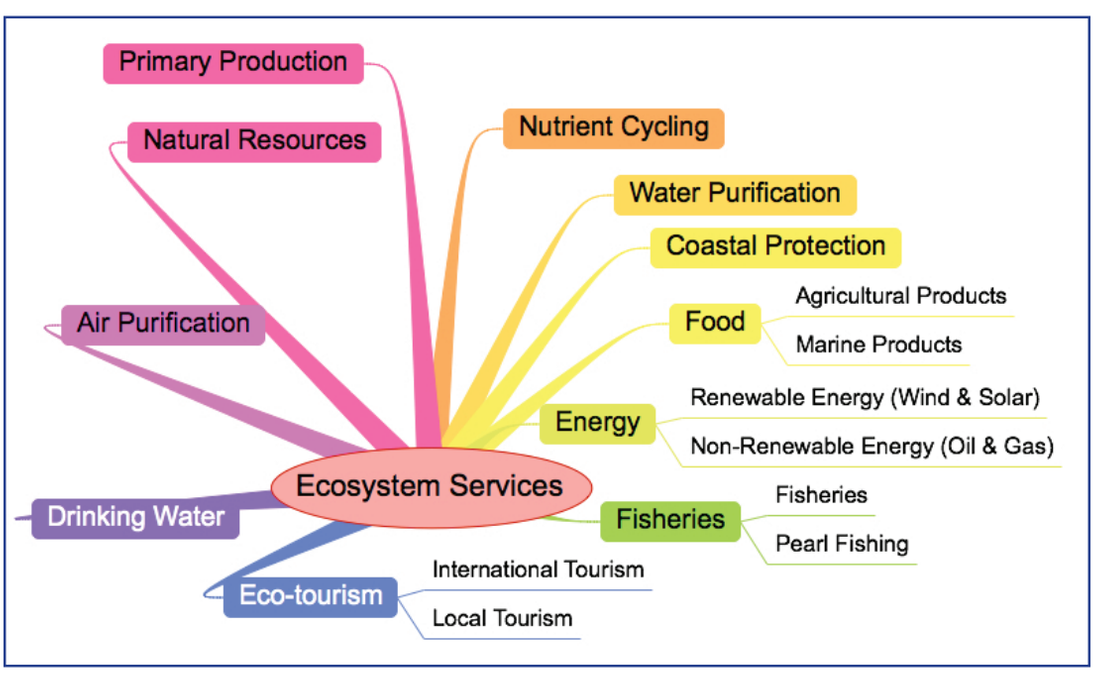


FIGURE (1-3) KEY SERVICES PROVIDED BY ECOSYSTEMS IN THE KINGDOM OF BAHRAIN.

Moreover, a study conducted by Al Radhi (2013) indicated that the majority of fish stocks in Bahraini waters faced increased fishing effort during the period 2004-2012 which has caused their depletion. In turn, this has led to a decline in both catch rates and abundance index of stock to low levels reflecting excessive exploitation and overfishing. Moreover, about 70-74 finfish stocks have recorded a decline in catch rates during the period 2004-2012 indicating that the status of fish stocks are outside the safe biological limits. The increase in fishing effort has resulted in the decrease in fish catch which in turn has led to the rise in fish value (Figure 1-4) (Directorate of Fisheries, 2013).

Despite the limited contribution of the fishing sector (estimated to be 0.1% in 2012) to the national GDP, this sector plays a vital role in strengthening national food security whilst creating job opportunities for both citizens and expats. In 2012, the total number of fishermen benefiting from this sector reached 6969 of which 1637 were citizens and 5332 were expats.

In terms of recreational importance of biodiversity and ecosystems, "*The analysis of various socio-economic aspects of the oyster beds*" conducted in 2014 on the Northern Hayrat indicated that over 600 individuals benefit from recreational services offered by *Najwat* & *Hayr Bul Thamah, Hayr Bu Am'ammah* and *Hayr Shtayyah.* Notable activities include pearl diving, SCUBA diving, recreational fishing in addition to water sports activities (Al Mealla *et al*., 2014). Moreover, the number of visitors to Al Areen Nature Reserve whose area covers a total of 7 km^2 witnessed an increase from 94,800 to 197,330 visitors between the period 2011-2013 indicating an increase by twice the initial number of visitors in 2011.

Moreover, the agricultural sector recorded a change in the production size of crops and livestock between the years 2011 to 2013 whereby, an increase of 30 tons was seen in the production of dates whilst red meat production rose by 86.6%; however, a 5271 tons decrease was recorded in the production of vegetables (Figure 1-5).

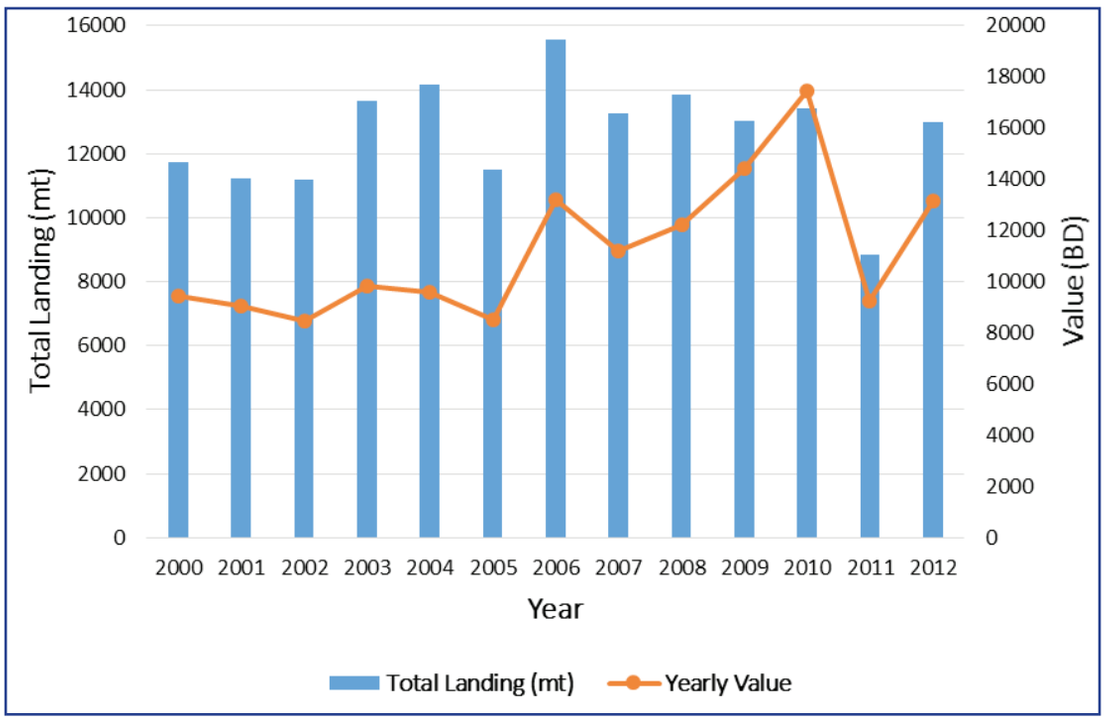


FIGURE (1- 4) TEMPORAL CHANGE IN THE TOTAL FISHERIES LANDING (MT) AND THE MARKET VALUE (BD) FOR THE PERIOD 2000 – 2012 IN THE KINGDOM OF BAHRAIN (SOURCE: DIRECTORATE OF FISHERIES, 2013).

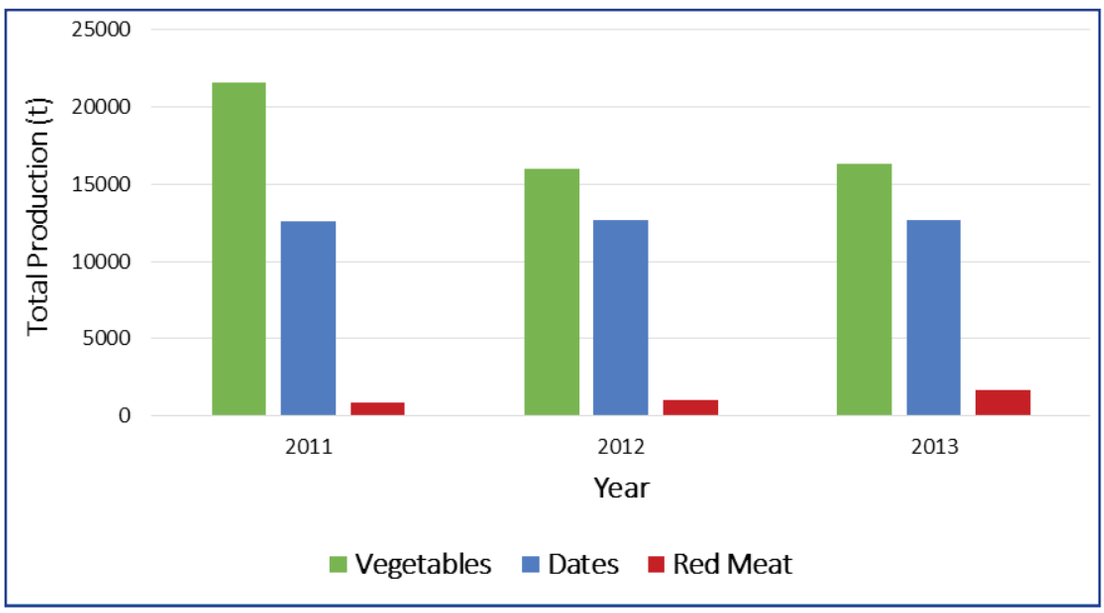


FIGURE (1-5) CHANGE IN TOTAL PRODUCTION SIZE OF CROP & LIVESTOCK BETWEEN 2011-2013 IN THE KINGDOM OF BAHRAIN (SOURCE: AGRICULTURAL AFFAIRS & MARINE RESOURCES, 2014).

3.3 Cultural & Historic Importance

For centuries biodiversity has played a large role in defining the identity and heritage of the Kingdom of Bahrain. Most noteworthy is the unique presence of freshwater springs on both land and sea which gave Bahrain its name today which translates literally to “two seas”. Moreover, Bahrain is also characterised by the pearl oyster beds which are of high historical and cultural importance especially prior to the discovery of oil by which they provided the backbone of the country’s economy. Despite the Kingdom’s development and rapid urbanization, palm trees and the dates they produce still retain their cultural importance and hence are used widely amongst the local population. Moreover, traditional herbal medicine remains widely practiced and has gained remarkable popularity especially in the recent years.

4. Major changes in the status and trend of biodiversity

Detailed explanation on the importance of ecosystems, species and genetic biodiversity, their components and threats nationally were presented extensively in the Kingdom of Bahrain’s Fourth National Report to the CBD under the Chapter “*The Reality of Biodiversity in the Kingdom of Bahrain and Expected Future Trends*.” Therefore, this chapter shall focus on summarizing and updating the status of biodiversity and trend along with threats faced between 2011-2014 (for more details, kindly refer to the Fourth National Report – Chapter One).

4.1 Ecosystem Level

The qualitative assessment conducted during the preparation of this report indicates that in general, the status of ecosystems has not registered any significant improvement in comparison to their previous status in 2010. Despite this, it is safe to note deserts have maintained a wide geographical range (Table 1-1).

TABLE (1-1) THE STATUS, TRENDS AND THREATS OF THE MAIN ECOSYSTEMS IN THE KINGDOM OF BAHRAIN FOR THE PERIOD 2011-2014. HABITATS ARE LISTED AS PER THE ECOSYSTEM TO WHICH THEY BELONG.

Ecosystem	Habitat	Status and Trends	Main Pressures
Arid and Semi-Arid Ecosystems	Desert	The desert has retained its geographical extent with the southern desert regions benefiting from high level of protection while desert areas in the northern region have registered a decline in area.	Urban development, camping and pollution.
	Agricultural Lands	Agricultural land areas have witnessed a decline as statistics show that the total area suitable for farming amounts to 6400 hectares of land. However, only a total area of 3700 hectares is actually in use hence utilizing 58% of the total agricultural lands area (Directorate of Agricultural Affairs & Marine Resources, 2014).	Decline in the number of Bahraini farmers, urban development.
Inland Water Ecosystems	Reed Swamps	Rapid and sharp decline in the areas of reed swamps	Groundwater depletion, urban development, pollution.
	Irrigation Channels	Some irrigation channels along the northern coast of the main island have witnessed a decline whereas, channels present along the western coast remain in good condition.	Groundwater depletion, urban development, pollution.

Ecosystem	Habitat	Status and Trends	Main Pressures
Coastal Ecosystems	Mudflats	Mudflats located on the eastern shoreline have decreased in area while the muddy coastlines of the Hawar Islands remain stable and in pristine conditions.	Urban development, pollution, fishing activities.
	Salt Marshes	Salt marshes along the eastern coast line have witnessed a sharp decrease in the extent and size while those present on Hawar Islands have retained a stable conditions.	Urban Development, pollution.
	Mangroves	Deterioration has been recorded in some mangrove sites in and around Tubli Bay while the largest reserve of mangroves located in Ras Sanad has retained its size and extent. In addition, mangroves in Arad Bay (a protected area) have recorded an expansion in occupied area with improved conditions recorded.	Urban development, pollution logging and hunting.
	Rocky Shores	No improvement has been observed in the status of natural rocky shores located in the northern shoreline. However, rocky shores on Hawar Islands are seen to be in good and stable conditions. On another note, artificial rocky shores have witnessed an increase in length and expansion especially in the northern half of Bahrain as a result of the establishment of artificial islands.	Urban development, pollution.
	Sandy Shores	Sandy shores have diminished in size on the west coast areas whereas those present in Hawar remain in good condition. Moreover, the number of constructed sandy beaches have seen a marked increase in both number and area due to the construction of artificial islands.	Urban development, pollution.

Ecosystem	Habitat	Status and Trends	Main Pressures
Marine Ecosystems	Coral Reefs (*Fashts*)	Coral Reefs along the east coast remain in critical condition despite records of minor signs of improvement in some sites. It is important to note that the northern coral reefs are in better condition than those on the eastern side.	Urban development (reclamation and dredging activities), fishing activities, recreational diving, pollution, climate change.
	Sea-grass beds	Sea grass beds have diminished in size along the eastern and northern coastline. It is worth mentioning that some records show a marked improvement in the case of some sites that had previously been razed by dredging activities.	Urban development (dredging and reclamation activities), fishing activities, pollution.
	Oysterbeds (*Hayrat*)	Surveys conducted in 2012 indicated that the Northern Oyster Beds are in good condition. On the other hand, it is probable that oyster beds near the coast are witnessing rapid deterioration due to increasing pressures caused by shellfish harvesting.	Urban development, fishing activities (pearling / pearl harvesting), groundwater depletion.

4.2 Species Level

In terms of species, a total number of 1301 species have been identified in Bahrain ranging from microbes to large mammals (see Table 1-2). However, it should be noted that this number is probably an underestimate since many taxa are yet to be defined and identified.

TABLE (1-2): NUMBER OF SPECIES IDENTIFIED IN BAHRAIN AS PER THEIR TAXONOMIC GROUPS.

No.	Taxonomic Group	No. of Species
1	Algae	34
2	Vascular Plants	357
3	Corals	24
4	Annelids	27
5	Sea Shells (Gastropods and Bivalves)	184
6	Crustaceans	64
7	Echinoderms	13
8	Insects	39
9	Arachnids	6
10	Fishes	239
11	Amphibians	1
12	Reptiles	20
13	Birds	331
14	Mammals	22
Total		**1361**

The qualitative assessment conducted during the preparation of this report indicated that in general, the status of the main taxonomic groups have not registered any significant improvement in comparison to their previous condition in 2010 (Table 1-3).

TABLE (1-3): THE STATUS, TRENDS AND THREATS OF THE MAJOR TAXONOMIC GROUPS IN THE KINGDOM OF BAHRAIN FOR THE PERIOD 2011-2014

Taxonomic Group	Status and Trends	Major Pressures
Algae	Recent studies on the status of fresh and seawater alga are unavailable; however it is thought that the areas of occupancy and extent for algal species are in sharp decline due to rising pressures on their habitat.	Urban development, groundwater depletion and pollution.
Vascular Plants	The geographical range of some desert and coastal wild plants is in decline, whereas the number of agricultural and horticultural plant species due to the expansion in imported species.	Urban development, pollution and climate change.
Invertebrates	Updated surveys are not available in order to accurately assess the status of invertebrates but it is likely that there has been a decline in the case of mollusks and crustaceans as a result of the increased pressures on their habitats. On the other hand, the number of invasive agricultural insects has witnessed an increase whereby some of these species have caused serious environmental and economic damage.	Urban development, fishing activities (e.g. crustaceans) and pollution.
Fishes	There has been no improvement in the state of freshwater and marine fish as a result of the pressure on their habitats. The annual statistics indicate an increase in the size of annual finfish landings during the year 2012-2013 in comparison to 2010. Moreover, this correlates with an increase in fishing effort (Figure 1-6). It is important to note that, based on a study conducted in 2012 which is considered the first of its kind in the country has recorded a total number of 16 species of sharks (elasmobranches) in Bahrain's territorial waters.	Urban development, fishing activities and pollution.
Amphibians	The status of the marsh frog (*Rana ridibunda)* remains critical due to increasing pressure on its habitat.	Urban development, groundwater depletion, hunting activities.
Reptiles	Because of harmful fishing practices, no improvement in the status of marine turtles has been recorded. Similarly, the status of the Caspian Terrapin turtle continues to be in critical condition. Furthermore, it is likely that the status of desert reptiles has not changed significantly compared to 2010.	Urban development, hunting activities, camping, groundwater depletion, pollution.

Taxonomic Group	Status and Trends	Major Pressures
Birds	It is likely that the state of some terrestrial and coastal birds has declined on main islands (e.g. Bahrain Island, Muharraq and Sitra). This comes following observations made by local expertise, for example, according to Dr. Brendan Kavanagh and his team, both the bar-tailed lark (*Ammomanes cinctura)* and the black-crowned sparrow lark (*Eremopterix nigriceps)* have not been recorded in Bahrain in the past five years. In contrast, the state of birds on some uninhabited islands remains stable, for example, the Socotra cormorant (*Phalacrocorax nigrogularis)* on the Hawar Islands. Moreover, the numbers of coastal birds that breed on artificial islands (such as Al Jarim) have increased. On the other hand, two new species of birds were recorded in Bahrain for the first time in 2014, namely: the Red-wattled lapwing (*Vanellus indicus)* and Egyptian Nightjar (*Caprimulgus aegyptius)*.	Urban development, hunting activities, pollution.
Mammals	No recent surveys are available on mammals in Bahrain whether terrestrial or marine however it is thought that their conditions remain stable in comparison to 2010. On the other hand, deceased dugongs and dolphins have been observed all of which are a result of bad fishing practices.	Urban development and hunting activities.

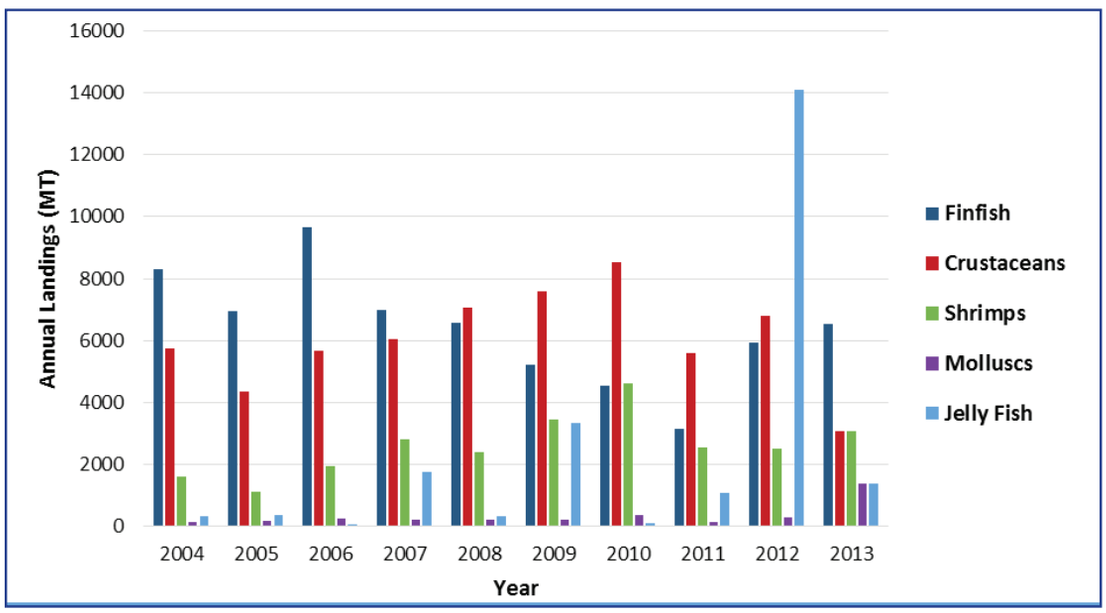


FIGURE (1-6): TOTAL ANNUAL LANDINGS (METRIC TONNES) OF FISH, CRUSTACEANS, MOLLUSCS, SHRIMP AND JELLYFISH CAUGHT DURING THE PERIOD 2004-2013 (DIRECTORATE OF MARINE RESOURCES, 2014).

4.3 Genetic Level

There are no specialised studies available on the status of genetic diversity in the Kingdom of Bahrain. In regards to domesticated species, a qualitative assessment conducted during the preparation of this report indicated that, in general, authentic Arabian horse breeds have been maintained in good condition, although there has been increasing pressure on date palm varieties as outlined in Table (1-4).

TABLE (1-4): THE STATUS, TRENDS AND THREATS OF THE MAJOR VARIETIES AND BREEDS IN THE KINGDOM OF BAHRAIN FOR THE PERIOD 2011-2014

Variety/Breed	Status and Trends	Major Pressures
Date Palm Varieties	There are approximately 600,000 palm trees in the Kingdom of Bahrain belonging to more than 100 varieties. Between 2011 -2014, pressures on local palm varieties were seen to increase which has caused the number of alien varieties to increase as a result of expansion plans to meet growing demand for palm planting in public places.	Urban development, groundwater depletion, pollution.
Agricultural Crop Varieties	It is thought that the status of local varieties of fruit and vegetables are likely to have stabilized as per the situation prior to 2010.	Urban Development, groundwater depletion, pollution
Arabian Horse Breeds	There are 21 breeds of purebred Arabian horses registered in Bahrain with origins traced back to five authentic horses (Directorate of Agricultural Affairs and Marine Resources, 2014). It is likely that breeds of purebred Arabian horses remained stable during the period 2011-2014 as a result of vested interests and an increase in the number of breeders who are keen to continue breeding pure Arabian horses.	Hybridization with non-purebreds
Arabian Camel Breeds	There are 20 breeds of Arabian camel in Bahrain (Directorate of Agriculture Affairs and Marine Resources, 2014). During the period 2011 – 2014 it is likely that camel breeds were stable as a result of increased interest by national stables and individuals.	Hybridization with non-purebreds
Goat and Sheep Breeds	There are 8 local breeds of sheep and 5 local goat breeds (including Bahrain and alien breeds). It is likely that these breeds have remained stable between 2011 and 2014 as a result of vested interests.	Hybridization with non-purebreds



FIGURE (1-7): A BAHRAINI FARMER COLLECTING DATES FROM A POPULAR VARIETY OF DATE PALMS KNOWN LOCALLY AS KHENAIZI (SOURCE: SUPREME COUNCIL FOR ENVIRONMENT).

5. Major Pressures on Biodiversity

Emerging pressures and threats on biodiversity arising from both unsustainable anthropogenic activities and natural threats have been discussed in detail in the first chapter of the Fourth National Report of the Kingdom of Bahrain to the Convention on Biological Diversity. Table (1-5) presents a brief update on the status and trend of these major pressures. It is important to note that their impacts on biodiversity components were mentioned in Tables (1-1, 1-3 & 1-4).

TABLE (1-5): THE STATUS AND TRENDS OF THE PRESSURES & THREATS IMPACTING BIODIVERSITY IN THE KINGDOM OF BAHRAIN FOR THE PERIOD 2011-2014.

Threats and Pressures	Status and Trends
Increasing and Overpopulation	The population in Bahrain continues to increase at an accelerated rate acting as a major driver for a number of direct and harmful threats to biodiversity. Most notably the increasing consumption patterns resulting in depletion of natural resources (Figure 1-8).
Urban Sprawl	Despite a recorded decrease in the demand for land as a result of the global real estate crisis, the demand for residential land was seen to resume increasing. Therefore, urban sprawl is still considered one of the major challenges facing biodiversity in Bahrain. Its widening sphere of impact include an extensive list of habitats, species and genetic varieties as showcased in Tables (1-1, 1-3 and 1-4).
Overfishing and By-Catch	Fishing activities are still one of the most prominent pressures faced by marine habitats and species with no significant improvement seen in comparison to the situation in 2010. For example, in 2012, the number of fishermen amounted to approximately 7629 of which 5562 (78.5%) were non-Bahraini. Similarly, the total number of fishing vessels have increased steadily, reaching approximately 1637 boats in 2012 distributed between 111 dhows locally known as *banoosh* dedicated to catching fish, 263 dhows for prawn fishing, 1149 small fishing boats and 114 small prawn fishing boats. In addition, the continuous increase in the number of professional and amateur fishermen, non-compliance of some fishermen during the fishing ban periods are putting a burden on the fishery stocks and contributes to their depletion. Moreover, by catch along with the use of some banned fishing equipment by fishermen is causing harm to non-target marine species.
Ground Water Depletion	Despite a decreased reliance on groundwater for municipal purposes, ground water levels remain below biological safe limits and thus groundwater depletion is still considered the foremost pressure impacting agricultural biodiversity and inland water systems.

Threats and Pressures	Status and Trends
Alien Invasive Species	There has been an apparent increase in the number of invasive alien species causing increased direct and in-direct impacts. Despite the reduction in the number of House Crows *(Corvus splendens*) as a result of various national invasive species management and control programs, they are still seen to be present in residential areas. On the other hand, the number of Mynah birds have witnessed a steady rise, whilst the red palm weevil (*Rhynochophorus ferrugineus*) was seen to have expanded its area of occurance thus causing increased severe damage to native date palm plantations (Figure 1-9).
Pollution	The amount of sewage discharge into the marine environment has decreased as a result of re-using treated water for agricultural purposes. Moreover, sewage treated discharge has witnessed an increase in the quality of water as a result of the expansion in the establishment of sewage treatment plants nationally. In addition, Bahrain has not experienced any severe oil pollution between 2011-2014 despite the minor spills recorded from time to time. On the other hand, effects from industrial discharges and illegal dumping of municipal waste remain a challenge for biodiversity components.
Climate Change	No mass coral bleaching events, such as the one that occurred in 1998, were recorded between 2011 and 2014 despite some recorded cases of fish mortality due to a rise in sea temperatures. On the other hand, recent studies suggest it is possible that 83km^2 (11%) of the total land area will become inundated in the event of sea level rise by 0.3 meters by 2050 (Figure 1-10).

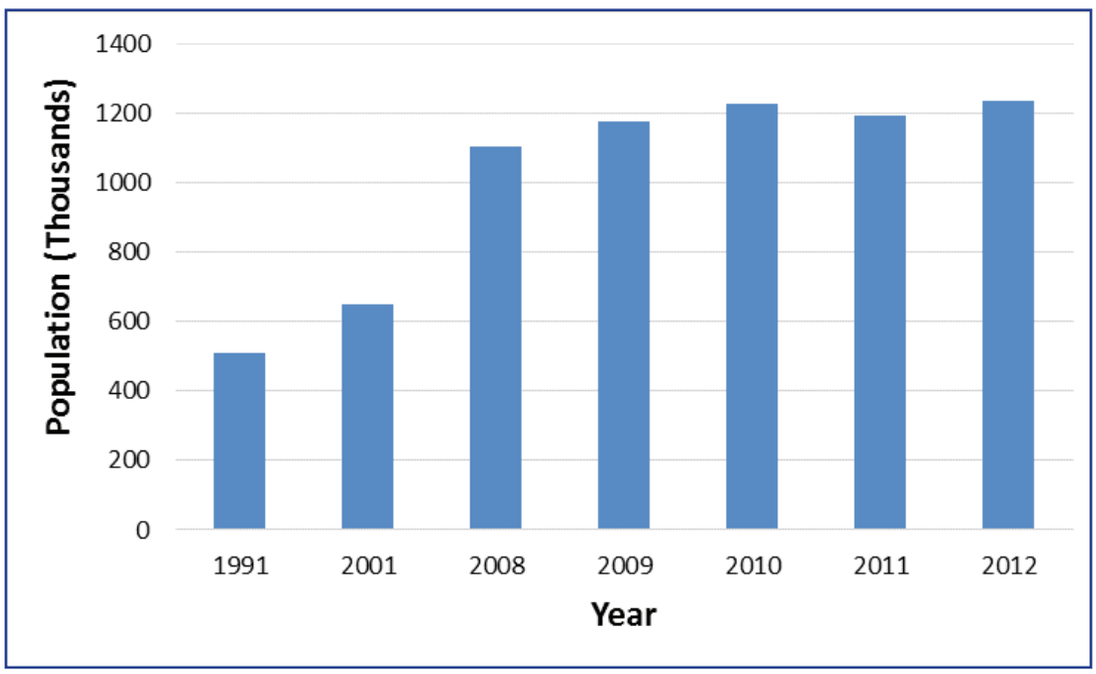


FIGURE (1-8): POPULATION INCREASE IN THE KINGDOM OF BAHRAIN BETWEEN 1991 AND 2012 (SOURCE: CENTRAL INFORMATICS ORGANISATION).

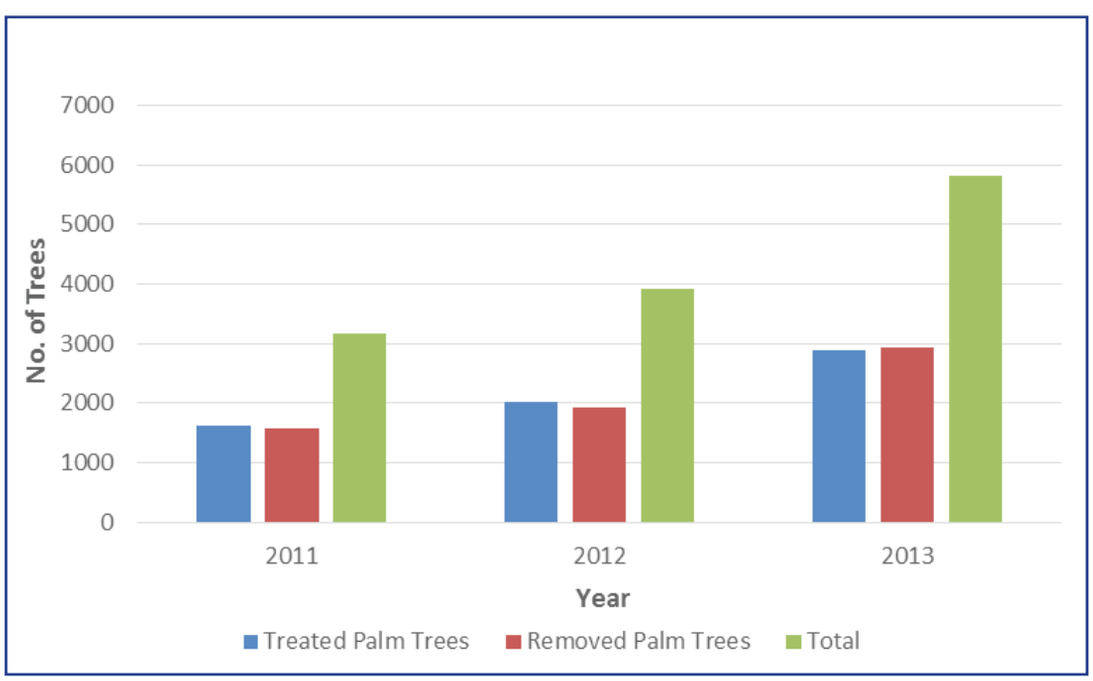


FIGURE (1-9): COMPARISON OF THE NUMBER OF PALM TREES INFECTED BY THE RED PALM WEEVIL THAT WERE TREATED OR REMOVED BETWEEN THE PERIOD 2011- 2013 (DIRECTORATE OF AGRICULTURAL AFFAIRS AND MARINE RESOURCES, 2014).

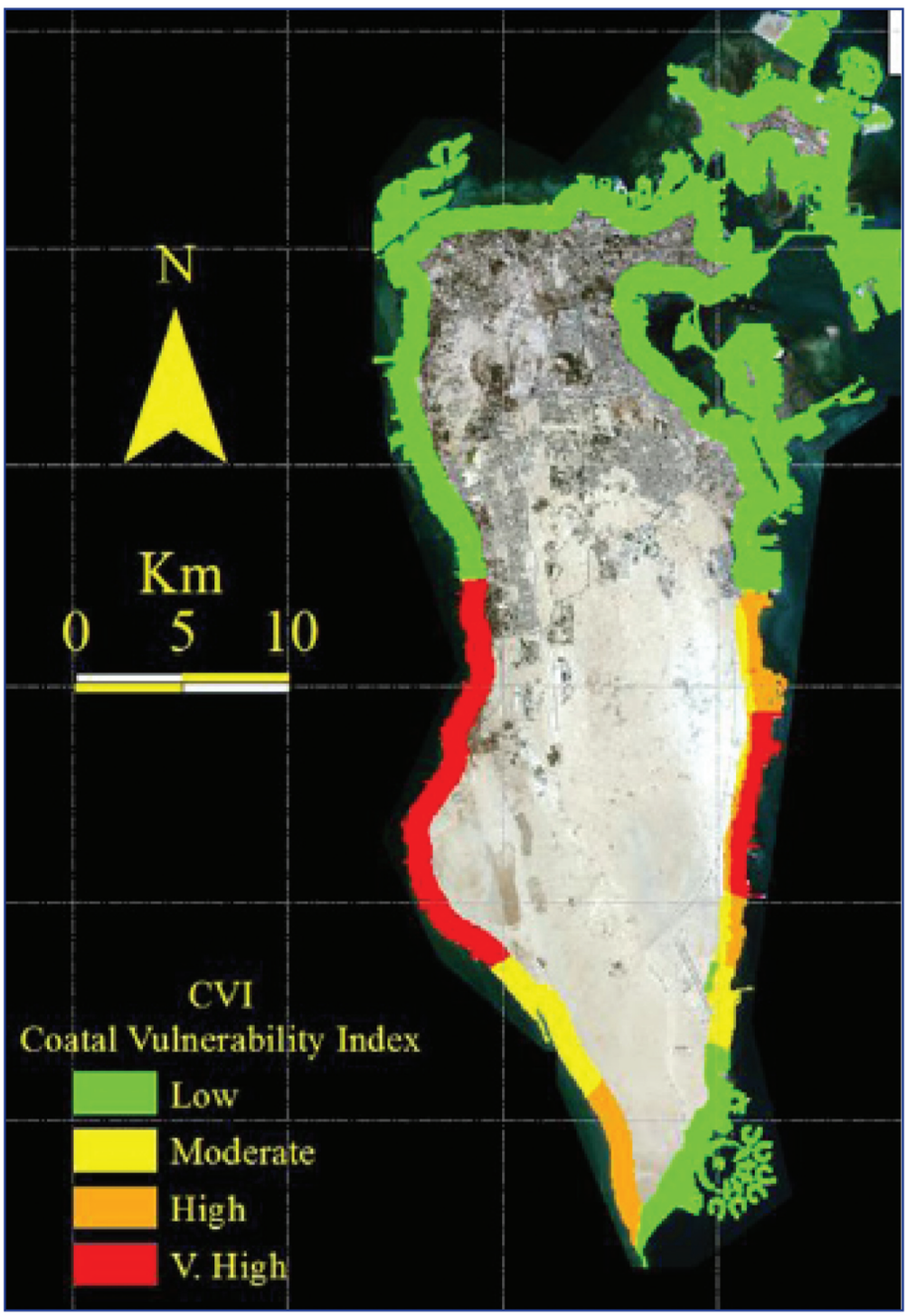


FIGURE (1-10): COASTAL AREAS THAT WILL POTENTIALLY BE IMMERGED BY SEA WATER IN THE EVENT OF SEA LEVEL RISE (SCE, 2012)

Chapter 2



Progress made in the Implementation of the National Biodiversity Strategy and Action Plan

Chapter 2

Progress made in the Implementation of the National Biodiversity Strategy and Action Plan

1. Introduction

This chapter reviews the efforts made in implementing the national targets embedded in the National Biodiversity Strategy and Action Plan (NBSAP) whilst highlighting the efforts made by the Kingdom of Bahrain to update these targets amidst national, regional and international developments. Following this, the chapter sheds light on efforts made by the kingdom to strengthen and integrate biodiversity conservation into national policies and initiatives within all sectors along with efforts made to implement the Convention.

2. The National Biodiversity Strategy and Action Plan (NBSAP)

2.1 National Biodiversity Targets

The Kingdom of Bahrain's first NBSAP was prepared at the end of 2007 in collaboration with the United Nations Development Programme (UNDP) and broad participation of national stakeholders across all sectors of society. The NBSAP consists of 15 main chapters and 5 appendices. Out of these, Chapter Nine defines nine main national targets reflecting the priorities for biodiversity at the national, regional and international level (Figure 2-1).

2.2 Implementing the NBSAP

The implementation of the various projects and programmes outlined in the NBSAP (2007) were reviewed in detail in the Fourth National Report of the Kingdom of Bahrain (please refer to Chapter Two of the Fourth National Report for more details). During the period 2011-2014, additional efforts were made in implementing those projects and programmes which are outlined briefly in Table (2-1).

TABLE (2-1) THE PROGRESS MADE TOWARDS IMPLEMENTING THE PROJECTS & PROGRAMMES INCLUDED IN THE NBSAP (2007) DURING THE PERIOD 2011 - 2014.

No.	Project / Programme	Progress of Implementation
1	Activating an institutional framework for the management of biodiversity in Bahrain	• In 2012, the National Biodiversity Steering Committee came into form and includes representatives from governmental and private sectors in addition to relevant academic and research institutions. • In 2013, the Directorate of Biodiversity was established under the umbrella of the Supreme Council for Environment and entrusted with following-up on biodiversity related issues, including the implementation of the CBD.
2	Strengthening public participation in biodiversity conservation	• The period 2011- 2014 witnessed an expansion in the contribution of civil society in the implementation of projects and programs related to biodiversity, including environmental awareness, surveys, rehabilitation and monitoring programs (see section 4 below). • Many awareness programs and activities were carried out between 2011 and 2014 in order to promote and strengthen public awareness regarding biodiversity issues. During that period, 51 lectures were conducted including all sectors of society (see chapter 3). • Civil society groups including local NGOs, societies and clubs contributed to organising various national events dedicated to marking the International Day for Biological Diversity on the 22nd of May 2014. • Members of the municipal councils and representatives of NGO's were invited to participate in meetings held to discuss the outcomes of Environmental Impact Assessments (EIAs) of projects with potential impacts on biodiversity. • Many schools have founded environmental clubs and organise regular activities aimed at promoting awareness amongst students. • In 2014, the Manama municipality in coordination with the Municipal Council, organized a clean-up and tree planting campaign on the coast of Abu Ghazal in celebration of tree week. Waste was removed from 500m of coastline and 120 trees were planted under the supervision of a number of specialists and inspectors.

No.	Project / Programme	Progress of Implementation
3	Adopting Strategic Environmental Impact Assessments as a tool for effective planning to conserve biodiversity	• A project proposal aiming to improve and strengthen national capacity building necessary to enable the SCE and other relevant stakeholders to apply strategic EIA's effectively to projects and policies with a strategic dimension has been prepared. • In 2014, a project proposal was prepared surrounding the application of strategic environmental impact assessments in studies on the accumulation of environmental impacts resulting from dredging activities in national territorial waters. • The inclusion of strategic environmental impact assessment principles in the spatial planning project implemented by the Ministry of Works, Municipalities Affairs and Urban Planning in order to determine patterns in land use in coastal and marine areas in Bahrain.
4	Enhancing environmental protection and management measures in declared protected areas	• On-going expansion of the Tubli sewage treatment plant in order to accommodate increased load flowing in and thus reduce the amount of waste water discharge into Tubli Bay. • On-going seasonal monitoring of a number of physio-chemical indicators in order to evaluate the quality of the marine environment in Tubli Bay and the extent of anthropogenic impacts on it, especially from the discharge of secondary and tertiary treated wastewater. • Issued Decision No. (70) of 2011 concerning the reclamation boundary line in Tubli Bay. • Issued Decision No. (4) of 2010 concerning the fishing regulations on the Hawar Islands and surrounding territorial waters. • In 2012, *Najwat* and *Hayr Bul Thamah*, *Hayr Shtayyeh* and *Hayr Bu Am'amah* (three oyster beds and one coral reef site covering an area twice the size of Bahrain island) were inscribed as a UNESCO World Heritage Site which includes *Hayr Bul Thamah*, a nationally protected area. • During 2014, a draft of an environmental management plan was prepared adopting an Ecosystem Based Approach for *Najwat* and *Hayr Bul Thamah*, *Hayr Shtayyeh* and *Hayr Bu Am'amah* (refer to Chapter Two, Section 4)
5	Establishment of an Environmental Trust Fund	• New laws and legislations have been added to the updated environmental law draft document which includes mechanisms for the collection of donations and financial compensations which shall be deposited into the Environmental Trust Fund. These funds shall be utilised in the implementation of environmental projects which aim towards rehabilitating sites that have been impacted by human activities. • Some companies and banks have made donations to the Wildlife Fund which have supported captive breeding programs of rare and endangered species of plants and animals.

No.	Project / Programme	Progress of Implementation
6	Activating the Principle of Environmental Compensation	• The private sector contributes by providing some financial resources which are directed towards the implementation of biodiversity conservation projects as part of voluntary initiatives aimed at environmental compensation. For example, between 2012 and 2014, Diyar Al Muharraq and Muharraq Sewage Treatment Plant (MSTP) made financial contributions towards the deployment a number of artificial reef units in selected marine locations. • Bahrain is currently collaborating with the rest of the GCC countries to prepare a comprehensive socio-economic valuation of coastal and marine ecosystems along the southern coastline of the Arabian Gulf. • A comprehensive study was prepared to assess the economic value of marine ecosystems in Bahrain's territorial waters in collaboration with the World Bank. It is hoped that the outcomes of the study will aid in calculating and determining the value of financial compensation required to be met by those responsible for projects with adverse effects on marine biodiversity (refer to Chapter Two, Section 4). • Two studies were conducted to determine the economic value of services provided by biodiversity and ecosystems in three pearl oyster beds and a coral reef are of prominent environmental and cultural importance (Chapter Two, Section 4).

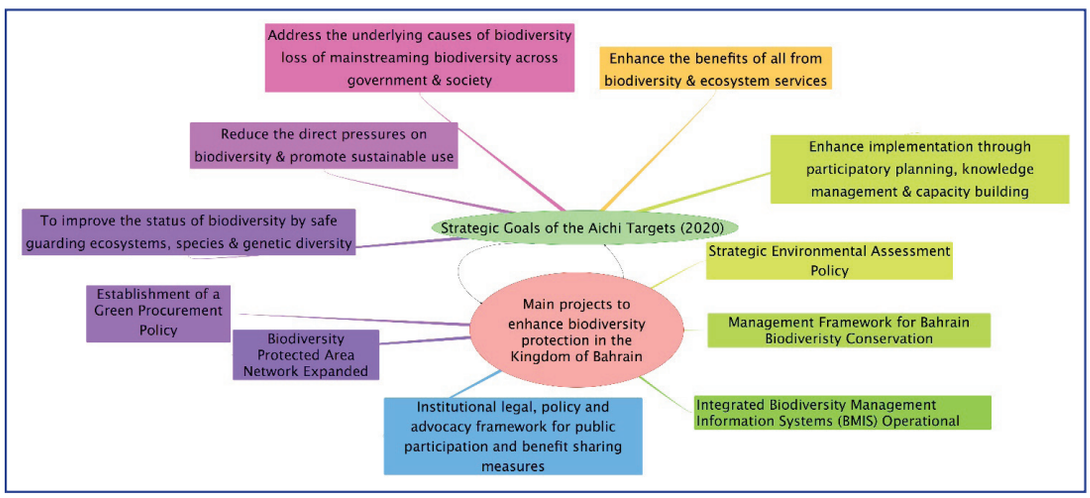


FIGURE (2-1): MAIN PROGRAMS REFLECTING NATIONAL PRIORITIES TO STRENGTHEN AND PROMOTE BIODIVERSITY CONSERVATION IN THE KINGDOM OF BAHRAIN IN LINE WITH THE 2020 AICHI TARGETS THROUGH LINKING THEM TO THE NATIONAL STRATEIC GOALS

2.3 Updating the NBSAP

Resolution No. (10/5) issued at the tenth Conference of Parties to the CBD urges parties to update and revise their NBSAPs to conform to the Strategic Plan for Biodiversity 2011-2020. With this in mind, the Kingdom of Bahrain has embarked on a project aimed at updating the National Biodiversity Strategy and Action Plan and preparing its Fifth National Report to the CBD which was launched in 2013 in collaboration with UNEP and financial support from the Global Environment Facility (GEF).

Under the framework of the above mentioned project, the first national stakeholder workshop was organised bringing together 48 participants from 33 institutions representing various governmental and private sector organisations, academic and research institutions in addition to members from civil society and media (Figure 2-2). During the workshop, stakeholders defined the methodologies to be adopted to update the NBSAP and outlined the aspirations that reflect national priorities for biodiversity, as well as adopted the implementation plan for the project.

Five working groups were formed during the workshop each consisting of representatives from various stakeholders. This was aimed at encouraging participants to share their views on selected themes covered in the NBSAP where each group addressed one of the following topics:

- The current status of biodiversity
- Threats being faced by biodiversity
- Biodiversity and ecosystem services
- Current polices, programs, projects and initiatives related to biodiversity
- Sectors and stakeholders involved in the conservation of biodiversity

The outcomes of the workshop were relied upon to give a preliminary idea of the available information and gaps that will aid in guiding the initial steps required for the implementation of this project. For example, one of the working groups who worked on addressing one of the five themes identified a total of 49 stakeholders from across various sectors related to biodiversity issues as shown in Figure (2-3).



FIGURE (2-2): THE FIRST (OPENING) NATIONAL WORKSHOP FOR UPDATING THE NBSAP OF THE KINGDOM OF BAHRAIN HELD FROM THE 2ND TO THE 3RD OF OCTOBER 2013 (SOURCE: SCE, 213)

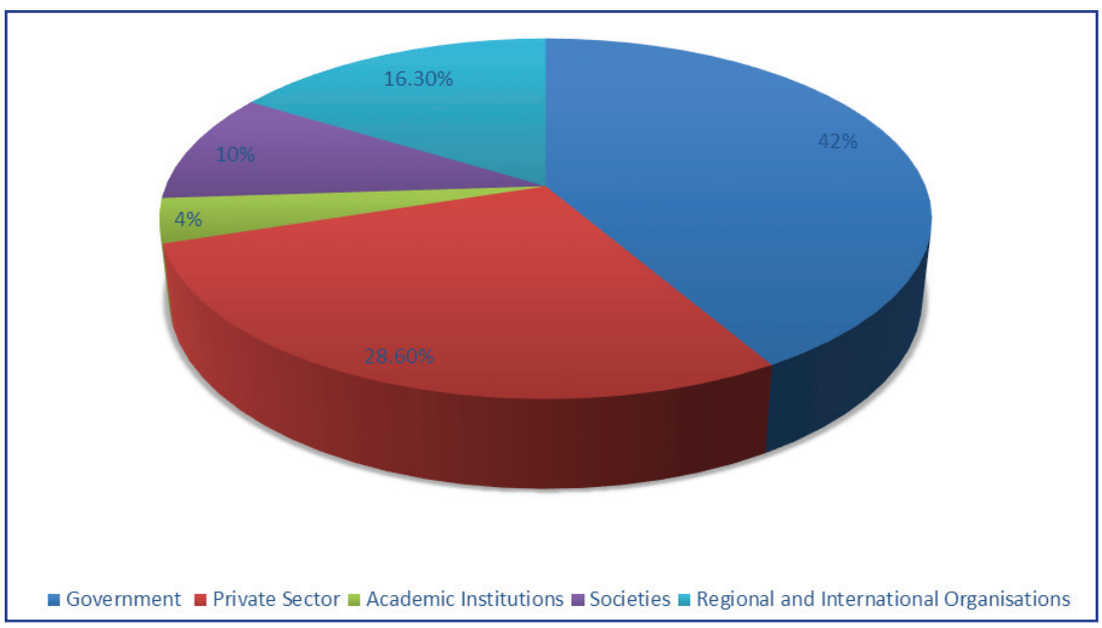


FIGURE (2-3): THE PERCENTAGE OF STAKEHOLDERS INVOLVED IN BIODIVERSITY ISSUES AS IDENTIFIED BY PARTICIPANTS AT THE FIRST NATIONAL WORKSHOP FOR THE NBSAP PROJECT (SOURCE: SCE, 2013).

In addition, a joint project was implemented by the SCE in collaboration with UNEP-ROWA which aimed at preparing a national biodiversity indicators and targets list for the Kingdom of Bahrain for the year 2020 in light of the Aichi Biodiversity Targets which come under the Strategic Plan for Biodiversity (2011 – 2020).

This witnessed the launch of the 'National Workshop on Biodiversity Indicators in the Kingdom of Bahrain' which took place from the 20th of November to the 1st of December, 2011. Fifty participants attended representing 12 institutions across various sectors including civil society (Figure 2-4). The outcomes of the workshop included the drafting of 90 biodiversity indicators related to the 20 Aichi biodiversity targets. The indicators were formulated in light of the strategic goals of various ministries and governmental agencies in Bahrain as well as the Aichi Biodiversity 2020 targets. Based on this list of national indicators, an updated and integrated list of national biodiversity indicators for the Kingdom of Bahrain will be adopted as part of the updating of the Kingdom of Bahrain's NBSAP project.



FIGURE (2-4): THE NATIONAL WORKSHOP ON BIODIVERSITY INDICATORS FOR THE KINGDOM OF BAHRAIN HELD FROM THE 29TH OF NOVEMBER TO THE 1ST OF DECEMBER, 2011 (SOURCE: SCE).

It is hoped that the updated NBSAP will focus on developing and implementing measures to limit threats faced by biodiversity by applying the 'Ecosystem Based Approach', in addition to stressing the importance of integrating a human dimension in conservation programs whilst linking related policies and activities to the needs of the local population. The updated NBSAP will be linked effectively to the strategies and plans of all sectors to strengthen the integration of biodiversity principles into their policies, projects, programs, activities and initiatives. Moreover, the document will include comprehensive programs to determine the goods and services provided by ecosystems and evaluate the economic value associated with these services, in addition to the environmental management of genetically modified organisms, access to genetic resources and the fair and equitable sharing of benefits arising from them.

3. Integrating Biodiversity Principles

Efforts made by the Kingdom of Bahrain to integrate biodiversity principles and considerations into national policies and sectoral projects are outlined in detail in Chapter Three of the Fourth National Report to the CBD (please refer to the report for more details). Continuing the same approach, additional efforts have been made in the period between 2011-2014 to integrate biodiversity conservation and promote sustainable use along with ensuring the fair and equitable sharing of benefits arising from genetic resources through policies, projects, activities and initiatives in relevant sectors. Moreover, several tool have been utilised to strengthen the integration of biodiversity principles, most notably the numerous strategies and action plans in various sectors, laws and legislation, strategic environmental planning, environmental impact assessment in addition to the establishment of national committees.

3.1 Integration at the Policy Level

Biodiversity principles have been integrated into many of the national strategies, action plans and initiatives across various sectors some of which include:

- Bahrain's Vision 2030
- Bahrain's Economic Strategy (2009-2014)
- National Strategy and Action Plan for Agriculture (2010 – 2015)
- Ministry of Finance's Green Policies
- National Strategy for Youth – Kingdom of Bahrain (Phase Two, 2011 – 2015)

A number of laws and legislations have been issued in Bahrain that contribute towards biodiversity integration in policies, programs and activities in relevant sectors (please refer to Chapter Three of the Fourth National Report for more details) (Table 2-2).

TABLE (2-2): LIST OF LEGISLATIONS ISSUED BETWEEN THE PERIOD 2011 - 2014 THAT CONTRIBUTE TOWARDS STRENGTHENING THE INTEGRATION OF BIODIVERSITY PRINCIPLES.

No	Legislations	Sector
1.	Decision No. (44) of 2011 concerning the establishment of the National Biodiversity Steering Committee	Institutional arrangements
2.	Decision No. (81) of 2011 concerning the formation of the National Biodiversity Steering Committee	Institutional arrangements
3.	Decision No. (1) of 2012 concerning the conservation of the *Abu Sayf* shark species	Fisheries
4.	Decision No. (41) of 2013 amending Decision No (12) of 2009 identifying dedicated shrimp fishing areas	Fisheries
5.	Decision No. (10) of 2013 concerning the ban on fishing, trading or selling of crabs	Fisheries
6.	Decision No. (1) of 2011 determining the transport period of horses under resolution No. (62) of 2010 concerning the transportation of horses	Animal Resources
7.	Decision No. (2) of 2011 determining the ban on importing cats and dogs from the Kingdom of Thailand	Trade
8.	Decision No. (70) of 2011 concerning the determination of the transboundary line for land reclamation in Tubli Bay	Urban
9.	Decision No. (72) of 2011 concerning the ban on importing horses from the Kingdom of Jordan	Trade

NB: The above is an unofficial version of translated laws, no official translation is currently available.

3.2 Integration at the Programmes, Projects and Activities Level

Similarly, there have been efforts to integrate biodiversity principals into projects, programmes and activities of relevant sectors, which are summarised in Table (2-3). Figure (2-5) outlines the sectors and institutions that have included or are in the progress of including biodiversity considerations into their policies, programs and projects.

TABLE (2-3): SELECTED EXAMPLES ILLUSTRATING THE INTEGRATION OF BIODIVERSITY CONSIDERATIONS INTO OTHER SECTORS.

No.	Sector	Efforts
1.	Fisheries	• Reduce the number of fishing permits by providing financial incentives for fishermen who want to give up their permits. • Impose a seasonal shrimping ban. • Releasing farmed fish fingerlings into the marine environment. • Construction and deployment of artificial reefs. • Strengthening monitoring of fishing activities. • Subjecting fish farms to periodic monitoring and observations.
2.	Agriculture	• Expanding the use of treated water for irrigation purposes. • Expand the use of vertical agriculture and hydroponics. • Conduct surveys to inventory exotic agricultural pest species. • Fight against exotic pests, in particular the red palm weevil. • Expanding the use of modern techniques in the cultivation of palm tissue. • Create collections of genetic varieties of palm trees, fruits and local crops.
3.	Culture	• Organising international workshops to highlight the importance of preserving cultural heritage related to biodiversity. • Implementing the 'pearling route' project that aims to revive heritage associated with pearl diving and pearl trade. • Inscribing two UNESCO World Heritage Sites in Bahrain that includes coastal and marine environments.
4.	Urban Development	• Integrating biodiversity considerations into the spatial planning process aimed at the urban master plan 2030. • Subjecting all proposed development projects to Environmental Impact Assessments. • Implementing environmental compensation programs for some dredging and reclamations projects.
5.	Industry	• Subjecting proposed industrial projects to implementing Environmental Impact Assessment. • Regular monitoring of the quality of industrial wastewater. • Expanding the use of clean and renewable energies. • Declaring sites with special biodiversity characteristics within the boundaries of major national companies as areas of importance.

No	Sector	Efforts
6.	Trade	• Subjecting imported goods to inspection to ensure the authenticity and validity of permits and certificates from the country of origin are in order. • Enforcing plant and animal quarantine requirements at ports. • Enforcing requirements aimed at reducing the impacts resulting from trade in rare and endangered species at ports. • Providing financial support for some of the projects directed at biodiversity conservation.
7.	Education and Research	• Integrating local and global biodiversity issues in the national curricula at all educational levels. • Conducting specialised studies aimed at assessing the status of protected areas and the contribution of the marine environment in mitigating climate change. • Conducting awareness-raising competitions directed at school students related to biodiversity issues. • Expand the implementation of school garden projects that aim at conserving local plants species.
8.	Media	• Alloted weekly columns in local newspapers that address environmental issues and highlight biodiversity issues. • Produce films about biodiversity in protected areas in Bahrain • Organise talk-shows on TV and radio which address biodiversity issues and topics.
9	Tourism	• Attracting a large number of visitors of all ages to Al Areen Wildlife Park and Reserve to see species reflecting the Arabian Peninsula's environment. In 2013, the number of visitors witnessed a rise from 94, 800 to 197, 330 (Source: Al Areen Wildlife Park and Reserve). • Organise regular trips to Hawar Island protected area that hosts a hotel and chalets. • Launched a walkway and tourism facilities at Dohat Arad Protected Area.

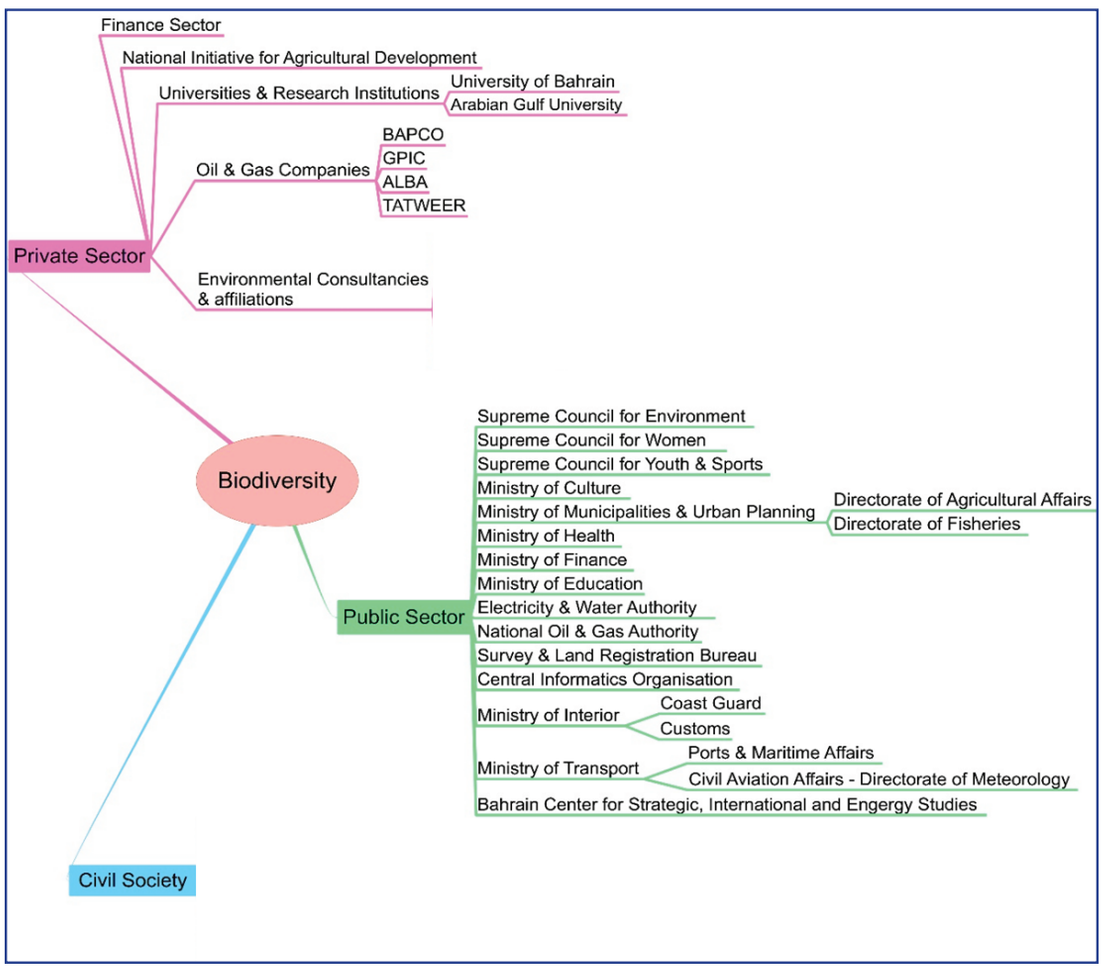


FIGURE (2-5): SECTORS AND INSTITUTIONS THAT HAVE INCLUDED OR ARE IN THE PROCESS OF INCLUDING BIODIVERSITY CONSIDERATIONS TO THEIR POLICIES, PROGRAMS AND PROJECTS.

4. |Implementation of the Convention on Biological Diversity (CBD)

During the period 2011- 2014, the Kingdom of Bahrain has put in many efforts in order to ensure the implementation of the Convention at the national, regional and international level, examples of these are reviewed in Tables (2-2) and (2-3). Moreover, Bahrain has given particular importance to the implementation of some themes that are considered as high priority by the CBD, some of which are reviewed in this chapter in the form of case studies, with the aim of benefiting from the outcomes of these experiences.

Case Study (1): Applying the Ecosystem Based Approach

The Ecosystem Based Approach (EBA) is considered one of the leading initiatives launched by the CBD and is noticeably popular at the international level. Between the period of November 2012 and March 2014 a project, which is considered the first of its kind in the region and aimed at including the EBA in strategies, plans and legislation, was implemented by the SCE and the Ministry of Culture of the Kingdom of Bahrain, in collaboration with UNEP-ROWA.

The project included a study centered on applying the EBA to strengthen environmental protection in *Najwat* and *Hayr Bul Thamah, Hayr Shtayyeh* and *Hayr Bu Am'amah* which were inscribed as a UNESCO World Heritage Site in 2012. In this context, four national stakeholder workshops were held in addition to conducting a number of specialized studies on the principles of EBA, the most important of which was a study to identify relevant stakeholders and analyze expected roles in conservation programs. Moreover, efforts were made to evaluate the economic value of ecosystem services provided by the study area as well as to identify the communities who benefit from the direct services provided by the marine resources in the region. The project resulted in the production of the environmental management plan for *Najwat* and *Hayr Bul Thamah, Hayr Shtayyeh* and *Hayr Bu Am'amah* which was prepared through applying the Ecosystem Based Approach.

The project succeeded in attracting a wide range of stakeholders representing governmental institutions, the private sector and civil society organisations who actively participated in workshops and contributed towards conducting the necessary studies in addition to the collection of information (Figure 2-6).



FIGURE (2-6): STAKEHOLDERS AT ONE OF THE NATIONAL WORKSHOPS THAT WAS ORGANIZED WITHIN THE FRAMEWORK OF THE ECOSYSTEM BASED APPROACH PROJECT (SOURCE: SCE)

Study (2): Highlighting the Economic Value of Ecosystem Services

The decisions made by the Conference of Parties to the CBD stresses the importance of highlighting the economic value of ecosystem services provided by biodiversity in order to convince decision makers and the public of the importance of conserving and preserving biodiversity. In support of this approach, the SCE in collaboration with the World Bank, conducted a study highlighting the economic consequences and loss (estimated financial value) of the deterioration observed in coastal and marine environments within Bahrain's territorial waters between the period between 2011 and 2013. Similarly, Bahrain has also conducted a study in collarboation with UNEP-ROWA regarding the economic value of ecosystems services provided by *Najwat* and *Hayr Bul Thamah*, *Hayr Shtayyeh* and *Hayr Bu Am'amah*. The study results indicated that these ecosystems contribute between $3.4 – 227.1 billion/year (UNEP-ROWA, 2013). In support of these the results, the SCE in collaboration with the Ministry of Culture, conducted a comprehensive survey to identify all stakeholders benefitting directly from the use of resources provided by *Najwat* and *Hayr Bul Thamah, Hayr Shtayyeh* and *Hayr Bu Am'amah*. During the period of this study, it was found that raising awareness of some stakeholders involved directly within the field of biodiversity contributes effectively to the decision-making process.

It is hoped that these studies, which are considered as the first of their kind in Bahrain, shall support the national decision-making process with up-to-date scientific information that highlights the economic and social consequences resulting from the destruction of biodiversity.

Case Study (3): Engaging Civil Society

The CBD stresses on the importance of adopting a participatory approach in facing issues related to biodiversity and enabling the involvement of civil society in conservation programs. In this light, the period of 2011 – 2014 has witnessed an expansion in the participation and involvement of local communities – e.g. local clubs, associations, societies, youth movements and members of civil society – in projects, programs and initiatives related to biodiversity conservation as outlined in Table (2-4) and Figure (2-7).

TABLE (2-4): SELECTED EXAMPLES OF CIVIL SOCIETY REPRESENTATIVES AND THEIR CONTRIBUTIONS DURING THE PERIOD 2011 – 2014 IN THE IMPLEMENTATION OF PROJECTS, PROGRAMS AND ACTIVITIES RELATED TO BIODIVERSITY CONSERVATION IN BAHRAIN.

Group	Institution	Key Efforts
Local Societies	Barbar Club	The club organises regular awareness raising activities, such as a lecture that was organised in 2014 highlighting the importance of heritage and history in the coastal village of Barbar.
	Municipal Councils	Many beach clean-up campaigns were held by schools and the active participation of the municipal councils.
NGOs	Bahrain Environment Society	In 2014, a marine survey was held to determine the different types of marine habitats present in the territorial waters of the Kingdom of Bahrain.
	Shark Conservation Society (UK)	In 2012, the shark conservation society conducted a comprehensive survey to identify shark species existing in Bahrain's territorial waters and local markets.
	Bahrain's Environment Friends Society	In 2014, the Environment Friends' Society held a workshop on marine turtles and the rehabilitation of injured turtles.
	Natural History Society of Bahrain	Members of this society continue to implement a bird ringing program that is considered to be the most comprehensive program of its type in the Arabian Gulf.
Youth	Arab Youth Climate Movement – Bahrain Chapter	In 2014, the movement conducted a study on the socio-economic aspects of *Najwat* and *Hayr Bul Thamah*, *Hayr Shtayyeh* and *Hayr Bu Am'amah*.

Case Study 4: Rehabilitation Programs

During the period 2011-2014, Bahrain implemented several rehabilitation projects at impacted sites, which is an initiative that is considered important within the CBD. For example, the SCE conducted a project in collaboration with the Ministry of Works, Municipalities Affairs and Urban Planning to cultivate and plant mangrove seedlings in order to rehabilitate and increase the green cover on degraded coastal areas. In 2013, the project succeeded in planting more than 1500 mangrove seedlings in Tubli Bay and Dohat Arad (Figure 2-8).

On the other hand, the Directorate of Fisheries at the Ministry of Works, Municipalities Affairs and Urban Planning has implemented a project aimed at increasing fish national stocks by deploying artificial reef units with the hope that they will contribute to the recovery of fish stocks to safe biological levels in Bahrain. The project was launched in 2012 after conducting a number of intensive surveys to identify suitable sites for the artificial reefs before the deployment of approximately 2,500 units (reef balls) in six key locations. In addition, fingerlings of commercially farmed fish were released around the artificial reef areas with the aim of reviving fish stocks in those sites.



FIGURE (2-7) SELECTED EXAMPLES OF CIVIL SOCIETY'S CONTRIBUTIONS TO BIODIVERSITY CONSERVATION: (A) MARINE SURVEY CONDUCTED BY BAHRAIN ENVIRONMENT SOCIETY; (B) A MARINE SURVEY CONDUCTED BY THE SHARK CONSERVATION SOCIETY; (C): ONE OF THE AWARENESS LECTURES ORGANIZED BY BARBAR CLUB ABOUT CULTURAL AND SOCIAL VALUE OF BIODIVERSITY TO THE COAST OF BARBAR VILLAGE; (D) SOCIO-ECONOMIC STUDY CONDUCTED BY THE ARAB YOUTH CLIMATE MOVEMENT (AYCM) – BAHRAIN CHATPER.



FIGURE (2-8): COLLECTING MANGROVE SEEDS AND PLANTING SEEDLINGS IN THE COASTAL AREAS OF TUBLI BAY AND DOHAT ARAD IN 2013 (SOURCE: SCE).

5. Regional and International Cooperation

Overcoming the challenges facing biodiversity requires effective international cooperation, especially with regard to cross-border / transboundary issues. In support of this, Bahrain is keen to strengthen its cooperation with other countries under the umbrella of bilateral, regional and international cooperation to effectively address biodiversity issues. In order to achieve this objective, Bahrain has entered into bilateral agreements with some other countries in addition to having joined and ratified a number of multilateral conventions on environmental protection which usually include biodiversity considerations in their scope (see Table 2-5). In addition, Bahrain is collaborating with a number of regional and international organisations in order to strengthen environmental management of biodiversity. The most prominent of these include: the United Nations Environment Programme - Regional Office of West Asia (UNEP-ROWA), the United Nations Development Programme (UNDP), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the United Nations Food and Agriculture Organisation (FAO), the Arab League, the Gulf Cooperation Council (GCC), the Regional Organisation for the Protection of Marine Environments (ROPME), the Regional Commission for Fisheries (RECOFI), the Arab Centre for the studies of Arid Zones and Dry Lands (ACSAD) (please refer to Chapter Three of the Fourth National Report for further detailed information about the regional and international bilateral cooperation that Bahrain contributes to in relation to biodiversity issues).

TABLE (2-5): A LIST OF SELECTED REGIONAL AND INTERNATIONAL CONVENTIONS AND PROTOCOLS ADDRESSING BIODIVERSITY WHICH THE KINGDOM OF BAHRAIN HAS JOINED & RATIFIED.

No.	Convention or Protocol	Year Joined
1	The Kuwait Regional Convention for Cooperation on the Protection of Marine Environments from Pollution	1978
2	The Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf	1990
3	The Protocol on the Regulations of Marine Transport and Disposal of Hazardous Waste and Other Waste Across Borders	2001
4	The Protocol for the Protection of Marine Environments resulting from Land-based Sources of Pollution	1990
5	The Convention on the Conservation of Wildlife and their Natural Habitats in GCC Countries	2002
6	The Agreement on the Establishment of the Regional Commission of Fisheries (RECOFI)	2002
7	The Convention Concerning the Protection of the World Cultural and Natural Heritage of 1972	1991
8	The Convention on Wetlands of International Importance, especially as Waterfowl Habitats (RAMSAR) of 1971	1997
9	United Nations Framework for the Convention on Climate Change (UNFCCC) of 1992	1994
10	Kyoto Protocol to the UNFCCC	2005
11	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa of 1994	1997
12	The International Convention for the Protection of New Varieties of Plants	2005
13	Cartagena Protocol on Biosafety to the CBD	2011
14	The Convention on International Trade of Endangered Species (CITES)	2012
15	Law No. (4) of 2012 to approve the ratification of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure	2012

Chapter 3



Progress Towards the 2020 Aichi Biodiversity Targets and Contributions Towards the 2015 Targets of the Millennium Development Goals

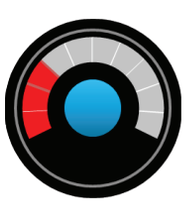
1. Introduction

This chapter demonstrates the efforts made by the Kingdom of Bahrain to ensure that progress is made towards achieving the 2020 Aichi Targets for biodiversity which are incorporated in the Strategic Plan for Biodiversity (2011-2020). It further explains the various national efforts made to contribute to the 2015 goals of the Millennium Development Goals (MDGs) specifically to those related to biodiversity.

2. Progress Made Towards Achieving the 2020 Aichi Targets

TABLE (3-1) NATIONAL EFFORTS AND PROGRESS MADE BY BAHRAIN TOWARDS ACHIEVING EACH OF THE AICHI TARGETS FOR THE PERIOD 2011 – 2014.

National Efforts	Status and Trends
By 2020, at the latest, people are aware of the values of biodiversity the steps they can take to conserve and use it sustainably.	
• The period 2011-2014 witnessed increased participation by civil society in implementing projects and programs related to biodiversity, some of which include environmental awareness programs, conducting surveys, restoration projects and monitoring programs (refer to Chapter 2, Section 4). • In this time, approximately 51 awareness lectures were conducted along with other activities (e.g. workshops and seminars) in the aim of raising people's awareness of the values of biodiversity and the threats faced. • In 2014, a documentary was produced to shed light on unique biodiversity present in the Kingdom of Bahrain. • Numerous publications were printed and distributed to schools and the general public in the form of books, magazines and brochures on biodiversity in Bahrain. • Within the first half of 2014, over 30 articles related to biodiversity issues in Bahrain have been published in the daily local newspapers. • The organizing committee of the Bahrain International Garden Show organises this event annually whereby it has proven to be very popular amongst members of the public, tourists in addition to the public and private sectors. The show also aims to spread awareness on plant diversity to enhance food security through displaying samples of local plants, various agricultural techniques along with hosting competitions suited to all ages of the public (Figure 3-1).	It is thought that the status, direction and projected scenario in achieving this goal is highly positive. 
By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and plann ing processes and are being incorporated into national accounting, as appropriate, and reporting systems.	
• Numerous efforts have been made to enhance the integration of biodiversity values into national policies, programs, projects, activities and sector initiatives through the utilisation of various tools such as strategic planning processes in sectors, legislations, environmental planning strategies, environmental impact assessment strategies and national committees (refer to Chapter 2, Section 3).	It is thought that the status, direction and projected scenario in achieving this goal is positive. 

National Efforts	Status and Trends
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.	
• Economic incentives are given to support handicrafts produced using materials derived from palm trees in the aim of conserving cultural and heritage practices related to biodiversity. • Economic incentives and support are also given to farmers to encourage them to utilise modern methods of farming. • Economic incentives are further given to fishermen who are willing to abandon their fishing permit in an effort to limit the growing pressure on marine fisheries.	It is thought that the status, direction and projected scenario in achieving this goal is neutral. 
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.	
• An annual shrimp fishing ban season is put into force during the breeding season in national waters (15 March to 15 July – Source: Legislation and Legal Opinion Commission, 2014). • Restrictions are set on the export of fisheries. • Encouraging fishermen to catch and export crustaceans and mollusks of low economic value in the local markets in an effort to lower the growing pressure on various finned fish species of high economic value. • Encouraging citizens and expats to consume varied species of fish to lower the pressure on major fish groups that are of high economic value. • Implement restrictions on the number of fishing permits in an effort to lower the pressure caused by fishing activities. • Strengthening marine monitoring to ensure that fishermen are utilizing non-destructive fishing gear and are abiding by the law during the fishing ban season. • Cooperation with neighbouring countries in the Arabian Gulf to strengthen the regional sustainable management of fisheries (e.g. Mackerel fisheries) • The adoption of an initiative that incorporates the encouragement of utilizing the mangroves present in Ras Sanad as a location for sustainable eco-tourism. • Expansion of using treated sewage water for irrigation purposes in farms and gardens.	• The constant increase in the amount of yearly fisheries landings in addition to increased fishing effort indicates that the fish stock is outside the biological safe limits (refer to Chapter 1, Sections 2-3 and 2-4). • The increase in landing size for jellyfish following the policies which encourage the export of species of low economic value from 130.2 kg in 2004 to 1381.5 kg in 2013 which amounts to a 961.05% increase. 

National Efforts	Status and Trends
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.	
• The implementation of the mangrove planting project in the aim of rehabilitating deteriorated mangrove areas in addition to increasing the green area in the Kingdom of Bahrain (refer to Chapter 2, Section 4). • The expansion in the construction of artificial reefs accompanied by the launch of initiatives for coral propagation in an effort to rehabilitate destroyed and degraded coral reefs. • The launch of initiatives to rehabilitate degraded sea grass beds due to trawling activities.	Despite the improvement noted on the current status of mangroves, no significant positive improvement was observed on the status and direction of coastal and marine habitats due to the increasing pressures resulting from urban development. 
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.	
• Efforts are similar to that stated under Target 4 above. • During the period (2012-2014), an ambitious project was launched adopting the Ecosystem Based Approach in the Kingdom of Bahrain which incorporates preparing an environmental management plan for a UNESCO World Heritage site which includes three important oyster bed sites and a coral reef (refer to Chapter 2, Section 4).	Similar to Target 5 above. 

National Efforts	Status and Trends
By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	
• Integrating the requirements of conserving the green belt that includes the palm groves in the urban planning process. • Economic incentives and technical support are given to farmers to strengthen sustainable farming activities whereby technical support is extended as consultations in restoring and rehabilitating degraded lands e.g. saline lands. • Ensuring fish farms are subjected to regularly monitoring programs. • Expanding the use of treated sewage water for irrigation purposes in the aim of limiting the use of groundwater. In 2014, the number of farms connected to the treated sewage water network has reached 410, which represents 75% of the total number of farms (Directorate of Agriculture Affairs and Marine Resources, 2014). • The registration of fertilisers and soil improves in an effort to limit any harm to the soil whereby, the number of certificates issued in 2011-2014 has reached a total of 300 certificates (Directorate of Agriculture Affairs and Marine Resources, 2014). • Implementing regular programs to measure agricultural soil salinity and acidity, whereby, between January to May 2014, 20 farms have been surveyed and a total of 116 samples were analysed (Directorate of Agriculture Affairs and Marine Resources, 2014).	• The number of fish farms has increase by a total number of 2 new farms since 2010. • It is thought that the status, direction and projected scenario in achieving this goal is positive. 
By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
• On-going implementation of a project which aims to increase the receiving capacity of Tubli Sewage Treatment Plant. • The construction of a temporary sewage treatment plant inside Tubli Sewage Treatment Plant to enhance the quality of treated water. • The opening of Muharraq Station for Sewage Treatment that will contribute towards lowering the load on the Tubli Sewage Treatment Plant. • The continuation of the seasonal marine environment quality monitoring program which is present opposite to the Tubli Plant effluent outflow executed by the Supreme Council for Environment. • The continuation of the periodic monitoring program executed by the Supreme Council for Environment to assess the quality of treated sewage water expelled into the sea. • The formation of a national committee to monitor and study the phenomena of red tides within national waters. • The continuation of the monitoring program for deceased fish and marine life by the Supreme Council for Environment in collaboration with academic institutions and civil society.	• The improvement in the quality of treated sewage water drained into the marine environment. • The concentration of dissolved oxygen in the waters surrounding the Tubli Plant area remains low. • Records for some of the red tide incidents equal that to the year 2010. 

National Efforts	Status and Trends
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.	
• Monitoring of borders and exit points to ensure the entry of invasive species into the country is detected (especially poisonous and predatory species). • Continuation of the House Crow (*C. splendens*) monitoring and management program in residential and agricultural areas. • Increasing the efforts of the red palm weevil (*R. ferrugineus*) pest management program executed by the Directorate of Agricultural Affairs and Marine Resources following legislative, mechanical, cultural chemical and behaviour control which includes efforts related to monitoring, surveying, pest control and treatment. Examples of the most prominent efforts implemented during 2011-2014 include (Directorate of Agricultural Affairs and Marine Resources, 2014): - The survey of 1815 farms and analysis of 738,062 palm trees to ensure that they are not infected by the red weevil. - Preparation of a detailed map illustrating the geographic spread of red weevil infections in Bahrain. - The treatment of 14,364 infected trees (either through pest control or removal – refer to Chapter 1, Section 5). - The distribution of 3,972 free red palm weevil pheromone traps and 12,023 pheromones on farmers (Figures 3-2). - Conducting two workshops on palm tree services and mitigating the red palm weevil pest. • Implementation of a project in collaboration with the International Research Center for Research in Dry Areas (ICARDA) that aims to create an inventory for palm pests which includes agricultural insects whilst dividing them based on their economic importance in dry areas.	• Decrease in House Crows numbers despite its presence in many residential neighbourhoods and agricultural lands. • Increase in the number and geographical extent of the common Mynah bird (*Acriclotheres tristis*). • The increase in the geographical extent of the red palm weevil (*R. ferrugineus*) and its economic, environmental impacts in the northern and western regions of the northern governorate. • Monitoring of a total of 61 agricultural pest species that impact date trees in the Kingdom of Bahrain (Directorate of Agricultural Affairs and Marine Resources, 2014). 
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.	
• Implementation of a strategic project aiming to revive reef fish stock by lowering the pressures on natural coral reefs through creating artificial reefs. • Launch of an initiative to restore degraded coral reefs through coral propagation. • The integration of biodiversity values in climate change mitigation policies, programs and activities especially those relating to assessing the sensitivity and adaptation rates of marine and coastal ecosystems to climate change.	Although indications of some encouraging signs were noted however, the general status of coral reefs in Bahrain remains critical. 

National Efforts	Status and Trends
 By 2020, at least 17 per cent of terrestrial and inland water, 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 wider landscapes and seascapes.	
• The declaration of *Najwat* and *Hayr Bul Thamah, Hayr Amamah* and *Hayr Shtayyah* as a UNESCO World Heritage Site covering a total area of approximately 1638.23 km^2. • Implementing the Ecosystem Based Approach in preparing the Environmental Management Plan for *Najwat* and *Hayr Bul Thamah, Hayr Amamah* and *Hayr Shtayyah* (refer to Chapter 2, Section 4). • The addition of MPA values in area planning projects for coastal and marine areas based on the 2030 Urbanization Plan.	• The increase in the number of protected areas by one which equals to an increase by 16.66% in comparison to the year 2010. • No change was seen in the area of in land waters and terrestrial land located within declared protected areas. • Stabilisation in the good status of Hawar Islands, Al Areen Nature Reserve, Dohat Arad and Mashtan Island in comparison to the no signs of improvements seen in Tubli Bay and Reef *Bul Thamah*. 
 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.	
• The continuation in implementing regular breeding programs in families from various rare and endangered species such as the Arabian Reem Gazelle (*Gazella subgutturosa marica*) and the Arabian Oryx (*Oryx leucoryx*), the marsh frog (*R. ridibunda*) and the caspian turtle (*M. caspica*). • Implementation of the monitoring of dead marine turtles which include periodic surveys and fishermen surveys to estimate the number of dead turtles in Bahrain. • Efforts were made by civil society organisations to rehabilitate a number of injured marine turtles (Chapter 2, Section 4).	• Stabilisation of the status of the Arabian Reem Gazelle (*G. subgutturosa marica*) and the Arabian Oryx (*Oryx leucoryx*) as a result of protection and breeding programs. • No improvements were noted in the numbers of marsh frogs (*R. ridibunda*) and caspian turtles (*M. caspica*). • Fishing activities utilising nets continue having negative impacts on marine turtles and mammals. 

National Efforts	Status and Trends
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.	
• The continuation of the "National campaign for planting a palm tree in every house" whereby a total number of 3752 saplings belonging to 23 varieties were distributed amongst 4376 homes through-out the country. • The analysis of the genetic make-up of pure Arabian horses whilst maintaining documented records of relative species. In addition to the organisation of periodic speed races and competitions for pure Arab thoroughbreds on various aspects. • Encouragement of breeders to acquire and breed native pure Arab thoroughbreds. • Bahrain has taken special interest in conserving the purity of Arab thoroughbreds whereby the royal stables for Arab thoroughbreds comprises approximately 20 stalls. • Technical support is given to farmers to encourage them to grow local and native species of palm trees in addition to breeding palm species of high economic value using tissue culture. • The establishment of a genetic center which consists of a botanical garden where a total number of 200 trees belonging to 19 species of native and local species of plants are grown in addition to those that have adaptation to the country's harsh environment. • Free veterinary services are given to breeders to aid them in caring for good genetic breeds of farm animals (e.g. cows, goats, chickens etc).	• The status of pure Arab thoroughbreds remains good and these species continue receiving high levels of protection. • Species of palm trees continue facing increasing threats due to the decrease of green spaces caused by urbanisation in addition to the introduction of alien species. 

National Efforts	Status and Trends
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.	
• Two studies were conducted during 2011-2014 to determine the services provided by ecosystems and various biodiversity aspects in the northern oyster beds and coral reefs of Bahrain (refer to Chapter 2, Section 4). • In 2013, a specailised study was undertaken to assess the economic impacts resulting from the degradation of coastal and marine habitats in Bahrain's territorial waters (refer to Chapter 2, Section 4). • Efforts are being made to halt the overexploitation of groundwater, which is, believed to be the main reason for the extinction of freshwater spring's habitats. These efforts include: - The expansion in the desalination of sea water to provide water for domestic and industrial use. - The expansion of utilising sewage treated water for irrigation purposes in farms, roads and public gardens. • The opening of Muharraq Sewage Treatment Station in 2014, which is estimated to contribute towards tripling the increase in production of treated water by 100000 m^3/day.	The increase in participation of civil society and NGOs in implementing biodiversity related projects (refer to Chapter 2, Section 4). 
By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has 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.	
• The launch of a mangrove planting project which involved planting 1004 seedlings during 2013-2014 in select coastal areas in Tubli Bay and Dohat Area with the aim of rehabilitating degraded mangrove sites in addition to increasing the vegetation cover within coastal areas (refer to Chapter 2, Section 4). • Increase in planting campaigns in residential and public areas and roads therby contributing towards mitigating the concentration of greenhouse gases. • The continuation in implementation of the "National campaign for planting a palm tree in every house" whereby free palm saplings are distributed among citizens (refer to Target 13). • In 2014, a comprehensive scientific study was launched to investigate the degree of carbon sequestration in marine ecosystems within Bahrain's territorial waters.	It is thought that the status, direction and projected scenario in achieving this goal is highly positive. 

National Efforts	Status and Trends
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.	
• Imposing restrictions on importing genetic resources to protect the rights of exporting countries. • The Kingdom of Bahrain allows other countries access to its genetic resources including agricultural and marine resources such as vegetables and commercial fisheries based on certain restrictions. • Conducting a study to assess the benefits gained by the Kingdom of Bahrain on joining the Nagoya Protocol which included consulting national relevant stakeholders. • Bahrain contributes along-side neighboring countries in the GCC in capacity building on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation.	Bahrain has still not signed or ratified the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation under the CBD. However, Bahrain is expected to sign and ratify this protocol shortly. 
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.	
• The formation of the Directorate of Biodiversity following Decision No (44) of 2012 that oversees the implementation of the NBSAP. • The launch of the revision of the NBSAP project in collaboration with the United Nations Environment Programme (UNEP) and the support of the Global Environment Facility (GEF).	It is thought that the status, direction and projected scenario in achieving this goal is highly positive. 
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.	
• Implementation of the "Pearl Route" Project which aims to revive the national heritage that accompanied pearling and its trade which was known to be the heart of the cultural and economic life for centuries in Bahrain (refer to Chapter 2, Section 4). • Encouraging the use of traditional fishing methods (such as *hadrahs* and *gargoors*). • Numerous efforts are being made to conserve the inherited culture accompanying palm trees. The most significant being the establishment of a permanent handicrafts center for palm products. • The expansion of growing local plants that are used in traditional medicine in the medical botanical garden situated in Al Areen Nature Reserve.	• The increase in the number of participants in projects related to reviving national heritage accompanying pearl diving and trade (refer to Chapter 2, Section 4). • The increase in participation of civil society in biodiversity projects bringing together local NGOs, youth groups and movements. 

National Efforts	Status and Trends
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.	
• The Central Informatics Organisation has an electronic portal that can access a national database which includes data on habitat maps and marine species in Bahrain. • The Ministry of Municipalities and Urban Planning maintains a comprehensive database which includes statistical information on agriculture and fisheries which is updated regularly. • Specialists at the University of Bahrain and the Arabian Gulf University conduct regular studies on various biodiversity aspects in Bahrain. • The Supreme Council for Environment possesses a database updated using GIS which outlines the geographic extent of marine, terrestrial and anthropogenic impacts on biodiversity (e.g. dredging and reclamation activities, camping activities, factories outfalls and quarries). • The Kingdom of Bahrain contributed in the implementation of the United Arab Emirates' project surrounding the Atlas of habitat and protected areas in the Arabian Peninsula. • The appointment of the latest technologies by the Directorate of Agricultural Affairs and Marine Resources some of which includes: distance consultations, genetic engineering applications and nanotechnology. The number of farms adopting hydroponic farming has reached 10 by 2014 (Directorate of Agricultural Affairs and Marine Resources, 2014). • The period 2011-2013 has witnessed an increase in the number of companies and farmers who have adopted the method of farming using hydroponics hence increasing the area of land using this technique. • The Supreme Council for Environment utilizes the latest techniques in its monitoring programs, water quality assessment in addition to inspection of industrial activities programs.	• Despite the efforts made, no central national database exists dedicated to biodiversity in Bahrain. • In comparison to 2010, no improvements were recorded in the transfer of new technology related to biodiversity in Bahrain. 
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 resource needs assessments to be developed and reported by Parties.	
• Completion of an updated national legislation draft which frames the establishment of an environmental fund. • Completion of a draft legal legislation document illustrating compensation mechanisms for dredging and reclamation projects. • The private sector contributes through financial donations to aid the implementation of projects involving biodiversity protection which includes captivity breeding programs. • Financial aid is given to farmers and garden owners through services such as the analysis of farm soil and sand samples whereby a total number of 3313 samples were analysed between January 2010 and May 2014 as for the number of soil samples taken reached 1279 within the same period (Directorate of Agricultural Affairs and Marine Resources, 2014).	• Despite this, the amount of financial aid directed towards biodiversity projects remain very limited. • Financial aid sources for biodiversity projects lack diversity and also remain from traditional sources. 



FIGURE (3-1): LOCAL PLANTS ON DISPLAY AT THE BAHRAIN INTERNATIONAL GARDEN SHOW TO RAISE AWARENESS ON THE IMPORTANCE OF PLANT DIVERSITY FOR STRENGTHENING FOOD SECURITY.

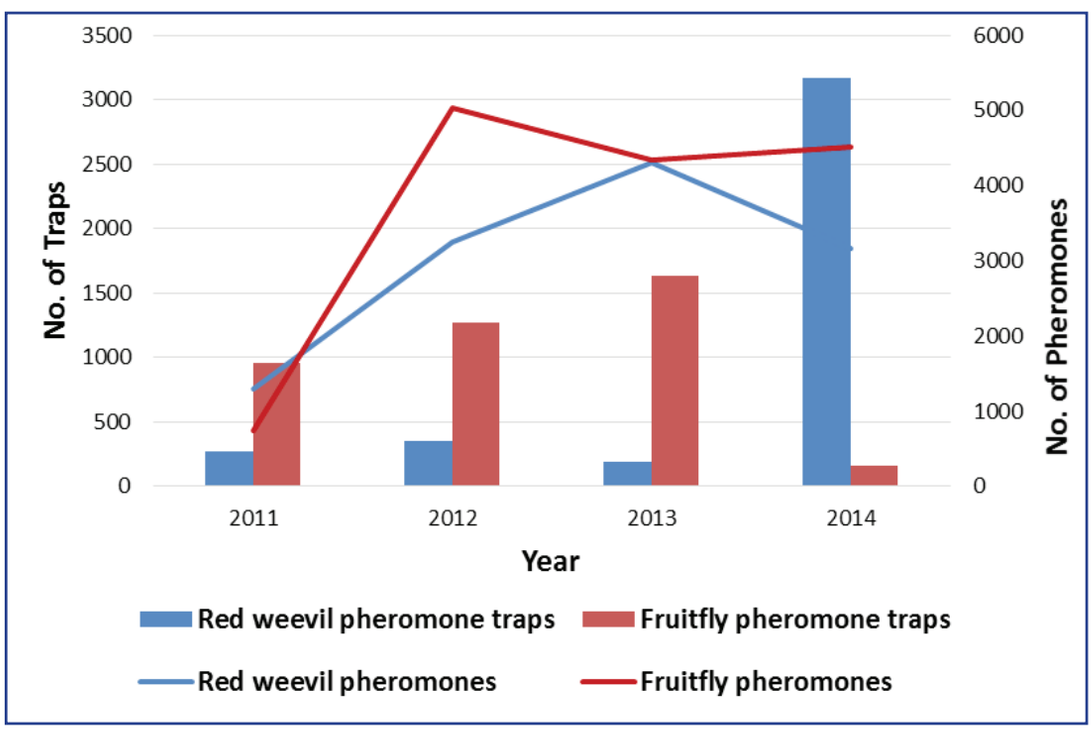


FIGURE (3-2): THE NUMBER OF RED PALM WEEVIL AND FRUITFLY PHEROMONE TRAPS INCLUDING SUPPLEMENTS THAT HAVE BEEN DISTRIBUTED TO FARMERS AND GARDEN OWNERS IN 2011-2014 (2014 RECORDS ARE FROM JANUARY TO MAY. SOURCE: DIRECTORATE OF AGRICULTURAL AFFAIRS AND MARINE RESOURCES, 2014)

3. Contributions Towards Achieving the 2015 Millennium Goals

The Kingdom of Bahrain has undergone unremitting efforts to achieve the Millennium Development Goals, which are: (1) to eradicate poverty and hunger (2) achieve universal primary education (3) promote gender equality and empowering women (4) reduce child mortality (5) improving maternal health (6) combat HIV/AIDS, malaria and other disease (7) ensure environmental sustainability (8) a global partnership for development.

The above-mentioned goals have been embodied in the Constitution of the Kingdom of Bahrain in addition to the National Action Charter by incorporating the need to ensure environmental protection to achieve a balance between the socio-economic aspects and development needs. This is further embedded within Bahrain's Economic 2030 strategy and Bahrain's National Vision Master Plan's structure. Furthermore, the kingdom has established several governmental agencies, institutions and committees whose interests lie in developing programs, policies and strategies to achieve sustainability. These have passed a number of laws and regulations related to the dimensions of sustainable development in reflection of the economic, political and social changes occurring within the international community. Moreover, multiple multilateral agreements and conventions related to these goals have been joined whilst ensuring continued commitment to these agreements with emphasis on raising public awareness and building national capacity in the relevant fields.

Most notably, the Kingdom of Bahrain was awarded the Millennium Development Goals award by the United Nations in 2010 in recognition of the efforts made by the kingdom in achieving the eight goals.

In this light, several national priorities have been outlined to ensure environmental sustainability in the Kingdom of Bahrain, some of which includes:

- The adoption of the "Ecosystem Based Approach" through the implementation of various programs with the aim of highlighting the economic importance of biodiversity in order to minimise the threats and impacts on biodiversity arising from economic motives such as urbanisation and overfishing (refer to Chapter 2, Section 4).
- The inclusion of the human well-being in projects geared towards biodiversity conservation through linking policies and activities relevant to biodiversity to the local population.
- The expansion in designing protected areas and the advancement of environmental management within them whilst taking into account the need for the integration of national protected areas systems.
- Focus on national capacity building in the field of biodiversity with particular focus on those related to the classification and management of invasive species, the transfer and use of biotechnology, the assessment of the economic value of ecosystems and access to genetic resources.
- Mainstreaming strategic environmental planning and impact assessment in all sectors to promote the integration of biodiversity in the early planning stages of development projects.
- The establishment of a central national biodiversity database to aid in archiving and organising all relevant available data.
- The adoption of an official national biodiversity indicators list to facilitate the evaluation of the progress made towards achieving the national and global targets.

- The activation of an environment fund and the development of a clear mechanism to compensate for the environmental damages caused by various development projects. The mechanism is to be based on scientific evidence whilst taking into account socio-economic aspects.

- The commencement of the process aiming at updating the NBSAP in the Kingdom of Bahrain.

4. Lessons learned from the Implementation of the Convention

The Kingdom of Bahrain has succeeded in integrating various biodiversity factors in policies and relevant sectoral programs, in order to effectively achieve the three objectives of the Convention and promote their sustainable use. This includes the fishing and agricultural sectors in addition to the urbanization, sanitation and industrial sectors. Some of the lessons acquired include the following:

- The need to raise the level of awareness of decision makers towards the critical importance of biodiversity and the challenges faced in the Kingdom of Bahrain.

- Increased effectiveness of the Directorate of Biodiversity following the adoption of the Ecosystem Based Approach and integrating human wellbeing along with linking policies and activities related to biodiversity to the local population needs.

- The need to establish a central biodiversity database in Bahrain to aid in archiving available data in an orderly manner for the ease of use and employment in the decision making process in addition to the preparation of national reports submitted to the Convention.

- The need to adopt an official list of national biodiversity indicators which will contribute towards evaluating the progress made to achieving national and international goals.

- The need to effectively link the updated biodiversity strategy to other sectoral strategies and plans in order to promote the integration of biodiversity values in all policies and activities.

- The need for inclusion of the national agricultural biodiversity issues in the updated biodiversity strategy and action plan document whereby the initial strategy did not address these issues adequately.

- The need to address genetic diversity as a high priority in the updated national biodiversity strategy given that the initial report highlighted the genetic richness within Bahrain's biodiversity especially in regards to strains of horses, camels and date palm varieties.

- The need to include programs that aim towards strengthening the environmental management of genetically modified living organisms in accordance with the provisions and requirements of the Cartagena Protocol on Biosafety in the updated NBSAP.

- The inclusion of a program that aids towards the advancement of current policies, programs and activities on a national level to reduce any potential impacts of local and global trade of living organisms or their derivatives on biodiversity.

- The need to include a program that encourages the transfer of modern biodiversity related technology to Bahrain in the strategic document of the NBSAP.

- The integration of comprehensive programs to determine ecosystem goods and services and evaluate the economic values associated with these services.
- The need to complete projects which are aimed at rehabilitating degraded habitats such as mangroves and coral reefs in order to ensure their sustainability in addition to all associated services that related to human well-being.
- The benefits gained and exchanged from regional and international experiences within the field of biodiversity conservation between parties to the CBD.
- The strengthening of the kingdom's regional and international cooperation in all related regional and international biodiversity forums.
- The need to activate national legislations to ensure the protection of biodiversity especially wildlife species that are at present within common borders of some state parties such as dugong species.

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Annex One



Contact Information for the National Focal Point for the CBD and Fifth National Report

Contact Information for the National Focal Point for the CBD and Fifth National Report

Introduction

The following outlines the contact information of the reporting party and the national focal point of the Kingdom of Bahrain to the Convention on Biological Diversity.

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National Focal Point (NFP)	
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Report Submission	
Signature of Officer Responsible for Submission	 ..... Dr. Mohamed Mubarak Bin Daina Chief Executive
Date of Submission	January 2016

Annex Two



Additional Sources of Information

Additional Sources of Information

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3. Websites

TABLE (A2-1) LIST OF WEBSITES AND ONLINE DATABASES, MANAGED BY GOVERNMENTAL, RESEARCH AND ACADEMIC INSTITUTIONS THAT WERE USED DURING THE PREPARATION OF THE FIFTH NATIONAL REPORT.

No.	Website	URL
1	University of Bahrain	http://www.uob.edu.bh
2	Arabian Gulf University	http://www.agu.edu.bh
3	Legal Affairs	http://www.legalaffairs.gov.bh/
4	Ministry of Works, Municipalities Affairs and Urban Planning	http://websrv.municipality.gov.bh/mun/index_ar.jsp
5	Directorate of Agriculture Affairs and Marine Resources – Ministry of Works, Municipalities Affairs and Urban Planning	http://websrv.municipality.gov.bh/agri/index_ar.jsp
6	Ministry of Industry and Commerce	http://www.moic.gov.bh/MoIC/Ar/Main
7	Bahrain Center for Studies and Research	http://www.bcsr.gov.bh/BCSR/Ar/default.aspx
8	Environmental Friends Society	http://www.naturalbahrain.org
9	Al Reem Environmental Consultancy	http://www.alreem.com/biodiversity/index.asp
10	Bahrain Bird Report	http://www.hawar-islands.com
11	Central Informatics Organisation	http://www.cio.gov.bh/cio_eng/index.html
12	Bahrain Center for Strategic, International and Energy Studies	http://www.derasat.org.bh/
13	Land Survey and Registration Bureau	http://www.slrb.gov.bh/default.aspx