



THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

2015 - 2020



MINISTRY OF ENVIRONMENT





His Majesty King Abdullah II Ibn Al Hussein



The National Biodiversity Strategy and Action Plan

2015 - 2020



Foreword by the Minister of Environment

While the first National Biodiversity Strategy in 2003, I am pleased to present this first update of that Strategy which is an outcome of sincere efforts by the national team working on biodiversity in the Hashemite Kingdom of Jordan.

Eleven years have passed since the issuance of the first Strategy during which time the world witnessed various changes in environmental conditions and natural phenomena such as rapid climate changes and evolving relevant concepts and principles related to maintaining biodiversity. These highlighted the need to update the National Biodiversity Strategy as to be in line with those concepts and principles and scientific advances and to mainstream the Aichi Targets (2010) agreed upon by the States Parties to the Convention on Biological Diversity (CBD) that have to be reached by 2020.

Sustainable development is an important tool to safeguard the natural rights of future generations and enhance national economy without undermining the environment and its components. With the indigenous and local communities and their knowledge and practices recognized in the CBD as integral elements of sustainable development, the Nagoya Protocol, adopted in 2010 and entered into force in 2014, emphasized that one of the CBD's core objectives is fair and equitable sharing of benefits arising from the utilization of genetic resources. Therefore, the States Parties to the CBD were required to update their strategies to keep pace with these developments. Being of a particular significance to biodiversity and a home of various biodiversity elements, Jordan has updated its National Biodiversity Strategy as a requirement to conserve and develop our natural resources.

The elements of biodiversity in the Hashemite Kingdom of Jordan are unique and rare internationally and have to be maintained as national heritage for the coming generations and as a source of economic benefits to be obtained sustainably by the communities while conserving the environment and its components as to encounter

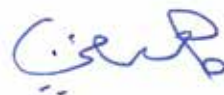
the threats posed by climate change, acquire resilience to this global phenomenon and conserve habitats. All these considerations were reflected in the updated Strategy that also includes the necessary scientific bases and displays awareness of the national legislative context.

The environment and its protection are an issue of collective responsibility among the government and non-government institutions and all components of civil society, and concerted efforts are needed to protect and sustain biodiversity elements. Therefore, this updated National Biodiversity Strategy provided ideas, programs and projects which all societal sectors can be involved in applying and thus contribute to protect biodiversity sources.

Tourism is a national asset in Jordan highly appreciated as a contributor to economy. The unique diversity in the Kingdom and existence of a national natural reserves network make ecotourism a major method to ensure societal involvement in conserving biodiversity especially that ecotourism offers significant employment opportunities for the citizens that have to be maintained and developed.

Here, I would like to express my appreciation to the International Union for Conservation of Nature, The Regional Office for West Asia and in specific Mr Fadi Shraideh and all the local experts that worked together throughout the past year to design this national strategy in a participatory manner. Finally, the vision proposed in this National Biodiversity Strategy necessitates that we adopt the sustainability of the environmental elements and conserve them for the future generations through a participatory approach to the preservation of this precious heritage; praying to God for protecting our country and its fortunes under the flag of the glorious Hashemite leadership.

Dr. Taher Radi Al Shakhshir
Minister of Environment



Acknowledgments

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IUCN-ROWA and the Ministry of Environment of Jordan extend warmest gratitude to her Highness Princess Basma bint Ali for her auspices, leadership and support for the National Program on Biodiversity Conservation in general and the update of the National Biodiversity Strategy and Action Plan, in particular.

Special thanks are conveyed to the National Biodiversity Committee and the various government agencies, non-government organizations, academia, as well as local communities across the Kingdom for their invaluable contributions in the preparation of the Strategy.

The report team would -particularly- like to express appreciation to the Ministry of Planning and International Cooperation, Ministry of Agriculture, Forestry Department, Rangeland Department, National Center for Agricultural Research and Extension, Royal Society for the Conservation of Nature, the Royal Marine Conservation Society of Jordan, Royal Botanic Garden, University of Jordan, The Jordan University of Science and Technology, the Research Committee, and the Aqaba Marine Station, for their constructive engagement and continuous commitment.

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List of Abbreviations

ASEZA	Aqaba Special Economic Zone Authority
BRP	Badia Restoration Program
CA	Country Assessment
CAP	Community Action Plan
CBD	Convention on Biological Diversity
CBRR	Community-based Rangeland Rehabilitation Project
CITES	Convention of International Trade in Endangered Species of Wild Fauna and Flora
DOS	Department of Statistics
FAO	Food and Agriculture Organization of the UN
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GEF	Global Environment Facility
GMOs	Genetically Modified Organisms
IUCN	International Union for Conservation of Nature
JD	Jordanian Dinar
JREDS	Royal Marine Conservation Society of Jordan
LaMME	Laboratory for Molecular Marine Ecology
LMOs	Living Modified Organisms
MCM	Million Cubic Meters
MDG	Millennium Development Goal
MWI	Ministry of Water and Irrigation
MoA	Ministry of Agriculture
MoEnv	Ministry of Environment
MoMA	Ministry of Municipal Affairs
MoPIC	Ministry of Planning and International Cooperation
MoTA	Ministry of Tourism and Antiquities
NAP	National Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCARE	National Center for Agricultural Research and Extension
NEP	National Executive Program
NGO	Non-Governmental Organization
NVH	National Virtual Herbarium
OECD	Organization of Economic Co-operation and Development
PA	Protected Area
PDTRA	Petra Development and Tourism Region Authority
PGR	Plant Genetic Resources
RBG	Royal Botanic Garden
ROWA	Regional Office for West Asia
RSCN	The Royal Society for the Conservation of Nature
SCA	Special Conservation Area
SGP	Small Grants Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

Executive Summary

The remarkable biodiversity of Jordan is a reflection of its varied physical characteristics which have yielded an unusual case of richness in landforms and biological diversity in terms of landscapes, ecosystems and species. At the intersection of three continents, Jordan encapsulates four bio-geographical regions: Mediterranean, Irano-Turanian, Saharo-Arabian, and the Sudanian Penetration. All four transform into 13 vegetation types which, in turn, embrace over 4,000 species of terrestrial, freshwater, and marine fauna and flora. In 2003, Jordan adopted its first national biodiversity strategy and action plan, and after ten years of concerted efforts to safeguard its biodiversity, the update of the strategy took place to reconfirm Jordan's commitment to conserving its biodiversity, continuing its alignment with the global movement under the Convention on Biological Diversity, and renewing its response to the continued loss of ecosystems and species as a result of the direct and indirect threats that hinder the sustainability of the country's diversity.

In 2014, the biodiversity of Jordan still faces many challenges and constraints including the continuation of habitat destruction as a result of uncontrolled urban expansion, overgrazing, excessive woodcutting, unplanned mining, and unbalanced water use, in addition to wildlife persecution, alien and exotic species invasion, inadequate tourism development, and the more recent challenge of refugees who have fled to the country as a result of regional political instabilities. These threats are further accelerated by the impacts of climate change, especially in a country of high vulnerability level such as Jordan. Threats to biodiversity are a result of a set of underlying causes including lack of general awareness, weak governance, lack of connection between science and development, inadequate knowledge systems, and finally, the absence of effective sustainable financing for biodiversity programs.

The update of the NBSAP comes in continuation to Jordan's strategic approach towards biodiversity conservation. The update process addressed the legal framework and its associated institutional setup as related to biodiversity. It was then built around an in-depth analysis of the 2003 NBSAP in terms of approach, stakeholder involvement, structure, and implementation modalities. The updated

NBSAP was developed around addressing the direct and indirect causes of biodiversity loss, with particular focus on the issues of governance as the backbone of a successful NBSAP implementation. This included the enhancement of the role of national coordination mechanisms, the encouragement of improved inter-institutional collaboration, the adoption of a courageous financing strategy, the enhancement of the participation of national and local stakeholders, and finally, investment in the new generation of biodiversity decision makers, practitioners, and beneficiaries.

The 2020 NBSAP embraces a new vision for Jordan's biodiversity as follows:

“By 2050, the biodiversity of Jordan is valued for its national heritage vitality, conserved for the well-being and enjoyment of people, and sustainably used for the benefits of current and future generations.”

To achieve the vision, five strategic goals were selected under which 29 national targets were included. The 2020 strategic goals for biodiversity in Jordan are:

- I- On good governance and mainstreaming: Enhance the national governance of biodiversity as a main mechanism for national mainstreaming, integration and participation.**
- II- On the response to human-induced pressures: Reduce the impacts of pressures on biodiversity including habitat destruction, political conflicts, and tourism.**
- III- On protected areas, priority species and genetic resources: Conserve and protect priority ecosystems, species and genetic resources of Jordan at the in-situ and ex-situ levels.**
- IV- On ecosystems services and climate change: Enhance the national understanding of dry-land ecosystem benefits to national resilience, economic sustainability and local livelihoods.**
- V- On knowledge management and monitoring: Develop biodiversity knowledge as the main tool for cultural reform, informing policy and decision making support.**

To achieve this ambitious set of goals, over 300 actions have been elaborated in the national action plan for biodiversity. The success of achieving the action plan will be tested against a clear set of key performance indicators which will be monitored and assessed through a specific monitoring system involving all key stakeholders and interest groups. The implementation of the NBSAP is as important as its development, if not more.

In order to ensure so, the 2020 NBSAP will be the responsibility of all key stakeholders involved in biodiversity conservation in Jordan, working under the umbrella of the National Biodiversity Committee in its capacity as the executive arm of the Ministry of Environment. The Royal Society for the Conservation of Nature, the Royal Botanic Garden, the Royal Marine Conservation Society of Jordan, the Forestry Department, the National Center for Agricultural Research and Extension, the Rangeland Department, the Aqaba Special Economic Zone Authority, and a number of national universities and academic institutions will all be integral to the implementation process of the updated NBSAP; each in its respective mandate, competency, and area of interest.

The successful implementation of the NBSAP is organically linked to the adoption of a clear financing framework. The financing of the implementation of the NBSAP will be a shared responsibility among all national stakeholders, led and supported by the Ministry of Environment.

A multi-resource financing framework will be adopted soon after the national endorsement of the NBSAP utilizing internal, external and innovative sources of funding in close cooperation with regional and international partners and cooperation agencies.

Jordan has a great ambition to reignite its thrust for the conservation of its unique biodiversity with the hope that by the year 2020 it will have come closer to the realization of its long-term vision for the good of its current and future generations.



خلاصة تنفيذية

ولتحقيق هذه الرؤية تم تحديد خمسة أهداف استراتيجية يندرج تحتها تسعة وعشرون هدفاً. والأهداف الاستراتيجية للتنوع الحيوي في الأردن لعام ٢٠٢٠ هي:

١. في ما يخص الحوكمة والتعميم: تعزيز الحوكمة الوطنية للتنوع الحيوي كآلية رئيسية في التعميم والإدماج والمشاركة الوطنية.

٢. في ما يخص معالجة الضغوط البشرية: تقليل أثر الضغوط على التنوع الحيوي بما فيها تدمير الموائل والصراعات السياسية والسياحة.

٣. في ما يخص المناطق المحمية والأنواع ذات الأولوية والموارد الجينية: صون وحماية النظم الإيكولوجية والأنواع الحية والموارد الجينية ذات الأولوية في الأردن في عَيْن الموقع وخارجه.

٤. في ما يخص خدمات النظم الإيكولوجية والتغير المناخي: تعزيز الفهم الوطني لفوائد النظم الإيكولوجية في الأراضي الجافة في مجال المرونة والاستدامة الاقتصادية وسبل العيش المحلية.

٥. في مجال إدارة المعرفة والرصد: تطوير المعرفة بالتنوع الحيوي كأداة أساسية في الإصلاح الثقافي ومَد السياسات بالمعلومات ودعم صناعة القرارات.

ولتحقيق هذه المجموعة الطموحة من الأهداف تم وصف ما يربو على ثلاثمائة نشاط ضمن خطة عمل التنوع الحيوي. وسيُقاس نجاح خطة العمل من خلال مجموعة من مؤشرات الأداء الرئيسية والتي سيتم رصدها وتقييمها بنظام رصد محدد يُشرك كافة المعنيين الرئيسيين ومجموعات المصالح. ويُقدَّر ما لتطوير الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي من أهمية فإن تنفيذها مهمٌّ إن لم يكن أكثر أهمية.

ولضمان ذلك ستكون مسؤولية الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي لعام ٢٠٢٠ مُناطة بكافة المعنيين الرئيسيين المنخرطين في صون التنوع الحيوي في الأردن من خلال العمل تحت مظلة اللجنة الوطنية للتنوع الحيوي بصفتها الذراع التنفيذي لوزارة البيئة. أما كلٌّ من الجمعية الملكية لحماية الطبيعة والحديقة النباتية الملكية والجمعية الملكية لحماية البيئة البحرية ومديرية الحراج والمركز الوطني للبحث والإرشاد الزراعي ومديرية المراعي وسلطة منطقة العقبة الاقتصادية الخاصة وعدد من الجامعات المحلية والمؤسسات الأكاديمية فستكون عنصراً أساسياً في عملية تنفيذ الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي المحدثة، كلٌّ وفق التفويض المناط به وقدراته واختصاصه.

ويرتبط تنفيذ الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي أساساً بالنجاح في تبني إطار عمل تمويلي واضح. وسيكون تمويل تنفيذ الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي مسؤولية مشتركة بين كافة المعنيين الوطنيين تقوده وتدعمه وزارة البيئة. وسيتم تبني إطار تمويلي متعدد المصادر فور إقرار الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي تُخصَّص موجهه موارد تمويل داخلية وخارجية ومبتكرة بتعاون وثيق مع الشركاء الإقليميين والدوليين ومنظمات التعاون.

طموح الأردن كبيراً لإعادة إيقاد جذوة جهود صون تنوعه الحيوي الفريد سعياً إلى اقترابه أكثر مع حلول عام ٢٠٢٠ إلى تحقيق رؤيته طويلة الأمد لخير الجيل الحالي والأجيال القادمة.

يمثل التنوع الحيوي الباهر في الأردن السمات الفيزيائية المتعددة لهذا البلد والتي أنتجت ثراءً هائلاً في أشكال الأرض والتنوع الحيوي في المناظر الطبيعية والنظم الإيكولوجية والأنواع الحية. فالأردن الواقع عند التقاء ثلاث قارات يضم أربعة أقاليم جغرافية-حيوية: المتوسطي، الإيراني-الطوراني، الصحراء العربية، السوداني. ويُعبّر عن وجود هذه الأقاليم الأربعة انتشاراً لثلاثة عشر نمطاً نباتياً تتألف بدورها مما يربو على أربعة آلاف من أنواع نباتات وحيوانات اليابسة والمياه العذبة والبحر.

تَبَنَّى الأردن في عام ٢٠٠٣ أولى استراتيجياته وخطط عمله الوطنية في مجال التنوع الحيوي. وبعد عشرة أعوام من الجهود التوافقية لحماية التنوع الحيوي في المملكة تم تحديث الاستراتيجية لتجديد التزام الأردن بصون تنوعه الحيوي والاستمرار في الوقوف مع التوجه العالمي في إطار اتفاقية التنوع الحيوي وتجديد تصديده للفقدان المستمر للنظم الإيكولوجية والأنواع الحية نتيجة للتهديدات المباشرة وغير المباشرة التي تعيق استدامة التنوع الحيوي فيه.

واليوم في عام ٢٠١٤ لا يزال التنوع الحيوي في الأردن يواجه تحديات وضغوطاً عديدة مثل استمرار تدمير الموائل نتيجة للتمدد الحضري غير المضبوط والرعي وقطع الأخشاب الجائرَيْن والتعدين العشوائي والاستعمال غير المتوازن للمياه إضافة إلى استهداف الحياة البرية وغزو الأنواع الحية الدخيلة والغريبة والتطوير السياحي غير المناسب والتحدي الأحدث المتمثل في تدفق اللاجئين للمملكة نتيجة للاضطرابات السياسية في الإقليم. وتتفاقم هذه التهديدات بفعل آثار التغير المناخي خاصة في ضوء المستوى المرتفع لسهولة التأثير كما هو الحال في الأردن. وتنتج التهديدات للتنوع الحيوي عن مجموعة من الأسباب الرئيسية مثل نقص الوعي العام وضعف الحوكمة وغياب الرابط بين العلم والتنمية والقُصور في النظم المعرفية وأخيراً افتقار برامج التنوع الحيوي إلى تمويل كاف ومستدام.

يأتي تحديث الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي استمراراً للنهج الاستراتيجي الذي اختطه الأردن في صون التنوع الحيوي. وقد تناولت عملية التحديث الإطار القانوني وما يرافقه من ترتيبات مؤسسية متعلقة بالتنوع الحيوي. ثم صُمِّمت العملية مستندة إلى تحليل معمق لاستراتيجية وخطة عمل عام ٢٠٠٣ من حيث النهج وانخراط المعنيين والبيئة وطرائق التنفيذ. وقد طُورت الاستراتيجية وخطة العمل المُحدثتان لتعالج الأسباب المباشرة وغير المباشرة لفقدان التنوع الحيوي مع التركيز على قضايا الحوكمة باعتبارها الركيزة الأساسية لنجاح تنفيذ الاستراتيجية وخطة العمل. وقد اشتمل ذلك على تعزيز دور آليات التنسيق الوطني وتشجيع تحسين التعاون بين المؤسسات وتبني استراتيجية تمويل طموحة وتعزيز مشاركة المعنيين من المستويين الوطني والمحلي وأخيراً الاستثمار في الجيل الجديد من صنّاع القرار والمختصين والمنفعين في مجال التنوع الحيوي.

تتبنى الاستراتيجية الوطنية وخطة العمل للتنوع الحيوي لعام ٢٠٢٠ رؤية جديدة للتنوع الحيوي في الأردن هي:

«بحلول عام ٢٠٥٠ يغدو التنوع الحيوي في الأردن موضع تقديرٍ لضرورته للتراث الوطني وصونٍ لخير ورفاه الناس واستخدامٍ مستدامٍ لمصلحة الجيل الحالي والأجيال القادمة.»



Part I:

Jordan and Biodiversity

1.1 The Global Context

Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It provides for food security, human health, the provision of clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction¹.

The Convention on Biological Diversity (CBD) has three objectives: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. In the Convention's first Strategic Plan, adopted in 2002, the Parties committed themselves "to a more effective and coherent implementation of the three objectives of the Convention, to achieve by 2010 significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth." Most Parties identify a lack of financial, human and technical resources as limiting their implementation of the Convention. Technology transfer under the Convention has been very limited. Insufficient scientific information for policy and decision making is a further obstacle for the implementation of the Convention. However, scientific uncertainty should not be used as an excuse for inaction.

The 2010 biodiversity target has not been achieved, at least not at the global level. The diversity of genes, species and ecosystems continues to decline, as the pressures on biodiversity remain constant or increase in intensity, mainly as a result of human actions. The global scenario analysis reveals a wide range of options for addressing the crisis. Determined action to value and protect biodiversity will benefit people in many ways, including through better health, greater food security and less poverty. It will also help to slow climate change by enabling ecosystems to store and absorb more carbon; and it will help people adapt to climate change by adding resilience to ecosystems and making them less vulnerable. Better protection of biodiversity is therefore a prudent and cost-effective investment in risk reduction for the global community.

Achieving this positive outcome requires actions at multiple entry points, which are reflected in the goals of this Strategic Plan. These include:

- (a) Initiating action to address the underlying causes of biodiversity loss.
- (b) Taking action now to decrease the direct pressures on biodiversity.
- (c) Continuing direct action to safeguard and, where necessary, restore biodiversity and ecosystem services.
- (d) Efforts to ensure the continued provision of ecosystem services and to ensure access to these services, especially for the poor.
- (e) Enhanced support mechanisms for: capacity-building; the generation, use and sharing of knowledge; and access to the necessary financial and other resources.

¹The text in 1.1 is an extract from the Global Biodiversity Strategy document 2010.

1.2 Jordan Country Profile

Jordan is of a relatively small size of 89,342 sq km territory, of which 88,802 is land and 540 sq km is water including a 27 km long coastline. The climate of Jordan is mostly arid desert with a relatively short rainy season between November and April. The topography of the country is highly contrasting; from more than 400 meter below sea level at the Dead Sea to 1,854 meter above sea level at the southernmost boundary in Um Addami Mountain. This variation of physical environment is strongly reflected in the diversity of life in the country in terms of natural heritage along with its associated cultural values and in particular as related to biological diversity.

Demographically, Jordan is home to around 6.5 million people, and is considered a young population community; more than 70% of the population is under 30 years of age, which suggests that investment in youth is a key instrument for national development and sustainability. Those between the age of 15 and 24 comprise 22% of the population, 80% of whom are urbanized, with a literacy ratio of almost 96%, one of the highest in the region and of good reputation of educational systems, including those related to environmental education and biodiversity centered learning and sensitization.

Jordan's economy is among the smallest in the Middle East, with insufficient supplies of water, oil, and other natural resources, underlying the government's heavy reliance on foreign assistance. Other economic challenges for the government include chronic high rates of poverty, unemployment, inflation, and an increasing budget deficit.

Jordan is an upper middle-income country, with a per capita gross domestic product (GDP) of US\$6,100, with agriculture contributing around 4%, industry 30% and services around 67%. The country has limited natural resources, potash and phosphate are its main export commodities, limited agricultural land, and severely scarce water, as the country ranks as the world's fourth poorest country in terms of water resources. Services account for more than 70 percent of GDP and more than 75 percent of jobs. As one of the most open economies of the region, Jordan is well integrated with its neighbors through trade, remittances,

foreign direct investment (FDI), and tourism. The unemployment rate in Jordan is estimated to be around 14% with an unofficial rate pointing to 30%.

Main agricultural products include citrus, tomatoes, cucumbers, olives, strawberries, stone fruits; sheep, poultry, and dairy.

The industries on the other hand comprise clothing, fertilizers, potash, phosphate mining, pharmaceuticals, petroleum refining, cement, inorganic chemicals, light industries manufacturing, and very importantly tourism.

The country's natural resources are scarce, with mainly phosphate, potash and shale oil. Only around 2% of Jordan is arable land including a total irrigated area of 800 sq km. The total renewable water resources is around .0.94 (MCM) (2011) with a per capita withdrawal rate of around 166 (MCM) /yr divided between domestic uses (31%), industrial (4%), and agricultural (65%).

Drought is the main natural hazard facing Jordan in addition to potential for periodic earthquakes. The main issues related to the environment in the country comprise the limited natural freshwater resources, deforestation, overgrazing, soil erosion, desertification and pollution.

1.3 The Importance of Biodiversity in Jordan

Overall Diversity

Jordan is a small country, with many development aspirations and challenges coupled with extremely limited natural resources, however with a remarkable biological diversity. The varied physical characteristics of the country have yielded an unusual case of richness of land forms and biological diversity in terms of landscapes, ecosystems, and species.

At the intersection of three continents, Jordan encapsulates four bio-geographic regions: the Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian penetration, each with their respective ecosystems and flora and fauna. Thirteen vegetation types are identified in the country reflecting the various climatic and geographic variations.

The total number of wild species occurring in Jordan is estimated to be around 4,000 species of terrestrial and marine flora and fauna. Of Jordan's 2,622 recorded species of vascular plants, representing about 1% of world flora, 100 are endemic, including *Iris nigricans*, Jordan's floral emblem, *Plantagomaris-mortui*, *Crucianella transjordanica*, *Centaurea procurrens*, *Scrophularia nabataerum*, *Tamarix tetragyn*, and *T. palaestina*.

There are a total of 644 animal species of which, 83 are mammal species, including the globally threatened *Capra nubiana*, *Gazella dorcus*, *Gazella subgutturosa*, *Gazella gazelle* and *Oryx leucoryx*. Avifauna composition is especially rich in Jordan because of its geographical location associated with the Great Rift Valley and lying on a major migratory birds route. Key bird species include *Geronticus eremita*, *Chlamydotis macqueenii*, *Nephron percnopterus*, *Serinus syriacus* and *Vanellus gregarius*.

The Gulf of Aqaba hosts more than 348 species of fish, 151 species of hard corals and 120 species of soft corals, in addition to a variety of invertebrates including snails, crabs and sea worms. A total of three threatened species of sea turtles were recorded in the Gulf of Aqaba. The rate of endemism is considered high among the Red Sea fishes and represents 13.7% of the total fish species recorded with seven fish species recognized as endemic

to the Gulf of Aqaba. More than 20% of mollusks and echinodermata as well as several species of algae occurring in the Gulf may be endemic.

Freshwater diversity is also high, with 15 of species recoded including the endemic *Aphanius sirhani*. Further, Jordan hosts 110 species of herpeto-fauna including three species of amphibians; 107 species of reptiles comprised of 37 species of snakes, one tortoise, one terrapin and 68 species of lizards, including the flagship species of the *Uromastyx aegyptia* and *Varanus griseus*.

Bio-geographical Regions

There are three main topographic features in Jordan including: the Rift Jordan Valley, the mountain ranges extending from north to south, and the desert plateau. Based on the biophysical characteristics prevailing in the country, Jordan is subdivided into four bio-geographic regions: Mediterranean, Irano-Turanian, Saharo-Arabian and Subtropical (Sudanian); these topographic variations resulted in rich flora and fauna diversifications. The southernmost part of Jordan harbors the Gulf of Aqaba with its spectacular coral reefs and their associated marine diversity. The two opposing climatic regimes of the Mediterranean located in the western part of the country and the desert in the eastern part surround the steppe region (Irano-Turanian) which represents a transition area between these two bio-geographical regions. A dynamic eco-tone is always present between any two bio-geographic regions.

In certain locations, three bio-geographic regions meet as in Ras Al-Naqab, causing an immense pressure on the occurrence of biological species leading to the production of endemic species resulted from acclimatization and adaptation.

Technically speaking, the classification of Jordan's biodiversity is primarily based on the diversity of the bio-geographical regions represented in the country. These are: the Saharo-Arabian and Sudanian climate, the Irano-Turanian climate, and the Mediterranean climate regions. Within each of the three climate zones, the diversity of ecosystems

comes second resulting in high number of ecosystems across the regions, each with its distinctive assemblages of vegetation types, fauna and flora and other associated natural values.

The following includes a brief description of the four bio-geographical regions in Jordan:

Mediterranean: This region is restricted to the highlands extending from Irbid in the north to Ras Al-Naqab in the south in addition to some isolated representation in the mountains of Wadi Rum. The altitude ranges from 700 to 1850 m above sea level. The rainfall ranges from 300 to 600 mm. The minimum annual temperature ranges from 5 to 10° C and mean annual maxima range from 20 to 30° C. Soil is dominated by the red Mediterranean soil (terra rosa) and the yellow Mediterranean soil (rendzina). This region comprises the most fertile part of the Kingdom and contains 90 percent of the population.

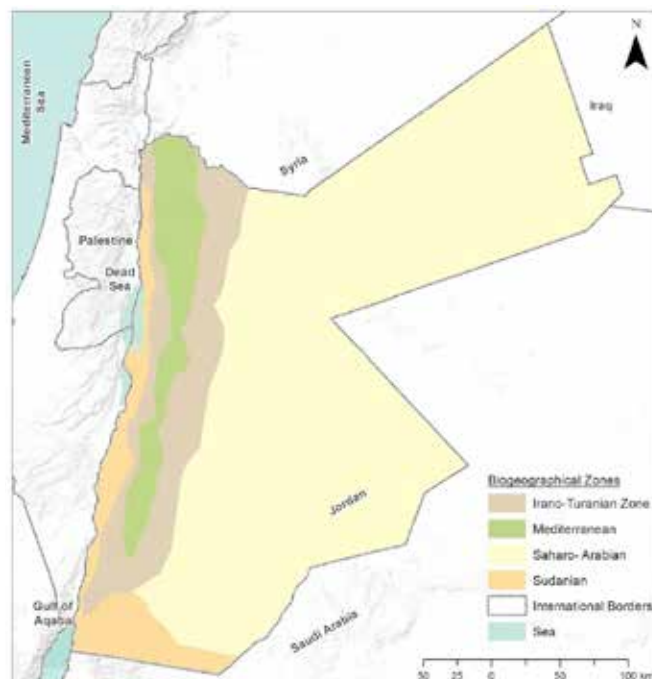
Irano-Turanian: A narrow strip of variable width that surrounds all the Mediterranean ecozone except in the north. It is characterized by being treeless. The vegetation is mainly small shrubs and bushes such as *Artemisia herba-alba*, and *Anabasis syriaca*. Altitudes range from 500 to 700 m, and rainfall ranges from 150 to 300° mm. Mean annual minimum temperatures range from 5 to 2° C, and mean annual maxima range from 15 to 25° C. Soils are mostly calcareous or transported by wind. The vegetation is dominated by chamaephytes.

Saharo-Arabian: This is the eastern desert or Badia and comprises the largest part of Jordan encompassing almost 80% of its total area. It is flat except for a few hills or small mountains, the result of volcanic eruptions. Altitude ranges between 500 and 700 m. The mean annual rainfall ranges from 50 to 200 mm, mean annual minimum temperatures range from 15 to 2° C and mean annual maxima range from 25 to 40° C. Soil is mostly poor, either clay, hamada, saline, sandy or calcareous. Vegetation is dominated by small shrubs and small annuals in the wadi beds.

Sudanian: It starts from the northern part of the Dead Sea and ends at the tip of the Gulf of Aqaba in the south along the Dead Sea depression

and Wadi Araba. The most important characteristic of this region is the altitude, considered the lowest point on earth (410 m below sea level near the Dead Sea). Rainfall ranges from 50 to 100 mm, the mean annual minimum temperature ranges from 10 to 29° C, and mean annual maximum temperatures range from the minimal 20 to 35° C. Soils are mostly alluvial, saline, sandy and granitic. The only inland sand dunes are in this region.

The vegetation is characterized by a tropical tree element such as *Acacia* spp. and *Ziziphus spina-christi* in addition to some shrubs and annual herbs. The following map demonstrates the four bio-geographic regions of Jordan².



² Source: RSCN, 2014

The below table summarizes the Jordan bio-geographic regions associated with their representative ecosystems and vegetation types³:

Bio-geographic regions	Representative Ecosystems and Species
Mediterranean	Pine forest: <i>Pinus halepensis</i> (380) ⁴
	Evergreen oak forest: <i>Quercus caliprinos</i> (600)
	Deciduous oak forest: <i>Quercus aegilops</i> (400)
	Juniper forest: <i>Juniperus phoenicea</i> (600)
	Degraded, non-forest (500)
	Hydric (120): <i>Arundo donax</i>
Irano-Turanian	Steppe: <i>Retama reatum</i> (400)
	Hydric: <i>Phragmites australis</i> (80)
Saharo-Arabian	Gravel Hamada: <i>Anabasis articulata</i> (200)
	Runoff Hamada: <i>Retama reatum</i> , <i>Artemisia herba-alba</i> , <i>Achillea fragrantissima</i> (200)
	Pebbles Hamada (Basalt) (400): <i>Diploaxis harrah</i> , <i>Jenandris iris</i> , <i>Achillea fragrantissima</i> , <i>Aronsonia factoroviski</i>
	Playa (Bjaha): <i>Halochneum strobilaceum</i> , <i>Sueda fruticosa</i> , <i>Haplo phylum amplexicaule</i>
	Salines or Oasis: <i>Nitraia retusa</i> , <i>Tamarix passerinoides</i> (30)
	Hydric fresh: <i>Phragmites australis</i> , <i>Typha angustifolia</i> , <i>Juncus actuaus</i> (70)
	Hydric saline: <i>Limoium purinosum</i>
Tropical (Sudanian penetration)	Sandy dunes: <i>Haloxylon persica</i> , <i>Panicum turgidem</i> (200)
	Saline: <i>Nitraria retusa</i> , <i>Juncus maritimus</i> (30)
	Rocky: <i>Acacia tortillis</i> (100)
	Hydric: <i>Tamarix jordanica</i> , <i>Mauringa peregrine</i> , <i>Capparis deciduea</i> , <i>Salvadora persicum</i> ((70)
	Sandy dunes: <i>Haloxylon persica</i> , <i>Panicum turgidem</i> (200)
	Saline: <i>Nitraria retusa</i> , <i>Juncus maritimus</i> (30)
	Rocky: <i>Acacia tortillis</i> (100)
	Hydric: <i>Tamarix jordanica</i> , <i>Mauringa peregrine</i> , <i>Capparis deciduea</i> , <i>Salvadora persicum</i> ((70)

Vegetation Communities

As mentioned earlier, the classification of Jordan's biodiversity is based on its eco-regions, ecosystems and vegetation types. The vegetation map of Jordan developed by Al-Eisawi in 1985 and 1996 represents the prime scientific reference to the classification of floral biodiversity. It was also the biological foundation mainly used in the development of the national protected areas network in its revised version of 2009. The original number of 12 vegetation types was updated to become 13 in light of a strategic review undertaken by RSCN in cooperation with

MoEnv, academia and other international partners. Since its development, little changes were introduced to the country map of the vegetation types. The following includes a recap on the main vegetation types adopted for Jordan along with the changes made to them during the last five years.

The below table summarizes the key characteristics of the vegetation types along with their size, attributes, percentage of coverage in established protected areas and their main challenges:

³Source: Al-Eisawi et al, 2014.

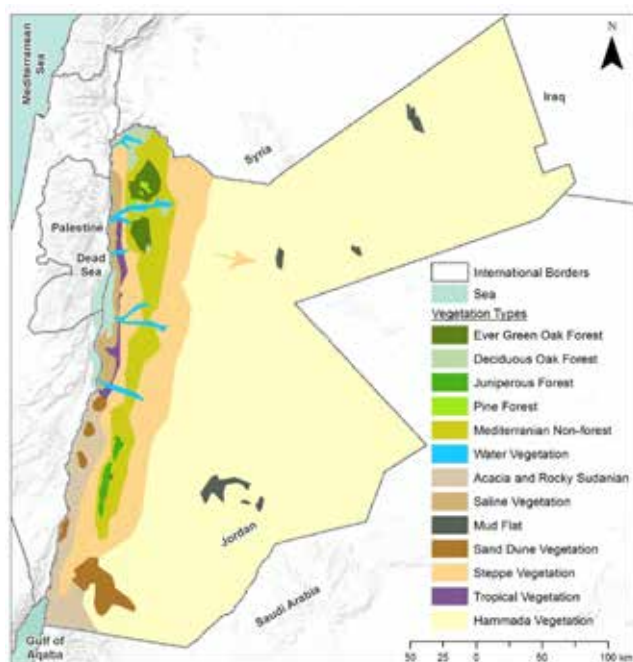
⁴Numbers indicate elevation against sea level.

No	Name of Vegetation Type	Size (sq km)	Key Attributes	% Coverage in Est. PAs ⁵
1	Pine forest	89	Typical Mediterranean vegetation forms the best forests in Jordan and reaches a climax in some places, with the dominant trees of Aleppo pine (<i>Pinus halepensis</i>) up to 15 meters. This forest vegetation usually occurs naturally on high altitudes, mostly over than 700m and where Rendzina and calcareous soils are present. In some places the pine trees are replaced by <i>Quercus coccofera</i> as a result of the degradation of the primary vegetation, forming a secondary succession.	9.6
2	Evergreen oak forest	747	This type of vegetation grows at high altitudes of more than 700m., and on red soil (Terra Rossa) of hard limestone parental rock, unless it is a secondary vegetation replacing Aleppo pine forest on calcareous or yellow (Rendzina) soil of soft limestone parental rock. The vegetation composition of this type of forest varies throughout the leading species including the evergreen oak <i>Quercus coccofera</i> which is the most important element.	0.92
3	Deciduous oak forest	433	The deciduous oak forests in Jordan occur at a lower altitude than all other forests and mostly grow on red or brown soil of hard limestone parental rock.	4.62
4	Juniper forest	272	This occurs only in the Southern mountains of Jordan usually at high altitudes, over 1,000m., and sandy rocks. The Juniper forest formation is dominated by the leading species of <i>Juniperus phoenicia</i> associated with <i>Cupressus sempervirens</i> on the sand stone formation. The Cypressus trees <i>Cupressus sempervirens</i> are very rare as wild plants and only occur in that particular locality.	0.78
5	Med. non forest	4,595	The Mediterranean region which is not covered by forests contains some shrubs and bushes. This region is often referred to as Garigue and Batha Mediterranean vegetation. The leading species of this vegetation are <i>Rhamnus palaestinus</i> , <i>Calycotome villosa</i> , <i>Sarcopoterium spinosum</i> and <i>Cistus spp.</i> in the North, and <i>Artemisia herba-alba</i> will be associated with others in the South.	2.14
6	Steppe	9,641	This vegetation is confined to the Irano-Turanian region and may intrude either into the Mediterranean or the Saharo-Arabian region. The composition of the vegetation varies according to the soil and other climatic differences depending on its location with respect to the Mediterranean region. For example, the steppe vegetation in the Northern Ghor which links with the Northern mountains is dominated by <i>Retama raetam</i> , <i>Ziziphus lotus</i> , <i>Z. nummularia</i> and <i>Ferula communis</i> with almost no <i>Artemisia herba-alba</i> , while the steppe vegetation in the North, East and South Mediterranean borders shows other elements like <i>Pistacia atlantica</i> , <i>Anabasis syriaca</i> and <i>Artemisia herba-alba</i> which are not found in the Western steppes.	2.49
7	Halophytic	1,150	This occurs in the desert (Saharo-Arabian) region around Azraq Oasis, in the Rift Valley around the Dead Sea, in Wadi Araba, and around the shoulders of the River Jordan on what is known locally as Katarat. The leading species vary, depending on their ability to tolerate the degree of salinity. For example <i>Nitraria retusa</i> is a saline tolerant species but it does not grow if the salinity exceeds certain limits and will be replaced by other species such as <i>Arthrocnemum fruticosum</i> , <i>Suaeda spp.</i> <i>Juncus sp.</i> and <i>Tamarix spp.</i>	3.25
8	Sand dunes	1,266	This vegetation is only found the Sudanian region especially Wadi Araba and Wadi Rum. The vegetation is made up of shrubs or bushes, mainly of sand dune fixatives. In some places the vegetation has reached its climax especially in the area near Gharandal along the road to Aqaba where the plants reach a height of three meters. The leading species is the <i>Haloxylon persicum</i> .	35.54

⁵ The percentage number represents the amount covered from the total area of a particular vegetation type in established protected areas.

No	Name of Vegetation Type	Size (sq km)	Key Attributes	% Coverage in Est. PAs ⁵
9	Hamada	66,611	Most of the Saharo-Arabian region in Jordan is of hamada type, which comprises about 50 per cent of the total area. Three subdivisions of hamada can be recognized: 1. Run-off hamada; 2.Gravel hamada; 3. Pebble hamada.	0.43
10	Tropical	424.16	It occurs in the Sudanian region which extends from Dair 'Alla in the North down to Aqaba Gulf in the South, but it is concentrated more in the regions close to the Dead Sea, lower Jordan Valley, as well as in Southern Ghor, Ghor Safi and Ghor Fifa. The vegetation is confined to the alluvial soils of the Rift Valley, most of which have been destroyed and used for vegetable agriculture.	12.37
11	Acacia and rocky vegetation	2621.44	This vegetation is confined to the granite mountain bases and to the rocky parts of Wadi Araba, Wadi Al-Yutum and Wadi Rum in the Sudanian Region. It is characterized by the presence of scattered Acacia trees which get to be denser at the hard rocks of the mountain bases and have formed pure stands of Acacia woodlands.	6.94
12	Hydrophytic	674.23	This vegetation is confined to the granite mountain bases and to the rocky part of Wadi Araba, Aqaba, Wadi Al-Yutm, and Wadi Rum in the Sudanian region. Acacia trees are scattered through Wadi Araba, but they get denser toward the hard rocks of the mountain bases until they form a pure stand of Acacia woodland especially 20-40 km.	5.34
13	Mud flats	642.1	This occurs around the streams and river banks and around the water pools in Azraq. The vegetation does not occur much in Jordan but still it is clear around Jordan River; Yarmuk River; Zarka River; Wadi Shuaib, Wadi Mujeb; Wadi Al-Hasa and in Azraq Oasis.	1.4

The below map demonstrates the different vegetation types in Jordan⁶:



Terrestrial Flora

The flora of Jordan constitutes a very important component of Jordan's biological diversity. Conservation of such a national resource to ensure sustainability and development is listed high on the priorities of Jordan.

Flowering Plants: As mentioned earlier in the report, Jordan's plant diversity is remarkably high considering its size and aridity. The total number of recorded vascular plant species in Jordan is now over 2,622 species belonging to 113 families and around 810 genera. At least 100 species of endemic plants are now confirmed for Jordan comprising about 2.5% of the total species recorded, including species of the genus *Crocus*, *Colchicum*, *Iris* and *Verbascum*, while 375 are rare or very rare, including species of the genus *Orchis*, *Romulea*, *Biarum* and *Globularia*, forming about 14% of the total flora of Jordan. More than 70 species are considered extinct.

⁶ Source: RSCN, 2014.

Gymnosperms: The total number of gymnosperms does not exceed three species, confirming some of the most important forest ecosystems in Jordan, especially the Aleppo pine forest (*Pinus halepensis*) in Northern Jordan and the Phoenician Juniper (*Juniperus phoenica*) in the South. The Juniper and *Cupressus* species are considered threatened species due to the human impact on their natural habitat.

Pteridophyta: The total number of ferns in Jordan is estimated to range from 5 to 10 species. The status and distribution of these species are not well known.

Bryophytes: Few studies were made on the bryophytes of Jordan. About 150 species have been recorded so far. Information related to their distribution is not well known.

Lichens: An estimated number of about 150 species of lichen has been recorded. Complete and extensive surveys and specific studies have not been carried out so far.

Terrestrial Fauna

According to the IUCN Red List (2014), Jordan has 103 globally threatened species of fauna. The proportion of threatened species to the total number of species is very high, especially for mam-

mals, where 13 out of 83 mammals (15.6%) are considered globally threatened. Jordan's location by the Great Rift Valley makes the country one of the most important flyways and resting points for migratory birds in the spring and autumn. Hundreds of thousands of birds cross the area yearly, some of which are globally.

In addition to mammals, a total of 106 species of reptiles occurred in Jordan where 6 of them are threatened. The high number of birds (436) is expected because of Jordan's location along the migratory route between Eurasia and Africa. The invertebrate fauna of Jordan is unique in many aspects since its composition is a mixture of several faunal origins; but due to lack of comprehensive research, the exact number of invertebrate species is unknown.

Several assessments published tackled Jordan's fauna on the national, regional and international levels. Mammals were assessed in the Mediterranean region including species from Jordan where a single species was listed as a critically endangered; *Gazella subgutturosa*. In addition, two species are endangered and eight are vulnerable. Moreover, several assessments from the Arabian Peninsula were published including snakes, birds, reptiles, and carnivores. Below is the table of major groups with examples of the species⁷:

No	Category	Total Species	Number of Red List Species	Key Species
1	Mammals	83	8	<i>Capra Nubiana</i> , <i>G. subgutturosa</i> , <i>Gazella gazella</i> , <i>Oryx leucoryx</i> , <i>Myotis capaccinii</i> ,
2	Reptiles	107	6	<i>Varanus griseus</i> , <i>Uromastix aegyptia</i> , <i>Testudo graeca</i> , <i>Chalcides guentheri</i> , <i>Telescopus hoogstraali</i>
3	Amphibians	3	0	<i>Hyla savignyi</i>
4	Birds	436	8	<i>Acquila heliaca</i> , <i>Geroticus eremita</i> , <i>Neophron percnopterus</i> , <i>Serinus syriacus</i> , <i>Torgos tracheliotos</i>
5	Freshwater Fish	15	3	<i>Aphanius sirhani</i> <i>Garra ghorensis</i> <i>Aphanius richardsoni</i>

⁷Source: IUCN Red List, 2014.

Marine and Freshwater Biodiversity

The Jordanian coastline covers about 27 km at the northern tip of the Gulf of Aqaba, which extends for about 180 km off the Jordanian shore in the north of the Straits of Tiran in the south. It has an average width of 20 km and an average depth of 800 m. The Gulf of Aqaba consists of a series of embayments, each comprising comparatively similar communities including: rocky shore, reef flat, reef face, fore reef, sandy shore, sandy bottom and seagrass ecosystems. There is a discontinuous series of coral reefs and reef flats, never more than 150m wide, over a length of 13km.

The Gulf of Aqaba's global importance stems from its geographical location, as it is the only inland connection between Africa and Eurasia. The marine environment maintains more than 510 marine fish species, 5% of which are endemic. It is estimated that there are 25 endemic species of fish occurring only in the Red Sea, and these are profoundly found in reefs of the Gulf of Aqaba. Included here is the Indo-Pacific Humphead Wrasse (*Cheilinus undulates*) which is listed by IUCN as endangered, and three species of the Marine Turtle (*Chelonia mydas*, *Caretta caretta*, and *Eretmochelys imbricate*) which are globally endangered. There are also species of high economic value, including tuna and sardine.

Coral and Reef Fish: The Gulf of Aqaba sustains about 270 species of coral. In terms of relative abundance on Jordanian reefs, the five most abundant fish species are: *Pseudanthias squamipinnis*, *Chromis viridis*, *Dascyllus aruanus*, *Paracheilinus octotaenia*, and *Dascyllus marginatus*.

Seagrass: Seagrass meadows form the bulk of the biomass upon which other organisms in the benthic community depend, and are globally accepted as a good indicator of water quality. At least 3 species of seagrass occur here: including *Halodule wrightii*, *Halophila ovalis*, and *Halophila stipitata*.

Bacteria and Phytoplankton: Bacterial and pico-phytoplankton biodiversity surveys in the Gulf of Aqaba are very rare, due to the lack of infrastructure and human capacity. However, in 2014,

Aqaba witnessed the commissioning of the first marine microbiology and molecular biology laboratory at the University of Jordan- Aqaba Branch, Laboratory for Molecular Marine Ecology (LaMME). The first set of DNA barcoding for marine life in the Gulf of Aqaba will be presented during the Aqaba International Conference on Marine Sciences and Environment in 2014.

Zooplankton: A total of 82 species of different mesozooplankton groups and larval stages of various other organisms have been identified. Copepods are, by far, the most abundant and ubiquitous mesozooplankton organisms. The seasonal and spatial distribution of mesozooplankton in the Gulf of Aqaba has implications for fishing, ecosystem health, as a baseline to gauge impacts for future developments along the Jordanian coast, and to predict the most polluted site within the coastal stations.

Freshwater Diversity: The freshwater fish fauna of Jordan is very characteristic. It was formed from five different faunal origins; the Palaearctic, Indoasiatic, Afrotropical, Tethys relict and Mediterranean. This uniqueness attracted ichthyologists and biologists already in the 18th and 19th centuries to survey the area of Jordan basin and Yarmouk basin. A total of 15 species of fresh water fish belonging to six families and represented in 12 genera have been recorded in Jordan. All of these species are primarily fresh water fish except the cyprinodontid and cichlid fishes that are considered as secondary fresh water fish.

There are three endemic freshwater fishes in Jordan, one of which *Aphanius sirhani* is only found in Azraq and nowhere else, while the other two *Garra ghorensis* and *Aphanius richardsoni* are found in the Dead Sea basin. The first two species *A. sirhani* and *G. ghorensis* are identified as critically endangered at the global level, which promotes their conservation. A detailed study carried on both species including their life history traits was of great help to build those species conservation plan in Azraq and Dead Sea basin respectively.

Genetic Diversity

The national efforts on genetic resources in Jordan are focused on plant resources as they form the priority for national food security and human well-being. This focus is accompanied with the presence of a specialized national center in the field, namely, the National Center for Agricultural Research and Extension (NCARE). Many of the plant species in Jordan are adapted to desert areas. Therefore, these species are of extreme importance as a primary vegetation element due to their use as food for humans and animals; and for other uses including: medicinal; soil fixing; nitrogen fixing; as parents of cultivated species; and as disease, drought and saline resistant plants. Plant genetic resources of Jordan are a national and international heritage; therefore, they should be conserved and utilized for the benefit of humanity. Individual efforts have led to the collection, conservation, evaluation and utilization of a sizable part of these resources.

Jordan harbors a vast diversity of landraces, old cultivars, wild species and wild relatives of wheat and barley. For example, there is the cultivated durum (*Triticum durum*), the cultivated bread wheat (*Triticum aestivum*), the old wheat (*T. monoccocum*), the wild einkorn (*T. beoticum*, *poulard wheat*), the *T. turgidum* wild relatives (*T. dicoccoides*, *T. Urartu* and *Agliops spp.*), the cultivated two and six-row barley and the landraces old and improved cultivars (*Hordeum vulgare*), and wild barley (*Hordeum spontaneum* and other species).

Comprehensive evaluations have been carried out on the *Triticum* spp. in Jordan. *Triticum dicoccoides* is confirmed resistant to drought and diseases of Septoria blotch, common bunt, yellow rust, stem rust and barley yellow dwarf virus. Protein content of *T. dicoccoides* was found to be higher than the cultivated wheat varieties ranging from 13% to 27%. Further, accessions of *T. dicoecum* represent important genetic characters such as earliness, short stem, high number of fertile tillers, long spikes, kernel weight per spike, protein content and drought tolerance.

Wild relatives of fruit trees are found in Jordan in the highlands from the north to the south and in the

west. These include *Ceratonia siliqua*, *Ziziphus lotus*, *Ziziphus spina-christi*, *Caratagus aronia*, *Prunus mahaleb*, *Pistacia spp.*, *Ficus palmata* and *Olea europaea*. Ten accessions of *Prunus* have been collected since the early 1990s. These species and genera have adapted to harsh conditions including extremes in temperatures coupled with extended drought and low soil fertility. They are excellent resources for future research after identification of rootstocks like dwarfism, drought and calcareous soil tolerance. Medicinal plants are widely distributed in Jordan and are massively used by local people in folk medicine as hot or cold syrups, and as chewed fresh or dry raw materials.

Many plants are under collection pressure to be used for domestic use and grazing, or for housing and industrial projects (such as projects that package and market wild and medicinal plants). Species collected include: *Artemisia*, *Achilla*, *Salvia*, *Paronychia*, *Ecballium*, *Ephedra*, *Ajuga*, *Marubium*, *Origanum*, *Alcea*, *Thymus*, *Sarcopoterium*, *Hyoscyamus*, and many others. Many of these plants are endemic such as: *Iris nigricans*, *Cousinia dayia*, *Plantago maris-mortui*, *Crucianella transjordanica*, *Scrophularia nababeorum*, *Silene hussonii* and *Tamarix arvensis*. Collection often occurs in areas known for beauty and richness of flora, and is causing serious threats to natural habitats.

Finally, Jordan herbaria include those at Jordan and Yarmouk Universities (which are the largest with 60,000 and 20,000 specimens respectively); and the Royal Botanic Garden has launched a virtual herbarium. The National Virtual Herbarium (NVH) was launched on January 12, 2012, to allow online consultation of specimens from all of Jordan's herbaria. Specimens are now available onscreen at the NVH, and specimens will continue to be added until the entire flora of Jordan is represented. The mission of the National Herbarium at the Royal Botanic Garden is to provide institutions, scientists, students and other interested parties with a collection of high-quality herbarium specimens for all the flora of Jordan. The National Herbarium of Jordan will preserve important native specimens and relevant material, and make the specimens available throughout the country.

Protected Areas Network

The first national system plan for protected areas was developed in Jordan in the late 1970s under a cooperation program between Jordan (represented solely by RSCN) and IUCN and WWF. Being the lead national agency, RSCN led the first national assessment for Jordan's biodiversity priority areas thus including them in a proposal for a national protected areas network. The pioneering proposal represented the national framework for the in situ conservation of biological diversity for Jordan. Twelve sites were proposed, and were later reviewed by RSCN and MoEnv to include 4 additional sites, totaling 16 sites. Today, the number of protected areas established is 10, with a total surface area of 1,443.5 sq km.

Today, what could be categorized as proper protected areas according to the definition adopted by IUCN since 1994, and the sites included in the 2009 protected areas review, are the protected areas managed by RSCN and the Aqaba Special Economic Zone Authority (ASEZA). Other emerging protected area governance systems do fall under the globally accepted protected areas definition (such as the RBG Special Conservation Area); however, they lack the needed recognition as part of the national system plan adopted by the government of Jordan.

This table illustrates the updated national list of protected areas according to the IUCN guidelines:

No	Name of Protected Area	Date of Establishment	Area (km ²)
1	Shomari Wildlife Reserve	1975	21
2	Azraq Wetland Reserve	1978	12
3	Mujeb Biosphere Reserve	1985	212
4	Ajloun Forest Reserve	1987	12
5	Dana Biosphere Reserve	1989	292
6	Wadi Rum World Heritage Site	1997	729
7	Aqaba Marine Park	1997	2.5
8	Dibbin Forest Reserve	2004	8.5
9	Yarmouk Forest Reserve	2010	21
10	Qatar Nature Reserve	2011	110
11	Fifa Nature Reserve	2011	26
Total			1,420

The total size of protected land and water systems in Jordan (less than 1.5% of the total area of the country) remains very modest when compared to the global current global targets, the latest being 17% of terrestrial properties and 10% of coastal and marine areas as per the Global Biodiversity Strategy under the Aichi Target 11. It is also important to note that the national numbers presented in earlier CBD reports were highly inaccurate and quite misleading. For example, the third CBD report stated that more than 11% of Jordan's land and sea area is under protected areas.

It is important to report that several changes were introduced to the national protected areas network since the 2003 NBSAP, including the establishment of the Ministry of Environment as the national agency mandated to designate, oversee and monitor the protected areas network. The MoEnv signed an agreement with RSCN (in 2005), giving the latter the capacity to initiate the declaration of new protected areas, manage the established ones and strategically follow up the national network development. Another legal arrangement (a special economic zone law in 2000) granted ASEZA the authority over all protected areas lying within its area of jurisdiction. Further, the active protected areas bylaw gives the Minister of Environment the authority to declare what is referred to as “special conservation areas” as a complementary network supporting the national system plan, although not fully recognizing them as proper protected areas. As a result of the above, the first review of the national protected areas network was concluded in 2009 with an official endorsement by the Jordanian Cabinet.

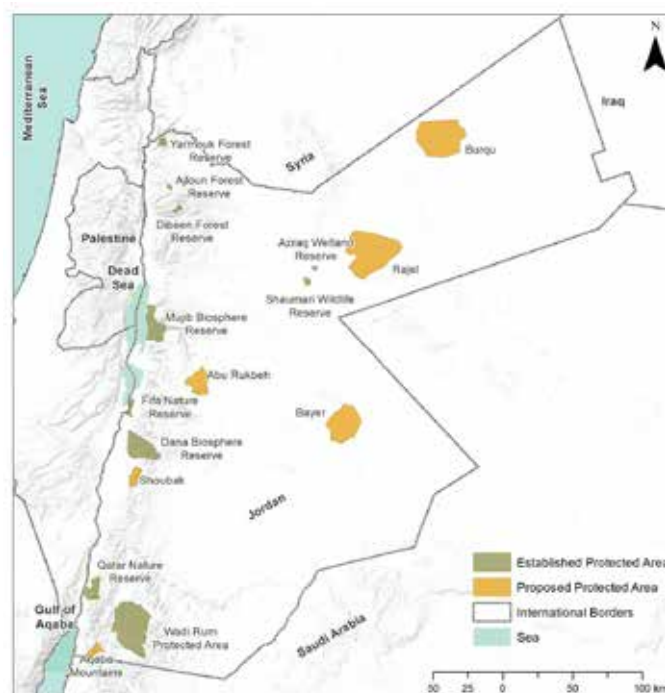
Further, the national network of protected areas incurred several changes pertaining to the sites included in the original system plan. This includes, for example, the removal of Masuda protected area as a the government's disapproval and local opposition, the addition of Shobak protected area as an alternative to the Masuda deletion, and the proposal for the inclusion of the Petra Archeological Park in the network starting from 2015. A set of specific technical reports on the main changes mentioned are available at RSCN, MoEnv, and PDTRA.

The special conservation areas represent another major transformation in the national governance system related to the protected areas. During the last five years or so, new governance arrangements have arisen in the designation and management of other types of protected areas across Jordan. In addition to the core set of nature reserves established and managed by RSCN and ASEZA, other protected areas are being declared by the Ministry of Environment and their management is mandated to other government, nongovernment and often community based organizations. These protected areas, with their specific gover-

nance arrangements, include numerous add-on sites with the primary objective of establishing and maintaining ecological connectivity between core sites and establishing ecological corridors with other unprotected sites, and finally safeguarding specific ecological hotspots (often smaller in size and lower in diversity) which were not included in the national system plan. These new sites are referred to officially as Special Conservation Areas (SCAs). This represents a positive development in the national governance system of the network, however with many challenges and questions emerging on the need for their national integration and management effectiveness. The 5th CBD report included a more detailed description of the SCAs network.

The various changes to the national network of protected areas reflect a major development in the national and local contexts related to the network in terms of governance arrangements, local stakeholder involvement, and site level impacts; all calling for a national consideration of a second review of the network starting possibly in 2015.

The map below demonstrates the protected areas of Jordan including the established and proposed ones⁸:



⁸Source: RSCN. 2014.

Jordan has successfully submitted the CBD Program of Work on Protected Areas, being one of the 108 contracting parties signatory to the convention out of 194. The PoWPA covers the period from 2012 to 2020, and includes three thematic focuses as follows. The percentage of achievement was

estimated based on the initial discussions with the MoEnv, RSCN and ASEZA as well the information available for the national team. The percentages and numbers are subject of review based on the extended consultation as part of the NBSAP updating process.

A. Improve PAs management effectiveness

No	Update and Complete Gap Assessment of PAs	Deadline	Achieved
1	Update and complete Gap Assessment of PAs	2015	80%
2	Assessment of PAs integration	2014	50%
3	Prepare and update management plans of PAs	2016	60%
4	Continue assessing threats and opportunities for restoration	2014	60%
5	Conduct and update management effectiveness assessment every five years	2015	100%
6	Continue research programs on PAs	2020	60%
7	Continue assessing and introducing technologies	2014	40%
8	Develop mechanisms for documenting lessons learned	2020	70%
9	Conduct studies on climate change and incorporate with PAs	2014	80%
10	Establish an M&E system for PAs	2013	60%

B. Improve policy environment for establishing and managing the PAs

No	Update and Complete Gap Assessment of PAs	Deadline	Achieved
1	Assess the policy environment for establishing and managing protected areas	2016	90%
2	Hold national workshops to discuss outputs	2016	50%
3	Conduct an assessment on values of PAs	2016	80%
4	Assess MPA establishment	2013	90%
5	Conduct a study on sustainable financing of PAs	2014	30%

C. Improve public awareness

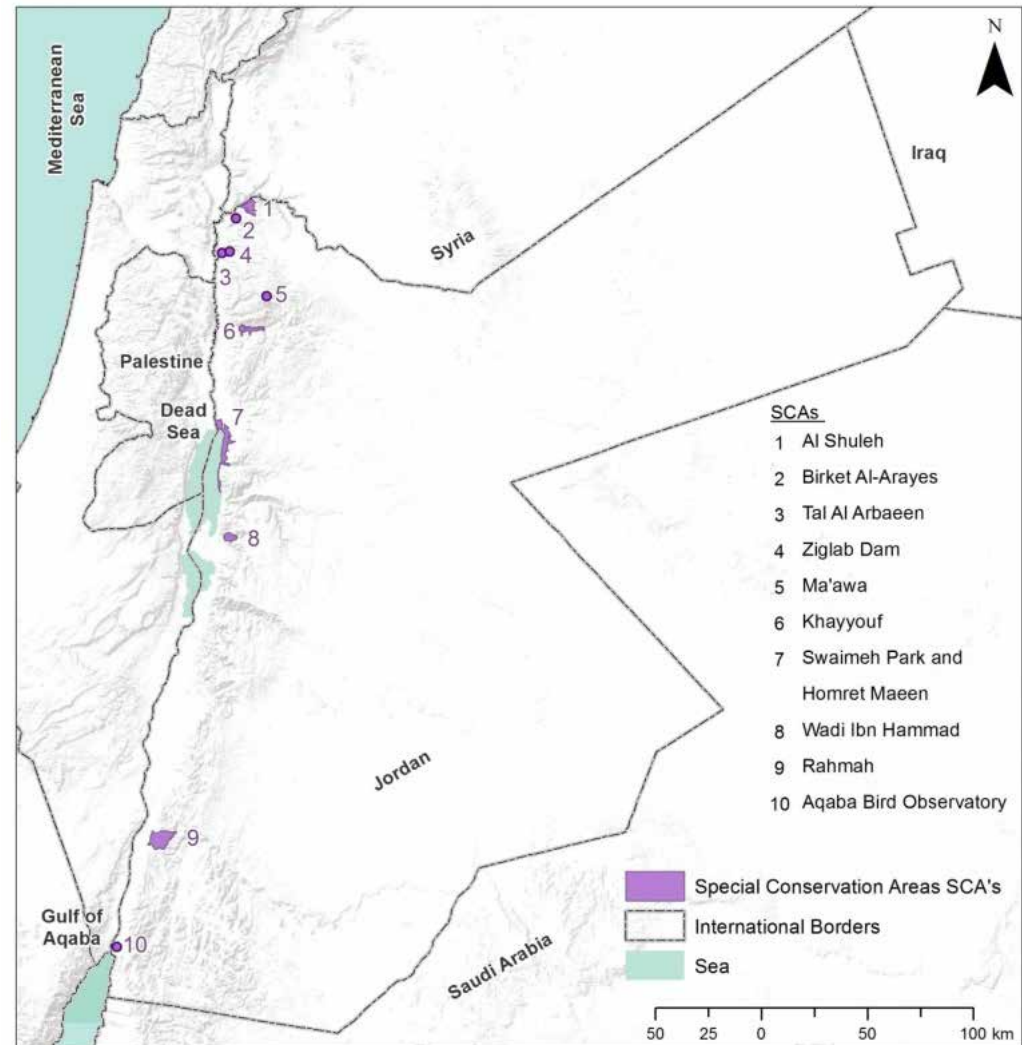
No	Update and Complete Gap Assessment of PAs	Deadline	Achieved
1	Conduct public awareness campaigns on PoWPA	2020	20%
2	Conduct public awareness on values of PAs	2013	60%

The above numbers show an adequate level of follow up on the implementation of the PoWPA for Jordan. However, it is well recognized by the key national stakeholders (namely MoEnv, RSCN, ASEZA, and the National Biodiversity Committee) that the CBD PoWPA needs to become better integrated into the national planning and reporting systems. The success of the required streamlining falls within the mandate of the MoEnv as a primary regulator of the national protected areas program.

Special Conservation Areas

During the last five years or so, new governance arrangements have arisen in the designation and management of protected areas across Jordan. In addition to the core set of nature reserves established and managed by RSCN, other protected areas are being declared by the Ministry of Environment and their management mandated to other government, nongovernment and often community based organizations. These protected areas with their specific governance arrangements include several prime national sites such as Wadi Rum and the Aqaba National Park which are managed by ASEZA, while others represent numerous add-on sites with the primary objective to establish

and maintaining ecological connectivity between core sites and establishing ecological corridors with other non PA sites, and finally safeguarding specific ecological hotspots (often smaller in size and lower in diversity) which were not included in the national system plan. A lot of these new sites are known as Special Conservation Areas (SCAs). This represents a positive development in the national governance system of the network, however with many challenges and questions emerging on national integration and management effectiveness. The map below includes the SCAs established until June 2014⁹.



The following table summarizes the key characteristic of the SCAs:

⁹Source: RSCN, 2014.

No	Site	Size	Location	Vegetation Type	Lead Agency	Main Management Interventions
1.	Al-Shuleh SCA	20 km ²	Irbid (Yarmouk)	-Deciduous oak -Water vegetation	Al-Shuleh Municipality	-Recreation and ecotourism
2.	Tal Al Arba' in SCA	.5 km ²	Northern Ghor Region	-Saline vegetation	Bab Al Salam Women Cooperative	-Sustainable agriculture
3.	Khyouf SCA	20 km ²	Al Balqa region	-Water vegetation -Steppe	Al Khair and Wafa Society	-Sustainable agriculture -Recreation
4.	Homret Ma'in SCA	40 km ²	Dead Sea region	-Water vegetation -Tropical and saline -Steppe	Development Zones Company (JDZ)	-Tourism -Eco-tourism -Agriculture
5.	Ibn Hammad SCA	15 km ²	Karak region	-Water vegetation -Tropical	-Bateer Women Society -Wadi Ibn Hammad Society	-Ecotourism -Sustainable agriculture
6.	Aqaba Bird Observatory	1 km ²	Aqaba region	-Saline vegetation	ASEZA	-Ecotourism
7.	Hima Layathneh SCA	2 km ²	Petra region	-Mediterranean non-forest -Traditional agriculture -Recreation -Nearby cultural tourism	PTDRA	-Ecotourism
8.	Al Ma'awa SCA	1 km ²	Jerash region	-Pine vegetation -Wildlife sanctuary -Natural Forest (pine and oak)	PAF	-Wildlife sanctuary
9.	Rahma SCA	30 km ²	Aqaba region	Sand dune vegetation -Desert landscape -Livestock grazing	NA (currently)	NA (currently)
10	Royal Botanic Garden	2 km ²	Jerash region	Pine forest	RBG	-Plant conservation -Rangeland rehabilitation

Important Bird Areas

The BirdLife International IBAs program aims to guide the implementation of national conservation strategies, through the promotion and development of national protected-area programs. It is also intended to assist the conservation activities of international organizations and to promote the implementation of global agreements and regional measures.

In Jordan, the BirdLife International's partner is RSCN since 1995. Through their long terms cooperation, a regional assessment of IBAs including Jordan was undertaken and published in 1994, and as a result, 27 IBAs were identified with their associated number of bird species. The below tables summarize the key attributes of Jordan IBAs10:

Total Number of Birds	329
Globally threatened birds	10
Landbirds	226
Seabirds	24
Migratory	270
Waterbirds	100
Number of IBAs	27
Number of EBAs	1 Levantine mountains

Red List Species

The IUCN species conservation program and commission have been assessing the conservation status of species, subspecies, varieties, and even selected subpopulations on a global scale for the past 50 years in order to highlight taxa threatened with extinction, and in response promote their conservation at all levels. Jordan started early on taking part of such assessments. These were initially related to bird and animal species. During the last five years or so, national efforts on Red Lists were extended to cover plants as well. One important development with regard to this national program is related to the specialization of organizations in addressing the different national red lists and their integration into the global Red Lists of IUCN.

The Royal Botanic Garden (RBG) has taken the lead in the classification of Jordanian plant species and assessing more than 1,000 plant species so far. The red list of the Jordanian Flora aims at supporting the creation of conservation strategies which, in turn, will help protecting Jordan's plant diversity and will serve as a reference for future studies and monitoring programs. It will be updated whenever new information is available.

The Jordanian National Plant Red List Assessment has five main objectives:

- To contribute to national conservation planning through provision of a baseline dataset reporting the status of Jordanian vascular plants.
- To identify those geographic areas and habitats in need of conservation to prevent extinction and

ensure that Jordanian vascular plants reach and maintain a favorable conservation status.

- To Identify the major threats to plant diversity in Jordan and propose mitigation measures and conservation actions to address them.
- Strengthen the network of national plant experts focused on conservation of vascular plants in Jordan (and the region) and ensure they have a role in regional and international initiatives, so that the assessment information can be kept current, and expertise can be targeted to address the highest conservation priorities.
- Strengthen the relationship between national and international plant experts focused on conservation of vascular plants in Jordan and ensure activities are fully integrated.

Further, the assessment seeks to achieve three main outputs:

- A summary report on the status and distribution of Jordanian vascular plants, their main threats and recommendations for their conservation measures.
- A *gratis* database holding the baseline data for monitoring the status and distribution of Jordanian vascular plants.
- A website and data portal showcasing these data in the form of species factsheets for all Jordanian plants that were assessed, along with background and other interpretative material.

¹⁰ Source: BirdLife/RSCN, 2014.

Volume One of the Jordan Plant Red Data Book has been prepared. Volume Two, which will include the assessment of all species, is being initiated along with a strategy to continuously monitor and update data.

A comprehensive bird red list is continuously updated by RSCN through its partnership with BirdLife and other national institutions, and a new marine biodiversity red list is being developed for the Gulf of Aqaba under a partnership between ASEZA and JREDS.

The following table includes an extract from the IUCN World Database for Red List Species presenting numbers under the various taxa for Jordan and as compared to some countries from the region. The table below shows how Jordan compares strongly with many countries of the region in spite of its small size. This is a reflection of the geography and topography variations in addition to the quality and quantity of scientific research undertaken over a long period of time¹¹.

Country	Mammals	Birds	Reptiles	Amphibians	Fishes	Mollusks	Other Invertebrates	Plants	Total
Jordan	13	8	6	0	12	5	55	1	100
Iraq	14	14	3	1	17	1	16	1	67
Lebanon	10	8	7	0	20	8	6	2	61
Oman	10	8	8	0	25	2	29	6	88
Palestine	3	8	4	1	0	2	2	0	20
Saudi Arabia	10	13	3	0	24	1	58	3	112
Yemen	9	12	6	1	24	2	66	162	282

Wetlands

The Convention on Wetlands which was convened in 1971 in Ramsar, known as the "Ramsar Convention". It is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.

The Convention on Wetlands came into force for Jordan on 10 May 1977. Jordan presently has one site designated as a Wetland of International Importance, with a surface area of 7,372 hectares. The Jordan Ramsar site is the Azraq Oasis and Qa'a, inscribed on the list in July 1990. Azraq is formerly a permanent, spring-fed wetland and extensive (6,127ha) seasonally-flooded mudflat of a large drainage basin. Under natural conditions, the lush oasis supported reed and sedge communities restricted to the area. It is a valuable staging area for migrating birds and serves as an important

water supply for local communities, as well as one of the main water sources for the capital city, Amman. Azraq suffers from unsustainable groundwater extraction which led to the almost complete desiccation of the site.

This site has been almost totally destroyed except for a very limited part which is manually fed by water to maintain this ecosystem. This destruction resulted from severe water abstraction that exceeds many fold of its annual recharge. Accordingly, within the last twenty years, at least 50% of the plant biodiversity recorded in 1995 survey has been lost. Among these lost species are very rare and endemic species that do not occur anywhere else in Jordan. A rehabilitation program has been implemented for Azraq since mid-1990s including the establishment of the Azraq Wetland Reserve (around 10% of the Ramsar site) by RSCN in cooperation with the MoEnv, MoWI and international donor agencies such as GEF, World Bank and GIZ.

¹¹ Source: IUCN Red-list database 2014.

Forests

Jordan has limited forest resources, with less than 1.5% of the country being classified as forests. Of this forest land, only 26% have forest cover with a canopy density of 10% or more and the rest is mostly composed of land sparsely covered with vegetation.

The forests in Jordan, especially natural forests, are fragmented, open in density, slow growing, of degraded conditions and, thus, of low commercial value. Commercial forests are only expected in areas receiving more than 400 mm of precipitation annually. Such lands constitute only 9% of the total forestlands. Afforestation activities can be implemented in areas receiving more than 250 mm/year which constitute 8.3% of the total forestland.

The forest vegetation in Jordan can be divided into the following categories: Natural forests that are composed of evergreen shrubs, pine and juniper forests as well as broadleaf forests. Artificial or man-made forests, are areas afforested artificially by the Forestry Department since the 1950s.

The afforested areas are found in all registered forest lands in Jordan. They are planted mostly with *Pinus halepensis* and *Acacia saligna*. The survival rate varies from 0 to 75%.

Bare forest lands, are areas registered as forest land in the name of the government treasury but being presently bare of forest cover. They are characterized by rough topography, poor site conditions, soil erosion hazards, over grazing or over harvesting.

Unsettled forest areas, areas covered completely or partially by forest trees, but still un-surveyed or un-registered. The total area of unregistered forest area is estimated at 12,200 ha. These areas are in principle governmental land at the disposition of the forestry administration.

Roadside plantations cover about 2,500 km of roadsides. Trees planted along the roads belong to the government and are managed by the Forestry Department.

All these are government forests either registered in the name of the Jordan government Treasury as forestland or declared as forestland according to the 1973 Agricultural Law no. 20 and to the 1974 Government Property Owned Management Law no. 17.

Private forests are registered in the name of their private owners and are found mostly in the northern part of Jordan where higher rainfall is prevailing. They include natural forest vegetation and tree plantations on farms, in the form of windbreaks and shelter-belts. Private forests account for less than 4% of the total declared forestland.

1.4 Threats to Biodiversity

The Jordan biodiversity remains exposed to major threats which have led and continue to cause sharp destruction of natural ecosystems and loss of their functions and services, and severe declines in the flora and fauna numbers and distribution, including the threatening and extinction of flagship habitats and species for the terrestrial and aquatic ecosystems. The threats of biodiversity include a set of direct threats and other underlying causes.

Direct Threats to Biodiversity

The following presents a summary of the main factors directly threatening biodiversity and causing its loss. These factors represent the symptoms of the biodiversity challenge in Jordan. They comprise mainly human-induced factors which represent the direct impacts of mal-consideration of biodiversity in all development processes in the country starting from planning, to management, all the way to performance monitoring and judgment of success in the eyes of the government, the civil society and the private sector.

Habitat Destruction

Uncontrolled urban expansion occurs in the form of deforestation, rangeland degradation, and transformation of forests into agricultural and urban areas, all due to the increase of Jordan's population and industrial development accompanied with inadequate planning and management controls of land and sea.

Overgrazing and excessive woodcutting, in addition to intensive agricultural practices, are major threats to biodiversity in Jordan as they result in soil erosion and destruction of natural habitats.

Unplanned mining and quarrying are leading to further habitat destruction especially in and around areas of significance to biodiversity such as established and proposed protected areas, important bird areas, genetic resources areas, areas of rangeland diversity and all fragile forest ecosystems. The challenge of mining increases in the case of strategic resources and minerals such as water, oil, oil-shale, gold and copper upon which all conservation as well as human well-being agendas and priorities would easily be compro-

mised due to Jordan's pressing economic needs and priorities. Several clear cases are evident of the above including the ongoing threat on Dana Biosphere Reserve from the copper industry, and the inability to activate the management of the Qatar Protected Area for the anticipated Red-Dead water conduit project.

Uncontrolled vehicles movement associated with the lack of ecosystem based transportation infrastructure safeguards have led to serious habitat destruction in many biodiversity hotspots –like in the case of northern forests and the rift valley region- and have caused major disturbance to areas of migratory species importance, leading –for example- to decrease in successful breeding and numbers of migratory birds visiting Jordan.

Unbalanced water use and unplanned water extraction from surface and underground water resources threaten many areas of Jordan and consequently the habitats and micro ecosystems of both animals and plants. The impacts of water use on biodiversity are still highly understudied and not understood at the macro and micro levels.

Pollution of surface and underground water resources and aquifers due to agro-chemicals, sewage discharge and solid waste disposal causes further threat to the presence and reproduction of many faunal species.

The increasing development pressures represented by the above factors, combined with population growth, are accelerating habitat degradation, climate change, species loss and the general depletion of key natural resources, especially water as well as biodiversity. They are also affecting the livelihoods of local pastoral and agricultural communities, who now find traditional grazing areas, agricultural lands and hunting areas dissected and degraded by infrastructure and urban expansion. As a result, overgrazing, overhunting and deforestation are widespread, adding more pressure on the remaining natural areas.

The above ongoing and often accelerating challenges reinforce the need for improved land use planning and management capacity.

A national land use plan was a clear focus of

several national policies and strategies since the 1991 National Environment Strategy. All successive strategies continued to address such a need, however with little detail on ways of specifically integrating biodiversity conservation into broader land use strategies.

Despite the above, several progressive land use planning efforts were and are being made by respective national and regional institutions. This includes the efforts implemented by the Ministry of Municipal Affairs (MoMA) on the development of the national land use plan which was concluded in 2006 and its ongoing follow up program on the governorate levels. The initiative includes the development of the natural heritage layer as one of the foundations for development planning. It has also introduced a specialized unit at the Ministry for natural heritage planning, and equipped it with required infrastructure and technical competencies. MoMA has been making concrete efforts to involve and coordinate the program with relevant ministries including the Ministry of Environment, civil society organization such as RSCN, and local communities' organizations especially at the governorate level.

Other land use planning and management initiatives include the following:

- The ongoing implementation and monitoring of the 2004 land use plan of the Jordan Rift Valley, implemented by the Jordan Valley Authority. This included the designation of two new protected areas in the valley, Yarmouk and Fifa and several SCAs such as the Khyouf SCA in Balqa Governorate downstream of the King Talal Dam.
- The ongoing review and implementation of the ASEZA (2000) land use and master plans by ASEZA. This includes the review and update of the buffer zone around the Wadi Rum as a World Heritage Site and a Protected Area with particular focus on biodiversity conservation and sustainable tourism development.
- The ongoing implementation of the Dead Sea master plan by the Development Zones Company associated with the Development and Free Zones Commission. This includes a set of biodiversity guidelines and safeguards in addition to the establishment of an eco-park as the backbone for coastal development and protection.
- The ongoing updates and finalization of the Petra Region land use plan including the development of the heritage based buffer zone and the declaration of the Petra World Heritage Site as a Natural Protected Area.

Persecution of Wildlife, Trade and Spread of Disease

Illegal hunting has caused the extinction of several species of Jordanian wildlife, and is considered to be one of the main factors threatening faunal biodiversity of the country. The impact of this threat further increased after the introduction of modern hunting techniques.

Illegal trade of native species directly affects faunal populations. Additionally, the illegal dissemination of non-native species causes severe stress on some species and is a threat to their presence.

Little is known about the status and transmission of diseases in wild animals. Increased contact with wildlife has led to the transmission of some diseases from livestock to wild animals and vice-versa, either through direct contact or predation. Further, several wild animal species in Jordan are thought to be vectors or reservoirs for some diseases. These diseases may affect both humans and wild fauna and could be a real threat to the distribution and relative abundance of certain species.

Invasion of Alien and Exotic Species and Genetic and Living Modified Organisms

Introduction of alien species is a major threat to native animal and plant species. Alien species and invasive exotics can become pests by adapting to habitat changes and causing destruction to natural habitats and agricultural areas. On the other hand, feral species, which invaded the country long ago, might affect their wild relatives through competition and interbreeding.

On the other hand, the accelerating trend on biotechnology, although foreseen to improve the quality of life and economic development, includes an increasing level of risk on national biodiversity especially in relationship to the transfer and application of Living Modified Organisms (LMOs). Jordan, being a center for genetic resources associated with food security at the national –and more importantly– the global levels, needs to address such a potential risk and its consequent threats with the maximum level of caution and readiness in terms

of legislative frameworks, technical and logistical capacities as well as monitoring and inspection.

Tourism Development

The tourism sector already poses a major threat to biodiversity, and given the planned exponential growth of the sector, this threat is expected to grow significantly. Although few of Jordan's current visitors are nature tourists per se, tourists do visit protected areas and high biodiversity areas. Biodiversity is being threatened by mass tourism across the landscape as a whole, and the tourism footprint on biodiversity is expected to grow over time. Threats posed by tourism may be divided into two categories: direct threats and indirect threats.

The prime direct threats from tourism activities to biodiversity are the following:

Hotel and tourism infrastructure development: Development of hotels and other tourism infrastructure in ecologically sensitive areas is leading to fragmentation and loss of habitat.

High visitor numbers: High visitor numbers lead to disturbance of habitats. Visitors' activities have exerted extensive pressure on biodiversity from trampling, hunting, plant collection, uncontrolled trekking and climbing, etc.

Effluent discharges: Effluent discharges, litter accumulation and extensive abstraction of water have had an impact on animal behavior and also resulted in the accumulation of toxic compounds in the ecosystem, in addition to threatening the biodiversity of important habitats.

The indirect threats of tourism to biodiversity include:

Roads development: Roads provide easy access to ecologically important areas. Unless planned to incorporate biodiversity values, this could have the inadvertent effect of increasing other threats (e.g. poaching).

Encroachment by local population: Local populations encroach on natural resources and practice intensive resource use to support their livelihood needs. A further increase in agricultural and pastoralist activities is expected as the local pop-

ulation will aim to meet increased demand for food products from tourism establishments, causing additional pressure on biodiversity by overgrazing, loss of the vegetation cover, wood-cutting, etc.

Climate Change

There is a “very high confidence” (as laid down by the IPCC) that climate change is already affecting living systems. The responses of both fauna and flora span an array of ecosystems and organizational hierarchies, from the species to the community levels. Recent scientific research on global meta-analyses revealed significant range shifts averaging 6.1 km per decade toward the poles (or meters upward), and a significant mean advancement of spring events by 2.3 days per decade. Jordan is vulnerable to climate change, and some features of projected climate change in Jordan include: (i) increase in temperature of 1-2 degrees centigrade by 2030-2050; (ii) increase in evaporation accompanied by soil moisture reduction; (iii) diminished recharge of aquifers and oases, (iv) projected shrinkage of grasslands (which extend over 10% of Jordan); and (v) projected shift of semi-arid rangeland (which extends over 80% of Jordan) to become arid desert. Improved and continued conservation planning and management in Jordan; based on an assessment of climate change implications on biodiversity is both prudent and necessary.

Climate change has progressively become a key national development agenda item triggered by the increasing international recognition following the confirmation of its global impacts and response strategies, as well as the rapid development of the global instruments and mechanisms targeting the enhancement of national capacities with regard to climate change adaptation and mitigation, the first being a priority in the Jordan context.

In line with the global movement, Jordan has taken several strategic steps in its engagement and contribution to this global priority. The national efforts in response to the global movement on climate change comprise the legal and institutional developments adopted by the Ministry of Environment, including the establishment and activation of the climate change department as a key functional unit at the Ministry.

The development above coincides with the development and adoption of the national climate change policy in 2013, and the current process of the preparation of the third national communication report on climate change.

The national climate change policy represents a key milestone in the development of the national legislative frameworks related to climate change in general including the aspects related to biodiversity and ecosystems which are well-recognized in the policy document.

The policy document includes specific national objectives:

- To advance the understanding of climate change impacts on biodiversity as well as on the green house gases' mitigation of ecosystems potentials, in particular those of protected areas;
- To improve the monitoring of encroachment of urban and rural development on prime agricultural lands, green spaces, open spaces and forests;
- To facilitate adaptation of biodiversity to climate change by increasing resilience of, the protected areas in particular; and
- To develop capacity within responsible institutions and communicate to relevant stakeholders.

Further, the policy document identifies several climate change priorities, main measures and instruments for the biodiversity sector as follows:

- Design and manage Jordan's protected areas in light of the emerging and increasing challenges related to climate change and global warming;
- Introduce and strengthen eco-system based adaptation.
- Research, monitor and address impacts of climate change on biodiversity. In particular, climate change sensitive environmental and socio economic monitoring and evaluation systems needs to be put in place parallel to Jordan's protected areas planning;

- Address socioeconomic concerns resulting from climate change impacts on biodiversity;
- Enhance climate change resilience within terrestrial ecosystems and their services and enhance the resilience of coastal and marine ecosystems and associated vulnerable species;
- Support restoration of degraded forests, using diverse conservation areas governance forms, and building on the special conservation areas approach.
- Raise awareness and mobilize stakeholders for conservation of biodiversity and ecosystem services; and
- Promote a common working definition of sustainable land use and planning, and encourage public participation in land use policies and management.

Further to the above, Jordan ratified the United Nations Convention Framework on Climate Change UNFCCC in 1993 and prepared and submitted two national communication reports to the convention till this date. The communication reports include major sectors emissions and major sectors impacts resulting from climate change. Biodiversity and ecosystems were not fully investigated as a sector in the first two national communication reports to the UNFCCC; therefore, there was a need to include biodiversity and ecosystems sectors in the third Jordan's UNFCCC communication report to cover this sensitive and important sector.

The Third National Communication report highlights the climate change impact on biodiversity and ecosystems and assesses the vulnerability of biodiversity and ecosystems sector in Jordan toward climate change and suggested adaptation measures in the form of best fit local and national projects. The Third National Communication Report has just been finalized by the MoEnv in cooperation with GEF/UNDP and its submission is expected before the end of 2014.

Another important national initiative addressing the climate change impacts on biodiversity and related adaptation strategies has been implemented by RSCN since 2007 at the strategic level, including the development of the protected areas based scenario building, a national stakeholders communication platform, a protected areas centered climate change adaptation strategy and a set of pilot initiatives of climate change adaptation on the ecosystem and habitat levels. It is important to note that the provisions, objectives and obligations addressing the climate change theme as associated with biodiversity and protected areas will be reflected in sectoral as well as the national strategies addressing biodiversity, in this case the NBSAP. The NBSAP will act as a tool for the implementation of the national climate change policy.

The Issue of Refugees

More than one million Syrian refugees have entered Jordan during the last three years. They escaped the crisis in their country, leaving behind their livelihoods and most of their resources. The majority of these refugees were integrated into the Jordanian society, while a substantial number remained in designated refugee camps such as the Zaatari camp in the Mafraq area. The northern governorates of Jordan have received the majority of the refugee populations, with a significant percentage distributed in the northern parts of the Rift Valley area. More specifically, this includes the western parts of the governorates of Irbid, Mafraq, Ajloun, Jerash, and Balqa.

It is not an easy task to assess or quantify the specific impacts of the refugees on the various natural resources and ecosystems in the host regions; nonetheless, some of these impacts are easier to estimate than others. These impacts include pressures exerted on water resources, agricultural areas, rangelands, and open spaces. In the case of the refugee camps, most of the impact on natural resources is represented by water use (mostly for domestic purposes). As confined territories, the camps have limited impact on rangeland and other natural resources, especially noting that they are mainly supported through international subsidies for the provision of food and other ecosystem-related goods and services.

The case for the refugees outside the designated camps is much more complex to assess in regard to interaction with ecosystems and their associated biodiversity. Nonetheless, evidence could be established on a number of associations between the influx of refugees and the impacts on natural resources. For example, many refugees who come from nomadic or rural backgrounds got involved with livestock husbandry and agricultural activities, mainly through employment by Jordanian residents who utilized the refugee work force to support their agriculture related activities, as well as the operation of tourism enterprises. It could also be noted that the skilled labor introduced by the refugees created an opportunity to improve the quality of services related to agriculture, livestock, and tourism. Consequently, this would also mean increasing pressures on ecosystem goods and services in addition to increasing the demand on consumption associated with the direct socioeconomic needs of the refugees themselves.

From another point of view, the influx of refugees has increased competition with host communities on a large set of income sources and jobs. Further, the wave of refugees caused a sudden increase in the cost of services and real estate which impacted the purchasing power of host Jordanian communities, thus forcing them to exercise more direct and indirect pressures on natural resources. Clear examples include the increasing trend of illegal tree cutting to compensate for increased fuel prices, overgrazing of livestock in response to inability to secure high cost fodder, and illegal wildlife hunting as a reflection of reduced ability to procure domesticated sources of meat such as chicken and lamb.

The economic valuation of the direct and indirect impacts of the refugees on the ecosystems of host regions of Jordan requires an in-depth scientific research which would lead to a clear policy document needed to support decision making with regard to the sustainability of ecosystems, their goods and services, as well as their biodiversity, under crisis conditions such as the Syrian refugee case.

The Underlying Causes of Biodiversity Loss

The above direct threats to biodiversity are a result of a series of root causes:

Lack of Public Awareness on Biodiversity

The main root cause in the decline of Jordan's biodiversity can be attributed to the fact that biodiversity is not sufficiently recognized by the Jordanian public including policy and decision makers all the way to end users. For the biodiversity to be well protected and conserved for the future, it needs to become integral to the overarching set of national values and patriotic principles. A national culture of respect, appreciation and action towards the biodiversity is a primary requirement for the success of all strategic and operational efforts to conserve it and sustain its use.

The general public in Jordan is not aware of the importance of biodiversity for our lives and future. Biodiversity is perceived by the majority of Jordanians an elitist sector which is highly disconnected from national realities related to the political, social and economic constraints and priorities. Many national and local efforts were made to bridge the awareness gap and clarify the concrete relevance of biodiversity to peoples' well-being and prosperity. These include several long terms programs developed and implemented by government and nongovernment organizations; nevertheless, the level of success is not at all satisfactory.

This strategy addresses the issue of awareness from a governance perspective, with the hope that improved public participation in the environmental processes and decision making frameworks would yield better national understanding and more ownership and thus stronger support to biodiversity conservation and environmental sustainability.

Weak Governance

Good governance is built on three fundamental pillars, a clear legislative framework, an effective decision making structure and strong culture based on the principles of equity, participation and accountability. In the case of biodiversity in Jordan, the legal frameworks have been significantly improved especially in light of the establishment of the Ministry of Environment (2003) and the adoption of the Environment Protection Law (52) 2006 which enhanced the overall national recognition of the environment protection sector as a whole. The law included provision for two bylaws, namely, the protected areas and national parks, and the environmental impacts assessment by-laws, which were instrumental in the application of the law. Further, the historic role of the Ministry of Agriculture in the protection of forests, rangelands and genetic resources since the establishment of the State of Jordan provided the needed foundation for a successful introduction of the emerging environment legislation. Another positive aspect of the legislative set up is related to the delegation of some of the responsibilities and authorities of the two ministries to the long-established RSCN with regard to the establishment and management of protected areas (by MoEnv) and the enforcement of wildlife protection and hunting regulations (by MoA).

In spite of the above, the chronic weak enforcement of laws remains a perennial issue for biodiversity in particular. The problem of enforcement is mainly related to the ineffective application of the bylaws and regulations by the juridical systems. This is often justified in recent years by the argument related to the sensitive regional political conditions which require a more lenient approach to law enforcement in general and to the enforcement of environment laws in particular.

Secondly, the decision structures related to biodiversity have been poorly established until recently. Public participation including civil society, local communities and private sectors remains below accepted standards; however, one important strategic improvement was initiated few years back by instituting the National Biodiversity Committee (NBC) in 2005 which is gradually becoming an ac-

tive platform for improved involvement of civil society in the decision making process with regard to biodiversity. It is important to note that the NBC as a good governance initiative is highly emphasized in this strategy document.

Thirdly, the public culture for governance in Jordan in general, and to a lesser extent in the environment sector, is not supportive of good governance principles and applications. This is a root cause of many of the shortcomings related to the malfunctioning legislative systems and their associated regulations.

Disconnect between Scientific-base and Development Agendas

Sound decision making requires a strong linkage with science and knowledge. Biodiversity related knowledge in Jordan is well advanced and is considered among the pioneering examples at the regional level. Nonetheless, the level of investment and support given to this very important sector is still below the required levels. Linkages between the government and the academic institutions had been developing in the last decade or so. One good example is the strongly positioned role of the Marine Science Station (MSS) with the Aqaba Special Economic Zone Authority (ASEZA). The MSS represents the scientific advisor of ASEZA with regard to all marine environmental aspects related to the different development projects. Although occasionally constrained by the sensitivities and politics of some initiatives, the set up remains among the success stories where the science-base informs and guides more sustainable decision making and actions. For an adequate level of decision support to be provided by the various specialized scientific entities concerned with biodiversity, a set of supportive legal instruments needs to be put in place, supported by adequate levels of technical and logistical capacities of such institutions, also coupled with clear lines of separation of duties and lines of authority.

Inadequate Knowledge Management

There has been a tremendous amount of accumulative knowledge on Jordan's biodiversity which was collected and archived by numerous government agencies, NGO's, and academia. Nevertheless, there is no single national platform which compiles all the gathered knowledge; thus, it remains scattered in the archives of many individual organizations. This represents a major challenge, as knowledge is not being shared adequately or updated systematically or based on previous efforts. This results in the loss of valuable efforts and time which are expended in gathering information and developing knowledge products. The lack of knowledge sharing is often related to possessive approaches adopted by the relevant organizations, justified by the protection of their source of power and influence.

Another missed opportunity is the mal-utilization of new technology solutions for knowledge management, which allow proper mechanisms for gathering, storing, disseminating, updating, and quality controlling of knowledge. Another missed opportunity is represented by the use of knowledge in enhancing public understanding and participation in biodiversity related efforts and problem solving. It is evident that there are several good initiatives on the development of knowledge databases related to biodiversity, especially relevant to NGOs. A very good example is that of the RBG which has recently established a national database on native flora species associated with a national red list on threatened flora and a virtual herbarium, with the latter considered to be a pioneering initiative and success story.

On the other hand, the Ministry of Environment is currently establishing a clearing house mechanism (CHM) on biodiversity with the purpose of establishing a centralized and well harmonized national database on biodiversity information, accessible to the public and practically useable to support decision making with regard to conservation and development projects of relevance. This strategy includes strong emphasis on the enhancement of knowledge management frameworks and strengthening of knowledge sharing and collaboration.

Lack of Systematic Financing Framework

Lack of adequate and sustainable financing is a global constraint facing the sustainable development agendas in general and biodiversity conservation in particular. The level of national government investment of Jordan on biodiversity was less than .0.05% of the GDP in 2013¹². The financial challenge includes the government institutions, NGOs and the local Community Based Organizations (CBOs) as well.

For example, the RSCN annual budgetary turnover is around 5 million dollars covering –on behalf of the government- the cost and operation of over 300 staff and 8 protected areas. Out of this amount only less than 10% is provided by the government in return of RSCN's mandate. RSCN –in an internationally recognized model– secures its operational costs through utilizing a set of innovative sources of income including endowment funds, ecotourism and donations. A third of its budget still however comes from international aid projects and external support. Similar models are applied by other emerging NGOs such as the RBG and JREDS, nonetheless with more dependence on aid projects and private sector sponsored activities.

Although innovative and successful, these models cannot be applied to line ministries and programs addressing biodiversity protection as they are constrained by legal obligations related to access to nonconventional funding sources.

For a financing framework to be effective it requires a proper legal setting enabling a multi-resource financing approach from internal and external sources (i.e. government fiscal budget allocations, and bilateral and multilateral aid and credit projects) as well as innovative mechanisms such as climate change funds, biodiversity off-sets and private sector CSR programs.

¹² Source: Ministry of Environment, 2014.



Part II:

The Update of the NBSAP

2.1 The National Strategic and Legal Frameworks for Biodiversity

National Biodiversity Strategies

Environmental planning and policy formulation in Jordan prior to the 1990s was based on a sector-specific approach with little consideration of environmental concerns. It can be said that environmental planning and policy formulation came to age in 1991 when the National Environmental Strategy (NES) was formulated by a national consultation process led by the Ministry of Municipal, Rural Affairs and the Environment.

Based on the NES, Jordan was in a good political and strategic position to sign and then ratify the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC) in 1993 during the Earth Summit. Two years later Jordan signed and then ratified the UN Convention to Combat Desertification (UNCCD).

Completing most of its international obligations and on the foundations of the NES, Jordan opted to develop a practical environmental action plan in 1995. The National Environmental Action Plan (NEAP) was prepared through a national consultation process coordinated by the Ministry of Planning; and it included a prioritized action plan based on results. The NEAP remained to be the environmental guidebook in Jordan, with most of its proposed projects either implemented or started to be implemented.

In 2000, Jordan launched its multi sectoral National Strategy for Sustainable Development which was called “National Agenda 21”. The National Agenda 2007–2017 represents an ambitious effort to create a master plan for the reform, future growth and development of Jordan. The Agenda initiatives were developed in three key areas:

- 1- Government & Policies.
- 2- Basic Rights & Freedoms.
- 3- Services, Infrastructure & Economic Sectors.

The third theme above includes the environmental identified several challenges with regard to the environmental sustainability sector, recommending several initiatives to address them, as follows:

- Improve the management of natural reserves and develop a master plan for land use and ensure its implementation.

- Formulate a long-term comprehensive policy to combat desertification and integrate it in national sustainable development policies.

Two performance indicators were established to monitor progress on the establishment of protected areas and the protection of genetic diversity, with the latter receiving more attention and elaboration.

The National Biodiversity Strategy and Action Plan (NBSAP) was launched in 2003 while the National Action Program (NAP) to combat desertification was launched in 2006, both currently being reviewed and updated by the MoEnv. This strategy document represents the first update of the 2003 NBSAP as part of Jordan's commitment towards the global obligations as set in the CBD implementation and the associated Global Biodiversity Strategy 2011-2020.

Legal Framework and Associated Institutional Setup

Biodiversity is addressed through three main legal frameworks in Jordan. The first one is represented by the Environment Protection Law (Number 52 for the year 2006). The law gives the Ministry of Environment national mandate and authority over environmental management and protection whilst obliging all official and civic constituencies to adhere to the legislations, bylaws, regulations, and decisions associated with the implementation of the law.

The law further designates the Ministry to be the national, regional and international focal point for the whole of the environment sector, including collaboration and coordination with and on international conventions and treaties. A specific responsibility of the Ministry is related to the protection and sustainability of biodiversity in the forms of ecosystems, species and genetic resources, among many other strategic roles and responsibilities.

The strategic position of the Ministry as adopted by its successive senior management is based on its role as a regulatory body responsible for the development of the policy frameworks, sector strategies and programs portfolio, followed by a

strategic monitoring and quality assurance role on the performance of executive entities delegated by the Ministry to undertake specific tasks and responsibilities.

The capacity of the Ministry to fulfill its two primary mandates on biodiversity remains very limited. It is an inevitable necessity that the building of the technical, human resource, logistical, monitoring, and associated financial capabilities must be a prime focus of this strategic document with the aim to empower the Ministry to guide the national program on biodiversity and provide adequate levels of support backstopping to partners and stakeholders.

Further, the Ministry adopted two bylaws which are directly related to biodiversity namely the Bylaw on Protected Areas and National Parks (Number 29 for the year 2005), and the Bylaw on Environmental Impact Assessment (Number 37 for the year 2005).

It is important to note that the Ministry is currently working on amending of its general law. The new amended law is foreseen to enhance the legal framework on biodiversity, as it will include the development and adoption of several bylaws, specifically on protected areas, genetic resources and biodiversity, and species conservation. The law will also include the revision of the EIA Bylaw, introducing improved legal tools and mechanisms on biodiversity safeguards and management.

RSCN is mandated by the Ministry of Environment to implement the Bylaw on Protected Areas and National Parks in what is considered a unique model for the region and globally, whereas an NGO is mandated to implement government mandates. This is attributed to the long established experience of RSCN as a pioneering nature conservation agency active in Jordan since the mid-1960s. Such an innovative governance arrangement could be applicable to other subsectors of biodiversity protection, hence will be a focus of the current strategy.

The second main legal framework for biodiversity is represented by the law of the Ministry of Agriculture, the long established legal provisions of the Ministry of Agriculture which owns the historical precedence in the protection of wildlife, forests,

and rangelands, as well as genetic resources. This mandate is currently mandated by the application of the Agriculture Law (Number 44 of the year 2002), which includes a series of articles addressing the sustainable use of natural resources, including genetic diversity and the protection of wildlife species inside and outside their natural habitats. RSCN is also mandated by the Ministry of Agriculture to enforce the regulations related to wildlife protection and hunting control. The Ministry has recently been developing its technical capacities in relation to biodiversity protection in an increasing trend of recognition of the modern approaches tackling ecosystem management and biodiversity conservation. The two strategic roles of the two line ministries often overlap and a concerted effort is required to ensure synergy, complementarity, and coordination. This strategy briefly addresses the need to enhance inter-ministerial dialogue and coordination towards a more effective program on biodiversity.

The third legal framework is represented by the special setup associated with the Aqaba Economic Zone Authority and its sub-national mandate over environmental protection and management. ASEZA was established in 2000 and enjoys a special law (Number 32 for the year 2000) which entitles the Authority to implement its autonomous legal systems and regulations, including provisions related to environmental protection and biodiversity conservation. ASEZA enjoys its own set of bylaws addressing environmental protection, environmental impact assessment, as well as the special bylaw addressing the Wadi Rum Protected Area. The ASEZA case, although representing a success story in applying a decentralized approach towards environmental protection, entails a number of strategic and operational challenges related to the alignment of its regional legal arrangements with the national setting. Further, the autonomous setup is often constrained by the potential for conflicts of interest in balancing the development agendas with the conservation obligation. This strategy calls for the initiation of a strategic dialogue between ASEZA and the Ministry of Environment on the national alignment of ASEZA's environmental legislations and the facilitation of knowledge exchange, reciprocal support and collaboration.

2.2 Synthesis on the CBD Provisions and Obligations

It is well established that the update of the National Biodiversity Strategy and Action plan is an integral component of the global process related to the development and implementation of the Global Biodiversity Strategy 2011-2020. The NBSAPs are the principal instruments for implementing the Convention at the national level (Article 6). The Convention requires countries to prepare a national biodiversity strategy and to ensure that this strategy is mainstreamed into the planning and activities of all those sectors whose activities can have an impact (positive and negative) on biodiversity.

To date, out of 194 contracting parties that ratified the convention, 180 parties have submitted their post convention NBSAPs. By updating its NBSAP before the end 2014, Jordan will likely remain among the leading countries in the region to follow up and implement the Convention, especially the 2020 Global Biodiversity Strategy and its associated targets (the 20 Aichi Targets).

Article (6) of the Convention on General Measures for Conservation and Sustainable Use states that each Contracting Party shall, in accordance with its particular conditions and capabilities:

- Develop national strategies, plans or programs for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programs which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned.
- Integrate, as far as possible and appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, program and policies.

In essence, Article 6 creates an obligation for national biodiversity planning. A national strategy will reflect how the country intends to fulfill the objectives of the Convention in light of specific national circumstances, and how the related action plans will constitute the sequence of steps to be taken to meet these goals. Article 26 and Article 10(a) of the Convention are closely linked to Article 6. The first

calls upon Parties to present, through their national reports, information on measures which have been taken for the implementation of the provisions of the Convention and their effectiveness in meeting the objectives of the Convention. The latter encourages Parties to integrate consideration of the conservation and sustainable use of biological resources into national decision-making. As for the Global Biodiversity Strategy 2011-2020, adopted in Nagoya, Japan in 2010, twenty strategic targets were adopted globally and referred to as the Aichi Targets. Out of these, the Aichi Biodiversity Target 17 specifically addresses the contracting parties' obligations to develop and adopt adequate policy and strategic instruments dedicated to Biodiversity in their respective countries.

Target 17 stated that, 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 CBD global database shows that since COP-10, the CBD Secretariat has only received 30 NBSAPs (23 revised, 7 first) which reflect varying degrees of compliance with the Nagoya outcomes. Parties whose post-2010 NBSAP takes the Strategic Plan for Biodiversity (2011-2020) into account are 21 parties, while the remaining 9 do not. To date, 150 parties have not yet submitted a post-2010 NBSAP, also noting that 14 parties have not yet submitted an NBSAP. To support the contracting parties in the process of updating their respective NBSAPs, the Conferences of Parties (COP 9 and 10, held in Germany and Japan, respectively) adopted two key decisions that provide direct guidance for NBSAPs, decision IX/8 and decision X/2. Parties were encouraged to review these decisions for consolidated guidance on the NBSAP process, substance, components, support systems, and monitoring and review systems.

The table below provides a quick reference to relevant COP 10 and COP 11 decisions, and the various themes/topics included in the guidance notes. The decision parts which are most relevant to Jordan based on the preliminary country assessment are highlighted in blue.

Topic/Issue ¹³	Decisions/Articles
NBSAP Content	
Target-setting, National Biodiversity Targets	X/2 paras 3(b) and (c)
Mainstreaming	X/2 paras 3(d) and (f); XI/8 para 4
Biodiversity for Development	X/2 para 3(d); X/33 para 8(k)
Resource mobilization; funding priorities and needs	X/3 para 2; X/26 para 3; X/31 para 11; XI/4 paras 5, 17, 25;
Cooperation with other conventions, international organizations, and initiatives	X/5 para 3; XI/6 paras 10 and 11
Article 8(j) and related provisions	X/16 para 3(a)
Global Strategy for Plant Conservation	X/17 para 6(a); XI/26 paras 4, 5, 5(a)
Gender	X/19 para 5; XI/9 para 7
Marine and Coastal Biodiversity	X/29 paras 7, 18, 67
Mountains	X/30 paras 4 and 8
Protected Areas	X/31 paras 1(c), 11, 26(b); XI/24 para 1(a)
Sustainable Use of Biodiversity (Bushmeat)	X/32 paras 2 (e) and (h); XI/25 para 13(d)
Ecosystem Services, Valuation	X/32 para 2(g); X/44 para 6; XI/30 para 9
Climate Change	X/33 paras 8 and 8(k); XI/19 para 1(a)
Agricultural Biodiversity	X/34 para 7
Dry and Sub-humid Lands	X/35 para 2(b)
Bio-fuels and Biodiversity	X/37 para 5; XI/27 para 2(a)
Global Taxonomy Initiative	X/39 para 8; XI/29 para 3, Annex B para 5
Incentive Measures	X/44 para 6; XI/30 paras, 3, 6, 7, 9
Bio-safety	XI/5 Appendix II para 4(d)
Island Biodiversity	XI/15 para 4(b)
Technology Needs Assessments	X/16 para 3(a)
NBSAP Revision Process and Stakeholder Involvement	
National Reporting; Monitoring	X/10 para 9(b); XI/3 para 6
Clearing-House Mechanism (CHM) (funding)	X/15 para 2(c)
Business Engagement	X/21 para 1(e) and (g)
Sub-national Governments, cities and other local authorities	X/22 para 2; XI/8 A para 4
Children and Youth	XI/8 B paras 1, 2
Civil Society	XI/8 C paras 1, 2
Indigenous and Local Communities	XI/14 B para 17
Cooperation with other Conventions, International Organizations, and Initiatives	XI/6 paras 10 and 11

¹³ Details on the texts of the various decisions are readily available on the CBD website.

Jordan ratified the Convention on Biodiversity in 1993 and developed its first national CBD report in 2002, followed by the finalization and the official publishing of the NBSAP in May 2003. Jordan also submitted the 3rd National Report in 2006, the 4th in 2009 and has submitted the 5th in September 2014.

As mentioned earlier, the joint MoEnv IUCN/ROWA project addresses updating the NBSAP for Jordan. It is expected for conclusion before the end of 2014 with the anticipation to have the revised NBSAP fully aligned with the Global Biodiversity Strategy 2011-2020.

It is important to highlight the fact that there has not been any systematic follow up on the implementation of the 2003 NBSAP by the various national stakeholders since its finalization in 2003. Modest attempts were made by the Ministry of Environment to report on the status of the NBSAP implementation as part of its periodic CBD reporting, specifically in CBD 3rd and 4th reports.

The 2003 NBSAP included over 70 priority projects related to the measures identified in Jordan's Convention on Biological Diversity Implementation Strategy.

A preliminary unsystematic assessment was done to measure the percentage of the projects implemented since 2003. The analysis indicates that above 50% of the projects were implemented until 2014. The rest of the projects are either under consideration for funding or deferred due to lack of financial resources or changes to the conditions related to their implementation. It is noteworthy that many of these projects were delivered through national funding.

Further, the tentative assessment identified key challenges and constraints which faced –and often are still facing– the implementation of the projects portfolio initially intended in 2003, as follows:

- Absence of clear resource mobilization strategy.
- Lack of a unified knowledge management and data processing system specific to biodiversity.

- The ineffective national communication and coordination framework on biodiversity.
- The NBSAP was not well incorporated into other national sectoral plans and projects.
- The projects identified in the NBSAP do not adequately address the private sector and local communities in their planning and delivery.
- The NBSAP was not accompanied with a continuous national outreach program.
- Lead implementing agencies were not clearly identified for each of the proposed projects.

The updating process of the NBSAP is planned to follow the methodology set by the CBD and elaborated by IUCN, and a set of guiding principles are considered for the development of the updated NBSAP, as follows:

- NBSAP is the prime national strategy for the Conservation of Biodiversity in Jordan; and for that to be effective and sustainable, it is required to become integral to the environmental governance system in Jordan as part of the national mandate of the Ministry of Environment. So far, the NBSAP is perceived as an external obligation distinctive from the national planning and executive programs.
- NBSAP is the principal instrument for implementing the Convention on Biological Diversity which is an obligatory convention ratified by the government of Jordan and reflects on its global image towards environmental protection and sustainability.
- NBSAP needs to be updated in light of the new Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets to develop a clear set of national indicators.
- NBSAP strives to mainstream biodiversity into all national sectors and cross-sectoral strategies including economic planning sector.
- NBSAP development process must include provisions for its implementation, monitoring and

evaluation, hence ensuring an effective framework for the national agenda on biodiversity.

- NBSAP's development, implementation and monitoring must be based on sound scientific research, effective knowledge management systems and an inclusive stakeholders participation and involvement process.

Further, the process of updating the NBSAP adopted the following steps:

- Formulation of a national working group for the update of the NBSAP comprising all key stakeholder and interest groups. The working group was convened by the Ministry of Environment and was guided by the National Biodiversity Committee. This working group includes representatives from the following national entities:

- o Ministry of Environment (MoEnv).
- o The Forestry Department/Ministry of Agriculture (FD/MoA).
- o National Center for Agricultural Research and Extension (NCARE).
- o The Royal Botanic Garden (RBG).
- o Royal Marine Conservation Society of Jordan (JRDES).
- o Royal Society for the Conservation of Nature (RSCN).

- Rapid review of the national progress made on the implementation of the 2003 NBSAP, includes:

- o Update of situation analysis of key biodiversity values and attributes.
- o Revision of the main threats to national biodiversity.
- o Analysis of the key direct and indirect drivers of biodiversity loss.
- o Review of the NBSAP projects implementation and the lessons learnt.

- Development of a revised vision statement for biodiversity in Jordan.

- Review of the strategic goals for biodiversity alongside their midterm outcomes. These will

be aligned with the Global Biodiversity Strategy and the Aichi Targets.

- Development of a revised national action plan for biodiversity.
- Development and adoption of a revised governance framework for the implementation of the NBSAP and its monitoring using global best practices and guidelines.
- Design of a national outreach and awareness raising campaign to promote national engagement in the NBSAP implementation.
- Development of a strategic framework for financing the updated plan from national and external sources.

Overall, Jordan has been relatively successful in the fulfillment of the various provisions and obligations related to the CBD including the NBSAP; however, recently, and due to the increasing regional turbulence and transformations, substantial divergence has been taking place in the national biodiversity agenda thus shifting the country's focus away from the optimal levels sought for biodiversity conservation, mainstreaming and sustainability.

2.3 Strategic Reflections on the 2003 NBSAP

The review of the 2003 NBSAP has revealed many strengths, and also shortcomings, which were associated with the Strategy in terms of stakeholders, approach, structure, content, implementation and follow up. It is established that the process of the 2003 NBSAP was a very inclusive one involving a wide range of national stakeholders who were engaged through an elaborate platform of participation.

The 3-year 2003 NBSAP project was perceived to be a very important document representing the national direction for Jordan with regard to Biodiversity Protection and Sustainability. This was strongly aligned with the strong global movement on environmental sustainability triggered by the Rio Summit 1992 and the adopted Millennium Development Goals (MDGs) in 2010. The caliber of the 2003 NBSAP significance was reflected in the numerous structures adopted for the process, including the Royal Patronage of Queen Noor Al Hussein, and the Establishment of a Project Steering Committee comprising a number of renowned politicians and officials from more than 15 institutions representing non government parties, the nongovernment, the private sector, the social sector, and the academia. The NBSAP was coordinated by a 5-member fulltime coordination team and 18-member project team representing the spectrum of environment and development sectors in the country. Further, the NBSAP process was supported by a team of five senior advisors on awareness raising, advocacy and outreach.

On the other hand, the involvement of the numerous stakeholders seems to have not continued long after the completion of the strategy document. There is no evidence that any mechanism was established nationally for the follow up on the NBSAP implementation. It is proven that there was no tangible attempt to activate the implementation of the NBSAP after its adoption nationally and submission to the CBD.

The approach and content adopted for the 2003 NBSAP were very comprehensive, covering all thematic areas directly or indirectly associated with biodiversity. For example, the document included a strong component on protected areas (which are

defined as a key global instrument for biodiversity conservation) and then at the other end of the spectrum urban based factories and their indirect impacts on ecosystems and species.

As a result, the document came out very ambitious, requiring extensive resources and collaboration, including 71 strategic projects to be implemented by the various stakeholders over a span of 10 years. Nonetheless, it is evident that no clear financing mechanism was adopted nationally for the implementation of the vast majority of these projects. The project team tracked several examples of the 2003 projects, and concluded that most of the follow up on these projects was done individually by institutions according mainly to their strategic priorities and available financial resources.

The contents of the 2003 strategy followed a clear logical sequence: a brief on the CBD was introduced, followed by an elaboration of the national and global importance of Jordan's biodiversity, then linked to a thorough analysis of the factors influencing biodiversity both directly and indirectly covering all sectors, leading to strategic framework including an overall vision governed by a set of guiding principles. The vision was divided into a set of strategic targets, for which a set of strategic objectives, operational objectives and priority actions were identified. The overall strategic direction was associated with a set of clear recommendations on the NBSAP implementation, monitoring and reporting. Finally, the strategy document included the 5-theme series of priority projects aimed at its 10-year implementation program.

It is clear that the 2003 document was rather encyclopedic, including almost everything which needs to be done, could be done, or even would be good to be done in the field of biodiversity protection and sustainability. The vision statement was more of a vision for Jordan towards environmental protection and sustainability rather than specifically for biodiversity conservation. The guiding principles –although value driven– were not associated with effective governance and legislative frameworks; the strategic goals were too stringent and included a wide range of strategic involvements in

a national development phase where biodiversity is still new, and translated into a long list of strategic objectives; operational objectives and priority actions resulted in a rather complicated structure for the strategy leading to a very challenging task for their monitoring and follow up. The immense list of strategic projects requiring tremendous financing and collaboration represented a mere wish-list rather than an applicable set of achievable targets. In essence, the highly ambitious content of the strategy seems to have not been adequately aligned with the level of national capacities for implementation. It also seems to have been “project driven” mostly, and much of the momentum established by the project gradually faded soon after its conclusion.

The 2003 NBSAP had no clear ownership framework after its development. It was developed as a national strategy with the prime coordination

responsibility of the General Corporation for Environment Protection (GCEP). GCEP was reengineered –soon after the NBSAP development- into a fully fledged, albeit embryonic, Ministry of Environment. This institutional transformation, although triggered by the NBSAP process, was not fully successful in adopting the needed thrust for the implementation and follow up of this key strategic document as part of the core program of the Ministry during its early stages of development.

Finally here, it is important to note that the current NBSAP update process was implemented in a mere three calendar months, with little technical and financial resources. This translated into a significant challenge for the assignment team which needed to ensure the anticipated quality of the update strategy and the adequate engagement of stakeholders, including raising their awareness and fostering national ownership of the adopted document.

2.4 The Approach for the Updated NBSAP 2020

The updating process is required to reflect on the good (and often difficult) lessons learned from the 2003 NBSAP, and seek to adopt a more effective approach to the strategy document in terms of approach, structure and content, and foremost, its implementation modality.

Overall approach: Updating the NBSAP does not represent the development of a new strategy document. Rather, it will be perceived as a proper review of the existing one mainly geared towards updating the strategic directions in light of internal and external changes and the arrangement needed for improved implementation and more effective achievement of set targets. This represents a national choice as well as a decision aligned with the global guidance on the NBSAPs update as it

advises the different nations to seize the global process and mechanism to update their national priorities based on past experiences and lessons learned. The updated NBSAP will be developed based on a balanced consideration of the following strategic questions:

- What are the practical biodiversity targets which can be achieved nationally until 2020?
- What needs to be done to achieve the national targets and with what resources?
- What can be achieved by the key biodiversity-related stakeholders as part of their ongoing and foreseen strategic programs and initiatives?
- How can the updated NBSAP be aligned into national governance, strategies and priority projects and initiatives?

Based on the above questions, the updated NBSAP will likely be a strategic collation of key strategies and programs adopted by the main stakeholders, encapsulated within an effective governance system and aligned with the Global Biodiversity Strategy and priorities. The strategy will most probably cover a period of six years starting from 2015 and ending in 2020.

Stakeholders: The 2020 NBSAP will be tailored around the key stakeholders and national players mandated for biodiversity conservation, who are concerned with its sustainability or interested in dealing with its emerging challenges and opportunities. The selection of the key stakeholders adheres to the following set of criteria:

- The legal mandates of the various stakeholders with regard to biodiversity conservation and sustainability.
- The proven commitment documented since the 2003 NBSAP including the quantity and quality of delivered programs.
- The level of confidence with regards to human and financial resources available or those that could practically be available for the implementation of the priority actions and initiatives towards 2020.

The primary ownership of the updated NBSAP will be for the MoEnv through an agreed upon governance system. The governance system will be made effective through participation, transparency, accountability, capacity building and monitoring. The primary mechanism for insuring that such a system be efficient is foreseen to be the National Biodiversity Committee (NBC) and its associated structures and tools.

Structure: The 2020 NBSAP will adopt a more simplified structure compared to that of 2003. The updated document will include a revision of the status of Jordan's biodiversity and its significance, and a synthesis on the main factors influencing biodiversity as the basis for the rationale of the strategic framework which is anticipated to be designed around a long term vision statement inspired by the 2050 vision of the global strategy 2011-2020. The vision statement will be pursued through a set of strategic goals. Each of the strategic goals will be measured by a set of national strategic targets

(aligned with the Aichi Targets), and each of the strategic targets will be achieved through a series of priority actions/operational objectives. The strategy document will have a specific section on the modality for its implementation and monitoring as the foundation for its governance system. A logical framework will be included in the final chapters of the strategy including the vision, the strategic goals, and the operational objectives - along with their Key Performance Indicators (KPIs), and anticipated milestones, deadlines and responsible authorities.

Implementation: There is a national consensus that the lack of an agreed upon governance structure for the implementation and monitoring of the 2003 strategy was its key shortcoming, leading to weak national mainstreaming, alignment and systematic follow up. The enhanced governance of the biodiversity is proposed to become fully integrated into the strategic framework as part of its midterm strategic goals, supported by a set of operational objectives and priority actions. It is well accepted that having a concise and pragmatic (however nationally aligned and coordinated) strategy is a much better scenario than having a comprehensive strategy which is over-ambitious and has limited national ownership and alignment. It is highly recommended that the NBSAP update give specific focus to building the institutional capacities of the Ministry of Environment as the means to enhance the governance of national biodiversity. MoEnv's improved capabilities for inter-institutional coordination, national mainstreaming, public engagement, knowledge management and effective monitoring will drastically enhance the effectiveness of the NBSAP implementation.

2.5 Strategic Directions towards an Improved NBSAP Global Alignment

This 2020 NBSAP proposes a revised set of governance arrangements related to the national coordination, communication and reporting on the national biodiversity program. The lessons learned from the 2003 NBSAP are numerous, including some hard ones related to ineffective national follow up, lack of communication and coordination on the implementation of the adopted projects, lack of adequate reporting related to the periodic progress made on the achievement of the strategic vision and goals coupled with a total lack of performance indicators at all levels, thus preventing a straightforward update process of the NBSAP.

The update of the NBSAP required a careful revisiting of the arrangements adopted for its implementation and monitoring. The central role of the MoEnv on this cannot be overemphasized.

The below direction represents a set of actions which were applied for the improvement of the NBSAP update process as well as its alignment with the Global Strategy and targets:

- Further enhancement and strengthening of the role of the national coordination mechanisms, primarily the National Biodiversity Committee. The committee could play as the national governing board for the implementation of the NBSAP and communication with the CBD Secretariat.
- Encourage and facilitate the inter-institutional collaboration in the various fields of biodiversity while allowing for more specialization. This can be done through the improved understanding of the core competence and mandates of each of the key national players in the field of biodiversity from the government and nongovernment organizations as well as academia and possibly the private sector.
- Develop a clear financing strategy for the NBSAP implementation from local and external sources. The ongoing sustainable financing initiative im-

plemented by MoEnv found a strong basis for a more effective financing program for the different priorities under the NBSAP.

- Adopt a national capacity building program for the Ministry and its associated partners and stakeholders from the government, civil society, local communities and private sector.
- Enhance the participation and involvement of national stakeholders -and particularly local communities- in the design, implementation and evaluation of national biodiversity strategies and programs as the central and site base levels.
- This should include a clear policy on sharing the benefits of biodiversity across all relevant stakeholders and interest groups.
- Enhance the role of media and public opinion on the necessity of biodiversity protection and sustainability as part of the national agenda set for development in the Kingdom. A new social contract needs to be defined with regard to safeguarding in adequate proportion the national natural resources for the use and enjoyment of future generations.



Part III:

The Strategy and Action Plan 2020

3.1 Setting the National Targets

The update of the national targets adopted the following logical flow:

- Brief recap on the 2003 projects portfolio with particular focus on the period from 2009 (the fourth CBD report) to 2014 (the foreseen deadline for the NBSAP update), and its relevance to the 2020 Aichi Targets. This will allow the national team to assess how relevant the national efforts were to the global trends and priorities during the last five years or so. For example, protected areas-related efforts will fall under the Aichi Target 11.
 - Review of the main factors directly affecting biodiversity as defined by the key national stakeholders addressing the various themes of biodiversity. The revised list of factors will set the basis for the updated strategic directions towards 2020. For example, the increasing pressure of tourism is a factor, and although identified in 2003, it was not adequately addressed in the 2003 program of work in ecologically sensitive areas such as the coastal zone.
 - Synthesis of the strategic goals adopted individually or collectively by the key national stakeholders as part of their organizational strategies, programs and adopted action plans. One good example here is the merging of the Royal Botanic Garden as an institution and also a program for plant conservation.
 - Rapid assessment of any gap area within the current program portfolio for biodiversity which may need to be addressed in the NBSAP update. Examples of this are the issues of climate change and refugees.
- The list of key factors influencing biodiversity were reviewed and updated to include:
- Severe levels of land degradation and habitat destruction. This is a recurrent key factor, mainly caused by urbanization, land conversion for agriculture, grazing, wood collection, poaching, fishing, and infrastructure development (including in coastal zones).
 - Climate change and its direct and indirect impacts on ecosystem services and livelihoods. This includes the elements related to mitigating climate change and/or adapting to its impacts, thus enhancing resilience and promoting best practices. Natural hazards are also included in the discussion on climate change.
 - Regional conflicts, political instabilities and social transformations. This includes the continuing impacts of past refugees' influx as well as the current and emerging impacts of more recent regional crises such as the Syrian case.
 - Tourism has an increasing trend of impacts on biodiversity, especially in areas where weak governance and lack of law enforcement are highest. This includes the impacts on ecologically sensitive areas outside protected areas as well as areas where tourism pressure increases with increased global recognition (e.g. the Wadi Rum World Heritage Site).
 - Weak governance systems and structures related to biodiversity. This includes lack of adequate policies, ineffective legislative frameworks, and absence of proper national communication and coordination.
 - Weak national awareness at all levels with regard to the value of biodiversity. This stems from policy and decision making bodies all the way to the local user and schools.
 - Lack of a coherent and systematic financing framework for biodiversity. This includes all types of financing, internal, external and innovative.
 - Ongoing disconnect between scientific research and development programs. This includes all sustainability related research in the various development sectors.
 - Lack of adequate documentation and knowledge management leading to suboptimal levels of decision support and informing policy. This also includes the lack of academic alignment of biodiversity in the national education systems from pre-school to post-graduate levels.
- The above list includes recurrent factors still valid since 2003 (e.g. habitat destruction), factors incurred and increasing since 2009 (e.g. tourism), and a number of emerging factors which were not addressed in the first strategy (e.g. refugees and climate change).

3.2 The 2050 Vision

Jordan adopts the following vision for its biodiversity:

“By 2050, the biodiversity of Jordan is valued for its national heritage vitality, conserved for the well-being and enjoyment of people, and sustainably used for the benefits of current and future generations.”

The above vision statement was adopted through a participative national dialogue incorporating key national stakeholders involved and concerned with biodiversity. The vision statement is inspired by the vision of the Global Biodiversity Strategy; however, tailored to the Jordanian context and priorities.

The strategic components of valuing and conserving biodiversity are strongly emphasized in the adopted statement, however with less emphasis on the restoration component of the global direction. This is mainly due to the pragmatic approach adopted by Jordan for the formulation of the statement incorporating what actually can be done within the strategic scope. The vision statement

also gives primary focus on the global targets related to the enhancement of biodiversity governance, in-situ and ex-situ conservation, as well as knowledge development and sharing.

Thematically speaking, the vision statement guides the strategic directions on mainstreaming biodiversity values and priorities into national strategies and policies; enhancement of governance including legislative frameworks; participative decision making structures and tools, and a strong culture of support and ownership; improved decision making based on sound science; reduction of human induced pressures on biodiversity; protected areas management; equitable sharing of genetic resources; provision of adequate financial resources; capacity enhancement of biodiversity related stakeholders including local communities and finally the implementation of appropriate policies and legal instruments.

On the other hand, the vision statement tackles the thematic areas of production, restoration, and pollution to a lesser extent.



3.3 The 2020 Strategic Goals

Jordan adopts the following strategic goals to achieve its 2050 vision:

VI- On good governance and mainstreaming: Enhance the national governance of biodiversity as a main mechanism for national mainstreaming, integration and participation.

This strategic goal primarily addresses the underlying factors affecting biodiversity which are related to the lack of good governance accompanied with low level of national awareness of the importance of national biodiversity at the local and global levels. It also addresses streamlining biodiversity into the line ministries' legislative frameworks, strategies, program portfolios and technical capacities. Further, the goal focuses on the strengthening of participative planning approach with particular focus on empowering the National Biodiversity Committee and its members as well as the local communities and their respective CBOs. The goal also adopts a specific set of targets related to achieving sustainable financing of effective monitoring program to ensure the effectiveness of the NBSAP implementation.

VII- On the response to human-induced pressures: Reduce the impacts of pressures on biodiversity including habitat destruction, political conflicts, and tourism.

This strategic goal focuses on the needed national response to the human induced pressures on biodiversity from the various development sectors including agriculture, urbanization, tourism, coastal zone development, regional political conflicts, and other unsustainable activities such as overgrazing, illegal hunting and wildlife collection, alien and invasive species, excessive tree logging, infrastructure development and mining.

VIII- On protected areas, priority species and genetic resources: Conserve and protect priority ecosystems, species and genetic resources of Jordan at the in-situ and ex-situ levels.

This strategic goal tackles the in-situ and ex-situ conservation priorities of ecosystems, species and genetic resources. It includes provisions on the enhancement of the national protected areas network for terrestrial, marine ecosystems as well

as genetic resources. Special emphasis is given to the national strategies on key species of flora and fauna from terrestrial and aquatic biota and in contrast, the combating of blacklist species from all taxa.

IX- On ecosystems services and climate change: Enhance the national understanding of dry-land ecosystem benefits to national resilience, economic sustainability and local livelihoods.

This strategic goal pilot a national program on the ecosystems services and the response to climate change. It focuses on improving the understanding of the two relatively new topics to Jordan and proposes a series of actions testing ecosystems resilience, explores pilot phasing the adaptation to climate change, and the initiation of the program on the Nagoya protocol.

X- On knowledge management and monitoring: Develop biodiversity knowledge as the main tool for cultural reform, informing policy and decision making support.

This strategic goal handles the knowledge management program of work with regard to the CHM program, specialized vocational capacity building, educational curricula development, and the documentation, dissemination, revitalization, and promotion of traditional knowledge.

The approach adopted for the update of the NBSAP with regard to the review of the action plan is based on the translation of the vision statement into the five strategic goals mentioned earlier, with each of the strategic goals addressing a key thematic area of strategic focus. The strategic goals were then deconstructed into a set of national targets addressing the various direct or underlying factors influencing biodiversity. The national targets were also designed to be aligned with the global Aichi Targets to ensure the highest level of national integrations into global priorities and directions. The achievement of each of the national targets was then reflected in the achievement of a set of key performance indicators.

3.4 The 2020 Action Plan

The KPIs are essentially a strategic collation of all existing, planned and foreseen programs and initiatives by the key stakeholders involved in the implementation of the NBSAP. Each of the KPIs was translated into a series of logically coherent actions which were associated with a specific stakeholder and a projected deadline. The intention from the above is to create a pragmatic action plan which is strategically linked to the mandates, strategies,

and programs of respective organizations, with the condition as related to the national needs and global priorities.

The action plan elaborated below includes a total of 29 national targets, over 100 KPIs, and over 300 strategic actions, all due to implementation within the strategic period from the beginning of 2015 to the end of 2020.

The table below summarizes the 2015-2020 action plan matrix:

No	Strategic Goal	Number. of National Targets
I-	On good governance and mainstreaming	7
II-	On the response to human-induced pressures	8
III-	On protected areas, priority species and genetic resources	6
IV-	On ecosystems services and climate change	4
V-	On knowledge management and monitoring	4

Matrix of National Targets, KPIs and Strategic Actions

Strategic Goal One: Governance of Biodiversity Enhanced

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
1	By 2016, the MoEnv strategy and its executive program are developed and operational.	-biodiversity is a prime constituent of the MoEnv strategy. -biodiversity is integrated into key development sector strategies.	MoEnv

No	KPI	Priority Actions	Deadline
1.1	Biodiversity is a prime constituent of the MoEnv strategy.	1.1.1: undertake a review of the existing strategy with regard to biodiversity components and develop strategic recommendations. 1.1.2: endorse the recommendations by the Minister in an action plan form. 1.1.3: set up a periodic performance assessment of MoEnv with regard to biodiversity targets.	2015 2015 2016
1.2	Biodiversity is integrated into key development sector strategies.	1.2.1: undertake a review of all relevant sectoral strategies. 1.2.2: define a MoEnv focal point for each sector and adopt a set of biodiversity objectives and engagement action plans.	2015 2015

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
2	By 2016, the National Biodiversity Committee (NBC) is the prime governance mechanism for biodiversity.	-the regulations of the Committee are integrated into the new environment law. -adequate financial resources allocated to the Committee by the MoEnv.	MoEnv, Committee chair

No	KPI	Priority Actions	Deadline
2.1	NBC regulations developed and integrated into the new MoEnv governance system.	2.1.1: review the new MoEnv structure and NBC regulations and prepare a set of recommendations to be endorsed by the Minister. 2.1.2: conduct regular NBC action plans on priority issues. 2.1.3: establish a secretariat for NBC at the MoEnv. 2.1.4: nominate an NBC representative for every priority sector, issue, program concerning biodiversity. 2.1.5: undertake periodic performance review of NBC.	2015 Ongoing 2016 2015 Ongoing
2.2	Adequate financial resources allocated to the Committee by the MoEnv.	2.2.1: prepare a strategic business plan for the NBC including a sustainable financing model. 2.2.2: adopt the business plan by the Minister including annual budget allocations. 2.2.3: undertake periodic monitoring of allocated budget.	2016 2016 Ongoing

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
3	By 2017, the new environment protection law is endorsed and effective.	-adequate biodiversity articles are included in the new law. -the nature conservation and protected areas bylaw is developed and effective.	MoEnv, NBC

No	KPI	Priority Actions	Deadline
3.1	Adequate biodiversity articles are included in the new law.	3.1.1: undertake national stakeholders' consultation process and compile recommendations. 3.1.2: adopt recommendations by the Minister and incorporate into the new law. 3.1.3: set up an NBC working group to lobby the parliament and follow up on the law developments and endorsement.	2014 2014 2015
3.2	Nature conservation and protected areas bylaw is developed and effective.	3.2.1: set up a technical and legal working group to prepare the bylaw. 3.2.2: establish an NBC working group to follow up the bylaw endorsement by the government. 3.2.3: review all bilateral agreements on the enforcement of the bylaw. 3.2.4: undertake regular monitoring of the bylaw related performance.	2015 2015 2016 Ongoing

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
4	By 2016, the new structure of the Nature Conservation Directorate of MoEnv is effective.	-Directorate mandate and program are in place and operational. -Directorate comprises sufficient technical capacities for biodiversity. -adequate financial resources are made available for the Directorate program. -national biodiversity monitoring system is in place.	MoEnv

No	KPI	Priority Actions	Deadline
4.1	Directorate mandate and program are in place and operational.	4.1.1: undertake a comparative review of relevant international best practices on institutional frameworks. 4.1.2: prepare the Directorate vision, objectives, goals and action plan. 4.1.3: prepare the Directorate structure. 4.1.4: prepare an operational manual for the Directorate. 4.1.5: undertake period reviews of the Directorate performance involving NBC.	2015 2015 2015 2016 Starting 2017, ongoing
4.2	Directorate comprises sufficient technical capacities for biodiversity.	4.2.1: based on 4.1, procure needed human resources. 4.2.2: implement a human resource training program. 4.2.3: undertake periodic monitoring of staff performance.	2015 Starting 2016 Starting 2017
4.3	Adequate financial resources are made available for the Directorate program.	4.3.1: prepare the Directorate business plan based on a five-year budget. 4.3.2: prepare the program portfolio for the Directorate in the form of internal and external proposals. 4.3.3: secure core program funding from MoEnv and national and international partners.	2015 2016 Starting 2016
4.4	National biodiversity monitoring system is in place.	4.4.1: establish a permanent NBC led working group on biodiversity monitoring. 4.4.2: prepare annual biodiversity reports and response action plans.	2016 Starting 2017

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
5	By 2020, a participative biodiversity planning protocol is developed and adopted nationally.	-NBSAP management unit established and operational at MoEnv. -6th national CBD report prepared and submitted. -national targets for beyond 2020 developed and adopted and NBSAP reviewed.	MoEnv

No	KPI	Priority Actions	Deadline
5.1	NBSAP management unit established and operational at MoEnv.	5.1.1: prepare unit TORs and endorse by Minister. 5.1.2: recruit/assign and train core unit staff. 5.1.3: produce periodic NBSAP monitoring reports.	2015 2016 Starting 2017
5.2	6 th and 7 th national CBD reports prepared and submitted.	5.2.1: prepare CBD reports' TORs. 5.2.2: secure reports funding nationally/ internationally. 5.2.3: establish NBC working groups for each report. 5.2.4: implement a national stakeholders' engagement process for each report. 5.2.5: submit report within global deadlines.	Starting 2016 Starting 2016 Starting 2016 2016, 2018
5.3	National targets for beyond 2020 developed and adopted and NBSAP reviewed.	5.3.1: establish an NBC working group on NBSAP review. 5.3.2: implement a national consultation process for NBSAP review. 5.3.3: secure funding for review and recruit experts. 5.3.4: prepare the new NBSAP, endorse nationally.	2018 Starting 2018 2019 2020

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
6	By 2015, a national biodiversity financing strategy is developed and adopted by the Cabinet.	- multi-resource financing strategy is developed and implemented. -national biodiversity program portfolio established and maintained.	MoEnv

No	KPI	Priority Actions	Deadline
6.1	Biodiversity program portfolio established and maintained.	6.1.1: establish a program database for priority projects involving all key stakeholders (including donors and executing agencies). 6.1.2: undertake regular projects financing progress monitoring. 6.1.3: undertake regular updates of the program portfolio.	
6.2	Multi-resource financing strategy is developed and implemented.	6.2.1: develop a program portfolio financing strategy and endorse by minister. 6.2.2: implement pilot financing tools on innovative sources such as PES, Offsets, green funds, and climate change funds. 6.2.3: prepare a proposal for the increase of national budget allocation, endorse by the minister and lobby the government for approval. 6.2.4: implement a targeted capacity building program for MoEnv on sustainable and green financing mechanisms.	2016 2017 2015 2017

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
7	By 2015, a national awareness program for the NBSAP is developed and operational.	-NBSAP adopted under Royal Hashemite Court auspices. -legislative and juridical councils are supportive of the NBSAP implementation. -NBSAP endorsed by the Cabinet.	MoEnv

No	KPI	Priority Actions	Deadline
7.1	NBSAP adopted under Royal Hashemite Court auspices.	7.1.1: prepare an appeal proposal for the Royal Hashemite Court. 7.1.2: present NBSAP to His Majesty's office. 7.1.3: secure royal patronage/support for NBSAP endorsement.	2015 2015 2015
7.2	NBSAP endorsed by the Cabinet.	7.2.1: submit the updated NBSAP to the Cabinet through the Minister. 7.2.2: present the NBSAP to the Prime Minister's office. 7.2.3: secure official endorsement of updated NBSAP by the Cabinet.	2015 2015 2015
7.3	Legislative and juridical councils are supportive of the NBSAP implementation.	7.3.1: establish an NBC communication group to lobby the Parliament. 7.3.2: present the updated NBSAP to the concerned committee at Parliament. 7.3.3: secure a support letter for the updated NBSAP from the Parliament.	2015 2015 2015

Strategic Goal Two: Impacts of Key Pressures Reduced

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
8	By 2016, a sustainable national tourism strategy is finalized, adopted and implemented.	-biodiversity conservation articles adopted for tourism master-planning and development. -regulations for ecotourism development adopted at all levels.	MoTA, JREDS, RSCN, ASEZA

No	KPI	Priority Actions	Deadline
8.1	Biodiversity conservation articles adopted for tourism master-planning and development.	8.1.1: review the existing sector and institutional strategies documents and submit recommendations to MoTA. 8.1.2: establish an NBC focal point/working group for tourism. 8.1.3: prepare an annual strategic report on tourism and biodiversity to support MoTA decisions and inform its policies.	2015 2015 Starting 2016
8.2	Regulations for ecotourism development adopted at all levels.	8.2.1: provide technical advice to MoTA on the new green unit development and capacity building. 8.2.2: provide technical advice on the green aspects of the tourism activities certification and licensing regulations.	Starting 2015 2015

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
9	By 2020, development pressures from anthropogenic sources are reduced to sustainable levels for both terrestrial and marine ecosystems.	-national EIA bylaw is effective and integrated into related national and sub-national development planning. -strategic environmental assessments as integral to the EIA bylaw. -national database for biodiversity hotspots updated. -national and sub-national land use plans adequately address biodiversity. -all impacts of development projects associated with the biodiversity hotspots eliminated or at least minimized.	MoEnv, NBC

No	KPI	Priority Actions	Deadline
9.1	National EIA bylaw is effective and integrated into related national and sub-national development planning.	9.1.1: undertake a review of the EIA bylaw, prepare a strategic report and endorse by the Minister. 9.1.2: establish an EIA working group from NBC. 9.1.3: prepare periodic EIA fact sheets on the bylaw implementation and enforcement.	2015 2016 Starting 2017
9.2	Strategic environmental assessments as integral to the EIA bylaw.	9.2.1: review the existing/draft EIA bylaw and propose SEA specific articles. 9.2.2: implement an advanced training program for MoEnv on SEAs and their application for biodiversity. 9.2.3: implement a set of pilot studies on SEAs application with focus on biodiversity.	2015 2016 Starting 2017
9.3	National database for biodiversity hotspots updated.	9.3.1: establish an NBC working group on the database for biodiversity hotspots and endorse by the Minister and the Cabinet. 9.3.2: disseminate the biodiversity sensitivity map with government and private sector stakeholders as part of the national CHM program. 9.3.3: undertake periodic update of the database.	2016 Starting 2016 Starting 2017
9.4	National and sub-national land use plans adequately address biodiversity.	9.4.1: undertake a review for key national and sub-national land-use and master plans, and produce a strategic report. 9.4.2: establish a land use planning working group from the NBC. 9.4.3: undertake dialogue and discussions with relevant authorities on biodiversity related standards, regulations, and specifications. 9.4.4: implement a set of pilot initiatives on biodiversity sensitive land use planning. 9.4.5: prepare a set of case studies on successes and failures in biodiversity and land use planning.	2016 2016 Starting 2016 Starting 2017 Starting 2016
9.5	Impacts of development projects associated with the biodiversity hotspots eliminated or at least minimized.	9.5.1: implement a screening study on priority projects with biodiversity implications, prepare a strategic report, and endorse by the Minister. 9.5.2: implement an advocacy campaign on impacts of strategic projects on biodiversity hotspots. 9.5.3: provide technical advice to relevant authorities on alternative biodiversity-sensitive approaches for development projects. 9.5.4: prepare and disseminate a guidelines manual on biodiversity integration for strategic development projects. 9.5.5: implement a specialized training program for relevant stakeholders on biodiversity-based solutions and approaches.	2015 2016 Starting 2016 2017 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
10	By 2020, a national strategy for forest conservation and sustainable use is developed and effective.	-national forests inventory is developed. -forestry bylaw reviewed and adopted. -capacities of the biodiversity unit enhanced and equipped with adequate resources. -ecosystem based approach to forest management tested.	FD/MoA

No	KPI	Priority Actions	Deadline
10.1	National forests inventory is developed.	10.1.1: develop inventory proposal and secure needed funding. 10.1.2: implement a specialized capacity building program on forests inventories for MoA/FD and key stakeholders. 10.1.3: undertake a gap analysis of inventory data. 10.1.4: prepare the first comprehensive national forest inventory report and endorse by the Cabinet. 10.1.5: prepare a national action plan for forest inventory update and management.	2015 Starting 2015 2015 2017 Starting 2015
10.2	Forestry bylaw reviewed and adopted with regard to biodiversity.	10.2.1: undertake review of the proposed/existing forest bylaw and prepare a strategic report for MoA endorsement. 10.2.2: provide political and institutional support to MoA/FD on the new bylaw. 10.2.3: provide technical advice to MoA/FD on biodiversity related applications of the new bylaw. 10.2.4: establish a forestry working group from NBC. 10.2.5: prepare periodic strategic reports on the bylaw implementation of biodiversity articles.	2016 2016 Starting 2016 2015 Starting 2017
10.3	Capacities of the biodiversity unit enhanced and equipped with adequate resources.	10.3.1: undertake a needs assessment for the biodiversity unit. 10.3.2: implement a capacity building program for the unit including institutional, technical and logistical aspects. 10.3.3: lobby MoA on the provision of adequate financial and human resources for the unit program. 10.3.4: prepare a biodiversity protocol for forest management and endorse by MoA.	2015 2016 Starting 2015 2017
10.4	Ecosystem based approach to forest management tested.	10.4.1: implement a set of site-based pilot initiatives on ecosystems approaches to forest management. 10.4.2: prepare and implement a national forests biodiversity monitoring system. 10.4.3: prepare and adopt a proposal for the restructuring of the national afforestation program for biodiversity. 10.4.4: implement a program for restructuring the national network of forestry nurseries using biodiversity guidelines and standards.	Starting 2016 Starting 2017 2015 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
11	By 2016, national strategy for rangeland development and managements developed and effective.	-biodiversity conservation articles integrated into the new rangeland strategy. -key wild/native rangelands species conservation programs initiated. -impacts of grazing and wood collection on biodiversity assessed and clear mitigation actions adopted.	RD/MoA

No	KPI	Priority Actions	Deadline
11.1	Biodiversity conservation articles integrated into the new rangeland strategy.	11.1.1: undertake review of the new rangeland strategy, identify biodiversity gaps and prepare a set of recommendations for MoA. 11.1.2: provide technical advice to MoA/RD on biodiversity guidelines and approaches on rangeland management. 11.1.3: implement a set of pilot initiatives using community based approaches to biodiversity conservation and sustainable rangeland management (Al Hima). 11.1.4: prepare a series of case studies on participative rangeland management and biodiversity.	2015 Starting 2015 Starting 2016 Starting 2017
11.2	Key wild/native rangelands species conservation programs initiated.	11.2.1: undertake a national screening study on rangelands species and prepare an indicative sensitivity map of their distribution. 11.2.2: construct a key rangeland species database and implement a periodic monitoring program. 11.2.3: assess the technical capacities of the MoA/RD and implement a specialized training program supported by needed IT and equipment.	2016 2016 2015
11.3	Impacts of grazing and wood collection on rangeland biodiversity assessed and clear mitigation actions adopted.	11.3.1: undertake a strategic impact assessment of grazing and wood collection on rangeland biodiversity using MoA/RD reserves. 11.3.2: implement a set of pilot initiatives addressing biodiversity conservation in rangeland reserves. 11.3.3: prepare and disseminate a series of practitioners' best practice guidelines manual on biodiversity and rangeland management using national case studies (e.g. Al Hima).	2016 Starting 2017 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
12	By 2016, renewable energy and mining strategies are reviewed and biodiversity safeguards adopted and enforced.	-renewable energy (wind) regulations adequately address biodiversity conservation. -mining protocols and master-plans address biodiversity concerns.	MoE, MoEnv

No	KPI	Priority Actions	Deadline
12.1	Renewable energy (wind) regulations adequately address biodiversity conservation.	12.1.1: undertake a review of best practices in renewable energy and prepare a strategic report. 12.1.2: finalize the renewable energy regulations and endorse by the Minister. 12.1.3: implement a national training and awareness raising program on renewable energy and biodiversity targeting government and private sector stakeholders. 12.1.4: establish an NBC working group on renewable energy; undertake periodic assessment and produce strategic reports. 12.1.5: prepare wind energy and solar energy guidelines and endorse by the Minister.	2015 2015 2016 Starting 2017 2016
12.2	Mining protocols and master-plans exclude/avoid key biodiversity hotspots.	12.2.1: undertake a strategic review of existing mining priorities and prepare a strategic report on biodiversity related impacts. 12.2.2: prepare and disseminate a biodiversity protocol for mining activities based on international best practices and guidelines. 12.2.3: implement an awareness raising and training program on biodiversity safeguards and mining. 12.2.4: implement a set of pilot initiatives on ecosystem rehabilitation/restoration in mining areas.	2016 2017 2017 Starting 2016

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
13	By 2016, sustainable coastal zone development master-plan developed and implemented.	-status of coastal and marine ecosystems and anthropogenic impacts assessed. -biodiversity sensitive regulatory frameworks adopted for the coastal zone development including a biodiversity oriented spatial zoning plan.	AZESA, JREDS, MSS, MoEnv

No	KPI	Priority Actions	Deadline
13.1	Status of coastal and marine ecosystems and anthropogenic impacts assessed.	13.1.1: establish the marine biodiversity database (baseline inventories including terrestrial biota) and disseminate results. 13.1.2: prepare the marine and coastal zone report. 13.1.3: implement a marine biodiversity monitoring program. 13.1.4: implement a specialized capacity building program for the MSS on integrated biodiversity management and monitoring including needed human resources, logistical requirements and equipments.	2015 2015 Starting 2016 Starting 2016
13.2	Biodiversity sensitive regulatory frameworks adopted for the coastal zone development including a biodiversity oriented spatial zoning plan.	13.2.1: prepare the sea use plan for the coastal zone and endorse by ASEZA and the Cabinet. 13.2.2: implement periodic monitoring of the implementation and enforcement of the sea plan. 13.2.3: prepare a set of marine biodiversity guidelines for coastal zones management.	2015 Starting 2016 2016

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
14	Wildlife hunting impacts on terrestrial fauna minimized and wildlife utilization sustainable.	-status of key wildlife and game species assessed. -wildlife hunting regulations reviewed. -law enforcement capacities of key stakeholders enhanced. - national awareness of hunters and collectors raised.	MoA, RSCN, MoEnv., Env. Police

No	KPI	Priority Actions	Deadline
14.1	Status of key wildlife and game species assessed.	14.1.1: undertake a strategic review of key wildlife/game species and produce a strategic report. 14.1.2: prepare a national wildlife/game species sensitivity map. 14.1.3: design and implement a wildlife monitoring program addressing trends and losses. 14.1.4: publish a national biannual report on wildlife/game species status.	2015 2016 2017 Starting 2018
14.2	Wildlife hunting regulations reviewed.	14.2.1: conduct a review of the MoA wildlife protection regulations, prepare a strategic report, and endorse by MoA. 14.2.2: review the national hunting regulations (based on 14.1) and endorse by MoA.	2015 2015
14.3	Law enforcement capacities of key stakeholders enhanced.	14.3.1: conduct a needs assessment study for key stakeholders on wildlife related law enforcement. 14.3.2: implement a comprehensive capacity building program (including customs/CITES) for key stakeholders including logistical needs and equipments. 14.3.3: establish an NBC working group on wildlife protection and prepare periodic performance reports.	2015 Starting 2016 Starting 2016
14.4	National awareness of concerned stakeholders raised.	14.4.1: undertake a stakeholders mapping study on wildlife/game activities. 14.4.2: implement a national outreach, education and awareness raising program on wildlife protection and sustainable hunting/collection. 14.4.3: establish a pilot game reserve and training center targeting awareness raising for hunters and stakeholders.	2016 Starting 2015 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
15	Regional political conflicts impacts on biodiversity are understood, and national response advocated.	-impacts of refugees assessed in priority areas. -response to refugees impacts on biodiversity piloted. -national guidelines for biodiversity safeguards adopted.	MoEnv.

No	KPI	Priority Actions	Deadline
15.1	Impacts of refugees assessed in priority areas.	15.1.1: undertake a targeted review of refugees' hotspots and their potential impacts on biodiversity, and prepare a strategic report. 15.1.2: implement a national awareness program on the impacts of refugees on national biodiversity. 15.1.3: disseminate the strategic report with international stakeholders as part of Jordan's claims for compensation.	2015 2015 2015
15.2	Response to refugees impacts on biodiversity piloted.	15.2.1: identify a pilot area for mitigating and adapting to refugees impacts on biodiversity as an integral component of their relief program. 15.2.2: implement an integrated ecosystem approach pilot initiative in a selected hotspots (e.g. Azraq region). 15.2.3: prepare a set of case studies on refugees and biodiversity.	2015 Starting 2016 2016
15.3	National guidelines for biodiversity safeguards adopted.	15.3.1: based on 15.1 and 15.2, prepare a set of biodiversity guidelines for refugees host areas and communities. 15.3.2: implement a pilot training program on the application of the guidelines in the selected sites.	2016 2016

Strategic Goal Three:

Key Ecosystems, Species and Genetic Resources Conserved

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
16	By 2018, the national protected areas program reviewed and effectively implemented.	-country assessment of key biodiversity and agro-biodiversity areas finalized and adopted nationally. -national protected areas network reviewed and its implementation continued. -terrestrial protected areas cover 2% of the total area of the country. -marine protected areas cover 10% of the marine and coastal ecosystems in the country. -all protected areas are effectively managed and financially sustainable. -regulations of special conservation areas and agro-biodiversity hotspots are identified and are incorporated into the new environment law and its bylaws.	MoEnv, RSCN, ASEZA, PTDRA, NBC

No	KPI	Priority Actions	Deadline
16.1	Country assessment of key biodiversity and agro-biodiversity areas finalized and adopted nationally.	16.1.1: design and implement a national survey on key areas. 16.1.2: implement a comprehensive stakeholders' consultation process with focus on local communities. 16.1.3: prepare and disseminate a country report on key biodiversity areas.	2016 2016 2017
16.2	National protected areas network reviewed and its implementation continued.	16.2.1: design and nationally adopt the process framework for the protected areas network review. 16.2.2: undertake comprehensive academic review including priority field investigations. 16.2.3: establish an NBC working group on the review. 16.2.4: prepare the review report, seek public opinions and endorse by the Cabinet.	2016 2017 2015 2018
16.3	Terrestrial protected areas cover 2% of the total area of the country.	16.3.1: prepare and update the designation files for Burqu and Petra protected areas. 16.3.2: secure official designation for Burqu and Petra by the Cabinet. 16.3.3: secure local communities consent on the protected areas designation. 16.3.4: initiate integrated management programs for both sites including the monitoring system. 16.3.5: prepare and adopt participative site governance and benefit sharing frameworks. 16.3.6: install needed human and infrastructure capacities for both sites.	2015 2016 2016 2016 2016 2018
16.4	Marine protected areas cover 10% of the marine and coastal ecosystems in the country.	16.4.1: finalize the design of the marine protected area. 16.4.2: prepare the site designation file and secure official approval by the Cabinet. 16.4.3: initiate an integrated management program for the site including the monitoring system. 16.4.4: prepare and adopt participative site governance and benefit sharing frameworks. 16.4.5: install needed human and infrastructure capacities for the site.	2015 2015 2015 2016 2016
16.5	All protected areas are effectively managed and financially sustainable.	16.5.1: prepare and update the management plans for all sites. 16.5.2: undertake a national management effectiveness assessment and disseminate report. 16.5.3: assess the effectiveness of the participative governance frameworks and benefit sharing.	Starting 2015 2017 2017
16.6	Regulations of special conservation areas and agro-biodiversity hotspots are identified and are incorporated into the new environment law and its bylaws.	16.6.1: review the existing special conservation areas regulations incorporating genetic resources areas. 16.6.2: prepare a biannual SCAs effectiveness report. 16.6.3: prepare and implement integrated management plans for the SCAs.	2015 2016 Starting 2015

No	KPI	Priority Actions	Deadline
16.1	Country assessment of key biodiversity and agro-biodiversity areas finalized and adopted nationally.	16.1.1: design and implement a national survey on key areas. 16.1.2: implement a comprehensive stakeholders' consultation process with focus on local communities. 16.1.3: prepare and disseminate a country report on key biodiversity areas.	2016 2016 2017
16.2	National protected areas network reviewed and its implementation continued.	16.2.1: design and nationally adopt the process framework for the protected areas network review. 16.2.2: undertake comprehensive academic review including priority field investigations. 16.2.3: establish an NBC working group on the review. 16.2.4: prepare the review report, seek public opinions and endorse by the Cabinet.	2016 2017 2015 2018
16.3	Terrestrial protected areas cover 2% of the total area of the country.	16.3.1: prepare and update the designation files for Burqu and Petra protected areas. 16.3.2: secure official designation for Burqu and Petra by the Cabinet. 16.3.3: secure local communities consent on the protected areas designation. 16.3.4: initiate integrated management programs for both sites including the monitoring system. 16.3.5: prepare and adopt participative site governance and benefit sharing frameworks. 16.3.6: install needed human and infrastructure capacities for both sites.	2015 2016 2016 2016 2016 2018
16.4	Marine protected areas cover 10% of the marine and coastal ecosystems in the country.	16.4.1: finalize the design of the marine protected area. 16.4.2: prepare the site designation file and secure official approval by the Cabinet. 16.4.3: initiate an integrated management program for the site including the monitoring system. 16.4.4: prepare and adopt participative site governance and benefit sharing frameworks. 16.4.5: install needed human and infrastructure capacities for the site.	2015 2015 2015 2016 2016
16.5	All protected areas are effectively managed and financially sustainable.	16.5.1: prepare and update the management plans for all sites. 16.5.2: undertake a national management effectiveness assessment and disseminate report. 16.5.3: assess the effectiveness of the participative governance frameworks and benefit sharing.	Starting 2015 2017 2017
16.6	Regulations of special conservation areas and agro-biodiversity hotspots are identified and are incorporated into the new environment law and its bylaws.	16.6.1: review the existing special conservation areas regulations incorporating genetic resources areas. 16.6.2: prepare a biannual SCAs effectiveness report. 16.6.3: prepare and implement integrated management plans for the SCAs.	2015 2016 Starting 2015

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
17	By 2020, national strategies and action plans for plant species at risk developed and implemented.	-national plant conservation strategy adopted nationally and implemented. -national plant red list updated and addressed in all relevant strategies and action plans. -blacklist is initiated, and management plans for species of high impact developed.	RBG, NCARE, MoA/FD

No	KPI	Priority Actions	Deadline
17.1	National plant conservation strategy adopted nationally and implemented.	17.1.1: finalize the plant strategy and prepare for national adoption. 17.1.2: implement a national outreach program for the adoption of the plan. 17.1.3: secure the plan adoption by the Cabinet. 17.1.4: publish and update the flora of Jordan book.	2015 2015 2016 Starting 2018
17.2	National plant red list updated and addressed in all relevant strategies and action plans.	17.2.1: update the national plant red list on a shared database. 17.2.2: prepare and publish volumes 1, 2, 3 of the national red list plant book. 17.2.3: prepare and adopt red list documentation and update protocol.	Starting 2015 Starting 2015 2016
17.3	Blacklist initiated, and management plans for species of high impact adopted.	17.3.1: undertake desktop review of all blacklist species and publish report. 17.3.2: implement a national awareness raising and outreach program on the blacklist. 17.3.3: prepare and adopt a national action plan for combating the blacklist species.	Starting 2015 2016 Starting 2016

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
18	By 2020, national strategies and action plans for faunal terrestrial and freshwater species at risk developed and implemented.	-status of key terrestrial and freshwater fauna assessed and conservation action plans implemented. -national database for terrestrial and freshwater fauna red list established, updated and addressed in all relevant strategies and action plans.	RSCN

No	KPI	Priority Actions	Deadline
18.1	Status of key terrestrial and freshwater fauna assessed and conservation action plans implemented.	18.1.1: undertake comprehensive review of data on target biota. 18.1.2: publish the first "status of national biodiversity report". 18.1.3: prepare and initiate the implementation of priority taxa conservation action plans.	2015 2016 2017
18.2	National database for terrestrial and freshwater fauna red list established, updated and addressed in all relevant strategies and action plans.	18.2.1: establish a national database on terrestrial and freshwater fauna red list. 18.2.2: publish the red list data book for target taxa. 18.2.3: implement a national awareness raising and outreach program on red list conservation. 18.2.4: prepare and adopt a priority red list species monitoring program.	2015 2016 2016 2017

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
19	By 2020, national strategies and action plans for marine species at risk developed and implemented.	-status of marine species assessed and conservation action plans initiated for species at risk. -national database for marine red list developed and addressed in all relevant strategies and action plans.	ASEZA, JREDS, MSS

No	KPI	Priority Actions	Deadline
19.1	Status of marine species assessed and conservation action plans initiated for species at risk.	19.1.1: undertake comprehensive review of data on target biota. 19.1.2: publish the first "status of national biodiversity report" including marine species. 19.1.3: prepare and initiate the implementation of priority taxa conservation action plans.	2015 2016 2017
19.2	National database for marine red list developed and addressed in all relevant strategies and action plans.	19.2.1: establish a national database on marine red list. 19.2.2: publish the red data book for target taxa. 19.2.3: implement a national awareness raising and outreach program on red list conservation. 19.2.4: prepare and adopt a priority red list species monitoring program.	2015 2016 2016 2017

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
20	By 2020, national strategies and action plans for genetic resources developed and implemented.	-national assessment of key genetic resources developed and action plans adopted nationally. -institutional and technical capacities of the relevant organizations developed and adequate human and financial resources allocated. -network of pilot genetic resources reserves established. -genetic resources specific bylaw developed and adopted legally.	NCARE

No	KPI	Priority Actions	Deadline
20.1	National assessment of key genetic resources developed and action plans adopted nationally.	20.1.1: establish an NBC working group on genetic resources. 20.1.2: publish the first state of the plant genetic resources for food and agriculture report. 20.1.3: construct, harmonize and update the national database on genetic resources.	2015 2015
20.2	Institutional and technical capacities of the relevant organizations developed and adequate human and financial resources allocated.	20.2.1.: undertake a review of institutional and technical capacities of relevant organizations on genetic resources conservation and publish a strategic report. 20.2.2: design and implement a specialized capacity building program for target organizations. 20.2.3: implement development plans of national herbaria and seed and gene banks.	
20.3	Network of pilot genetic resources reserves established.	20.3.1: based on 20.1, prepare a national sensitivity map for plant genetic resources. 20.3.2: harmonize the genetic resources map with the national protected areas and SCAs networks. 20.3.3: establish a set of pilot plant genetic resources reserves.	
20.4	Genetic resources specific bylaw developed and adopted legally.	20.4.1: prepare the draft genetic resources bylaw and endorse by MoA. 20.4.2: design and implement a national advocacy program on plant genetic resources. 20.4.3: lobby the government and endorse the bylaw by the Cabinet.	

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
21	By 2020, sustainable tourism development is achieved in all protected areas and their peripheries.	-national assessment of tourism impacts undertaken for all protected areas and their peripheries. -tourism development protocols for protected areas developed and adopted nationally. -business plans for all protected areas developed and implemented.	RSCN, ASEZA, NBC

No	KPI	Priority Actions	Deadline
21.1	National assessment of tourism impacts undertaken for all protected areas and their peripheries.	21.1.1: carry out tourism impact assessment in all established protected areas and publish report. 21.1.2: undertake economic valuation of tourism in protected areas and produce a national report. 21.1.3: implement a national awareness raising and outreach program on protected areas' economic values.	2016 Starting 2016 2017
21.2	Tourism development protocols for protected areas developed and adopted nationally.	21.2.1: prepare and adopt a best practice guidelines manual for tourism development in protected areas. 21.2.2: prepare and publish a set of case studies on tourism and protected areas. 21.2.3: prepare and adopt a benefit sharing protocol for tourism revenues with focus on local communities. 21.2.4: prepare and implement visitors' management plans for all relevant sites.	2016 Starting 2016 2015 Starting 2016
21.3	Business plans for all protected areas developed and implemented.	21.3.1: prepare a strategic protected areas sustainable financing framework for Jordan. 21.3.2: prepare and implement site specific business plans for all relevant sites. 21.3.3: prepare and adopt a guidelines manual for business planning and sustainable financing for protected areas.	2016 Starting 2015 2017

Strategic Goal Four: Ecosystem Values and Benefits Appreciated

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
22	By 2020, benefits of key national ecosystems assessed and conservation actions taken.	-country assessments on ecosystem services valuation undertaken for all key ecosystems. -national awareness of ecosystem services and benefits raised for all relevant stakeholders. -national protocols for ecosystem valuation adopted.	MoEnv, IUCN, NBC

No	KPI	Priority Actions	Deadline
22.1	Country assessments on ecosystem services valuation undertaken for all key ecosystems.	22.1.1: undertake a national assessment on key ecosystems. 22.1.2: conduct a set of strategic ecosystems services valuations for priority ecosystems. 22.1.3: publish the first national strategic report on dry-lands ecosystems values for Jordan and endorse by the Minister.	2015 Starting 2016 2016
22.2	National awareness of ecosystem services and benefits raised for all relevant stakeholders.	22.2.1: conduct a national stakeholders mapping exercise for ecosystem valuation. 22.2.2: implement a national advocacy and awareness raising program on ecosystems values. 22.2.3: prepare and disseminate a set of case studies on the role of ecosystems in sustainable livelihoods and economic development.	2015 2016 Starting 2016
22.3	National protocols for ecosystem valuation adopted.	22.3.1: establish an NBC working group on ecosystems. 22.3.2: prepare a national protocol and best practice guidelines manual on ecosystems valuation approaches and methodologies. 22.3.3: implement a specialized training program in ecosystems valuation for key stakeholders.	2015 2016 Starting 2017

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
23	By 2016, national climate change adaptation strategy and action plan is developed and implemented including mainstreaming of biodiversity and ecosystems.	-understanding of climate change impacts on biodiversity improved. -ecosystems resilience to climate change strengthened. -national capacities on climate change adaptation enhanced. -national awareness on climate change raised.	MoEnv, NBC

No	KPI	Priority Actions	Deadline
23.1	Understanding of climate change impacts on biodiversity improved.	23.1.1: undertake vulnerability studies for key eco-systems (e.g. forests, rift valley). 23.1.2: develop and adopt scientific protocols for climate change assessments based on international standards. 23.1.3: publish a series of case studies on climate change impacts on biodiversity.	Starting 2015 2016 Starting 2017
23.2	Ecosystems resilience to climate change strengthened.	23.2.1: identify key protected areas showcasing climate change resilience. 23.2.2: adopt climate change specific management programs on selected protected areas. 23.2.3: prepare and publish a national report on protected areas and resilience. 23.2.4: design and enforce participative planning and management systems on pilot protected areas.	
23.3	National capacities on climate change adaptation enhanced.	23.3.1: identify a national center of knowledge on climate change and biodiversity. 23.3.2: establish a climate change working group at NBC. 23.3.3: prepare and implement a climate change adaptation financing model and endorse by the Cabinet.	
23.4	National awareness on climate change raised.	23.4.1: undertake a stakeholders mapping on climate change and biodiversity. 23.4.2: implement an advocacy program for the climate change policy focusing on biodiversity and ecosystems. 23.4.3: design and implement a national awareness program on biodiversity and climate change.	

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
24	By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is nationally adopted.	-national awareness on the Nagoya Protocol raised. -pilot initiatives on the implementation of the Nagoya Protocol implemented. -national regulation for the enforcement of the Nagoya Protocol developed and legally adopted.	MoEnv, RBG NCARE

No	KPI	Priority Actions	Deadline
24.1	National awareness on the Nagoya Protocol raised.	24.1.1: undertake a rapid stakeholders mapping with regard to the Nagoya Protocol. 24.1.2: design and implement a stakeholders' awareness program on the Nagoya Protocol. 24.1.3: launch a national advocacy campaign on the Nagoya Protocol's importance.	2015 2015 2016
24.2	Pilot initiatives on the implementation of the Nagoya protocol implemented.	24.2.1: identify possible success stories on the implementation of the Nagoya Protocol with stakeholders. 24.2.2: design and implement a set of pilot projects on the implementation of the Nagoya Protocol involving local communities and private sector.	2016 2017
24.3	National regulation for the enforcement of the Nagoya protocol developed and legally adopted.	24.3.1: establish an NBC Nagoya Protocol working group. 24.3.2: draft a national regulation for the Nagoya Protocol and endorse by the Minister. 24.3.3: prepare a national assessment report on the response to Nagoya Protocol.	2015 2016 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
25	By 2015, a national program on the implementation of the Cartagena Protocol on Biosafety is effective.	-national awareness on the Cartagena Protocol raised. -national bylaw on the Cartagena Protocol developed and adopted by the Cabinet.	MoEnv, RBG NCARE

No	KPI	Priority Actions	Deadline
25.1	National awareness on the Cartagena Protocol raised.	25.1.1: undertake a rapid stakeholders mapping with regard to Cartagena Protocol. 25.1.2: design and implement a stakeholders' awareness program on the Caratagena Protocol. 25.1.3: launch a national advocacy campaign on the Protocol importance.	2015 2015 2015
25.2	National bylaw on the Cartagena Protocol developed and adopted by the Cabinet.	25.2.1: establish an NBC Cartagena Protocol working group. 25.2.2: draft a national bylaw for the Caratagena Protocol and endorse by the Cabinet. 25.2.3: prepare a national assessment report on the response to Cartagena Protocol.	2015 2016 2017

Strategic Goal Five: Biodiversity Knowledge Enhanced

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
26	By 2017, a centralized national environment information system (JEIS) is established and operational.	-national initiatives on biodiversity information systems harmonized and integrated. -state of national biodiversity report (GIS enabled) published. -series of scientific research protocols on biodiversity research developed and updated regularly.	MoEnv, NBC

No	KPI	Priority Actions	Deadline
26.1	National initiatives on biodiversity information systems harmonized and integrated within the CHM.	26.1.1: establish the centralized CHM at MoEnv. 26.1.2: integrate all biodiversity databases into the central CHM. 26.1.3: implement a specialized training program on CHM management and operation. 26.1.4: prepare and implement CHM maintenance and update protocol and sign bilateral MOUs with national partners.	2015 2016 Starting 2015 2017
26.2	State of national biodiversity report (GIS enabled) published.	26.2.1: establish an NBC working group on biodiversity knowledge. 26.2.2: prepare the comprehensive map of Jordan's biodiversity. 26.2.3: design and implement a national protocol for centralized database update and maintenance.	2015 2016 2018
26.3	Series of scientific research protocols on biodiversity research developed and updated regularly.	26.3.1: establish an NBC based research group on biodiversity. 26.3.2: undertake a strategic review of biodiversity research and publish a national report. 26.3.3: prepare and adopt a national biodiversity research action plan for priority research. 26.3.4: prepare and publish a thematic series on biodiversity research protocols. 26.3.5: carry out an outreach program on agreed research priorities and methodologies.	2015 2015 2016 Starting 2017 2016

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
27	By 2020, national higher education curricula on biodiversity conservation developed and maintained.	-nature academy of RSCN established and operational. -national capacity assessment on the higher education undertaken. -a set of pilot biodiversity specific curricula developed with academia. -pilot capacity building programs for selected academic institutions developed.	MoEnv, Academia

No	KPI	Priority Actions	Deadline
27.1	Nature vocational training academy of RSCN established and operational.	27.1.1: design the required curricula on different biodiversity themes. 27.1.2: secure international certification for developed curricula. 27.1.3: establish a network of advanced biodiversity trainers. 27.1.4: undertake periodic quality assurance program on delivered courses. 27.1.5: implement a business plan for the academy.	2015 2015 Starting 2015 Starting 2016 Starting 2016
27.2	National capacity assessment on the higher education undertaken.	27.2.1: establish an NBC thematic working group with academia. 27.2.2: compile a database for all biodiversity related courses. 27.2.3: identify curricula gaps and implement a response plan.	2015 2016 Starting 2017
27.3	Set of pilot biodiversity specific curricula developed with academia.	27.3.1: undertake a quality assessment of the current curricula. 27.3.2: design and adopt a biodiversity curricula certification protocol. 27.3.3: design and implement a series of specialized TOT training programs for academic lecturers.	2016 2017 Starting 2016

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
28	By 2020, national basic education program on biodiversity conservation developed and maintained.	-basic education curricula reviewed on biodiversity knowledge. -pilot capacity building programs for school teachers implemented.	MoEnv, Academia

No	KPI	Priority Actions	Deadline
28.1	Basic education curricula reviewed on biodiversity knowledge.	28.1.1: establish a biodiversity education working group at NBC. 28.1.2: undertake a strategic review of basic education curricula and produce a report. 28.1.3: implement a biodiversity curricula development action plan.	2015 2016 Starting 2017
28.2	Pilot capacity building programs for school teachers implemented.	28.2.1: conduct a national capacity assessment of school teachers on biodiversity conservation. 28.2.2: design and implement a school teachers TOT program on biodiversity related education. 28.2.3: design and adopt a national biodiversity award for school teachers.	2016 Starting 2017 Starting 2018

No	National Target	Key Performance Indicators (KPIs)	Potential Lead Agency (ies)
29	By 2020, traditional knowledge on biodiversity promoted and maintained.	-national assessment of traditional knowledge undertaken and a country report published. -research protocol for biodiversity traditional knowledge documentation developed and adopted nationally. -national action plans for biodiversity traditional knowledge adopted.	MoEnv. NBC

No	KPI	Priority Actions	Deadline
29.1	National assessment of traditional knowledge undertaken and a country report published.	29.1.1: organize a national conference on traditional knowledge and biodiversity. 29.1.2: establish an NBC working group on traditional knowledge. 29.1.3: construct a national database on traditional knowledge and biodiversity.	2016 2015 2017
29.2	Research protocol for biodiversity traditional knowledge documentation developed and adopted nationally.	29.2.1: undertake a review of international and regional best practices on traditional knowledge and biodiversity research. 29.2.2: design a practitioners' guidelines manual and toolkit on traditional knowledge. 29.2.3: implement a specialized training program on biodiversity and traditional knowledge.	2015 2016 Starting 2016
29.3	National action plans for biodiversity traditional knowledge adopted.	29.3.1: design and construct a national field center on traditional knowledge (RBG). 29.3.2: identify documentation gaps on traditional knowledge and adopt a response plan. 29.3.3: publish a thematic series of knowledge products on traditional knowledge and biodiversity.	2015 2016 Starting 2016

3.5 NBSAP Implementation Arrangements

Stakeholders Engagement

The following table summarizes the roles of the key national stakeholders with regard to the development, implementation and monitoring of the NBSAP. The roles below are tentative, subject to full review and ratification by the National Biodiversity Committee (NBC). The roles are proposed based on the following rationale:

- Existing legal and institutional mandates of the different agencies.
- Strategic frameworks of each of the agencies according to their set goals and priorities.
- Past experiences of the agencies with regard to NBSAP development and implementation.
- Future outlook of agencies towards their perceived roles and goals with regard to biodiversity.
- Institutional gaps identified by the project team with regard to some components of the NBSAP.

1	Ministry of Environment (MoEnv)	-overall ownership of NBSAP. -strategic guidance for NBSAP implementation. -monitoring of NBSAP implementation. -financing of NBSAP implementation. -national information management. -mainstreaming NBSAP in other sectors. -providing political support to other organizations.	All NBSAP organizations, other line ministries and authorities.
2	National Biodiversity Committee (NBC)	-the key governance mechanism for national biodiversity. -advocacy, outreach and awareness raising for NBSAP. -monitoring of NBSAP implementation. -platform for knowledge sharing and learning.	Royal Court, Cabinet of Ministers
3	Forestry Department/ Ministry of Agriculture (FD/MoA)	-lead on the forest ecosystems conservation and management. -support law enforcement. -lead on national forest inventories.	RSCN, NCARE, RBG
4	National Center for Agricultural Research and Extensions (NCARE)	-lead on genetic resources conservation and management. -lead on scientific research of genetic resources. -co-lead on Nagoya Protocol.	MoEnv, RBG, FD/MoA
5	Royal Marine Conservation Society of Jordan (RSCN)	-lead on protected areas program development and implementation. -lead on terrestrial and freshwater fauna conservation and management. -lead on ecotourism development and monitoring. -co-lead on community based management of rangelands.	MoEnv
6	Royal Botanic Garden (RBG)	-lead on plant conservation and management. -lead on traditional knowledge and plant diversity. -co-lead on community based management of rangelands.	MoEnv
7	The Royal Marine Conservation Society of Jordan (JREDS)	-lead on marine species conservation and management. -co-lead on marine and coastal areas conservation and management. -co-lead on tourism development and monitoring.	ASEZA, MoEnv
8	Aqaba Special Economic Zone Authority	-lead on coastal zone and marine diversity conservation and management. -lead on marine park management.	MoEnv
9	Rangeland Department (Ministry of Agriculture)	-lead on rangeland biodiversity and the Hima initiatives (community based management of protected areas)	MoEnv
10	Marine Science Station	-lead on marine research and studies informing policy and decision making.	ASEZA
11	Royal Administration of Environment Protection (RANGERS)	-lead on law enforcement and support for national stakeholders.	MoEnv., NBC

Financing Framework

The effective implementation of the updated NBSAP is organically linked to the adoption of a clear financing framework needed for the achievement of the national targets. The proposed approach for the framework follows a two-fold strategy.

The first component of the financing strategy is based on the fact that the financing mechanisms of the strategic targets are a reflection of the lead agency (ies) sources, tools and mechanisms. The financing of the NBSAP targets implementation is as shared by the Ministry with its partners as does their responsibility and accountability for the implementation of the program itself. For example, the RBG lead on the development and implementation of the national plant conservation strategy will entail its lead responsibility on securing and mobilizing the needed human and monetary resources.

The second part of the financing strategy is tailored around the commitment and obligation of the Ministry of Environment, in its capacity as the national umbrella for the NBSAP implementation, to support the various lead agencies' access to adequate financing through multiple resources including internal, external and innovative sources, tools and mechanisms.

It is well-established that the NGOs are proving to be successful in developing and adopting effective and often sustainable financing models for their programs portfolios. They have been very successful in adopting a multi-resource approach to program financing. This includes mainly engaging with civil society, external donors, private sectors, small and medium size businesses, as well as endowment funds with less dependence on government funding and allocations. To give a few examples, RSCN has a widely recognized funding strategy based on a mosaic yielding form endowment funds, ecotourism, and externally funded project of all sizes. JREDS has developed an interesting model in engaging with private sector's CSR programs for environmental campaigns and events in addition to specialized projects funding partnering with external organizations. Further, RBG has been very effective in mobilizing funding from bilateral donors active in Jordan in addition to civil society based donations and support.

Needless to say, the NGOs remain greatly challenged by the financial sustainability question and require a clearer and stronger support program from the government through fiscal allocations and other internal funding mechanisms such as the environmental fund.

The case above does apply to the government agencies involved on the implementation of the NBSAP such as the Forestry Department, the Rangeland Department and the NCARE. The government's human and financial resources allocations for biodiversity programs are very limited and represent a major constraint for these organizations to fulfill their programmatic obligations and ambitions on biodiversity conservation under the NBSAP. The additional external funding from bilateral and multilateral sources is also considered inadequate and insufficient.

To achieve the above, the following arrangements will be put in effect by the Ministry:

- 1- The adoption of a resource mobilization framework for the NBSAP based on a three-layer mechanism from internal, external and innovative sources and mechanisms.
- 2- The framework above will include the establishment of an NBC working group on program financing and resource mobilization with the primary mandate to lobby the government for more resources allocations as part of the national budget planning process. This will also include working with the juridical councils from the Parliament.
- 3- A specialized database for the NBSAP program portfolio –with focus on priority projects as agreed by the NBC- will be developed by the Ministry including information on potential donors and their funding eligibility.
- 4- A specialized resource mobilization, fund raising and project development training program will be implemented for all NBSAP partners.
- 5- A strategic monitoring -based on the above database- will be put in place to document and share trends, patterns, successes and challenges associated with the NBSAP financing.

The table below represents a checklist of existing and potential sources of funding for the NBSAP programs and projects:

Financing Mechanisms		
Internal Sources	External Sources	Innovative Sources
1. General Budget <i>(Parliament, Councils, Municipalities, Ministries, Budget Reserve)</i> 2. Treasury Operations <i>(Trust Funds/Guarantees, National Funds, Eco-Tourism Charges, etc.)</i> 3. Local Credit Unions, Banks, and Private Investments 4. Private Sector Local Markets 5. Nonprofit Organizations <i>(NGOs, Conservation Foundations, and Academic Institutions)</i> 6. Endowment vs. Revolving Funds	1. Aggregated Financial Flows (i.e., ODA-Bilateral & Multilateral) 2. Regional Development Banks <i>(The World Bank, The European Bank for Reconstruction and Development)</i> 3. Private Sources <i>(Foreign Direct Investment (FDI), Commercial Green Loans, etc)</i> 4. International NGOs 5. International/Multinational Partnership Cooperation's (i.e., GEF) 6. Expatriate Funds 7. International Philanthropic Organizations 8. Sector-Wide Approaches (SWAPs) 9. Debt Relief Instruments 10. Common, Pooled, or Basket Funding Arrangements 11. South to South and North to South Cooperation	1. Environmental Fiscal Reform <i>-Removing environmentally harmful subsidies &-offering soft credits/ waivers</i> 2. Payments for Ecosystem Services <i>-Tradable Quota Systems</i> <i>-Tradable Development Rights</i> 3. Biodiversity Offsets (Compensatory Conservation) <i>- One-Off Approach, In-Lieu Arrangement, & Bio banking</i> 4. Markets for Green Products (Organic, Gluten-Free, Eco-Labeling) 5. Biodiversity in Climate Change Funding <i>-Global Climate Change Alliance</i> <i>-UN-REDD Programme</i> <i>-Forest Investment Program (FIP)</i> <i>-Forest Carbon Partnership Facility</i> <i>-Amazon Fund</i> <i>-International Climate Initiative</i> <i>-Bio carbon Fund</i> <i>-ICFI</i> <i>-The Green Climate Fund</i> 6. Biodiversity within Financial International Development <i>(Solidarity, Public-Private Partnership, and Catalytic Mechanisms)</i> <i>-Green Bonds</i> <i>-Conservational Leasing/Trusts</i> <i>-Public-Private Partnerships</i> <i>-Long Term Concessional Contracts</i> <i>-Removing Investment Barriers</i> <i>- Grants, Loans, and Equity Investments (i.e. Microfinance Loans)</i> 7. Environmental Performance Bonds

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