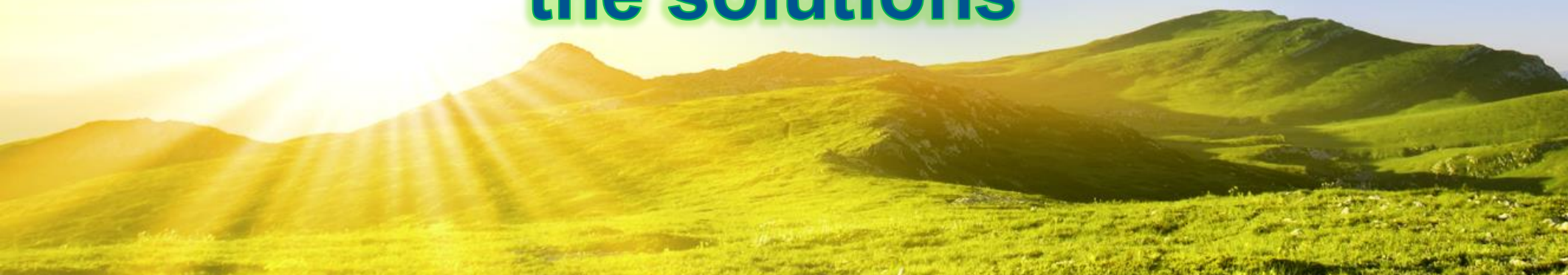


Biodiversity & Climate Change

Biodiversity is core to
the solutions



Ayman Hamada
Head of the Biodiversity Central Dept
Egyptian Environmental Affairs Agency



Outline

- ❑ **The triple environmental crises**
- ❑ **The biodiversity and climate change**
- ❑ **Addressing Bd loss and CC together**
- ❑ **Biodiversity is core to the solutions**
- ❑ **Reviews from Egypt**

The environmental crises

Loss of biodiversity

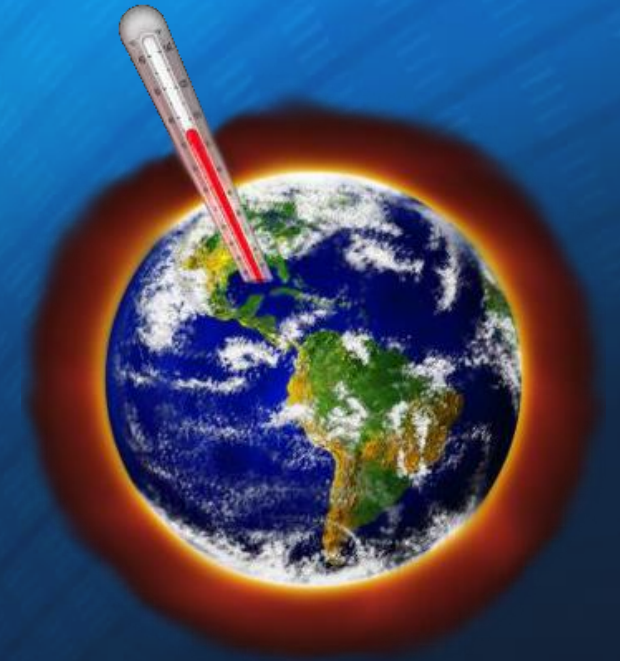
- ❑ Human activities lead to changes (mostly irreversible) in the diversity of living organisms.
- ❑ During the past 50 years, biodiversity is declining faster than at anytime in human history. The decline will continue to increase.
- ❑ Species extinction is at least tens to hundreds of times higher than anytime in the entire recorded history of earth.
- ❑ One million species face extinction, many of them within decades (25% of the assessed animal and plant groups)
- ❑ 75% of land surface is significantly altered
- ❑ 66% of the ocean area is suffering cumulative impacts.
- ❑ 85% of wetlands area has been either lost or damaged.



The environmental crises

Climate Change

- ❑ **Examples of impacts:**
 - ✓ **Average global temperature is raised about 0.76°C during 1850-2005.**
 - ✓ **Average sea level rise is about 12-22 cm during past century.**
 - ✓ **Projections confirm continuous rise of global temperature to reach 1.4 – 5.8 °C by 2100.**
 - ✓ **This will lead to continuous sea level rise, increase extreme weather events, shift in patterns of rain and vector borne diseases**
 - ✓ **More loss of biodiversity and ecosystem degradation.**



The environmental crises

Pollution

Air pollution

- ❑ 4.2 – 7 million people die annually.
- ❑ 9 out of 10 breathe air contains high level of pollutants.
- ❑ 258,000 died in Africa in 2017.
- ❑ 400,000 died in Europe in 2012
- ❑ Pollutants and particles contributed to spread of COVID
- ❑ Sources: industrial, vehicles, burning biomass, dust storms.

Plastic

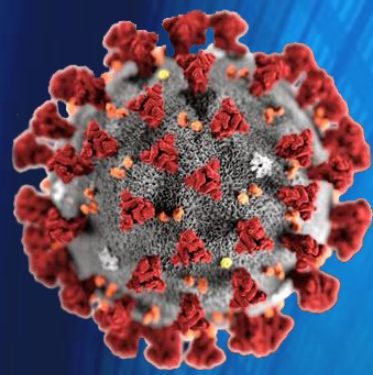
- ❑ Global production increased from 2 million ton in 1950 to 419 million ton in 2015.
- ❑ Ocean pollution has increased 10 times since 1980.
- ❑ In 2040: oceans receive 29 m.t. or 600 m.t. (microplastics).
- ❑ Directly affects 267 species of marine mammals, turtles and seabirds.



Stop the plastic tap

The environmental crises

COVID-19 Pandemic



The main suspect
Horseshoe Bat



Transferred due to direct contact

Through one or more hosts (Pangolin)

Due to pressures on animal

What does it mean?

Illegal wildlife trade is the main driver

Biodiversity & Climate Change

- ❑ Usually tackled separately.
- ❑ They are interdependent.
- ❑ Represent foundation of good quality of life.
- ❑ They are connected through carbon

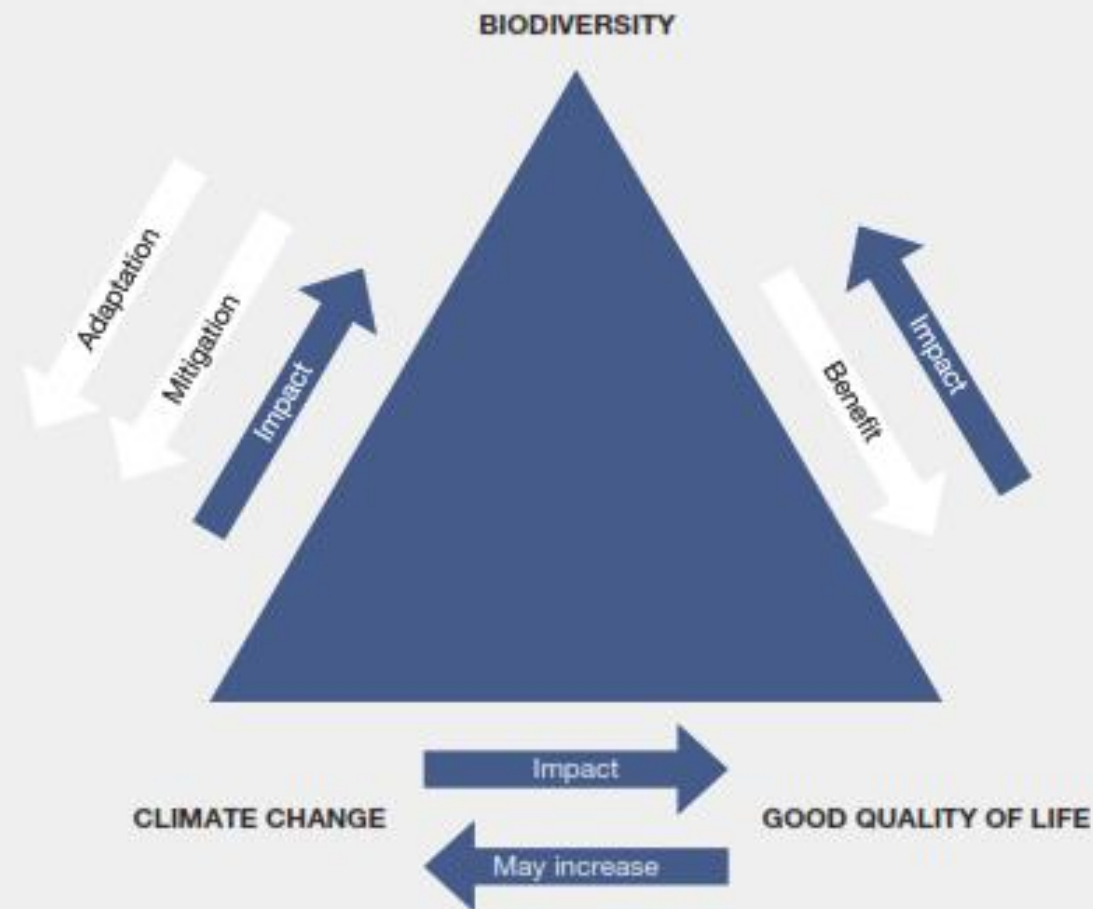


Figure 1 Relationships between climate change, biodiversity and good quality of life.

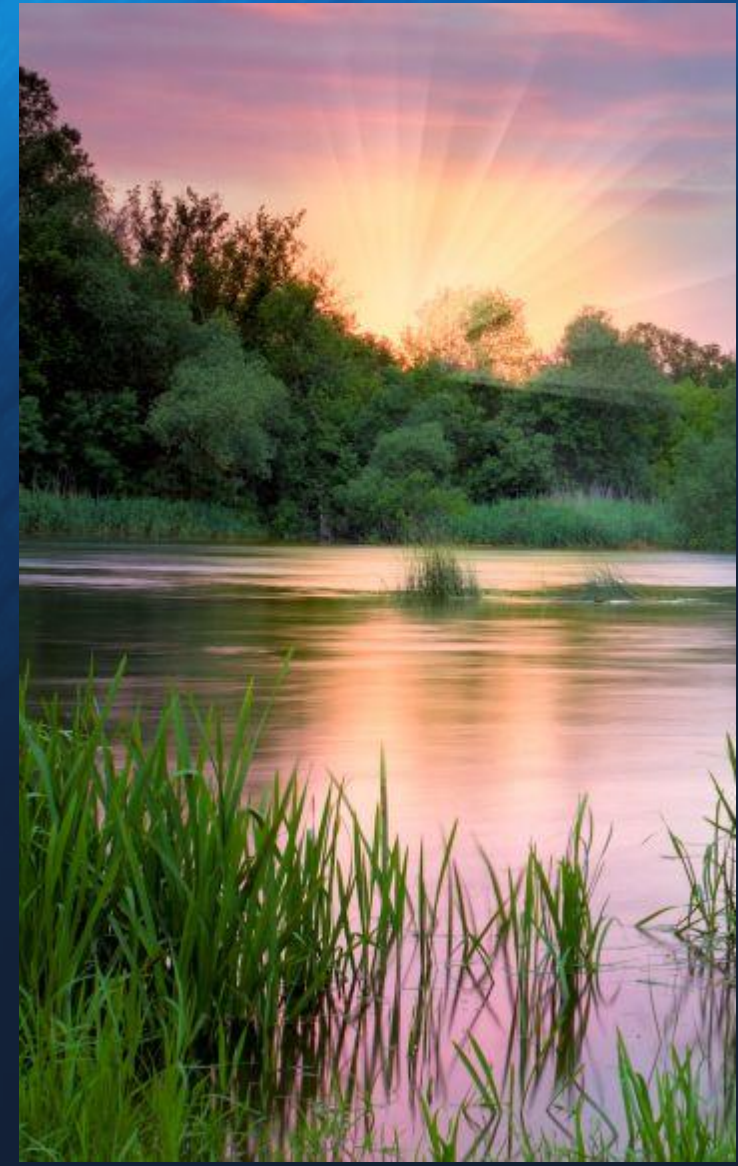
Blue arrows represent interactions that are predominantly threats, white arrows predominantly opportunities.
Modified from Korn *et al.* (2019).

Biodiversity & Climate Change

Impacts of climate change, IPCC

- ❑ Changes to the geographic ranges, physiology and morphology of land species.
- ❑ **50% of land species** studied have shifted their geographic ranges.
- ❑ Increased spread of **invasive** species and **vector** born diseases.
- ❑ Since AR5, increased no. of **biome shifts** and structural changes within ecosystems.
- ❑ 25% of natural land sees longer **fire** seasons.
- ❑ **Wildfires** increased in many parts including Amazon and Africa.
- ❑ 100 cases of mass drought-induced **tree die-off** in all regions.
- ❑ Percent of spp. **reach CR status**: 9-14% at 1.5°C, 10-18% at 2 °C, 12-29% at 3°C, 13-39% at 4°C, and 15-48% at 5°C Future changes may lead to “**new ecological state**”
- ❑ **At 4 °C**: 35% of global land surface could witness biome shifts
30% increase in net global wildfire frequency

Impacts on land and freshwater ecosystems



Biodiversity & Climate Change

Impacts of climate change, IPCC

- ❑ Climate induced drivers **alter distribution** of marine organisms from microbes to mammals and from individuals to ecosystem
- ❑ Ocean warming forces organisms **out of their natural habitats**.
- ❑ Changes in the **key biological events**: phytoplankton blooms, commercial fish spawning, and marine reptile breeding.
- ❑ Heatwaves lead to **“mass mortality”** events among “key foundational species” in many regions like seaweeds (kelp)
- ❑ **Mangroves and saltmarshes** at “high risk” from future sea level rise.
- ❑ **Coral reefs** are very vulnerable and showed increased mass bleaching events and disease outbreaks.
- ❑ Coral reefs are “under threat” of reaching **erosion rates that exceeds the rate of new corals growth**.
- ❑ Climate induced drivers **increase extinction** rate even below 2C.

Impacts on marine ecosystems



Biodiversity & Climate Change

Impacts of climate change, IPCC

- ❑ Roughly **50%** of the world's human population experiences **severe water scarcity** for at least one month per year.
- ❑ **44%** of all “disaster events” on Earth have been **flood-related**
- ❑ **Severity and frequency** of floods and droughts are increasing.
- ❑ **Snow cover** in the northern hemisphere is decreasing.
- ❑ Over the past two decades, the **loss of ice** from has exceeded 0.5 meters of water equivalent each year.
- ❑ **Groundwater** storage has declined in many parts of the world.
- ❑ CC affected global patterns **of soil moisture** over the 20th century, with consequences for agriculture, ecosystems.
- ❑ **Every fraction of temp. rise** will worsen drought and flood risk.
- ❑ **At 2 °C**: 3 billion people could face water scarcity
- ❑ **At 4 °C**: the figure rise to 4 billion
flood damage could be 4-5 times higher

Impacts on water



Biodiversity loss & Climate Change

Biodiversity conservation can address climate change and natural hazards

- ❑ Carbon regulator and sequestration.
- ❑ Flood protection, shoreline protection, regulation of soil erosion and temperature.
- ❑ Forests and green spaces help mitigating drought and extreme weather events.
- ❑ **Minimize vulnerability to climate change and enhance resilience.**



Biodiversity loss & Climate Change

How to address both together

- They must be tackled together for enhanced and greater effect.
- From that perspective:

Protection

- ✓ Carbon rich ecosystems
- ✓ Stop deforestation
- ✓ Increase biodiversity richness

Restoration

- ✓ KBA
- ✓ Degraded ecosystems
- ✓ Carbon sink ecosystems
- ✓ Flood prot. ecosystems

Enhance management

- ✓ Agriculture
- ✓ Fisheries
- ✓ Forestry
- ✓ Land use practices
- ✓ Consumption

Urban NbS

- ✓ Greening and parks
- ✓ Blue-Green infrastructure
- ✓ Cities as habitats for biodiversity

Biodiversity is core to the solutions

Lessons learned from the pandemic

- ❑ A turning and stepping point.
- ❑ Protecting the environment and nature is not a luxury and is no longer an option.
- ❑ Radical changes must be taken for nature and people.
- ❑ Nature should be at the heart of development.
- ❑ Building back better.
- ❑ No way to save the planet except by addressing:
 - ✓ Global warming and its implications.
 - ✓ Destruction of habitats and ecosystems
 - ✓ Loss of species and genetic diversity.



Biodiversity is core to the solutions

The One Health

- ❑ Tripartite and UNEP support OHHLEP's definition.
- ❑ **One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.**
- ❑ Most of human infectious diseases are zoonotic and exist in the ecosystems (over 200 zoonotic diseases).
- ❑ Can't be eliminated through efforts of one sector.
- ❑ Foodborne diseases: 600 million cases and 420,000 die every year due to contaminated food.
- ❑ **Antimicrobial resistance:** The environment and animals play a critical role in keeping the drug resistant microbes.



Biodiversity is core to the solutions

Green Recovery

- ❑ Rebuilding the economy to compensate for the losses while the environmental crises still exist.
- ❑ The recovery plans will undoubtedly influence the 3 crises for decades.
- ❑ Economic recovery plans must have long-term positive effects and be consistent with the pillars and criteria of sustainability.
- ❑ Such plans must be inclusive, address issues of inequality and poor communities, and support better human health, taking into account the impacts on climate change, biodiversity loss, and environmental protection.



Biodiversity is core to the solutions

Nature Based Solutions

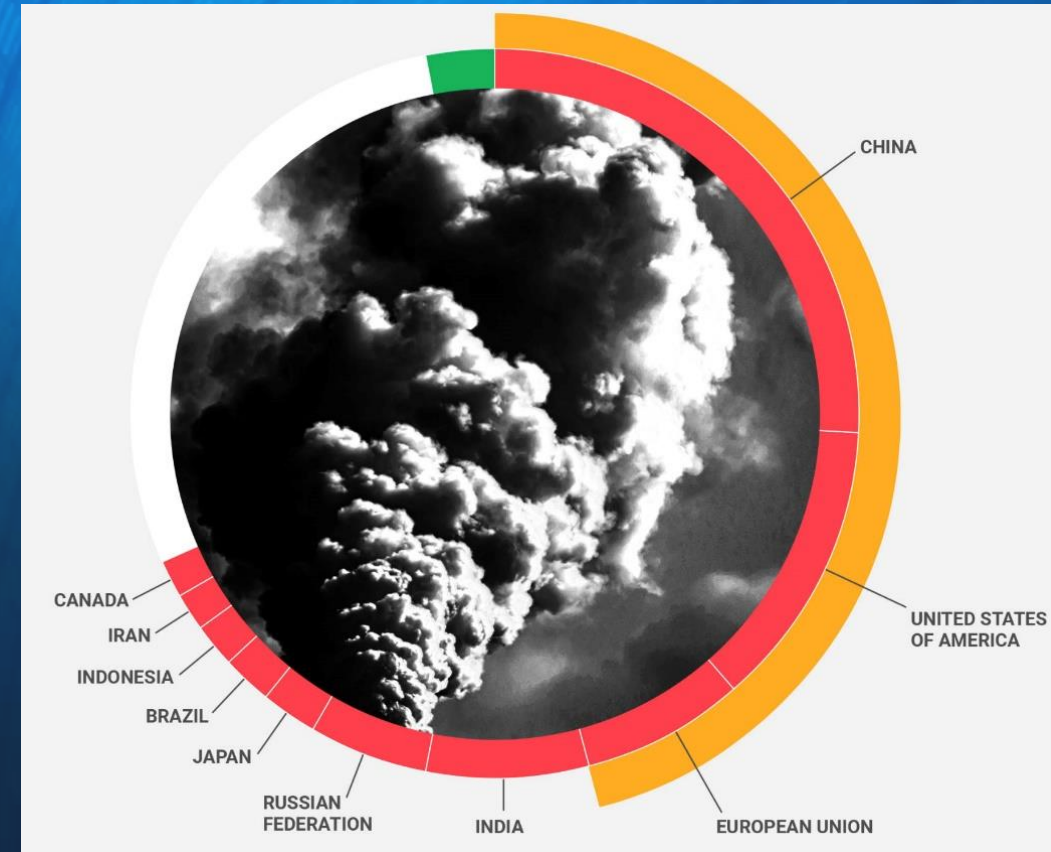
- The UNEA 5.2 Res.5 formally adopted the definition of nature-based solution as “actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits”.



Biodiversity is core to the solutions

Net Zero Coalition

- ❑ Essential to achieve the coalition target.
- ❑ To cut GHG emissions to as close as to zero and remaining emissions reabsorbed from the atmosphere



Net Zero
#ItsPossible

Biodiversity is core to the solutions

The Sustainable Development Goals

- Half of the world's population is dependent on nature for their livelihoods (forestry, Agri, fisheries).
- Provides basis for many economic activities.
- Aichi targets and SDGs.
- Biodiversity and ecosystem services contribute directly to human wellbeing and development priorities.



Reviews and snapshots from Egypt

Overview

- ❑ Egypt is among the least contributor and the most vulnerable countries.
- ❑ Dependence on Nile River and vulnerability to the reduction in rainfall and rise in temperature.
- ❑ Nile delta is one of the world's 3 extreme vulnerability hotspots.
- ❑ Sectors affected most: agriculture, water, livestock, and biodiversity.
- ❑ Expected to be hotter and drier under projected future climate.
- ❑ NDC is consistent with; reducing vulnerability, and poverty long-term sustainable economic development.

EGYPT THIRD NATIONAL COMMUNICATION

UNDER THE UNITED NATIONS FRAMEWORK
CONVENTION ON CLIMATE CHANGE



MARCH 2016

Reviews and snapshots from Egypt

Impacts of climate change on aquatic biodiversity

- ❑ Few studies on impacts on biodiversity
- ❑ Few recordings of bleaching within the Red Sea.
- ❑ Northern section is more resilient to thermal stress.
- ❑ That was evident during El Nino event 2015-2016.
- ❑ Central Red Sea is more susceptible.
- ❑ Northern Red Sea as “thermal refuge” of global value.
- ❑ Nesting habitats along the Med. Sea is endangered and will be lost (green and hawksbill)
- ❑ Rising temp. may affects gender distribution of turtles.
- ❑ Expected shifts in distribution and range of many species including sharks.



Reviews and snapshots from Egypt

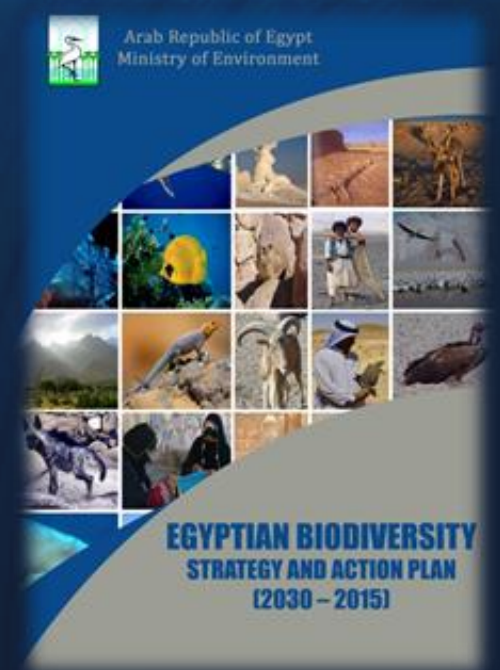
Impacts of climate change on aquatic biodiversity

- ❑ **Some observations:**
 - ✓ Algal blooming in Suez freshwater canal in 2003.
 - ✓ Frequent algal blooming (Cyanophyceae) Lake Nasser
 - ✓ Invasion of the mosquitofish (escaped to warmer water)
 - ✓ Climate and non-climate factors are adversely impacting the fisheries in the Red Sea and Medit. Sea
 - ✓ Saltwater intrusion in the coastal zones and delta.
 - ✓ Northern lakes are subject to effects of sea level rise, warming, eutrophication, and increased evaporation.



Reviews and snapshots from Egypt

Policies, strategies, and plans



Reviews and snapshots from Egypt

Biodiversity conservation & ecosystem restoration

- ❑ Protected Areas Network represent all ecosystems.
- ❑ 2nd version on NBSAP.
- ❑ Programs and projects:
 - ✓ Rehabilitation of Acacia in South Sinai and Upper Egypt PAs
 - ✓ Captive breeding and reintroduction of the Egyptian Tortoise.
 - ✓ Red Sea Mangrove assessment and rehabilitation.
 - ✓ Red Sea coral reef assessment and restoration.



Reviews and snapshots from Egypt

Biodiversity in the UNFCCC COP 27

16
NOV

Biodiversity Day

Elements of the Day



1

High level opening: Connecting Climate and Biodiversity

Setting the basis and objectives for the day. High level overview of the day, the interdependence of biodiversity and climate change, the urgent need for integrated responses at scale, and the international policy landscape that commits, encourages, and enables coherent and urgent institutional action to address the climate and biodiversity crises.

2

Present: The biodiversity and Climate Change Nexus

This session will present the very latest scientific knowledge on the relationship between climate change and biodiversity (impacts of climate change on biodiversity and the ecosystem, and the contribution of nature-based solutions to climate mitigation and adaptation).

3

Hope: Providing Solutions and Benefits for Biodiversity, climate, and people

This session aims to showcase successful approaches and case studies where biodiversity has been managed in the face of climate change, and where the management of biodiversity through conservation, land restoration, combating desertification and sustainable use has led to benefits for climate mitigation and adaptation. The launch of the COP27 Presidency initiative on Nature-based Solutions will take place during this block.

4

Vision: scaling up Urgent Action to Address the Biodiversity and Climate crises.

This session will focus on the urgency and scale of actions by policy makers, institutions, and all stakeholders across scales. It will bring youth, civil society, the private sector, and governments together in a constructive dialogue to ensure the urgency and scale of implementation needed is materialized to secure biodiversity, a stable climate, and sustainable development for all. It also provides an opportunity for the Glasgow Leader's Declaration on Forests and Land Use, agreed at UNFCCC COP26, to share its progress to date, as well as look ahead to the CBD COP15 and adoption of the post-2020 Global Biodiversity Framework. It has 4 blocks.

5

Closing session

Reflections on the day, implications for the future, including remaining negotiations at UNFCCC COP27 and the pathway towards CBD COP15.

Reviews and snapshots from Egypt

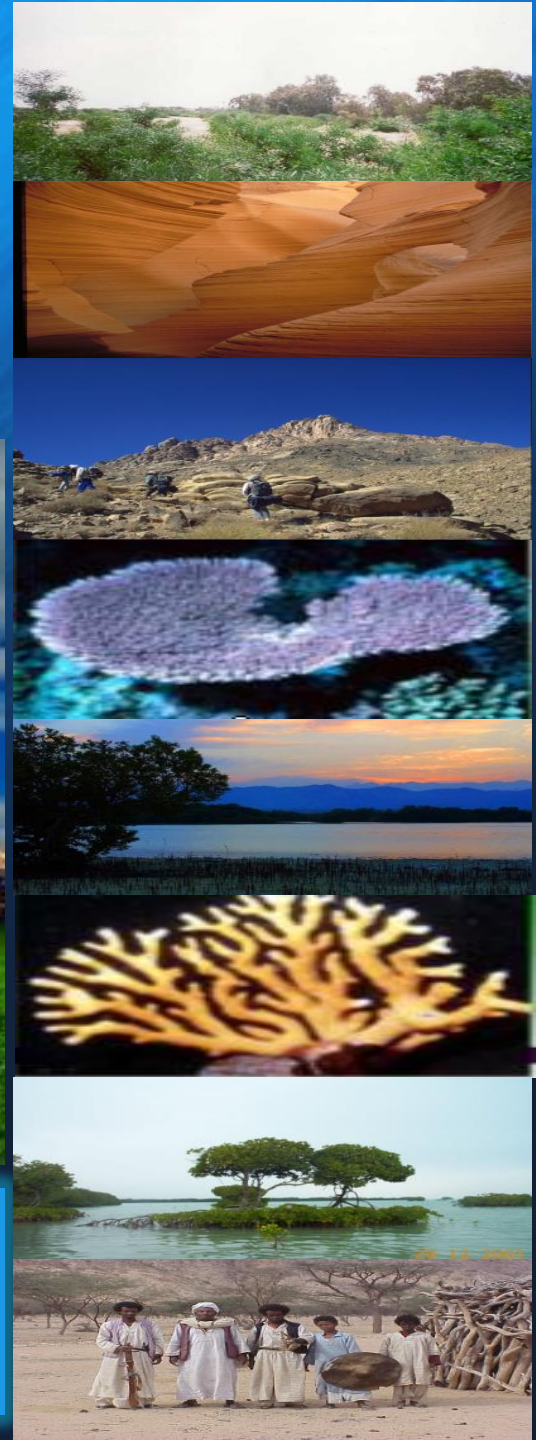
Biodiversity profile

Finally

Don't be part of the environmental crises



Be part of the solutions to build our shared future



A white rectangular card is centered in the image, featuring the words "thank you!" in a gold, cursive font. The card is surrounded by numerous glass marbles in various colors, including blue, green, and white. The background is a soft-focus field of these marbles, creating a vibrant and textured environment. The lighting is bright and even, highlighting the reflective surfaces of the glass.

thank
you!