Islamic Republic of Iran

National Biodiversity Strategies and Action Plans 3 (NBSAP3)

2024-2030

Draft ver. 2024

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Address: Chamran Hwy., Yemen St., Tehran, Islamic Republic of Iran

Tel: (+98-21) 22400094**, Fax:** (+98-21) 22401855

E-mail: irfocal@areeo.ac.ir

P.O.B.: 19395-1113

URL: irancbd.areeo.ac.ir

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Title:

The 3rd National Biodiversity Strategies and Action Plans (NBSAP3) of Islamic Republic of Iran (Draft ver. October 2024)

Steering Committee:

Dr. M. Khayam-Nekouei, Dr. M. Mardi, Dr. S. Kadkhodaei, Dr. M. Mofidi-Neyestanak

Authors (alphabetical):

Dr. A. Ameri-Siahoui, Dr. R. Ashrafipour, Dr. H. Badripour, Eng. M. Batebi, Dr. A. Dadashi, Dr. K. Davoodi, Dr. M. Ebrahimi, Dr. E. Gordmardi, Dr. B. Hamzeh, Dr. F. Heydari, Dr. S. Kadkhodaei, Dr. T. Khadivi, Dr. M. Khayam-Nekoui, Dr. M. Mardi, Dr. M. Mofidi-Neyestanak, Dr. H. Moghani, Dr. F. Owfi, Dr. M. Rezvanian, Dr. M. Seyyedi, Dr. H. Shahsavarani, Dr. S. Sheykhi-Ilanlou, Dr. M. Soltani, Dr. B. Sorkhi-Lellahlou, Dr. M. Tahmasebi, Dr. R. Talebi

Coordinator:

Dr. M. Mofidi-Neyestanak, Eng. Z. Tirgar

Organization contributors:

AREEO, DoE, ICA, MFA, MSRT, NRWMO

Tirage:

Limited

Preface

The Constitutional Law of the Islamic Republic of Iran emphasizes the significance of environment and biodiversity as a natural and divine right of humanity. This principle is reflected in Article 3 of the general environmental policies and Article 50 of the Constitutional Law.

As the Supreme Leader articulates: "*The environmental issue is not tied to any specific administration, individual, or movement. It is a national concern that demands collective efforts.*" He further states: "*For us, environmental preservation and natural resource conservation are not luxury or secondary matters. They are vital issues in our national development efforts, deserving priority.*"

Iran, recognized as one of the world's 20 mega-diverse countries, boasts immense biodiversity, including diverse species of mammals, birds, invertebrates, amphibians, microorganisms, plants, and fungi. Agro-biodiversity, crucial for environmental sustainability, faces challenges due to agricultural activities that cause land use changes and environmental degradation. Conservation of agriculture biodiversity is vital, as it plays a crucial role in sustainable growth and agricultural development.

Iran has a century-long history of studying and managing its natural biodiversity through research institute, natural museums, and herbaria. The Ministry of Agriculture-Jahad (MoAJ), tasked with protecting, collecting, evaluating, restoring, and developing genetic resources and plant biodiversity, oversees the Agricultural Research, Education, and Extension Organization (AREEO). AREEO's scope includes, agricultural, horticultural, ornamental, medicinal, pasture, forestry, livestock and aquatic plants, useful and harmful microorganisms and agricultural insects.

Over the past decade, Iranian taxonomists have identified and recorded more than 54,000 species of flora and fauna, documented in national and international scientific journals. These treasures are curated in bio-libraries within Iran's museums and herbaria, accessible to researchers and students. Research institutions and universities of the country have also focused on discovering and improving agricultural and horticultural varieties and native breeds of poultry and aquatic animals, enhancing cultivars and breeds each year.

Increasing biodiversity in agriculture can improve crops, increase farm yields, and reduce the need for chemical fertilizers and pesticides. Including biodiversity considerations in bio-assessments helps control diseases and pests, leading to healthier production from more qualified seeds. Preserving biodiversity ensures that nature is sustained for future generations and enables the production of valuable, healthy agricultural products.

The Environmental Performance Index (EPI) uses the latest data and indicators to provide a comprehensive assessment of global environmental sustainability. Fifty-eight indicators measure progress in addressing climate change, protecting ecosystems, promoting environmental health, advancing the United Nations Sustainable Development Goals (SDGs),

and achieving the targets of the 2015 Paris Climate Change Agreement and the Kunming-Montreal Global Biodiversity Framework (KM GBF). The first global assessment of the Paris Agreement goals revealed a concerning picture: significant progress is lacking worldwide. Nevertheless, Iran improved its ranking from 134th in 2023 to 112th in 2024 among 180 countries, despite resource constraints and the impact of extensive sanctions. This improvement demonstrates Iran's commitment to reversing environmental degradation and sustainably exploiting biodiversity through effective management.

The conservation management efforts of the Department of Environment (DoE), AREEO, the Iran Fisheries Organization (IFO), and the Natural Resources and Watershed Management Organization (NRWMO), among others, are progressing successfully, despite limited funds. Establishing more executive laws and regulations for the proper exploitation of genetic resources and creating responsible organizations and legal mechanisms to facilitate their use are positive steps that will further improve in the future. The alignment of the 7th Five-Year Development Plan (FYDP) with the KM GBF and the mutual environmental agenda provides an ideal framework for achieving the targets of both programs by around 2030.

We hope that lifting sanctions, ensuring equitable allocation of financial resources, and fostering technical cooperation will lead to prosperous, green and happy Iran and healthy Iranians by 2030 and 2050.

Dr. Mojtaba Khayam-Nekouei

Iran CBD National Focal Point

MoAJ Deputy Minister and Director General of AREEO

Ministry of Agriculture-Jahad of Iran

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Abbreviations

7th FYDP: The 7th Five-Year Development Plan of Iran

ABRII: Agriculture Biotechnology Research Institute of Iran

Aichi: Aichi biodiversity program

AREEO: Agricultural Research, Education and Extension Organization of Iran

CBD: Convention on Biological Diversity

DoE: Department of the Environment of Iran

COP: Conference Of the Parties

CP: Cartagena Protocol

DSI: Digital Sequencing Information

EIA: Environmental Impact Assessment

EPI: Environmental Performance Index

FIP: Fair Information Practices

FYDP: Five-Year Development Plan of Iran

GBF: Global Biodiversity Framework

GBIF: Global Biodiversity Information Facility

GDBR: General Data Protection Regulation

GEF: Global Environment Facility

GSI: Geological Survey and Mineral Exploration of Iran

GTI NFP: Global Taxonomy Initiative National Focal Point

HADI: HADI Master Plan is a structural pathology as the most comprehensive rural development plan in Iran

IAS: Invasive Alien Species

IFO: Iran Fisheries Organization

INSO: Iran National Standards Organization

IPM: Integrated Pest Management

IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IT: Information Technology

IUCN: International Union for Conservation of Nature

KM-GBF: Kunming-Montreal Global Biodiversity Framework

LAOI: Land Affairs Organization of Iran

MCG: Ministry of Culture and Guidance of Iran

MCLS: Ministry of Cooperatives, Labor, and Social Welfare of Iran

MCTH: Ministry of Cultural Heritage, Tourism and Handicrafts of Iran

MEDU: Ministry of Education of Iran

MEFA: Ministry of Economic and Finance Affairs of Iran

MFA: Ministry of Foreign Affairs of Iran

MHME: Ministry of Health and Medical Education of Iran

MICT: Ministry of Information and Communications Technology of Iran

MIMT: Ministry of Industry, Mine and Trade of Iran

MoAJ: Ministry of Agriculture-Jahad of Iran

MoE: Ministry of Energy of Iran

MoP: Ministry of Petroleum of Iran

MRUD: Ministry of Roads and Urban Development of Iran

MSRT: Ministry of Science, Research and Technology of Iran

MSY: Ministry of Sport and Youth of Iran

NAP: National Action Plan to Combat Desertification

NBSAPs: National Biodiversity Strategy and Action Plans

NEF: National Elites Foundation of Iran

NGOs: Non-Governmental Organizations

NIGEB: National Institute of Genetic Engineering and Biotechnology

NIOC: National Iranian Oil Company

NP: Nagoya Protocol

NR: National Report

NRWMO: Natural Resources and Watershed Management Organization of Iran

OECMs: Other Effective area-based Conservation Measures

PAs: Protected Areas

PBO: Plan and Budget Organization of Iran

PPAs: Privately Protected Areas

SCEP: Supreme Council of Environment Protection of Iran

SDGs: Sustainable Development Goals

SWoI: State Welfare Organization of Iran

UN CBD: United Nations' Convention on Biological Diversity

UNESCO-MaB: UNESCO- Man and the Biosphere Programme

UNESCO-TBR: UNESCO- Transboundary Biosphere Reserves

UNSDCF: United Nations Sustainable Development Framework

UPAs: Urban Protected Areas

Mangrove forest, South of Iran, the Persian Gulf (Photo: M. Mofidi-Neyestanak)

[IRĀN, Bushehr Province, Dayyer-Nakhiloo National Park, mangrove swamp, 27°50'48.4"N 51°34'52.9"E, Alt. 0 msl, 3.XI.2022]

INTRODUCTION

Iran and Iranians have consistently demonstrated a strong commitment to biodiversity throughout history. The ancient Iranian civilization thrived on the sustainable exploitation of biodiversity services. The construction of aqueducts (*Kariz*) to extract fresh and clean water from the depths of the deserts and the development of millennia-old civilizations exemplify Iran's harmony with nature. Although lofty goal was neglected for several decades, it has recently regained prominence.

Iran's environment faces numerous pressures, especially in recent years, and with decreasing water level and unprecedented heat. The country grapples with threats such as desertification, soil erosion, overgrazing, imbalance of production and consumption, unsustainable management of agricultural inputs and natural resources, and over-exploitation. Coastal habitats have reached their limit, and water resources are contaminated by oil spills, industrial accidents, and intensive industrial and agricultural activities. Overfishing also poses a significant threat to many fish species. efforts to halt ecosystem destruction include integrated fertilizer management, irrigation and inland water management, afforestation, and mountain-related initiatives.

Iran's national law to join the CBD was approved by the Islamic Parliament on May 26, 1996 and Iran officially became a member of the convention on November 4, 1996. Until 2018, the authority of the Convention resided with the Ministry of Foreign Affairs (MFA). A joint proposal by MoAJ and the DoE, alongside the single article of the Law on the Accession of the Government of the Islamic Republic of Iran to the CBD and Article 11 of the Biosafety Act of the Islamic Republic of Iran approved in 2009, designated the DoE as the national focal point for the GEF and the MoAJ as the national focal point for the CBD and related protocols.

The CBD has two supplementary agreements: the Cartagena Protocol (CP) and the Nagoya Protocol (NP). Iran joined the CP in 2003, following approval by the Islamic Parliament of IR Iran. Given that nearly 85% of natural areas and water, along with approximately 100 gene banks and genetic inheritance reserves, are managed by the MoAJ, it is necessary to assign national authority for one of the CBD protocols to the MoAJ. Consequently, the ministry was designated as the national authority of the Convention. Following the convention's approval by the MoAJ, it was decided that MoAJ could delegate some national authorities of specific issues to universities and organizations such as NRWMO, AREEO, MSRT and DoE.

Several issues addressed under this convention include:

- Measures and indices for the conservation and sustainable use of biodiversity,
- Legalized access to genetic resources and traditional knowledge, including informed consent before providing resources, research and development outputs, and benefits from

commercial and non-commercial use of the genetic resources with the providing contracting party,
- Access and technology transfer, including biotechnology,
- The role of the villagers, pastoralists and nomadic tribes, where applicable,
- International cooperation and financial mechanism,
- Organizational provisions and arrangements,
- Accepting responsibility and resolving disputes,
- Connection and collaboration with other nexus Conventions and international agreements,
- Coordination and creation of a national species data bank to manage and conserve biodiversity.
- Risk assessment and management,
- Increasing and educating public information and awareness,
- Mobilization of financial resources,
- Preparation of NBSAPs and national reports (NR) on the efforts to implement CBD responsibilities.

Following the 2015 approvals and the United Nations Framework Convention on Climate Change, biodiversity is considered vital for both the 2030 Agenda for Sustainable Development and the Paris Agreement. Approximately one-third of the net greenhouse gas emissions needed to meet the Paris Agreement goals can be reduced through nature-based biodiversity solutions.

The Islamic Republic of Iran, as a Contracting Party to the CBD, has actively participated in the international biodiversity and environmental programs and continues to prioritize the protection and sustainable use of nature.

AICHI Program and SDGs

In 2016, Iran's revised national strategic plan on biodiversity (NBSAP2) was prepared to align with the commitments of the Aichi Biodiversity Target 17 and the SDGs. The Vision stated: "By 2030, public awareness of the importance of biodiversity for human well-being will be raised, and the status of biodiversity will have sustainably improved, ensuring the effective conservation of natural landscapes, ecosystems, species, and genetic resources, including vital elements such as air, water, soil, fauna, and flora. In such an environment, people will enjoy physical and mental health, peace, security, and sustainable socioeconomic and environmental justice".

NBSAP2 retained the four strategies from NBSAP1 (2006) as guiding principles and set 24 national targets. In 2020, the "Global Biodiversity Outlook 5" was published, based primarily on national reports from Parties, assessments by IPBES, and notably the "Global Assessment Report on Biodiversity and Ecosystem Services." The assessments revealed catastrophic results. Despite efforts during the United Nations Decade on Biodiversity 2011-2020 to address biodiversity loss,

most of the Aichi Biodiversity Targets established in 2010 were not met. A far greater ambition was needed, a change that began in Egypt in 2018.

Global Biodiversity Outlook 5 highlighted that:

1. Since 1970, 78% of nature's contributions (in biodiversity) to the good quality of human life have declined.
2. Land and sea use change and direct exploitation account for more than 50% of adverse effects on land, freshwater, and marine ecosystems.
3. Extinction rates have sharply increased over the past century, putting a significant proportion of species at risk of complete extinction.
4. In developing countries, biomass extraction and pollution from exploitation are rapidly increasing.
5. In developed countries, per capita consumption of high-biodiversity products and air pollution are rapidly increasing.
6. Traditional knowledge, though specific to a place, has global relevance.
7. Overall, global progress towards Aichi goals has been minimal or negative.
8. In global sustainability scenarios, the impact of nature's contributions to people's lives on biodiversity is lowest in almost all regions.
9. Actors like intergovernmental organizations, governments, NGOs, citizens, social groups, local people, aid agencies, scientific organizations, educational institutions, and the private sector can drive global change.

Global Goals for 2050 and Targets for 2030 (KM GBF)

Global Biodiversity Outlook 5 illuminated the paths available to the global community to halt and eventually reverse the decline of biodiversity (GBF targets for 2030). These paths require transformative changes (Theory of Change) in human actions and the exploitation of nature. A sustainable future depends on participatory, integrated, and biodiversity-inclusive spatial actions by all stakeholders. Each action is necessary, yet none alone is sufficient. Achieving the 2050 goals requires considering all significant aspects of our relationship with nature.

The zero draft of this transformative global framework on biodiversity was prepared in Rome in 2020, with the first draft published by the UN CBD Secretariat on July 12, 2021. Initial discussions began online between August and September 2021. In March 2022, UN CBD countries met in Geneva to negotiate the first draft face-to-face, following the lifting of the global Covid-19 quarantine. Despite the Geneva meetings, many text sections required further discussion, leading to a meeting in Nairobi, Kenya. Originally scheduled for October 2020 in Kunming, China, COP15 was postponed three times due to Covid-19 travel restrictions and eventually held in Montreal, Canada, in December 2022.

During COP15, the Kunming-Montreal Global Biodiversity Framework (KM GBF) was adopted after four years of consultation and negotiation. This structure, supporting the achievement of the SDGs and the Convention's previous Strategic Plans, aims for a world "living in harmony with nature" by 2050, through four goals for 2050 and 23 targets for 2030. Decision 15/6 of the KM GBF requests Parties to submit their

NBSAPs, including national targets, by COP16, following the guidance in Annex I of the decision, aligned with the goals and targets of the GBF.

Iran Biodiversity in Brief

Iran, located in the Iranian Plateau, serves as a biogeographic bridge between Europe and Asia. Over millions of years, it has been a passageway for various animal species and hosts diverse climates that support various flora and fauna. For example, near Bandar Abbas in the south, Mount Ghenu stands at 2,500 meters above sea level, presenting a completely different climate from the nearby sea level, housing an irreplaceable genetic, species, and ecosystem diversity. In Ardabil Province, a drive of about half an hour from the peak of Sablan Mt. decreases the altitude by over 3,000 meters, revealing the warm Moghan plain. This height diversification, vegetation, and climatic indices promote Iran's significant biodiversity.

National Level Values of Biodiversity and Ecosystem Services

Iran, located in West Asia, borders the Caspian Sea, Persian Gulf, and Gulf of Oman. Its mountainous regions enclose several broad basins or plateaus, where major agricultural and urban settlements are located. Covering 1,648,000 square kilometers, Iran ranks eighteenth in the world by size. Despite its arid climate, Iran's wetlands are globally significant, hosting large populations of migratory birds that overwinter or pass through these wetlands.

Ecosystem Diversity

Iran's protected areas have consistently increased, from 194 sites in 2010 to 309 sites in 2024, including 3 2 national parks, 56 wildlife refuges, 40 national natural monuments, 181 protected areas, 13 UNESCO B iosphere Reserves, and 1 UNESCO Geopark. The area managed by the DoE is detailed in Table 1.

Currently, numerous international environmental projects are active and successful in Iran:

- Conservation of the Asiatic Cheetah
- Conservation of Iranian Wetlands
- Conservation of Biodiversity in Central Zagros Mountains
- Conserving and Managing the Biodiversity of Anzali Wetland
- Conservation of Caspian Hyrcanian Forest Biodiversity
- Integrated Natural Resources Management in Iran Agro Ecosystems
- Rehabilitation of Degraded Lands
- Sustainable Management of Hablehroud Land & Water
- Conservation against Desertification by Carbon Sequestering
- Establishment of Breeding Centers and Gene Banks

Several governmental organizations are directly or indirectly involved in recognizing, preserving, and sustainably utilizing biodiversity and traditional knowledge in Iran, such as AREEO, NRWMO, INSO, GSI, LAOI, MCG, MCLS, MCTH, MEDU, MEFA, MIMT, MSY, NEF, NIOC, PBO, SCEP, SWoI, and IFO. These organizations play crucial roles in the research, identification, conservation, and use of the country's natural resources.

Iran's forest biodiversity is essential not only for food security but also for the livelihoods of millions of people. Mountain forests supply over 47% of fresh water and produce high-quality, clean water.

Table 1. The area of the four regions under the management of the DoE

Region	No.	Refined Area (Km^2)
Protected Areas	181	10,387,035
National Natural Monuments	40	40,983
Wildlife Refuges	56	6,466,132
National Park	32	2,075,115
The total area	309	18,969,265

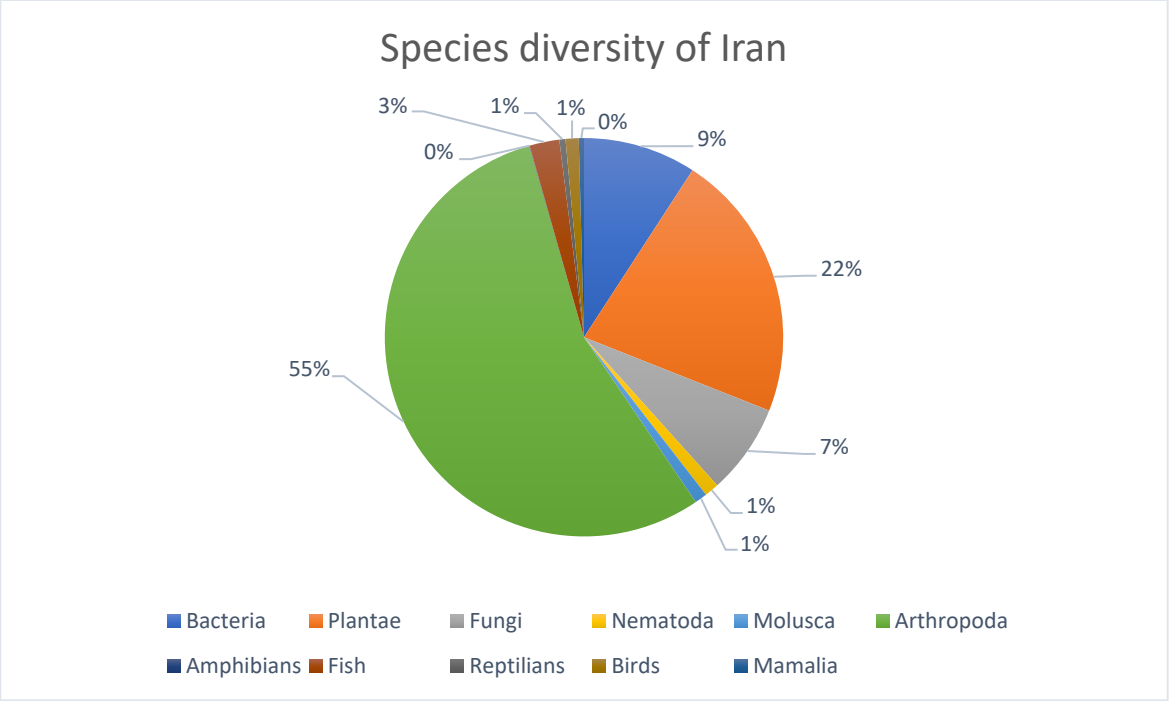

Figure 1. Species frequency of Iran's biota (source: GTI NFP of Iran)

Table 2. Species diversity of Iran's biota (source: GTI NFP of Iran)

Taxon or Group	Species Diversity
Bacteria	5000
Plantae	11900
Fungi	4000
Nematoda	636
Mollusca	546
Arthropoda	30000
Amphibians	24
Fish	1323
Reptilians	270
Birds	580
Mammalia	230
Total	**54509**

Iran is one of the most important countries in the Middle East and Western Asia for the conservation of biological diversity. The habitat diversity in Iran supports a wide range of animal life. The marine and coastal zones in the North and South of the country encompass 25 ecological types and units, with coral reefs, bays, and small islands being the most significant.

Species Diversity

Iran's complex climates, topography, geological features, and anthropological management of natural resources have led to unique species diversity. Iranian taxonomists have extensively identified and recorded 54,509 species of plants and animals, detailed in national and international journals or checklists. These treasures are curated in museums and herbaria of Iran and are available to researchers and students. The species documented include:

- 5,000 species of bacteria
- 11,900 species of Plantae
- 4,000 species of fungi
- 636 species of Nematoda
- 546 species of Mollusca
- 30,000 species of Arthropoda
- 24 species of amphibians
- 1,323 species of fish
- 270 species of reptiles
- 580 species of birds
- 230 species of mammals

While valid statistics for some taxa, such as Archaea, Chromista, and various viral groups, are not yet prepared, the "Flora of Iran" covers the kingdom Plantae in 149 volumes.

Genetic Diversity

Iran boasts unique genetic biodiversity due to its vast geographical area, diverse climatic conditions, and natural barriers. These factors have fostered the production of genetically unique organisms. Iran is a rich center of plant genetic diversity, home to over 8,300 species of agricultural and garden plants exceeding the genetic diversity of the entire continent of Europe. While many of these species are found globally, Iran's exclusive species have distinct characteristics. For instance, the plant genera Astragalus, Cousinia, and Acantholimon, with 800, 210, and 83 species respectively, are abundant in Iran.

Iran is also renowned for its diversity of sheep and goat breeds, possessing dozens of breeds of livestock such as cattle, sheep, goats, horses, and camels, totaling over 120 million livestock units. Many domestic animal breeds are unique to Iran, like the famous Caspian horse, which is highly sought after worldwide. Iran has about 8 breeds of native cattle, 3 breeds of buffalo, 28 breeds of sheep, 12 breeds of goats, 10 breeds of horses, 17 breeds of native chickens, and 6 breeds of camels. Additionally, unique aquatic species like sturgeon fish (family Acipenseridae) and the Caspian kutum (*Rutilus kutum*) are found in Iran.

DSI Activities

Digital Sequence Information (DSI) is a critical component of biodiversity conservation. It provides valuable insights into genetic diversity, species distribution, and ecosystem health. To effectively conserve Iran's rich biodiversity, it is essential to develop a robust framework for DSI management.

This section provides an overview of the importance of digital sequence information (DSI) for biodiversity conservation in Iran. It highlights the need for a robust framework to manage DSI, given its potential to provide valuable insights into genetic diversity, species distribution, and ecosystem health. The section also outlines the current state of DSI in Iran, including the legal framework, research and development activities, data sharing and access practices, and international cooperation.

Current State of DSI in Iran

- **Legal Framework:** While Iran does not have a specific law governing DSI, it is regulated by broader data protection and cybersecurity laws. These laws provide foundation for DSI management but may require further interpretation and adaptation. For example, the Protection Law may have provisions related to the data collecting, processing, and storage of personal data, which could be relevant for DSI collected from lining individuals, species and lower taxa. Cybersecurity Law may regulate the application of digital technologies and networking, which could have implications for the security and integrity of DSI.
- **Research and Development:** DSI research and development in Iran is progressing rapidly. There are several research institutes, educational institutions and projects focusing on DSI, especially in the fields of artificial intelligence, machine learning, and data analytics. These are funded by government agencies, universities, or private sectors. For example, the Iranian Academy of Sciences is supporting DSI research projects, or universities and research institutes and organizations, including AREEO have research groups dedicated to biodiversity genomics.
- **Data Sharing and Access:** Data sharing and access may be limited due to privacy and security concerns. However, there are some data repositories and platforms available to researchers and policymakers. These are government-run or privately owned. For example, AREEO, National Institute of Genetic Engineering and Biotechnology (NIGEB), and DoE have established some national biodiversity databases that includes DSI, or some private databases managed by research institutions or conservation organizations.

- **International Cooperation:** Iran has already participated in some international DSI initiatives, but its involvement is somehow influenced by geopolitical issues. For instance, Iran is involved in some regional biodiversity conservation projects, including vertebrate projects that involve DSI sharing and analysis, or in global initiatives such as the Global Biodiversity Information Facility (GBIF).

Challenges and Opportunities

- **Technical Capacity:** Building technical capacity to collect, store, and analyze DSI is crucial. This includes investing in infrastructure, equipment, and training for researchers and technicians. Iran needs to collaborate with other Parties or organizations to acquire the necessary technical expertise. For example, Iran could partner with international research institutions to develop training programs for DSI researchers or to gain access to advanced DSI analysis tools.
- **Data Privacy and Security:** Ensuring data privacy and security is essential to protect sensitive biodiversity information. This involves implementing robust data protection measures, such as encryption and access controls, and complying with relevant laws and regulations. Iran may need to develop specific guidelines or standards for DSI data management to address privacy and security concerns. For example, Iran could adopt international standards such as the General Data Protection Regulation (GDPR) or the Fair Information Practices (FIPs) as a basis for its DSI data protection framework.
- **Intellectual Property Rights:** Addressing IPR issues related to DSI is important to incentivize research and innovation. This includes developing clear policies and guidelines for the ownership and use of DSI data, as well as mechanisms for sharing benefits arising from DSI. Iran may need to collaborate with international organizations to develop harmonized approaches to IPR protection. For example, Iran could participate in international discussions on the Nagoya Protocol, which establishes rules for the fair and equitable sharing of benefits arising from the use of genetic resources.
- **Capacity Building:** Investing in capacity building programs can enhance DSI skills and knowledge. This includes training researchers, policymakers, and other stakeholders in DSI methods and applications. Iran may need to establish partnerships with universities, research institutions, and international organizations to provide capacity building opportunities. For example, Iran could collaborate with international universities to offer online courses or workshops on DSI, or it could invite international experts to conduct training sessions in the country.

Synthetic Biology

Synthetic biology, the design and construction of biological systems not found in nature, presents both opportunities and challenges for biodiversity conservation. While it can offer innovative solutions to environmental problems, it also raises concerns about potential risks to ecosystems and biological diversity.

This section provides an overview of the potential benefits and risks associated with synthetic biology in the context of biodiversity conservation in Iran. It highlights the growing research activities in synthetic biology in the country and the need for a comprehensive regulatory framework to address the ethical and environmental implications of this technology.

The section outlines the potential benefits of synthetic biology, such as developing tools for species monitoring, habitat restoration, and pollution remediation. It also acknowledges the potential risks, including accidental releases, creation of invasive species, and ethical concerns.

The strategic objectives and actions outlined in this section aim to promote responsible research and development, enhance public engagement, foster international cooperation, and integrate synthetic biology into biodiversity conservation strategies. It emphasizes the importance of developing a robust regulatory framework, conducting thorough risk assessments, and establishing ethical guidelines to ensure that synthetic biology is used in a safe and sustainable manner.

Current State of Synthetic Biology in Iran

- **Research and Development:** Iran has a growing synthetic biology research community, with active research being conducted in universities, research institutes, and private companies. Key areas of focus include engineering plants with enhanced stress tolerance or disease resistance, production of recombinant proteins, bioremediation, and synthetic biology tools.
- **Regulatory Framework:** Iran currently lacks specific regulations governing synthetic biology. However, there are general regulations related to biotechnology, environmental protection, and human health that may apply to certain aspects of synthetic biology.
- **Public Perception:** Public awareness of synthetic biology in Iran is still relatively low. There is a need to increase public understanding of the potential benefits and risks associated with this technology.

Challenges and Opportunities

- **Potential Benefits:** Synthetic biology offers significant potential for biodiversity conservation, such as:
    - Enhanced plant resilience: Engineering plants with enhanced stress tolerance or disease resistance can contribute to biodiversity conservation by reducing the need for harmful pesticides and fertilizers.

- Bioremediation: Synthetic biology can be used to develop organisms capable of degrading pollutants and restoring contaminated ecosystems.
- Conservation tools: Synthetic biology can create tools for species monitoring, habitat restoration, and invasive species control.
- Gene drives: While controversial, gene drives could potentially be used to eradicate invasive species or spread beneficial traits in wild populations.

- **Potential Risks:** Synthetic biology also poses potential risks, including:
  - Accidental release: Genetically engineered organisms could be accidentally released into the environment, potentially causing harm to ecosystems.
  - Creation of invasive species: Synthetic organisms could become invasive and outcompete native species.
  - Disruption of ecosystems: The introduction of synthetic organisms could disrupt ecological balance and lead to unforeseen consequences.
  - Ethical concerns: The creation of artificial life raises ethical questions about the boundaries of human intervention in nature.
  - Gene drives: Gene drives pose significant ethical and environmental risks, including the potential for unintended consequences and irreversible changes to ecosystems.

IRAN NBSAP3 (2024-2030)

Vision

The 3rd NBSAP aims to restore Iran's biodiversity by 2030, encouraging both government and citizens toward long-term sustainability of nature and economy to safeguard the survival of the country's diverse biodiversity.

Mission

Recognize, protect, and restore Iran's natural ecosystems and biota, promoting sustainable development th rough fair and equitable accreditation for genetic resources, and ensuring access to global facilities, funds, and collaborations.

NATIONAL GOAL-A (NT 1-8)

Protection and Restoration of Iran's Natural Ecosystems

The integrity, connectivity, and resilience of all ecosystems in Iran are to be maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050. Human-induced extinction of known threatened species is halted, and by 2050, the extinction rate and risk of all species are reduced tenfold, and the abundance of native wild species is increased to healthy and resilient levels. The genetic diversity within populations of wild and domesticated species is maintained, safeguarding their adaptive potential according to the traditional ecological knowledge and practices of the communities that inhabit and steward them.

NT-1

Halting the anthropogenic extinction caused by land- and sea-use changes of Iran's living species by 2030 through a participatory approach incorporating traditional knowledge of native, pastoralists, and nomadic tribes in conservation efforts, considering IUCN-protected areas and PA areas.

Actions, Plans, and Aims

1. Develop a national data warehouse and process-oriented statistics for Iran's biodiversity by setting up a Spatial Data Infrastructure to restore threatened species and weakening populations of wild biota by 2030, ensuring reasonable access to these data for all stakeholders.
2. Actively involves all stakeholders, including villagers, pastoralists, and nomadic tribes, in documenting biodiversity and related knowledge.
3. Compile Red Data Books for plants, fungi, invertebrates, and vertebrates with the involvement of native communities, leveraging their traditional knowledge.

4. Complete the list of invasive alien species in Iran with the active participation of pastoralists and nomadic tribes, integrating traditional management practices.
5. Launch an online portal incorporating input from local communities to document and access biodiversity information.
6. Collaborate with local communities to ensure their traditional ecological knowledge is documented and respected.
7. Draft and seek approval for a law fortifying species diversity protection, recognizing the role of pastoralists and nomadic tribes.
8. Collaborate with neighboring countries for regional species diversity protection, involving local communities in conservation efforts.
9. Share experiences and expertise across the country to promote sustainable land use practices and biodiversity preservation.
10. Develop scientific relations for recognizing and protecting species hotspots along common frontiers.
11. Develop an integrated plan for de-extinction and restoration of endangered species.
12. Implement captive breeding for endangered species like the Persian Wild Ass and Persian Fallow Deer.
13. Reduce climate change impacts by designating highland glaciers as new protected areas.
14. Collaborate with neighboring countries to establish Transboundary Biosphere Reserves.
15. Implement programs for remote villages to sustain relic forests in boundary protected areas.
16. Build capacity among local stakeholders for intersectional management according to UNESCO MaB criteria.
17. Empower herders, hunters, and local beneficiary groups to enhance PAs resilience.
18. Promote participation-oriented eco-tourism while maintaining tourism capacity and national standards.
19. Implement co-management and other governance models as per the World Conservation Union.
20. Compile and implement management programs with a spatial governance approach.
21. Increase the scope of natural-national monuments from 4000 meters altitude to lower altitudes.
22. Protect habitat corridors of charismatic species like the Iranian leopard.
23. Combine traditional and new methods for sustainable water resources management in habitats and protected areas.
24. Fulfill biodiversity goals and plans outlined by the Ministry of Foreign Affairs.
25. Use nature- and people-oriented solutions to address challenges like climate change and water resource sustainability.
26. Stabilize habitats of exclusive species in border mountains with IUCN support.

NT-2

Ensure that by 2030, at least 30% of degraded terrestrial, inland water, marine, and coastal ecosystems in Iran are under effective restoration, enhancing biodiversity and ecosystem functions, services, ecological integrity, and connectivity.

Actions, Plans, and Aims

1. Incorporate traditional land management and sustainable grazing practices in restoration projects.
2. Involve pastoralists and nomadic tribes in decision-making and implementing restoration projects.
3. Focus on rehabilitating degraded grazing lands crucial to the livelihoods of nomadic tribes.
4. Empower pastoralists and nomadic tribes to participate effectively in ecosystem restoration.
5. Establish systems for community-based monitoring of restoration projects.
6. Ensure pastoralists and nomadic tribes have access to resources for ecosystem restoration activities.
7. Identify and prioritize areas of high biodiversity and cultural importance for restoration.
8. Enhance climate change resilience through targeted restoration projects in vulnerable regions.
9. Use participatory approaches for data gathering and reporting progress on restoration efforts.
10. Allocate national and international funding for community-based restoration projects, involving local communities in decision-making.

NT-3

Ensure and enable that by 2030 at least 30% of Iran's terrestrial and inland water areas, and marine and coastal areas, especially those crucial for biodiversity and ecosystem functions, are effectively conserved and managed. This should be done through ecologically representative, well-connected, and equitably governed systems of protected areas and other effective area-based conservation measures. Recognize the traditional lands of villagers, pastoralists, and nomadic tribes, integrating these into wider landscapes, seascapes, and the ocean, ensuring any sustainable use aligns with conservation outcomes and respects the rights of these communities.

Actions, Plans, and Aims

1. Achieve the 30% conservation target by 2030 by designating non-hunting prohibited areas and desirable natural areas near current protected areas, based on the IUCN Matrix. This includes establishing Urban Protected Areas (UPAs) and Private Protected Areas (PPAs) to create an ecological network.
2. Ensure pastoralists' and nomadic tribes' lands are included within the conservation target, as these areas often harbor high biodiversity and should be sustainably managed.
3. Use a community-based approach to expand protected areas (PAs) and other effective area-based conservation measures (OECMs), involving local people in their identification, governance, and management.
4. Provide capacity-building programs on conservation practices, biodiversity monitoring, and protected area management to pastoralists and nomadic tribes, ensuring their knowledge systems are respected.
5. Ensure conservation efforts provide co-benefits for biodiversity and the livelihoods of local communities, enhancing food security, promoting sustainable livelihoods, and addressing climate resilience.

NT-4

Implement urgent management actions to halt the anthropogenic extinction of known threatened species and ensure their recovery and conservation. Reduce extinction risk, maintain genetic diversity within and between populations of native, wild, and domesticated species, and manage human-wildlife interactions to minimize conflict and promote coexistence.

Actions, Plans, and Aims

1. Emphasize local communities' role in sustainably managing wild species through traditional practices, integrating their knowledge into conservation strategies.
2. Develop systems for sustainable use, harvesting, and trade of wild species, involving local communities and integrating traditional knowledge with modern practices.
3. Encourage sustainable pastoralism, transhumance, and traditional harvesting methods that are culturally appropriate and ecologically sustainable.
4. Educate local communities to monitor and report illegal and unsustainable use or trade of wild species, establishing community-based monitoring systems.
5. Develop systems for the fair and legal trade of wild species, ensuring local communities receive equitable benefits, including better market access and fair pricing.
6. Provide programs focused on sustainable harvesting techniques, biodiversity monitoring, and legal trade practices, developed in partnership with local communities.
7. Ensure policies for sustainable use and trade of wild species support biodiversity conservation and local economic sustainability.
8. Educate local communities to integrate traditional knowledge into the scientific management of species populations, ensuring sustainable resource use.
9. Prevent the over-exploitation or extraction of wild species with appropriate safeguards.
10. Foster ethical and sustainable practices for using wild species in national markets, enhancing community resilience.

NT-5

Ensure the sustainable, safe, and legal use, harvesting, and trade of wild species, preventing overexploitation, minimizing impacts on non-target species and ecosystems, and reducing the risk of pathogen spillover, while respecting and protecting customary sustainable use by local communities.

Actions, Plans, and Aims

1. Incorporate traditional ecological knowledge to halt species loss and promote recovery, integrating it into national conservation strategies.
2. Establish systems for community-based monitoring of species populations, empowering communities to provide early warnings of species decline.
3. Ensure effective participation of local communities in designing and implementing species recovery programs.
4. Promote habitat restoration and protection using community-based approaches, recognizing and supporting traditional practices.

5. Implement local solutions to mitigate human-wildlife conflict, integrating community knowledge into national strategies.
6. Work with local communities to regulate hunting, fishing, and wild species use, ensuring sustainable practices and respecting traditional livelihoods.
7. Support local communities in maintaining and restoring habitat connectivity, involving them in projects like wildlife corridors and migratory route protection.
8. Harness local adaptive strategies to mitigate climate-related species loss and promote recovery in vulnerable ecosystems.

NT-6

Eliminate, minimize, reduce, and/or mitigate the impacts of invasive alien species (IAS) on biodiversity and ecosystem services by identifying and managing pathways for IAS introduction, preventing the introduction and establishment of priority IAS, reducing the rates of introduction and establishment of other known or potential IAS by at least 50% by 2030, and eradicating or controlling IAS in Iran.

Actions, Plans, and Aims

1. Engage villagers, pastoralists, and nomadic tribes in monitoring and managing invasive species that threaten local ecosystems and biodiversity. Their close connection to the land and water enables them to detect and manage IAS effectively. These programs should integrate scientific knowledge with traditional ecological knowledge, promoting a holistic approach to IAS management.
2. Encourage traditional land management practices, such as rotational grazing, fire management, and sustainable agriculture, to reduce the spread of IAS. These methods, developed over centuries, can maintain ecosystem balance and prevent IAS from taking root.
3. Engage local communities in habitat restoration projects aimed at removing IAS and restoring native biodiversity, thereby reversing the damage caused by IAS while restoring the cultural and ecological integrity of ecosystems.
4. Advocate for legal reforms that support community-based IAS management initiatives, empowering local people to act as stewards of their environments.
5. Establish monitoring systems that involve local communities in collecting data on IAS presence and impact, utilizing traditional knowledge to guide national efforts.
6. Promote collaboration between communities across borders to share knowledge and best practices for managing IAS.
7. Ensure that impact assessments for development projects include an analysis of IAS risks with full local community participation.
8. Mitigate the impact of IAS on livelihoods, particularly for communities dependent on pastoralism, transhumance, fishing, and agriculture, ensuring resilience in the face of IAS challenges.

NT-7

Reduce pollution risks and the negative impact of pollution from all sources in Iran by 2030 to levels not harmful to biodiversity and ecosystem functions, considering cumulative effects. This includes reducing excess nutrients lost to the environment by at least half, reducing the overall risk from pesticides and highly hazardous chemicals by at least half, and preventing, reducing, and working towards eliminating plastic pollution.

Actions, Plans, and Aims

1. Integrate traditional knowledge into strategies to reduce pollution, particularly in rural and pastoralist areas where traditional practices have helped maintain ecosystem balance.
2. Promote community-based waste management, especially in rural and pastoralist areas.
3. Ensure full and effective participation of local communities in the development and implementation of pollution reduction policies.
4. Encourage practices such as rotational grazing, organic agriculture, and water harvesting to reduce pollution from nutrients and other hazardous substances.
5. Establish systems for monitoring pollution levels in local territories, allowing for early detection and response to mitigate impacts on biodiversity.
6. Engage communities in efforts to reduce plastic use, promote recycling, and clean up plastic waste, particularly in areas critical to biodiversity conservation.
7. Provide support for local-led pollution reduction projects focused on clean water and healthy ecosystems.
8. Educate and collaborate with stakeholders to prevent the release of hazardous substances into the environment, prioritizing community-based approaches.
9. Encourage the use of biodegradable or traditional alternatives to plastic in local crafts and daily use.
10. Advocate for stronger regulations to prevent industrial pollution, ensuring industries near local territories adhere to strict environmental standards.
11. Develop educational programs to raise awareness about the impacts of pollution on biodiversity and promote sustainable solutions.
12. Ensure that pollution reduction efforts are part of broader biodiversity conservation programs.
13. Legally and comprehensively evaluate residues of agricultural pesticides, nitrates, heavy metals, and livestock drugs in agricultural products, establishing a tracking, packaging, identification, and branding system in the country.

NT-8

Minimize the impact of Iran's contribution to the climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.

Actions, plans and aims

1. Address specific vulnerabilities to climate change: Ensure that national climate resilience strategies take into account the specific vulnerabilities of women and girls, particularly in pastoralist, rural and agricultural communities. Provide targeted support to empower women in climate adaptation efforts, recognizing their key roles in managing natural resources and sustaining livelihoods.
2. Develop climate resilience indicators with local participation: Work with villagers, pastoralists and nomadic tribes to develop indicators for tracking progress on climate resilience and biodiversity conservation. These indicators should be based on both scientific and traditional knowledge, providing a more comprehensive understanding of how ecosystems and communities are adapting to climate change.
3. Support traditional seed conservation for climate-resilient agriculture: Promote the conservation and use of traditional and local seed varieties by traditional farmers both in situ and ex situ, which are often more resilient to climate change. These seeds and by this participatory approach for example through Evolutionary Plant Breeding have adapted over generations to local environmental conditions and can play a crucial role in sustaining agriculture in the face of climate variability.
4. Promote multi-stakeholder collaboration for climate-resilient ecosystems: Foster collaboration between government agencies, scientific institutions, NGOs, villagers, pastoralists and nomadic tribes in implementing ecosystem-based approaches to climate resilience. Multi-stakeholder partnerships can enhance the effectiveness of ecosystem-based approaches, pooling resources and knowledge to tackle climate challenges.
5. Protect and restore ecosystems critical to local communities: Prioritize the protection and restoration of ecosystems that are vital to the livelihoods of pastoralists, rural and agricultural communities, such as grasslands, wetlands, forests, and traditional grazing lands. These ecosystems play a central role in buffering the impacts of climate change, enhancing both biodiversity and community resilience.

NATIONAL GOAL-B (NT 9-13)

Iran's Sustainable Development Along with Nature

Sustainable use and management of Iran's biological diversity by valuing nature's services and preserving, developing, and restoring the functions and services of natural ecosystems. Supporting sustainable development for current and future generations until 2050, while encouraging the involvement of pastoralists and nomadic tribes in regional initiatives for species diversity protection.

NT-9

Ensure that the management and use of wild species are sustainable, providing social, economic, and environmental benefits, especially for those in vulnerable situations and most dependent on biodiversity. This includes promoting sustainable biodiversity-based activities, products, and services that enhance biodiversity, and protecting customary sustainable use by villagers, pastoralists, and nomadic tribes.

Actions, Plans, and Aims

1. Educate the public about the consequences of unsustainable exploitation of natural resources, such as indiscriminate harvesting of medicinal plants, fishing, and soil degradation.
2. Provide targeted training to villagers, nomads, and pastoralists on sustainable use of nature, tailored to the climatic characteristics and traditions of different regions.
3. Revise school curricula to include content on the benefits of nature and the role of humans in its conservation.
4. To be completed later

NT-10

Ensure that areas under agriculture, aquaculture, fisheries, and forestry in Iran are managed sustainably. Increase the application of biodiversity-friendly practices, such as sustainable intensification, agroecological, and other innovative approaches, to improve resilience, productivity, and food security while conserving biodiversity.

Actions, Plans, and Aims

1. Assess biodiversity management in various regions, including areas managed by DoE, AREEO, NRWMO, and NIOC, focusing on sustainable exploitation and resilience to climate change.
2. Promote environmentally compatible management practices in agriculture and industrial animal husbandry to prevent degradation and enhance resilience.
3. Utilize research and implementation experiences from countries with similar climates to develop long-term sustainable exploitation plans that minimize biodiversity loss and enhance resilience to climate change.
4. To be completed later.

NT-11

Restore, maintain, and enhance nature's contributions to people, including ecosystem functions and services like air, water, and climate regulation, soil health, pollination, disease risk reduction, and protection from natural hazards, through nature-based solutions and ecosystem-based approaches.

Actions, Plans, and Aims

1. Develop guidelines recommending modern methods for exploiting genetic resources, water, and soil, with environmental risk assessments before new projects to reduce biodiversity deterioration.
2. Ensure operational guidelines for exploiting biodiversity include statements to protect pollinating insects.
3. Create mechanisms for implementing a national action plan for wetland protection and management, prioritizing native bio-management and preventing unauthorized water harvesting.
4. Establish a market for exchanging non-conventional waters, maintaining water use, and preventing soil pollution, with technical and financial support for private sector involvement.
5. Provide general and specialized training on sustainable protection of water and soil cycles and the food web, highlighting their importance for safe biodiversity exploitation.

6. To be completed later

NT-12

Significantly increase the area, quality, and connectivity of green and blue spaces in urban and densely populated areas by mainstreaming biodiversity conservation and sustainable use. Ensure biodiversity-inclusive urban planning, enhance native biodiversity, improve ecological connectivity and integrity, and boost human health and well-being.

Actions, Plans, and Aims

1. Modify and implement guidelines for urban development, road construction, eco-tourism, and other measures to support nature's integrity and promote public health.
2. Implement existing legal provisions for sustainable rural and urban development, aligned with environmental protection.
3. Fully enforce water conservation and management laws to preserve biodiversity, including measures like installing counters on wells, banning irrigation of green spaces with drinkable water where alternatives exist, managing water rights, and maintaining irrigation networks.
4. Develop and legally enforce a national climate change management plan, promoting a green economy, low-carbon industry, and resilience against climate change impacts.
5. To raise awareness about the importance of DSI for biodiversity conservation among the public, policymakers, and stakeholders and encourage public participation in DSI-related activities, such as citizen science projects or data collection initiatives.
6. To be completed later

NT-13

Take effective legal, policy, administrative, and capacity-building measures to ensure fair and equitable sharing of benefits from the utilization of genetic resources and digital sequence information on genetic resources, and traditional knowledge associated with genetic resources. Facilitate appropriate access to genetic resources and significantly increase benefits shared by 2030, in line with applicable international access and benefit-sharing instruments.

Actions, Plans, and Aims

1. Focus on capacity building and the implementation of national laws on genetic resource exploitation to manage genetic diversity and ensure legal benefits for stakeholders.
2. Improve the management and development of national genetic resource banks, emphasizing traditional knowledge, private sector involvement, and international communication.
3. Actively engage in regional and international opportunities for the sustainable and equitable exploitation of genetic resources and genetic sequence information.
4. To be completed later.

NATIONAL GOAL-C (NT 14-18)

Fair and Equitable Accreditation for Benefit-Sharing from the Use of DSI on Genetic Resources

Benefit fairly and equitably from monetary and non-monetary facilities and benefits, derived from DSI and traditional knowledge from genetic resources until 2050. Ensure proper protection of traditional knowledge related to genetic resources, leading to the protection and sustainable use of biodiversity in line with internationally agreed access and benefit-sharing mechanisms and respect for pastoralists, nomadic tribes, and all Iranians.

NT-14

Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes, poverty eradication strategies, strategic environmental assessments, environmental impact assessments, and national accounting at all levels of government and across all sectors, aligning public and private activities with the KM GBF goals and targets.

Actions, Plans, and Aims

1. All new large-scale development plans by executive bodies, private sectors, cooperatives, and NGOs in Iran must be evaluated against environmental standards and criteria approved by the Presidential Supreme Council of Environmental Protection, as assessed by the DoE.
2. Prohibit the exploitation and harvesting of wood from Iran's natural forests to preserve, restore, and develop forests within the framework of Sustainable Forest Management and Modern Forestry Plan based on the 7th FYDP.
3. Implement the national action plan for wetland protection and management, prioritizing native bio-management, allocation and provision of environmental water needs, and preventing unauthorized water harvesting, engaging local communities in the plains around wetlands and lakes.
4. To be completed later.

NT-15

Take legal, administrative, or policy measures to encourage and enable businesses, especially large and transnational companies and financial institutions, to:

(a) Regularly monitor, assess, and transparently disclose their risks, dependencies, and impacts on biodiversity along their operations, supply, and value chains, and portfolios; (b) Provide consumers with information to promote sustainable consumption patterns; (c) Report compliance with access and benefit-sharing regulations, as applicable.

In order to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to business, and promote sustainable production patterns.

Actions, Plans, and Aims

1. Develop and enforce binding executive guidelines for urban and rural waste management, preventing waste and leachate leakage into water and soil sources to reduce biodiversity deterioration.

2. Amend regulations to establish the Energy Optimization and Strategic Management Organization, creating diversity in the fuel basket, optimizing energy consumption, and developing the energy optimization market to improve biodiversity.
3. Identify, explore, process, exploit, and produce mineral raw materials to replace polymer materials, realizing the value chain of mining and petrochemical industries while preserving the environment.
4. Develop specific guidelines or standards for DSI data management, including data collection, storage, sharing, and access.
5. Develop policies and guidelines for the ownership and use of DSI data.
6. Promote fair and equitable sharing of benefits arising from DSI, including through benefit-sharing agreements or royalty payments.
7. Establish mechanisms for resolving disputes related to DSI IPRs.
8. Support research institutions and projects focusing on DSI and its applications in biodiversity conservation, while encourage collaboration between researchers, policymakers, and stakeholders and provide funding for DSI research, including basic research, applied research, and technology development, through investing in capacity building programs to train researchers, policymakers, and other stakeholders in DSI, facilitating knowledge exchange and collaboration with international experts and supporting the development of DSI-related education and training programs at universities and research institutions.
9. Develop standards and protocols for data sharing and exchange, including data quality, metadata, and licensing and promote the use of open data principles to facilitate data sharing and access for establishing secure and accessible national data repositories for DSI.
10. Collect data on DSI activities, research outcomes, and policy impacts and use monitoring and evaluation data to inform decision-making and identify areas for improvement to establish a system for monitoring and evaluating the implementation of the DSI strategy.
11. Identify opportunities to use synthetic biology to support biodiversity conservation efforts, such as developing tools for species monitoring or restoring degraded ecosystems.
12. Ensure that the use of synthetic biology is consistent with sustainable development principles and does not harm biodiversity.
13. To be completed later

NT-16

Encourage and enable sustainable consumption choices among Iranians by establishing supportive policy, legislative, or regulatory frameworks, improving education, and providing access to relevant and accurate information and alternatives. By 2030, reduce the global footprint of consumption in an equitable manner, including through halving global food waste, significantly reducing overconsumption, and substantially reducing waste generation, to enable all people to live well in harmony with nature.

Actions, Plans, and Aims

1. Create specialized towns, areas, and complexes within urban and rural boundaries for IT, creative industries, handicrafts, production and service industries, clean industries, and waste management within the HADI Master Plan framework, preserving the rural-urban environment and biodiversity.
2. To be completed later.

NT-17

Establish, strengthen capacity for, and implement biosafety measures as set out in Article 8(g) of the CBD and measures for handling biotechnology and distributing its benefits as set out in Article 19 of the Convention.

Actions, Plans, and Aims

1. Implement accreditation for agricultural products to track and identify their origin, optimize input use, and monitor food product production and supply in line with biosafety national policies. Legally prohibit the cultivation of any transgenic products produced inside or outside the country on Iranian lands according to the 7th FYDP.
2. Develop and implement regulations for the economic valuation of environmental resources, determining the cost of environmental damage and allocating funds for environmental projects, coordinated by DoE and relevant institutions.
3. Establish a clear and comprehensive regulatory framework for synthetic biology in Iran, addressing issues such as research and development, environmental release, and public safety, ensure that the framework is aligned with international standards and best practices, such as the Cartagena Protocol on Biosafety through incorporating specific provisions for the regulation of gene drives, given their unique potential risks and benefits.
4. Support responsible research and development in synthetic biology by promoting ethical practices and risk assessment.
5. Establish guidelines for the conduct of research, including principles for transparency, accountability, and public participation.
6. Require researchers to conduct thorough risk assessments before conducting field trials or releasing synthetic organisms into the environment.
7. Increase public awareness and understanding of synthetic biology through education and outreach programs.
8. Facilitate dialogue between scientists, policymakers, and the public to address concerns and build trust.
9. Establish mechanisms for public participation in decision-making regarding synthetic biology.
10. Establish a system for monitoring and evaluating the development and use of synthetic biology in Iran.
11. Assess the effectiveness of regulatory measures and identify areas for improvement. Conduct regular reviews of the regulatory framework to ensure it remains relevant and effective in addressing emerging challenges.
12. Establish ethical and other necessary guidelines for the development and use of synthetic biology, addressing issues such as the creation of artificial life, the potential for unintended consequences, and the distribution of benefits and risks to develop a comprehensive risk assessment framework for synthetic biology, considering potential environmental impacts, human health risks, and ethical concerns.
13. To be completed later.

NT-18

Identify by 2025, and eliminate, phase out, or reform incentives, including subsidies harmful to biodiversity, in a proportionate, just, fair, effective, and equitable manner. Substantially reduce harmful incentives by 2030 and scale up positive incentives for biodiversity conservation and sustainable use.

Actions, Plans, and Aims

1. Continuously monitor pollution levels and self-assess polluting units, calibrating biological resource pollutant monitoring equipment through trusted laboratories.
2. Direct relevant organizations to increase the cultivated area of organic agricultural products in the country.
3. To be completed later

NATIONAL GOAL-D (NT 19-23)

Fair and Guaranteed Access of Iran to Global CBD Facilities, Funds, and Collaborations

Ensure Iran's fair and guaranteed access to sufficient implementation tools, including financial resources, capacity building, technical, scientific, and technological cooperation, for mobilizing national resources and international financial facilities for financing the implementation of NBSAP3 in alignment with KM GBF and 2050 goals.

NT-19

Substantially and progressively increase the level of financial resources from all sources, in an effective, timely, and easily accessible manner, including domestic, international, public, and private resources, in accordance with Article 20 of the Convention, to implement national biodiversity strategies and action plans.

Actions, Plans, and Aims

1. Collaborate with international organizations and other countries to share knowledge, best practices, and regulatory experiences in synthetic biology and develop harmonized standards in this regard.
2. Participate in global initiatives to address the ethical and environmental implications of synthetic biology.
3. To be completed later.

NT-20

Strengthen capacity-building and development, access to and transfer of technology, and promote development of and access to innovation and technical and scientific cooperation, including through South-South, North-South, and triangular cooperations, to foster joint technology development and joint scientific research programs for the conservation and sustainable use of biodiversity, and to strengthen scientific research and monitoring capacities for effective implementation of the goals and targets of Iran NBSAP3.

Actions, Plans, and Aims

1. Implement a "National Program for the Development of Artificial Intelligence" in compliance with the 7th FYDP, based on approvals from the Supreme Council of the Cultural Revolution and the strategic document of the Islamic Republic of Iran. This program aims to support a reliable and sustainable AI transformative ecosystem, determine interaction frameworks for all stakeholders, and provide technical, social, ethical, and legal knowledge and infrastructure, promoting awareness of AI functions and risks.
2. Through investing in capacity building programs to train researchers, policymakers, and other stakeholders in DSI, facilitating knowledge exchange and collaboration with international experts and supporting the development of DSI-related education and training programs at universities and research institutions.
3. To be completed later.

NT-21

Ensure that the best available data, information, and knowledge are accessible to Iranian decision-makers, practitioners, and the public to guide effective and equitable governance, integrated and participatory management of biodiversity. Strengthen communication, awareness-raising, education, monitoring, research, and knowledge management. Traditional knowledge, innovations, practices, and technologies of villagers, pastoralists, and nomadic tribes should only be accessed with their prior and informed consent, in accordance with IR Iran legislation.

Actions, Plans, and Aims

1. Develop, construct, and improve villages, identifying and exploiting existing capacities, improving social status, income levels, and quality of life. Support employment and production, build rural housing for disadvantaged groups, especially youth and young couples, create sustainable livelihoods, promote reverse migration, and ensure justice-oriented and balanced prosperity and progress in the country.
2. Establish a clear national DSI strategy aligned with Iran's biodiversity conservation goals and identify any gaps or inconsistencies in the legal framework to propose amendments or new regulations as needed.
3. To be completed later.

NT-22

Ensure equitable representation and participation of women and girls in decision-making, access to justice, and information related to biodiversity for all people, including villagers, pastoralists, and nomadic tribes. Respect their cultures and rights over their resources and traditional knowledge, as well as by children and youth, in accordance with IR Iran legislation.

Actions, Plans, and Aims

1. Develop a rural small business program based on regional competitive advantages, create a national network of women's cooperatives to train in production and marketing cycles, self-regulation, and cooperative ratings. Provide job creation facilities and tax support, set up local markets within national laws, and empower rural and nomadic women and girls according to the 7th FYDP.
2. To be completed later.

NT-23

Ensure equitable participation of women and girls in the framework, recognizing their access to land and natural resources, and their participation in action, policy, and decision-making related to biodiversity, in accordance with IR Iran legislation.

Actions, Plans, and Aims

1. Recruit education survivors with a priority in elementary schools, develop a flexible curriculum approved by the Supreme Council of Education, support boarding schools and central village schools, provide textbooks, meals, support packages, and educational resources for students, particularly girls, according to the 7th FYDP.
2. To be completed later.