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Supporting Decision Making and Building Capacity to Support IPBES Through National Ecosystem Assessments

AZERBAIJAN ECOSYSTEM ASSESSMENT SCOPING REPORT

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List of Abbreviations

MENR	Ministry of Ecology and Natural Resources of Azerbaijan
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
NEA	National Ecosystem Assessment
BMU	Germany Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
IKI	International Climate Initiative
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
BAU	Business As usual
SEM	Sustainable Ecosystem Management
UNDP	United Naitons Development Program
GIZ	Germany International Cooperation
FAO	Food and Agriculture Organization
GAHP	Global Alliance on Health and Pollution
NBP	National Biodiversity Platform

Executive Summary

As part of the global initiative, “Supporting decision-making and building capacity to support the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) through National Ecosystem Assessments”, Azerbaijan was selected as one of the participating countries. This document is an Azerbaijani NEA scoping report which is a summary of the Azerbaijan NEA process. The NEA will provide an information on the country’s biodiversity and ecosystems which can then be used for national reporting on regional and international biodiversity-related frameworks. It is planned to prepare several documents before the completion of the NEA project. This includes the NEA technical document, SPM, deployment plan and other documents.

Azerbaijan as a first a first country conducting a NEA in region hope that NEA will be important tool for policy makers in national and subnational level.

The Republic of Azerbaijan forms an integral part of the Caucasus Ecoregion, a region with exceptional levels of biodiversity. Azerbaijan is also located on the shores of the Caspian Sea, the world's largest inland body of water. One of the most valuable characteristics of Caspian biodiversity is high endemism. The longest established species are among the group of indigenous, brackish-water organisms.

The Azerbaijan NEA aims to form an essential knowledge ground for the management, use and protection of biodiversity and ecosystem services that is important in national and subnational level. NEA will help policy makers to improve existing ecosystem management policies and create new grounds for management approaches.

National assessment launch and initial stakeholder scoping, National stakeholder consultations and Starting of establishment on National Platform on NEA were the main initial stages of the scoping phase.

NEA’s key policy questions are cover all sphere of science-policy interface and process of Government design making. The key policy questions were identified during the scoping phase with the participation of experts and stakeholders, and focused on the status of ecosystems, the relationship between people, economy, and ecosystems. The questions also concern future trends and needed policies and activities regarding sustainable use of selected ecosystems.

The NEA scoping report includes main study objectives of NEA. These study objectives include mostly NEA methodological approaches and key needs for NEA implementation.

The results of scientific research, published scientific works, reports and raw data of projects carried out by international organizations in Azerbaijan (eg UNDP, UNICEF, GIZ, FAO, UNEP, GAHP, Pure Earth) in Azerbaijan and the region will form the main database of NEA. The lack of information and data limited the scope of this study; therefore, further research is needed, and it may include developing of primary data baselines.

During the shopping process, the creation of the NBP was also started. NBP is a platform created by stakeholders. MENR is a main coordinating authority and Azerbaijan Branch Office of REC Caucasus is an implementing agency for the NBP.

NBF supports science-policy dialogues on issues related to biodiversity and ecosystem services, foster the dialogue between science and policy and thereby seeking to stimulate the biodiversity research community to address policy or user relevant questions, inform national stakeholders on IPBES processes. In carrying out its functions and exercising its rights, the National Biodiversity Platform interacts with central and local executive authorities of the Republic of Azerbaijan, local self-government entities, academia, various scientific research institutes, as well as in mutual cooperation with the international and non-governmental organizations.

1. Introduction

As an important part of the Caucasus region, Azerbaijan is in a region rich in biodiversity. The fact that about 60 percent of the area is mountainous, located on the shores of the Caspian Sea, the dominance of different climatic types in the area has led to a very rich biodiversity in the country.

The existing mountain, forest, and freshwater ecosystems in the country play an important role in improving the lives of the population and the formation of living standards for people. More than 80 percent of the country's food production comes from irrigated agriculture.

Ecosystem products in mountain forests and pastures in high mountain areas help to provide livelihoods for the local population. Numerous endemic species and picturesque mountain ecosystems have not only material but also spiritual value and are seen as a key factor in the development of tourism.

Unfortunately, in recent decades, the country's ecosystems have been under the influence of human economic activity and are gradually losing their importance. On the other hand, factors such as pollution of transboundary rivers in neighboring countries and climate change are worsening the situation in ecosystems, which has a negative impact on the lives of the country's population.

Conducting national ecosystem assessments is important for the country for several reasons. First, as a newly independent country, Azerbaijan has just begun to shape its national environmental policy and often suffers from a lack of comprehensive ecosystem assessments. Second, the existing environmental policy in the country is often seen as a continuation of the old Soviet environmental policy, and therefore the lack of modern international experience hinders the formation of a comprehensive policy. Third, Third, to prevent existing threats to ecosystems, it is very important to study their current state, changing trends and develop future trends. And fourth, Azerbaijan is the first country in the region to conduct a National Ecosystem Assessment, and this assessment could be a very good example for the region.

The aim of NEA is also to bring attention on national and sub national level to the risk of decreasing of human life due the illinies and diseases in a frame of losing of biodiversity and ecosytems.

1.1. Project Background

As part of the global initiative, “Supporting decision-making and building capacity to support the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) through National Ecosystem Assessments”, Azerbaijan was selected as one of the participating countries. Other project countries include Grenada, Bosnia and Herzegovina, Cambodia, Cameroon, Colombia, Ethiopia and Vietnam. The project began in 2019 and is scheduled to conclude in 2023. Funding is provided by the Government of Germany, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), International Climate Initiative (IKI) with global project oversight by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC).

The Azerbaijan NEA will provide an information on the country’s biodiversity and ecosystems which can then be used for national reporting on regional and international biodiversity-related frameworks. The following documents and reports will be prepared during the project:

- Azerbaijan NEA scoping report (this document)
- Summary for policy makers

- Azerbaijan NEA technical report
- A plan for dissemination and use of NEA findings
- Supporting information products, briefs, videos etc.

The NEA will help to build a capacity and consider ecosystem services in government decision-making and mainstream NCP to the development planning at at local and national levels. In a positive way, NEA will provide comprehensive and substantial support not only to government programs, but also to community initiatives, and will help strengthen the NCP's role in community life.

In addition, NEA will also help increase the capacity of civil society institutions on the environment, educate them, and increase their participation in decision-making processes at both the community and state levels.

This assessment will also play an important role in capacity building on ecosystem valuation within the project's Secretariat, National Steering Committee, relevant government personnel and assessment authors.

As one of its key components, the project also envisages the creation of a National Plant Biodiversity Platform (NBP). As a main instrument, the The NBP will help strengthen the dialogue between science and policy on biodiversity and ecosystem services, encourage the participation of national stakeholders in IPBES processes, and take comprehensive action to increase their participation in IPBES activities.

1.2. Scoping Project Objectives

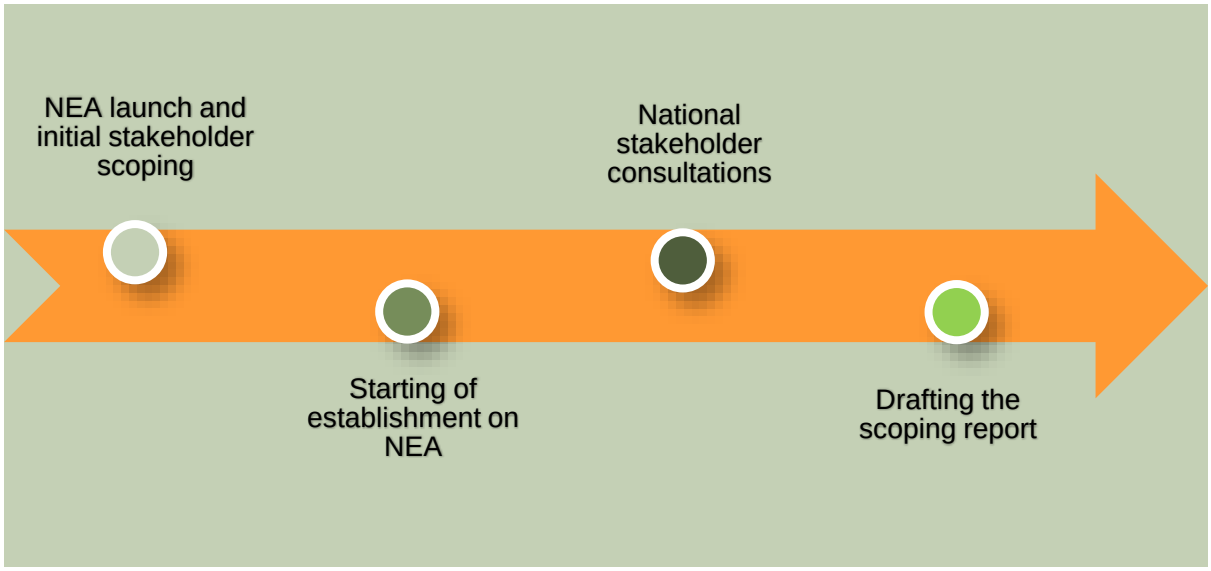
The objectives of the NEA-scale report have been identified with the participation of all stakeholders in the various meetings that took place during the scoping process and include:

- To determine the scope and main priorities of the NEA
- To determine the need and utility of a national ecosystem assessment
- To establish key policy questions that are relevant to guide the assessment
- To identify key needs and future benefits for NEA implementation
- To determine spatial and temporal boundaries of the assessment
- To identify the main methodological approaches of NEA
- To provide a brief overview of the chapters of the NEA technical report
- To start establishment of NBP
- To develop conceptual framework of NEA and NBP

1. 3. Methodoology of the Scoping

Broad stakeholder participation was ensured during the preparation of the soping report. Representatives of the state, community, civil society, and research institutes attended the launch of the NEA and the initial stakeholder meeting. The NEA scoping document was written after carefully listening to and analyzing the views and opinions of various parties.
The stages of the scoping process are shown in Figure 1.

Figure 1. Main stages of the SR preperation



1.3.1. NEA Launch and Initial Stakeholder Scoping and inception workshop

The initial meeting took place on October 4-5, 2019, with participation of more than 35 representatives. The organized workshop intended to launch the implementation of the "Supporting decision making and building capacity to support IPBES through national ecosystem assessments" project by bringing together relevant stakeholders including government bodies, international institutions, public and private sector actors, academia, sivil society and community organizaitons. The other important aim of workshop was identification potential ecosystems and establishment national board on ecosystem services. The workshop has created a fruitful platform for lively discussions, tabled a number of proposals on potential ways of collaboration during project implementation period, and agreed on project results-based work plan. During the meeting, which ecosystems should be preferred during the NEA was the subject of lively discussions, and ecosystems were prioritized in terms of biodiversity and NCP. Other important result of workshop was discussion on establishment National Platform and selection of ecosytems which will be include to the NEA (Figure 2).

Figure 2. Inception workshop

1.3.2. The beginning of the creation of the NBP

To have crucial role in actively connecting the resident expert communities on biodiversity and ecosystems services, MENR, together with relevant NGOs, academia, relevant governmental authorities and with leading role of Azerbaijan Branch Office of REC Caucasus, launched the establishment of National Biodiversity Platform (NBP). MENR is a main coordinating authority on environment, and in particularly, on biodiversity and ecosystems services, within the implementation of the project "Supporting decision making and building capacity to support IPBES through national ecosystem assessments" in Azerbaijan. Azerbaijan

Branch Office of REC Caucasus is an implementing agency for the above-mentioned project and main coordinating and implementing unit for National Biodiversity Platform.

NBP supports science-policy dialogues on issues related to biodiversity and ecosystem services, foster the dialogue between science and policy and thereby seeking to stimulate the biodiversity research community to address policy or user relevant questions, inform national stakeholders on IPBES processes. In carrying out its functions and exercising its rights, the National Biodiversity Platform interacts with central and local executive authorities of the Republic of Azerbaijan, local self-government entities, academia, various scientific research institutes, as well as in mutual cooperation with the international and non-governmental organizations.
Azerbaijan Branch Office of REC Caucasus is main coordinating and implementing unit for NBT and will appoint the secretary on partly on paid basis for NBP.
The platform is rather neutral (e.g. sharing knowledge and information) while at the same time provides an open space for exchange on issues of national relevance (e.g. water use, etc.). Platform is open to stakeholders from different sectors and potentially play also a role in addressing topics that are perhaps not dealt with in other places or fora.
NBP is an only platform, which is responsible for reviewing and approval of all documents of NEA, including Summary for Policymakers.
The work of members of Coordination and Advisory Board are not paid explicitly for platform work, secretary of NBP is a staff of REC Caucasus and be paid for NBP from REC Caucasus, as well as experts engaged to IPBES projects and to other projects, which will be coordinated by NBP in future. Sources of finance could include ministries, research institutions and the private sector. The amount of funding and the sources of funding will be indicated in annual financial reports of REC Caucasus Azerbaijan and will be open for all donors.

1.3.3. Second consultation workshop

Second consultaiton meeting took place on November 29- December 1, 2019. Workshop brought together more than 20 representatives of different stakeholder groups including governmental agencies, sivil society organizaitons, academia, public and private sector entities (Figure 3).
The workshop has created a fruitful platform for lively discussions, tabled many proposals on potential ways of collaboration during project implementation period, and agreed on project results-based work plan.
Participants discussed the goals and objectives of the author groups of ecosystem assessments to be conducted at NEA, the work of CLA and assessment teams, methodologies, and ways to obtain results tailored to current needs.

Figure 3. Second consultaiton workshop

The key outputs of the workshop were following:

- Discussion on conceptual framework and improvement it
- Conceptual framework as an indicator
- Draft discussion of TOR for National Biodiversity Platform
- Draft discussion of key policy questions

1.3.4. Third Expert meeting

The expert meeting was held on December 20-21, 2019. The meeting was attended by authors who are expected to participate in the assessments, experts who have participated in various projects in the ecosystem assessments, representatives of research institutes, etc. attended.

Participants were divided into four groups and began to work in groups. Each group worked on separate separate ecosystems which include freshwater, grassland and semi-desert, high mountain, and forest ecosystems (Figure 4). These four groups discussed ecosystems to be assessed separately, trends in ecosystems over time and space, the intended methodologies, and the possibility of adapting IPBES methodologies to the conditions of Azerbaijan. The main questions discussed were as follows:

- Why this ecosystem is important?
- What should be spatial and temporal boundaries of the assessment?
- What role does this ecosystem play in human life?
- What type of NCP's come from this ecosystem?

The key outputs of the workshop were following:

- Final discussions and adoption of conceptual framework
- Final discussions and adoption of key policy questions
- Discussions of spatial and temporal boundaries of the assessments
- Discussion of NEA methodologies
- Discussions of NEA'a chapter outlines

Figure 4. Group discussions during the third expert meeting

The participants of the third expert meeting then also discussed the methodologies and databases to be used during the NEA. Many different opinions were voiced and it was agreed that the main methods should be based on models, scanrious and spatial and temporal comparison of selected ecosystems.

At the third expert meeting, an approximate list of team members who will participate in the project was also prepared. How CLAs and LAs were selected for all three selected ecosystems was also identified. It was announced at the expert meeting that there are many experts in Azerbaijani universities, institutes of the Academy of Sciences and line institutes of ministries, and an approximate list of these experts was prepared.

2. Biodiversity in Azerbaijan

2.1. Basic Definitions

- Ecosystems - the variety of habitats, biotic communities, and ecological processes.
- Species - the variety of species, including plants, animals, fungi and micro-organisms.
- Genes - the variety of genetic information contained in all the individual plants, animals, fungi and micro-organisms.
- Biodiversity- the variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable
- Ecosystem services- many and varied benefits to humans gifted by the natural environment and from healthy ecosystems.
- Nature Contribution to People- The IPBES category of NCP, is defined here as all the positive contributions, or benefits, and occasionally negative contributions, losses or detriments, that people obtain from nature.

2.2. Global Significance

Azerbaijan is situated at the juncture of several bio-geographical areas (the Eastern Palaeartic, Turan, the Mediterranean, Asia Minor, and the Middle East) and contains broad range of species of European, Central Asian and Mediterranean origin. The country forms an integral part of the Caucasus Ecoregion, a region with exceptional levels of biodiversity. Azerbaijan also shares the largest inland body of water in the world, the Caspian Sea, with four other countries (Russia, Iran, Turkmenistan and Kazakhstan). The biological diversity of the Caspian Sea and its coastal zone makes the region particularly significant. One of the most valuable characteristics of Caspian biodiversity is high endemism. The longest established species are among the group of indigenous, brackish-water organisms.

Azerbaijan can be divided into the following seven ecosystem complexes, all of which contribute to the large diversity of this small country:

- Forests (lowland, riverine and mountain forests)
- High mountain ecosystems (sub-alpine and alpine habitats)
- Dry mountain scrublands
- Steppes
- Semi-deserts (wormwood and saltwort semi-desert habitats)
- Wetland and coastal ecosystems (lakes, riverine and coastal wetland habitats)
- Marine ecosystems

Approximately 4,846 plant species have been recorded in the country - of which more than 400 are considered endemic to Azerbaijan. Approximately 25,000 species of invertebrates

have been recorded from the country. Ninety percent of the invertebrate species belong to the phylum Arthropoda, (including insects, arachnids and crustaceans). Azerbaijan also hosts 667 species of vertebrates.

Azerbaijani watercourses are the preferred spawning geounds for valueables Caspian sturgeons, which account nearly 90% of the world's sturgeon populations.

The country is an important migratory path for many bird species travelling from Europe and Russia and south to Africa and Asia. The lakes and wetlands of Azerbaijan support high numbers of waterfowl species that migrate through or winter here, including the White-Headed duck and the globally threatened Lesser White-fronted Goose. Fifty-one Important Bird Areas (IBAs) – hosting 31 globally threatened species, 9 biome-restricted species and 15 congregator species - and one Endemic Bird Area (EBA) have been identified.

Azerbaijan has the highest number of mammal species in Europe.

2.3. Biodiversity Values

The territory of Azerbaijan is a centre of origin for several globally important food crops, including wild rye, wheat, barley, millet, wild pears, cherry, and more than 200 varieties of grapes. Four hundred and fifty-four species of graminaceous plants are found in Azerbaijan, 25 of which are cultivated. This includes: 15 varieties of the wheat; one species of maize, with 90 distinct genetic varieties; 10 species of barley, with 500 distinct varieties; five species of rye; and one species of rice, with more than 80 local varieties (including a number of traditional cultivars). Most of the native varieties are now either extinct, or in danger of extinction. Only one of these native varieties (Secale cereale) is still under cultivation.

The country is especially noted for wild fruit and nut trees. The forests of the Greater and Lesser Caucasus Mountains and the Talish Mountains contain wild ancestors of apples, persimmons, walnuts, chestnuts, pistachios, and many other species that have been widely domesticated into many different varieties and strains.

Some of the wild plants are widely used as fruits and vegetables in Azerbaijan, including: cherries; plums; cornel; hawthorn; forest strawberry; cherry-plum; sea-buckthorn; apple; medlar; sour cherry; blackthorn; raspberry; and wild varieties of onion.

Approximately 800 indigenous plant species of medicinal value have been recorded in Azerbaijan, 150 of which are commercially used in pharmacological practice.

Some native plants are recognized as important sources of pollen and nectar for honey, and others provide flavouring for natural beverages and teas. Several local plants are used to produce oils, doshabs and syrups (e.g. walnut, pistachio, hazel nut, beech, grapes, tomato, pomegranate, garlic, pumpkin, peach, apricot and sour cherries).

Azerbaijani flora is rich with colouring materials, primarily used in carpet-making. Approximately 1500 plant species have been used as colorants, including mulberry, chesnut, osage orange, barberry, walnut, and oak.

A number of local plant species are exported for commercial purposes, including cultivated liquorice, linden, cane, tulips, nettle (Urtica dioica) and Betula spp. Various construction and

furniture materials are made from the wood of native forest species, including Hornbeam, Georgian oak, Caucasian oak and European yew. Some mammal (e.g. European hare, ginger fox, golden jackal and wild boar) and bird (e.g. ducks, geese, coot, pigeons, quail and pheasant) species are being traditionally hunted for food, while there is a growing demand for commercial hunting packages for foreign hunters (e.g. hunting of Eastern Caucasian Tur).

2.4. Threats to Biodiversity in Azerbaijan

2.4.1. Land Degradation

Extensive areas of Azerbaijan are being severely impacted by soil erosion and salinization. It is estimated that 3.7m ha (~42% of the territory of Azerbaijan) is subject to the damaging effects of erosion, while 0.6m ha (~7% of the territory of Azerbaijan) is adversely affected by salinization, to the extent that it is now no longer suitable for agriculture. The salinization and erosion of soils tend to be a result of poor irrigation and drainage systems, overstocking of livestock, unsustainable levels of ground water extraction and ongoing deforestation. Desertification due to climate change and reduced natural water supply is a new negative phenomenon in the lowlands of the country.

Land degradation is being further exacerbated by the weak regulation of building and construction activities and illegal urbanizaiton in Azerbaijan, as well as the limited capacity for effective controls on mitigating the environmental impacts of industrial developments.

2.4.2 Habsitat fragmentation

The alteration and depletion of forest resources has historically had severe ecological impacts in Azerbaijan. In some parts of the country (e.g. on the slopes of the Talish mountains) forests are being still further fragmented as economically valuable timber species (such as nut and oak) are being illegally harvested. Forests are also occasionally impacted by wildfires, most occurring because of the burning of maize fields in winter and grass in summer. Fires are constantly observed in the occupied territory of Karabakh and in the on the front lines.

The conversion of the lowland grasslands into agricultural land, through ploughing and scrub removal, is fragmenting many remaining areas of natural steppes. Several steppe ecosystems are also being further fragmented by the extensive network of irrigation channels, particularly in the central lowland part of the country.

The construction of dams and reservoirs on the major rivers flowing into the Caspian Sea has created obstacles that are effectively fragmenting riverine habitats for some key species. For example, the construction of the Mingechevir and Bahramtapa reservoirs on the Kura and Araz rivers has reduced the spawning grounds for anadromous sturgeon species because they are now unable to pass the dams to reach upstream breeding areas. Small mountain streams represent the preferred spawning grounds for valuable sturgeon of the Caspian Sea and other

types of fish, but experience continuously increasing exploitation in the form of water withdrawals for industry and irrigation.

2.4.3. Unsustainable levels of natural resource use

Overgrazing has become a major problem both in winter pastures in the lowlands and in summer pastures in the high mountain grasslands. The intensive use of pastures in pastures result in accelerated soil erosion, and the increasing land desertification. The loss of traditional and historical pastures in the occupied territories of Karabakh has led to more cattle grazing in other pastures of the country. Additional herds have also been brought in by refugees from the occupied districts around the Karabakh region. Many of the animals owned by these communities are now concentrated in areas that are largely unsuitable for livestock, for a variety of reasons, including competition for water and food near settlements and exclusion from summer grazing areas due to conflicts in some mountainous areas. Many winter grounds are now being utilized for livestock grazing throughout the year.

While all types of hunting are strictly regulated in Azerbaijan, illegal hunting - for both subsistence and commercial purposes - of wild birds and game species is still widespread and relatively poorly controlled.

Overfishing - driven by subsistence uses, the demand of local consumers and international demand for black caviar - is widespread in the Caspian Sea and spawning rivers. In spring, spawning sturgeon in the shallow warmer waters often become the victims of illegal poachers.

Of the approximately 1 billion m^3 of freshwater used each year, just under 350 million m^3 is lost due to the poor state and management of the water distribution systems in Azerbaijan. Of the water used, 70% is sourced from neighbouring countries, and there is currently an annual water deficit in the country of ~400 million m3.

2.4.4. Pollution

Over the last 150 years Azerbaijan was one of the principal oil producing and processing countries without adequate environmental management practices. It is estimated that 14,000ha of land in Azerbaijan is still contaminated with oil and petroleum products. Large-scale use of fertilizers, pesticides, and herbicides has notable polluted lands in rural places. Soils throughout the region were also previously contaminated by DDT and toxic defoliants used in the cotton production during the Soviet era and legacy DDT sites remain major sources of pollution.

Although several actions have recently been taken to clean up the country - particularly in Baku and the Absheron peninsula - severe pollution is found in many areas of the country.

Transboundary pollution in the Kura Basin is one of the main causes of pollution in the country's main waterways. Municipal, industrial and agricultural wastewaters from neighbouring countries are being drained into the Azerbaijan.

In Azerbaijan, toxic pollutants have caused a broad range of negative health impacts within the population and have increased the cost of living. A broad range of studies confirmed that pollution causes negative impacts on the local ecosystems of Azerbaijan. For example, the discovery of polychlorinated biphenyls, organochlorine pesticides, and organotin compounds found in the blubber and liver of Caspian seals (Phoca Caspica), which has been identified to have caused mass mortality of this species. In addition, there are discovered traces of acute genotoxic effects from pollution in the Russian sturgeon, acipenser gueldenstaedtii. There is also evidence of a strong correlation between three-ring PAH pollution and chromosomal damage in aquatic turtles (E. orbicularis). Moreover, a study done by Matson et al. (2005) confirmed that the cities, Sumgayit and Neftchala in Azerbaijan, have soils contaminated with genotoxic and PAHs, which have a direct effect on observed genotoxicity.

Birds that land in oil-contaminated lakes on the Absheron Peninsula often drown there. This is a very dangerous phenomena for both domestic and migratory birds.

2.4.5. Invasive species

There are several species that are invasive in Azerbaijan. One of the most notable is the comb jelly Mnemiopsis leidyi - an introduced species that invaded the Caspian Sea through the Volga Don channel. Its population has now multiplied to the extent that the biomass of the population has exceeded the general productive biomass of the sea.

Invasive plant species include the widely distributed common ragweed, buffalobur nightshade and the Russian knapweed. The introduced American racoon has now successfully spread into most of the forests of Azerbaijan. The invasive fall webworm is also known to cause substantial damage to commercially grown ornamental trees and shrubs and to several agricultural crops.

2.4.6. Climate changes

Third National Communication of Azerbaijan to UNFCCC confirms large scale shifts on long-term temperature and precipitation values. Climate change in Azerbaijan is projected to increase average temperatures, resulting in hotter and longer summer heatwaves and droughts, as well as a likely reduction in average annual rainfall. Overall, this means the country will likely become hotter and more arid, with major implications for water availability and ecosystem productivity. The tendency in temperature and precipitation on the territory of Azerbaijan is varied by areas and highlands. Calculations according to all scenarios of GCM

models forecasts an increase of monthly average temperature in a range of 0,72-1,580C during 2015-2050 years in comparison with average values of 1961-1990.

Forest, high mountain, and marine ecosystems in Azerbaijan may be particularly vulnerable to the effects of climate changes. Climate change will cause deforestation, river depletion, soil erosion, and warming of the Caspian Sea, which will have various negative effects on biodiversity. Although the impact of climate change on biodiversity in Azerbaijan has not yet been assessed, based on global assessments, it can be said that these effects will appear as long-term, negative and serious consequences.

2.5. Rare, Threatened and Endangered Species

The Red Book of Azerbaijan (2014) contains updated information on the status of rare, threatened, and endangered wild plant and animal species for the entire territory of the country, including Azerbaijan's sector of the Caspian Sea. The current version of the Red Book lists 338 species of higher plants, 12 species of fungi, 23 species of lower plants and 223 species of fauna (including 74 insect species, 6 amphibian species, 14 reptile species, 9 fish species, 72 bird species and 42 mammal species).

Many valuable species live in protected areas. At present, there are 10 reserves and 10 national parks in Azerbaijan, the total area of which is 893,000 hectares. This is 10.3 percent of the country's territory (Figure 5).

Figure 5. Protected areas of Azerbaijan

3. Scoping

The NEA will critically assess the state of knowledge on past, present and possible future trends in multi-scale interactions between people and nature, taking into consideration different views and knowledge systems. Expert opinions, ideas and opinions collected during NEA meetings, the results of group works, the results of surveys conducted among local experts and the population during the NEA process will be reflected in the the NEA technical report. Simultaneously, the assessments will collect and analyze all scientific sources related to biodiversity, pollution, ecosystem services and related topics. Reports of projects already carried out by international organizations in Azerbaijan will also be considered as key documents.

The NEA will provide policy relevant information on the relationships between human societies and their natural environment. The NEA process will also analyze the status of ecosystems, past conditions and future trends, as well as the factors that led to these changes and their causes, as well as existing national policies for the protection of ecosystems. Therefore, the assessment will cover direct drivers such as climate change, pollution, land use change, invasive alien species etc.

NCP assessments are one of the main objectives for NEA and will be extensively covered in the technical report. The assessment will demonstrate how the mainstreaming of nature and ecosystems into development can advance human quality of life. The assessment will analyze the role of ecosystems in human life in the past, as well as the gradual changing trends of this role. The role of the NCP in sustainable development, the ILK and local and indigenoius approaches to ecosystem management, the positive experiences that have historically existed between ecosystems and the local population, and the opportunities for future use of these experiences will also be widely reflected in NEA.

NEA will also take economic, demographic, management technology and cultural information from other reports and assessments, while considering local factors by applying IPBES methodologies. Special attention will be given, among indirect drivers, to the role of institutions (both formal and informal) and impacts of the patterns of production, supply and consumption on nature, nature's benefits to people and good quality of life.

3.1. NEA key questions

The following key questions emerged as an output of stakeholder meetings, expert discussions, and preliminary research:

- What is the status of and trends of selected ecosystems (forest, mountains including pastures and inland waters)?
- What direct and undirect drivers effect selected ecosystems?
- What is the status of knowledge on ecosystems and it is the benefit to the well being of people?
- How much do people know about the status of ecosystems, and how does this affect their lives?
- Do people have information about ecosystem changes in recent decades?

- How do ecosystem degradations affect human health and their quality of life?
- What policies and activities are needed to turn future negative trend into positive ones?

Which ecosystems should be selected for evaluation? This question has been a major topic of NEA discussions. Many experts have suggested that all ecosystems in Azerbaijan be included in the assessment. However, most experts have suggested that the following ecosystems be included in NEA assessments so far, given the financial constraints:

- Forests
- Mountain ecosystems, including pastures
- Inland waters

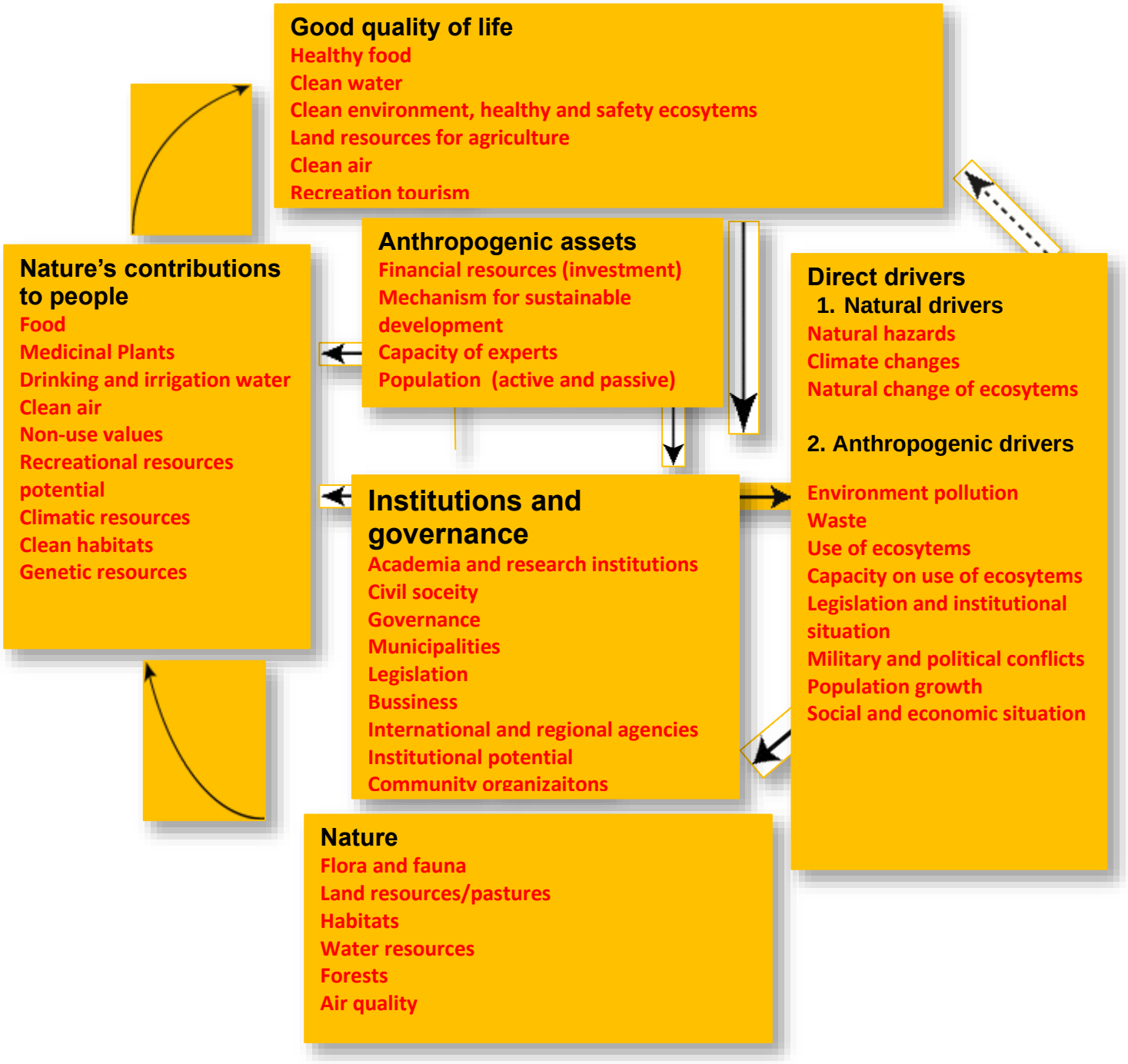
The selection of these ecosystems is based on the following criteria:

- Level of degradation of ecosystems (more degraded ecosystems were selected)
- The role of ecosystems in human life (the most important ones in terms of the level of impact on human quality of life and NCP were selected)
- Expert opinion (determined by financial resources and expert voting)

3.2. Conceptual framework of the Azerbaijani NEA

The conceptual framework (CF) is grounded through the processes that connect people and their livelihood with nature. Taking the key policy questions as a preliminary ground, the CF underlines the contribution of nature in supplying services that improve people's life. An overview of the CF demonstrated in the figure. CF demonstrates that healthy food, clean water and safe ecsystems are essential to increasing quality of life. In this sense, nature provides human society with all the means it needs. CF also demonstrates that there close interrelaatioships between institutions/governance and anthropogenic drivers and NCP. It shows that Anropogenic drivers make shifts in natural resources which a base of NCPs. (Figure 6).

Figure 6. Conceptual framework of assessment



3.3. Forest ecosytems

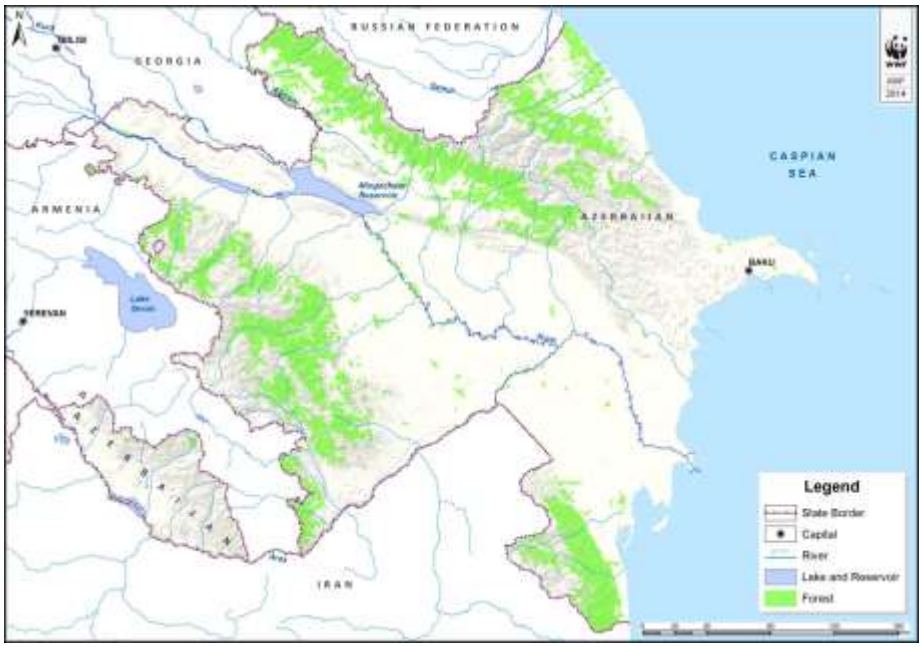
In Azerbaijan, forests cover 11% (860000 ha) of the total area, and exist mainly in mountain regions of the country. Much of this forest area is located in Greater and Lesser Caucasus and in Talish Mountains (Figure 7). Mountain forests are mainly located in high and middle mountain regions and occupy about 10% of the total land area of Azerbaijan. The mountain forests consist of a broad range of tree species. Oriental beech (Fagus orientalis), Georgian oak (Quercus iberica), Chestnut oak (Quercus castaneifolia) and hornbeam (Carpinus betulus) are the main trees that comprise mountain forests of the country. Riparian and plain forests

in Azerbaijan occupy areas, where groundwater table is rather close to the surface and may permanently supply trees with water. These areas include Lenkoran and Yalama areas and Qanıx-Haftaran valley. In addition, there are nearly 20,000 ha riparian forests in Azerbaijan, that mainly occupy banks of the Kura and Araz rivers. Riparian forests of Azerbaijan are locally called tugay forests.

Overgrazing is one of the main drivers of deforestation. If forested areas are exposed to intensive grazing, young trees will not be able to grow and replace old trees. In other words, forest recovery processes will be less intensive or completely stopped. This pattern will reduce density and productivity of forests gradually increasing the vulnerability of the land. Overgrazing usually occurs in poorly managed agricultural applications, where livestock populations exceed maximum rates.

NCP potential of Azerbaijani forests are very big. Almost in all forested regions of Azerbaijan, forests are the major sources of water that is naturally purified and filtered. Rough estimations confirm that nearly 2,100,000 people in Azerbaijan use non-treated clean water that is supplied from forested watersheds. Azerbaijani forests also the sources of broad range of non-timber products, including food, medicinal plants, game meat, etc. and therefore has a very serious impact on the lives of the local population. However, a wide range of natural and anthropogenic drivers reduce forest outputs.

Figure 7. Forests of Azerbaijan



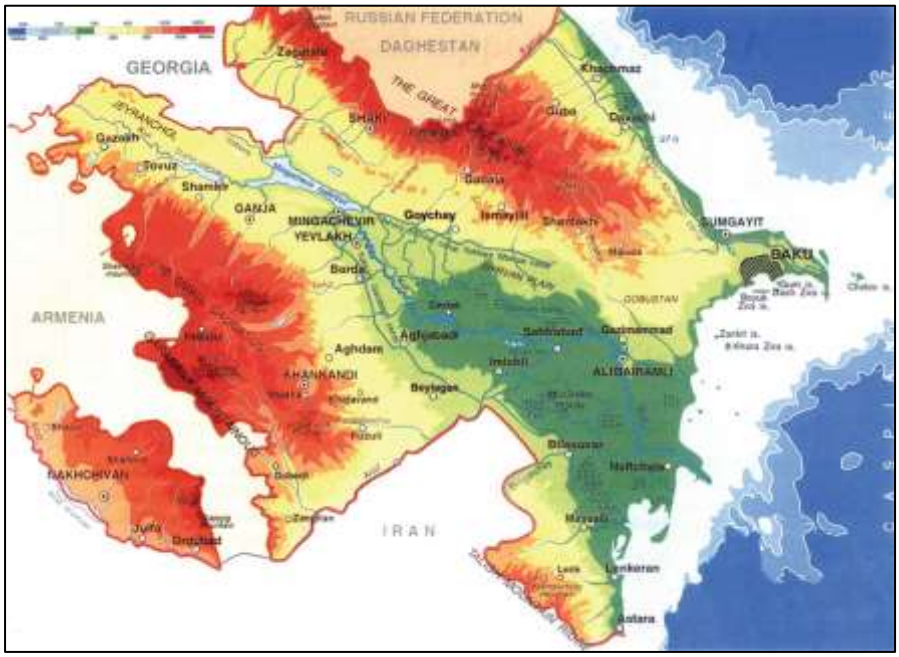
3.4. Mountain ecosytems (including Pastures)

Mountains cover up to 60% of the country's territory (Figure 7). Mountain ecosystems provide a reliable shelter for many types of living organisms and essential for biodiversity protection. Many rare, endangered, or endangered species have found habitat in the mountains of Azerbaijan. For centuries, the life of the Azerbaijani people has been closely associated with the mountains. The mountains are not only the source of many crops, but also the main

summer pastures used by cattle. In addition, the importance of mountain tourism is very high, and the Azerbaijani mountains with their high aesthetic values play a major role in the development of tourism in the country. In addition, there are many local communities in the mountains, and the ILK is in the spotlight due to many important features.

Land degradation in mountain areas of Azerbaijan is increasing at a rapid rate, largely as a result of overgrazing. Recent monitoring of livestock shows that the number of animals per hectare is 10-50 times higher than the grazing norm in some areas, and even more in other areas. This is resulting in the incremental increase in both the extent of the areas under grazing pressure, and the intensity of the grazing pressure.

Figure 7. Orographic map of Azerbaijan



3.5. Inland water ecosystems

There is a network of more than 8550 rivers and 450 lakes in the biodiversity rich regions of Azerbaijan.

Freshwater ecosystems, representing highly important areas for biodiversity conservation, play a vital role in humans` life providing key ecosystem services and benefits. Lakes, watercourses, wetlands are the most important inland water habitats in terms of biodiversity and NCP. The mouths of small mountain rivers flowing into the Kura and Araks are the preferred spawning grounds for the valuable sturgeon fish of the Caspian Sea, which contains over 90% of the world's sturgeon population.

Rivers and small streams are under extreme pressure at present due to intensive water withdrawals for agriculture, particularly during the low-flow period, when some of them run dry—a situation which is not natural in this region. Intensive water withdrawals in many small streams have led to significant changes in flow regime downstream.

Because Azerbaijan is located in the lower reaches of the Kura and Araz rivers, the water withdrawals carried out by the upstream countries have a serious impact on biodiversity in the downstream part of these rivers.

Approximately 1 billion m3 of fresh water used each year, just about 40% is lost due to the inefficient water distribution systems in Azerbaijan. The breakdown of water usage levels for 2012 is shown below of the water used, 70% is sourced from neighbouring countries, and there is currently an annual water deficit in the country of ~400 million m^3.

Overfishing - driven by subsistence uses, the demand of local consumers and international demand for black caviar - is widespread in the Caspian Sea and spawning rivers. In spring, spawning sturgeon in the shallow warmer waters often become the victims of illegal poachers. Indiscriminate methods – such as the use of explosives, electric shocking, and poisoning - are threatening stocks of sturgeon and other fish species. The Convention on International Trade in Endangered Species (CITES) has now listed all sturgeon species as threatened, including all commercial Caspian varieties. The regulation of fishing licenses and quotas are also not always effectively administered by some of the Caspian littoral states.

At present, drinking water resources in Azerbaijan - especially the waters of Kura and Araz - do not fully comply with basic biological and chemical indicators and affect the health of the population. Therefore, taking strict measures in terms of improvement of drinking water supply is the priority of the Government. The water samples taken from wide-range of areas, especially from the main water resources of rural areas of Azerbaijan, currently do not meet with norms and standards of the WHO.

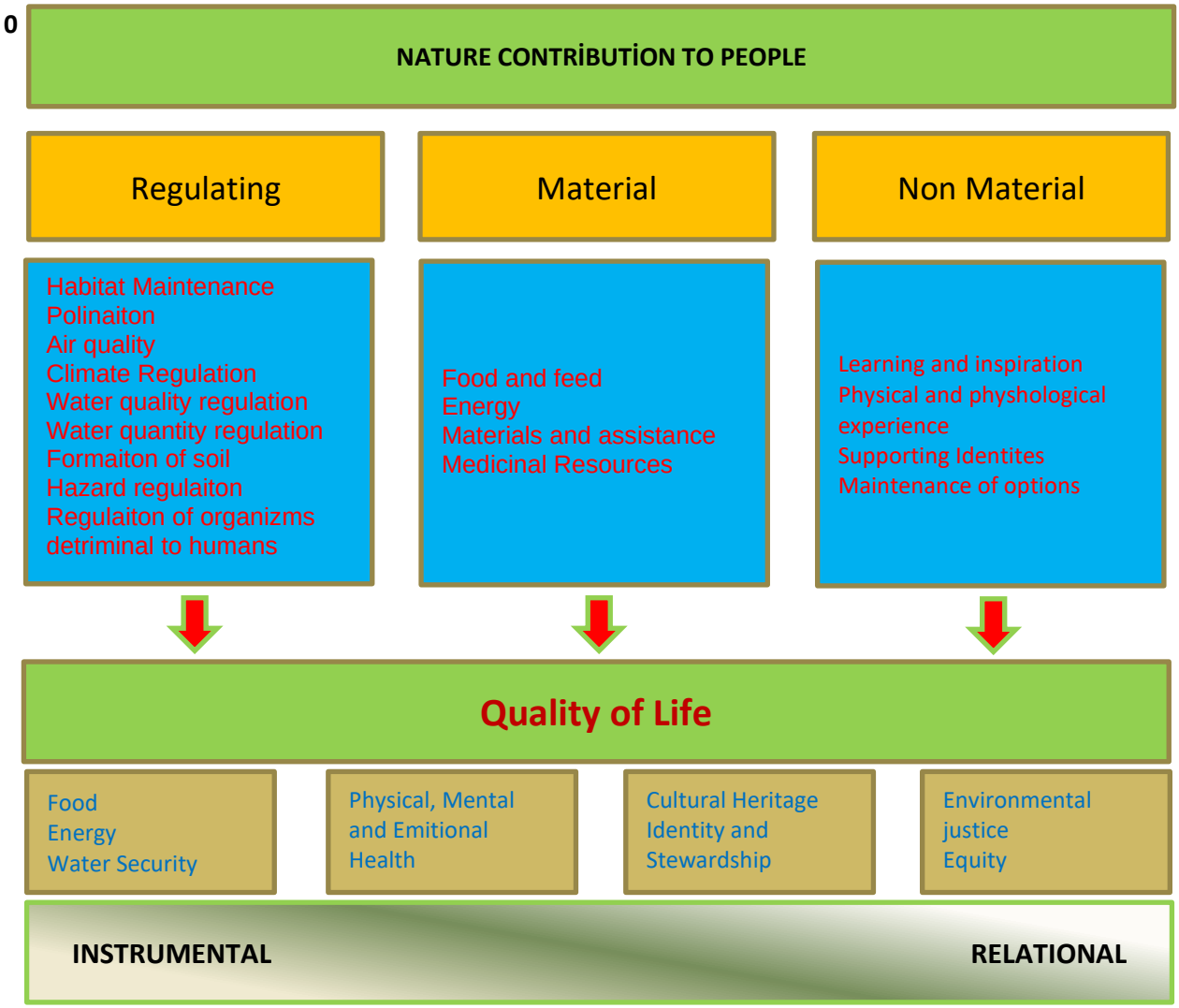
Most of lakes are subject to heavy euthrofication due to untreated wastewater inputs from residential places and agricultural lands. Lakes around the big cities are heaily polluted with oil products and chemical compounds.

4. Nature’s contributions to people

Ecosystems provide a range of services that improve living conditions in societies. According to the IPBES approach, NEA considers ES from the NCP's point of view. In other words, the NEA of Azerbaijan emphasizes that the terms ES and NCP are roughly the same, and difference between ES and NCP should not lead to misunderstanding and confusion. It should also be noted that the terms ES or NCP have been used in various reports and articles, and the two terms should be considered approximately the same.

In the NCP, as in the ES, Nature has three types of contributions to people, and these contributions include material, non-material, and regulatory contributions. It is accepted that these contributions improve a person's life and make him physically and spiritually healthy. At the same time, NCP means food, energy, and water, and they come directly from nature to humans. According to this concept, the NCP is the main provider of quality of life. Quality of life means food, energy and water, physical and mental health, moral values, environmental justice and equality (Figure 8).

Figure 8. Nature's contributions to people and their relation to quality of life in terms of instrumental and relational values (source IPBES)



5. Utility

In 2016, the government of Azerbaijan founded the National Coordination Council for Sustainable Development (NCCSD) to align their development programs with the 2030 Agenda and its Sustainable Development Goals (SDGs). The country will continue its efforts to implement 2030 Agenda with a view to achieve the SDGs. Azerbaijan is investing in innovation initiatives and innovative ideas within the spectrum of SDG accelerators.

National Strategy on the Conservation and Sustainable Use of Biodiversity (NBSAP) document adopted for the period 2017-2020 is the basis of the existing documents for the protection of biodiversity and SDG goals in Azerbaijan. Although most parts of this program have been

successfully implemented, many action plans still require additional activities. remain unfulfilled.

The main results of the NEA report will be used in the implementation of the SDG goals until 2030, the completion of the NBSAP, as well as the implementation of other strategic programs facing the MENR and related ministries. NEA will provide comprehensive assistance to decision-makers, policy makers, and ministry departments in carrying out their activities.

6. Political and Institutional Framework In Azerbaijan

5.1. International Agreements Guiding Biodiversity Conservation and Use

The list of international conventions to which Azerbaijan is a party is given in the table 1.

Table 1. International conventions of Azerbaijan

Convention	Ratification
Convention of the World Meteorological Organization	03.10.1993
Convention concerning the Protection of the World Cultural and Natural Heritage	06.12.1993
The Convention on International Trade in Endangered Species of Wild Fauna and Flora	23.07.1998
European Convention on the Conservation of European Wildlife and Natural Habitats	28.10.1999
Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters	09.11.1999
International Plant Protection Convention	14.03.2000
United Nations Framework Convention on Climate Change	18.07.2000
UNESCO's Convention on Wetlands of International Importance, especially as Waterfowl Habitat	18.07.2000
Convention on the Protection and Use of Transboundary Watercourses and International Lakes	03.08.2000
Convention on Biological Diversity	03.10.2000
Stockholm Convention on Persistent Organic Pollutants	09.12.2003
Convention on Trans-boundary Effects of Industrial Accidents	04.05.2004
Cartagena Protocol on Biosafety (under the Convention on Biological Diversity)	23.03.2005
Framework Convention for the Protection of the Marine Environment of the Caspian Sea	04.04.2006
European Landscape Convention	24.06.2011

5.2. National Legislative Context for Biodiversity Conservation and Use

The legal framework for environmental protection, use and management of natural resources in the Republic of Azerbaijan is quite extensive. Key national environmental laws in Azerbaijan include the following:

The Law on Environmental Protection provides the broad legal framework for protection of the environment and its natural resources. The law describes, in general terms, the rights and duties of the state, local authorities, individuals and public organisations; acceptable uses of nature and natural resources; the system of regulation of natural resource use; the development of inventories and monitoring of environment and natural resources; the regulation of the degree of overall environmental protection and activities that damage the environment; the assessment of enterprise and activities for compliance with environmental norms and standards and impact on the environment; and research, public education and data management.

The Forest Code regulates the protection and utilization of forests. The Code establishes the legal basis for the regulation of forests and their funding, use, protection, preservation, reintroduction, and expansion. The Forestry Code also makes provision for a number of regulations that more specifically define the general rules laid down in the Code.The Law on Fauna and the Law on Protection of Flora establishes the legislative framework for the protection and sustainable use of fauna and flora.

The Law on Fishing establishes legislative provisions for: the organisation and management of fishing operations; and the breeding, use and protection of fish stocks.

The Law on Specially Protected Nature Areas and Objects provides the legal framework for the classification, establishment and expansion of 'Specially Protected Nature Areas' (SPNAs).

The Law on Environmental Safety determines the legal basis for organizing and exercising phytosanitary controls and regulating cooperative governance in the field of plant protection and plant quarantine.

The Law on Phytosanitary Control regulates the manufacturing, sales, and import of pesticides, agrochemicals, biological and other related substances.

The Law on Protection of the Atmospheric air provides the legal framework for mitigating the effects of harmful and polluting atmospheric substances.

The Law on Environmental Education and Awareness of the Population defines the national approach to, and requirements for the implementation of, environmental education and awareness-raising activities.

The Law on Obtaining Environmental Information establishes everyone's rights to obtain environmental information. Any person may obtain environmental information irrespective of time and without any terms, except information obtaining which is limited. The information obtaining, which is limited, includes the information assumed to be of state/public importance.

The Water code determines the internal water resources (rivers, lakes, ground water etc.) of the Republic of Azerbaijan as national wealth. Water Code constitutes the basis of the water legislation and regulates the relations regarding the use of water bodies, their water resources and their protection. According to the code, the management of water bodies also envisages the protection of environment in addition to the development of economy and provision of the population with quality water. The Water Code approves the rules for water use and the right to use water.

The law on water supply and wastewater was adopted in 2000. The main goal of the law is to determine the provision of the population, enterprises and institutions with water and management of wastewater. According to the law, the Cabinet of Ministers and the local bodies of executive power are key executive bodies. This law establishes the main water rights and wastewater management rights.

The International Commission on Aquatic Resources of the Caspian Sea (ICARCS) regulates fisheries in the Caspian Sea region by defining the Total Allowable Catch (TAC) and distributing the catch quota regarding major commercial fish species (sturgeon, kilka, seals) between Iran, Kazakhstan, Russia, Azerbaijan and Turkmenistan. The Commission also coordinates conservation activities related to the sustainable use of Caspian aquatic bio-resources, supports scientific cooperation and data exchange, and coordinates scientific research.

5.3. Institutional Context for Biodiversity Conservation and Use

The stakeholders involved in the natural resources and environmental management in the territory of the Republic of Azerbaijan include state, non-state and local self-governing institutions.

The key state institutions are the Ministry of Ecology and Natural Resources, the Ministry of Emergency Situations, Ministry of Agriculture, The State Tourism Agency, The Ministry of Economy and several governmental and non-governmental institutions. Municipialities, CSOs, local community organizaitons, public environmental movements, environmentally active people represent public sector. Independent experts, practioners and research scientists represent academia.

International organizaitons are represented by UN agencies (UNDP, FAO, UNICEF, WHO etc.), NGOs (e.g. WWF) and state Agencies of various countries (e.g. GIZ).

The Ministry of Ecology and Natural Resources (MENR) is the primary government agency responsible for biodiversity conservation and the sustainable use of natural resources (i.e. forestry, wildlife, and fish) in Azerbaijan. The key responsibilities of the MENR cover six broad areas: (i) environmental policy development; (ii) environmental protection; (iii) water monitoring; (iv) water management; (iv) protection of freshwater and marine natural resources; (v) forest management; and (vi) protected areas.

The Ministry of Agriculture (MA) is the primary government agency responsible for regulating and controlling the means of agricultural production and processing in Azerbaijan. The key responsibilities of the MA cover six broad areas: (i) agricultural policy, planning and standards;

(ii) livestock production and processing (including infrastructure and equipment); (iii) crop production and processing (including infrastructure and equipment); (iv) agricultural reforms and food security; (v) land use, monitoring and environmental protection (including veterinary services); and (vi) agricultural research (plant and animal).

The State Tourism Agency (STA) is the primary government agency responsible for the development of tourism in Azerbaijan. The key responsibilities of the AT cover four broad areas: (i) tourism policy and planning; (ii) tourism media and communications; and (iii) tourism development.

The Ministry of Economy (ME) is the primary government agency responsible for the development of the industrial manufacturing and energy production sectors in Azerbaijan. The key responsibilities of the ME cover four broad areas: (i) industrial and energy planning, policy and standards development; (ii) facilitating investment conditions for the manufacturing sector; (iii) improving the efficiencies of energy supply; and (iv) energy research and development.

The Ministry of Finance (MF) is the primary government agency responsible for regulating the financial sector in Azerbaijan. The key responsibilities of the MF cover four broad areas: (i) financial, budgeting and tax policies; (ii) forecasting, budgeting and financial management of state budget; (iii) development of financial markets; and (iv) controlling the movement of funds.

The Ministry of Emergency Situations (MES) is entitled to reduce the risks of natural disasters, flood and flash floods, landslides, avalanches, droughts, forest fires and manage them during emergency situations and apply emergency zone when necessary. Currently, MES only controls the operaiton of large water bodies and takes measures to prevent possible natural disasters.

6. Key Datasets, Methology And Chapter Outlines

6.1. Key Datasets

The assessment will mostly be conducted on the base of secondary data and information. The available sources such as the Azerbaijan Fifth and Sixth National report to the UN Convention on Biological diversity. The results of scientific research, published scientific works, reports and raw data of projects carried out by international organizations in Azerbaijan (eg UNDP, UNICEF, GIZ, FAO, UNEP, GAHP, Pure Earth) in Azerbaijan and the region will form the main database of NEA. The lack of information and data limited the scope of this study; therefore, further research is needed, and it may include developing of primary data baselines.

An initial review of the literature indicates that government data and grey literature will play an important role in the assessment due to limited availability of up-to-date peer-reviewed literature covering environmental and biodiversity related topics in Azerbaijan The following are the key data sources that will be drawn on for the project:

Government datasets: State agencies and government ministries hold a valuable repository of data. The datasets of the Ministry of Ecology and Natural Resources, State Statistical Comittee as well as the Ministry of Agraculture are the main datasets NEA will use. Economic, Environmental, Agricultural and Water related datasets will be used as a major source of rough informaitons. Environmental impact assessment studies submitted to the government will also be considered as a data source.

National reporting to international agreements: Data from the country's national reports to agreements such as the CBD, UNFCCC and the Ramsar Convention on Wetlands of International Importance will be used in the assessment.

Regional data sets and policy documents: Due to the existence of strong regional political coordination mechanisms in the Transboundary Joint Secretariat regional policies and datasets will also be drawn on for the assessment. Online data sources such as the Rec Caucasus and WWF will also be utilised.

Indigenous and local knowledge: Scientific data and information will be consistently supplemented ILK in a structured way. The NEA scoping exercise has already benefited from community stakeholder consultations and invited community members to gather ILK informaitons. Duing NEA prosess ILK wil be involved through community surveys.

Remote sensing data: The satilite images will be used to generate data on land cover, land use, wetland distribution, land degradation, primary productivity, and other attributes of the land. Repeated observations of different years of the same area are accessible and enable to launch trends for all types of ecosystems.

6.2. Survey

It is also planned to conduct a survey among the local population to use newer and more direct source data. The survey will be taken from about 500 respondents who reside in proximity to protected areas, famous areas in terms of biodiversity. The survey and will be based on the following sentiments:

- Testing knowledge of local and indigenous people about the ecosystems
- Gathering the most successful local NCP expririence
- Gathering knowledge about the ILK
- Testing the knowledge of the local population about the changes in ecosystems in recent decades
- Identificaiton of direct and undirect drivers that cause shifts in ecosystems
- Gathering knowledge about the impact of ecosystem changes on the quality of life of the local and idigenous population
- Stuyding current participatory activities in management of ecosystems
- Indigenous and local people's perspectives to adapt to changes that are likely to occur in ecosystems in the coming years
- Assessment of ecosystems' use and nonuse values

The survey questions will cover all the ecosystems covered by the NEA, and the data collected will be widely used during the NEA.

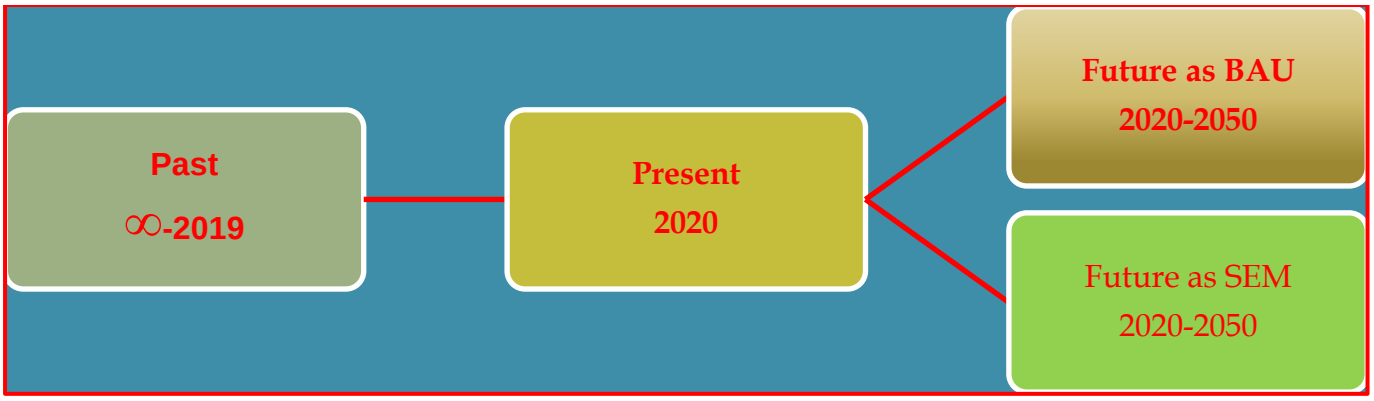
6.3. Methodology

The scoping document only discusses general approaches, and more information on methodology and approaches will be provided in the main NEA technical document.

The current state of ecosystems in all ecosystems, past status and future change trends will be assessed in the form of various scenarios and models. The period from the past to the present will be assessed in the form of a trend or one scenario, while the period from today to the future will be assessed in the form of two scenarios. These scenarios will be mainly Buseness as usual (BAU) and Sustainable Ecosystem Management (SEM) scenarios. In some cases, three scenarios can be developed for the future, and these can be BAU, optimistic and pessimistic scenarios.

The length of the past period will vary depending on the availability of information. The next period will be forecast for all ecosystems until 2050. For example, for inland aquatic ecosystems, the past will cover 1961-2020 and the future will be forecast until 2050 (Figure 9).

Figure 9. Suggested tentative scenarious during the NEA



Scenarios will be developed based on both raw data (eg forest area) and indicators (eg water quality or water stress index), and the choice of which indicator will depend on the availability of information and the choice of chapter authors. Altough indicators are surrogate measures of more complex aspects, they provide an effective means of communication with policymakers.

Dollar-based ecosystem valuation methods will also be used to assess the tangible and intangible value of the ecosystem. but this will be discussed again in later stages.

6.4. The NEA processes

The NEA will follow the key issues set out in the assessment scoping and will focus in particular on aforementioned key policy questions.

National ecosystem service assessment will be conducted in six steps:

Step 1. Defining the issue and context.

- The main ecosystems are selected, the main object and objectives of the assessment are identified, and the main problems are detected.
- Setting up a lead team. First, CLAs will be selected and their roles and responsibilities will be determined. It is planned to select one CLA for each team which will study selected ecosystem. Each CLA will work with 2 or 3 LAs. CLAs and LAs have collective responsibility for the contents of a chapter. CLAs are responsible for coordinating work on major sections of a report such as chapters and SPM. Cas are responsible for collections data, review them and contribute to writing processes. Although the primary responsibility falls on CLAs, both LAs and CAs should participate in the assessment at the same level (Table 2).
- Defining the issue(s) that are driving the assessment
- Reviewing key terms and considerations

Table 2. Coordintion among CLA, LA and CA

Coordinating Lead Author	• Usually more expirienced scientist • Review exsisting literature with LA • Responsible for major sections of the report • Responsible for data colleciton and analysis • Plays a leading role in the team
Lead Author	• Mid career scientist • Works on sections of a chapter • Collectivivly responsible for a content of a chapter • Responsible for data collection • Review exsisting literature
Contributing Author	• Fellows and Doctoral Students • Responsible for data collection • Prepares technical information in the form of text, graphs or data • Solicited by LAs to fill specific gaps in expertise and ensure a range of views are represented • Works on sections of chapters

Step 2. Identifying priority ecosystems and beneficiaries

- Identifying priority ES and beneficiaries

Step 3. Identifying what needs to be evaluated to answer assessment questions

- Organizing assessment team and process:
- Identifying resource requirements: time, expertise, and funding
- Establishing advisory, technical, and review groups
- Developing an administrative plan
- Reviewing the ES Priority Screening Tool with assembled team
- Identifying what will be evaluated to answer assessment questions:
- Describing the priority ES within their social and ecological contexts
- Tracking how system components relate to each other
- Developing a technical assessment plan

Step 4. Going into detail: Identifying and using indicators, data sources, and analysis methods

- Identifying which indicators are most relevant for assessing each ES
- Identifying and gathering existing data sources or developing new data
- Selecting and using analysis methods and tools to answer the assessment questions
- Choosing analysis approach

Step 5. Synthesizing results to answer assessment questions

- Integrating and synthesizing results

Step 6. Communicating assessment outcomes

- Understanding what results mean and do not mean
- Communicating results to different audiences
- Distilling complex, integrated results into key messages

6.5. Chapters' Outline

NEA consists of four chapters, and these chapters are as follows:

Chapter 1. Nature's contributions to people and quality of life. This chapter provides an overview of the impact of ecosystem services and biodiversity on social and economic well-being in Azerbaijan and the key concepts and frameworks available to link them. This chapter will also provide a summary of the individual chapters and an overview of the overall assessment.

Chapter 2. Status, trends and future dynamics of biodiversity and ecosystems underpinning nature's contributions to people. This chapter provides information on the past, current status, and future trends of ecosystems selected for NEA. According to the proposed methodology, ecosystem scenarios will be established and changes in people's lives will be

analyzed in accordance with these scenarios. At least two scenarios (BAU and SEM) will be constructed for the past and future periods.

Chapter 3. Direct and indirect pressures on biodiversity and ecosystem services in selected ecosystems. This chapter provides information on direct and indirect drivers that change the state of ecosystems. Both direct and indirect drivers will be analyzed and summarised. Climate changes, naturaı ecosystem fluctuations as natural factors, deforestation, pollution, overgrazing, etc. as antropogenic factors. will be analyzed. Discussion related to ecosystems and health wil be including into this chapter as well.

Chapter 4. The level of awareness and knowledge about nature's benefit, status, and management of biodiversity and ecosystem services. This chapter will discuss people's level of knowledge about nature and ecosystem services, the contribution of nature to human life, and the role of man in ecosystem management at both the community and state levels. Part of this chapter will also be about ecosystem values. These values will cover both use and non-use values.

Chapter 5. Impacts of policies and institutional arrangements on biodiversity conservation and the ecosystem services. This chapter will discuss the specifics of state policy in environmental management in Azerbaijan. In addition, international conventions to which the country is a party, environmental agreements, the basics of environmental legislation, problems and opportunities in this area will be discussed. Simultanously, the role of community and public organizations in environmental management will be discussed.

The proposed workplan for the assessment is shown in the Annex, at the end of this document.

7. Ecosystems and Health

The main sources of pollution in the country are old oil wells, chemical plants, motorised vehicles and areas where old pollutants accumulated. Although numerous clean-up projects have been carried out in the country in recent years, large-scale legacy industrial pollution still exists in various parts of the country. Large areas remain polluted in industrial, urban, and rural settings. Heavy metals, TPP, POPs, PAHs and broad range of air pollutants are the main pollutants that threat to ecosystem health.

Agricultural and household pesticide use was widespread in Azerbaijan and materials were easily accessible. It is estimated that there are more than 70 residual POPs pesticide sites in the country that require cleanup interventions. In many sites, the chemicals are uncontained and may easily migrate to sensitive environmental receptors. The situation has been exacerbated by the accessibility of old pesticide sites.

The impact of pollution on biodiversity is diverse and multifaceted. Among the affected species are birds living around large cities. Lakes heavily polluted with oil products are the most common places of poisoning and death for birds. Oil ponds poison birds entering the water and cause them to stick to fuel oil.

Toxic chemicals found in bodies of Caspian seals (Phoca Caspica), which has been identified to have caused mass mortality of this species. In addition, there are discovered traces of acute

genotoxic effects from pollution in the Russian sturgeon, acipenser gueldenstaedtii. A strong correlation between three-ring PAH pollution and chromosomal damage in aquatic turtles (E. orbicularis) is seen. The cities, Sumgayit and Neftchala in Azerbaijan, have soils contaminated with genotoxic and PAHs, which have a direct effect on observed genotoxicity

Birds are also exposed to various effects in rural areas where old pesticide contaminants are present. In this case, it should be noted that the protected areas on the main migration routes of birds are polluted with domestic water which affect ecosystem health in those places. Reptiles and amphibians are also exposed to similar effects both in urban and rural areas. Caspian Seals and valuable fish species living in the Caspian Sea are also exposed to toxic pollution.

One of the main problems in the mountainous regions is the growing noise pollution. This is due to the increase in tourist flows to more protected areas. As a result, the free habitat of valuable birds and mammals is reduced.

As the coronavirus pandemic rapidly sweeps across the world, it is inducing a considerable degree of fear, worry and concern in the population at large and among certain groups in particular, such as older adults, care providers and people with underlying health problems.

In public mental health terms, the main psychological impact to date is elevated rates of stress or anxiety.

The situation with the spread of COVID-19 is evolving rapidly and is a source of great concern to Azerbaijan as well. Strict quarantine regime has been applied in the country by end of March 2020, calling population to play a part to keep population as safe as possible.

In the coming decades, ecological degradation, heat waves, and whether hazards may intensify the threats to human health posed by viruses. Biodiversity (all biological diversity from genes, to species, to ecosystems) is declining faster than at any time in human history. Destroing forests and habitats, bringing wild animals closer to human settlements. And hunting and selling wildlife, often endangered, increasing the risk of disease transmission from animals to humans.The list of diseases that have jumped from animals to humans (“zoonotic diseases”) includes HIV, Ebola, Zika, Hendra, SARS, MERS and bird flu. Like its precursor SARS, COVID-19 is thought to have originated in bats and subsequently transmitted to humans via another animal host, possibly at a wet market trading live animal.

For infectious diseases such as COVID-19, air pollution creates another risk. This new virus causes a respiratory illness and, as with SARS, exposure to air pollution worsens our vulnerability.

8. Project Communicaiton, Stakeholder Engagement and Capacity building

Project communicaiton activities will be implemented using the widest possible means. The organization of various events, the regular flow of information about the NEA in the media, the dissemination of information about the NEA on social networks are the main means of communication. In addition, NEA plans to hold several events at Khazar University with the participation of students.

All NEA documents will be translated into Azerbaijani and distributed to all stakeholders, universities, academia and research organizations, ministries, civil society and community organizations.

Project communicaiton and stakeholde engagement on the project began with three stakeholder workshops. In these workshops, project partners and stakeholders came together to develop comprehensive action plans for the project.

Other activities under the capacity bulld was International Conference entitled “Eastern Europe Uptake & Outreach Event/National Focal Point Dialogue Meeting”. Meeting has been jointly organized by Khazar University and the IPBES at university’s Fikrat Amirov Conference-Concert Center

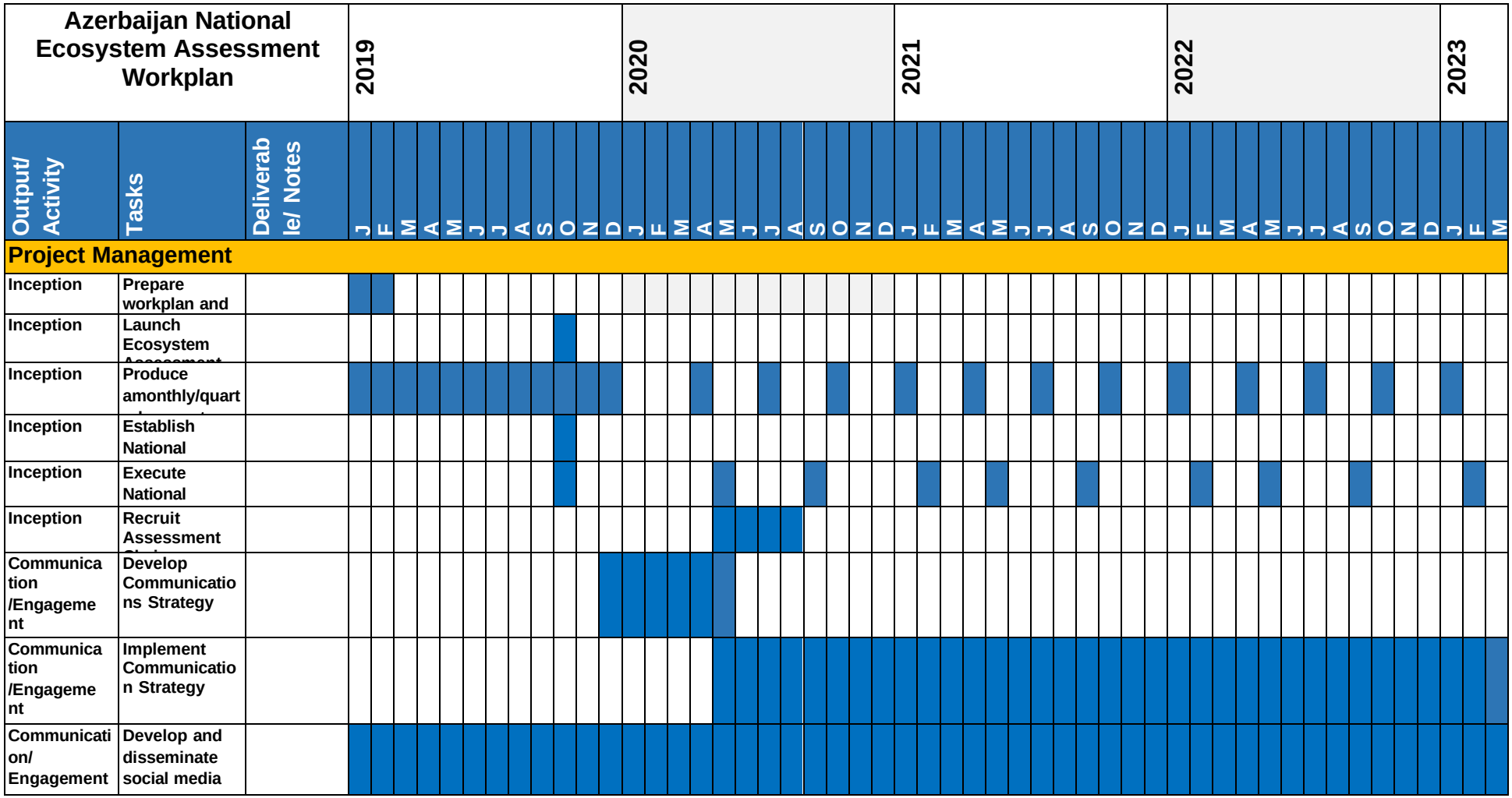
The event was attended by national coordinators and experts from 25 countries, including Norway, Germany, Turkey, Bulgaria, Belgium, Moldova, Belarus, Slovakia, Russia, Bosnia and Herzegovina, Serbia, Croatia, Azerbaijan, Hungary, North Macedonia, Estonia, Uzbekistan, Kazakhstan, Georgia, Romania, Czech Republic and the Netherlands. Project team has made a presentation about NEA project and scoping prosesses.

Figure 10. IPBES Baku conference

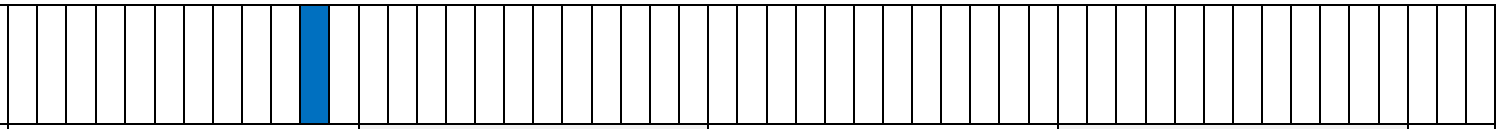
9. References

1. Abbasov R. 2014 TEEB scoping study for forestry sector of Azerbaijan. WWF Azerbaijan http://www.enpi-fleg.org/news/teeb-scoping-study-for-forestry-sector-of-azerbaijan/
2. Abbasov, R., Cervantes de Blois, C.L., Sharov, P. et al. Toxic Site Identification Program in Azerbaijan. Environmental Management 64, 794–808 (2019). https://doi.org/10.1007/s00267-019-01215-1
3. Bickham J, Rowe G, Palatnikov G (1998) Acute and genotoxic effects of Baku Harbor sediment on Russian sturgeon Acipenser guildensteidti. Bull Environ Contam Toxicol 61:512–518. https://doi.org/10.1007/s001289900792
4. Bickham JW, Matson CW, Islamzadeh A, Rowe GT, Donnelly KC, Swartz CD, Kasimov R (2003) Editorial: the unknown environmental tragedy in Sumgayit, Azerbaijan. Ecotoxicology 12 (6):505–508. https://doi.org/10.1023/b:ectx.0000003037.55253.c5
5. Economic Commission for Europe, 2003, Environmental Performance Review/Azerbaijan, Geneva, Switzerland.
6. Economic Commission for Europe, 2004, Environmental Performance Reviews/Azerbaijan Committee on Environmental Policy, UNITED NATIONS, New York and Geneva
7. Government of Azerbaijan, 2000, Nature Conservation in Azerbaijan Republic, Document prepared in 2000 for the Council of Europe by the State Committee of Azerbaijan Republic on Ecology and Nature (follow up of the Convention on the conservation of European wildlife and natural Habitats).
8. Government of Azerbaijan, 2006, National Strategy and Action Plan onConservation and Sustainable Use of Biodiversity in Azerbaijan. Baku, Azerbaijan.
9. Government of Azerbaijan, 2020, Country Study on Biodiversity and Sixth National Report, Republic of Azerbaijan, Baku, Azerbaijan.
10. Kahramanova, S. H. S. H. (2012). Anthropogenic pollution of soils in Absheron Peninsula. Akademicheskij vestnik UralNIIproekt RAASN, 1, 25–30
11. Mamedov, B. A. (2011). The current situation and development prospects of the economy of Sumgait City. Science Prospects, 3(18), 133–137
12. Musayev,M. S.Aliyev, 2004, Animal life of Azerbaijan III issue. Baku, Azerbaijan.

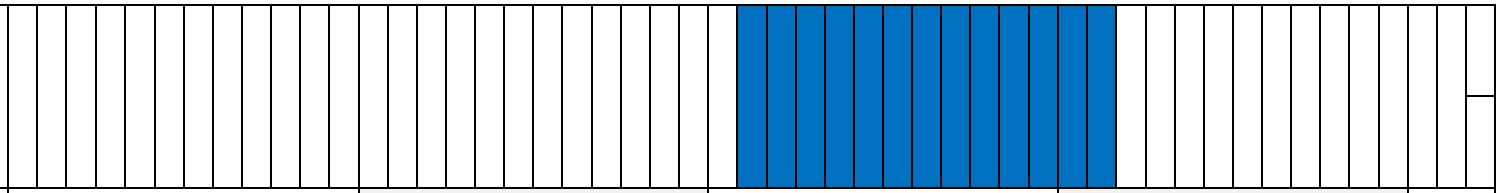
Annex. Azerbaijani NEA proposed workplan



Out1 Act 1: Scoping	Execute stakeholder identification workshop		



Azerbaijan National Ecosystem Assessment Workplan			2019	2020	2021	2022	23
Output/ Activity	**Tasks**	**Deliverable/ Notes**	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M
Output I. Technical scoping and carrying out an assessment, including delivery of summaries for policymakers for all relevant sectors; technical reports to increase access to the evidence base, and communication materials and processes for helping to promote and facilitate uptake of the assessment findings by policy makers. Completed national ecosystem assessments within each project country							
Out1 Act 1: Scoping	Execute stakeholder workshops to						
Out1 Act 1: Scoping	Prepare Scoping Report						
Out1 Act 1: Scoping	Finalise Scoping Report	Final Scoping report					
Out 1 Act 2 Assessment	Design Assessment						
Out 1 Act 2 Assessment	Select experts/authors						
Out 1 Act 2 Assessment	Execute author meetings						
Out 1 Act 2 Assessment	Execute stakeholder workshops,						
Out 1 Act 2 Assessment	Prepare zero order draft of assessment	ZOD has been prepared					

Out 1 Act 2 Assessment	Collect and update data for Assessment		

Azerbaijan National Ecosystem Assessment Workplan			2019												2020												2021												2022												23		
Output/ Activity	**Tasks**	**Deliverable/ Notes**	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Out 1 Act 2 Assessment	Conduct peer review/stakeholder																																																				
Out 1 Act 2 Assessment	Prepare 1st order draft of assessment	FOD																																																			
Out 1 Act 2 Assessment	Conduct peer review/stakeholder																																																			
Out 1 Act 2 Assessment	Prepare final draft																																																			
Out 1 Act 2 Assessment	Conduct peer review/stakeholder																																																			
Out 1 Act 2 Assessment	Produce final assessment																																																			
Out 1 Act 3 Disseminate	Prepare draft summary for policy makers																																																			
Out 1 Act 3 Disseminate	Finalise summary for policy makers	SPM has been prepared																																																			

Out 1 Act 3 Disseminate	Disseminate summary for policy makers																																																			
Azerbaijan National Ecosystem Assessment Workplan			2019												2020												2021												2022												23		
Output/ Activity	Tasks	Deliverable/ Notes	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Output II. Identifying and implementing policy support tools to integrating findings from the assessment into decision making, developed as part of and in parallel with the national ecosystem assessment process in Output I.																																																					
Out2 Act1 Identify	Identify policy support tools																																																			
Out2 Act2 Develop	Develop policy support tools																																																			
Out2 Act3 Implement	Implement policy support tools																																																			
Output III. The development of national platforms and a programme of capacity-building, recognising that depending on national circumstances this may be a new activity, or may build on existing initiatives.																																																					
Out3 Act1 Review	Preparation terms of reference and	Prepared TOR																																																		
Out3 Act2 Establish	Establish/utilise existing platform to																																																			
Out3 Act3 Sustainability	Investigate and document mechanisms for sustainablility	NP has been established and relevant report has																																																		

Output V: A series of case studies and lessons learned made available through relevant communities of practice such as the SGA Network, and support offered to other countries based on this experience so as to extend the impact of the project																																																				
Out5 Act2 Case studies	**Preparation terms of reference and**	**Prepared TOR**																																																		

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