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**EU4Environment in Eastern Partner Countries:
Water Resources and Environmental Data**

**BRINGING BACK NATURE IN THE KURA DELTA (AZERBAIJAN)
PHASE 1 – CONCEPT NOTE**

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This note has been produced in the frame of the programme EU4Environment-Water and Data (activity 1.1.3) from a first brief bibliographical review, a study visit and discussions with local stakeholders (Feb. 2023). This note describes a phase 1 dedicated to the sizing of a participative programme of works addressing Kura delta. The maps and any content included herein are without prejudice to the status of, or sovereignty over, any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

Description of the site

The Kura delta is downstream the Kura transboundary basin just before the Caspian Sea. This area has been modified through the years mainly because of: human works in the area, human activities in the upstream and downstream basin (abstractions, dredging, dams, etc.), variation of sea level.



Figure 1: Concerned area (UN map)

This area has a high biodiversity potential and supports agriculture (breeding) and fishing.

The Kura River area of the Caspian Sea is a place of foraging, wintering, spawning migrations and reproduction of all species of the Caspian sturgeon family except for the sterlets. It is an especially valuable area for the Persian sturgeon and pinch, as it is associated with the Kura River. In addition, the area is home to extensive wetlands with dense reed vegetation, a network of dams and a large island that is an important wintering and nesting site for some bird species and the area is especially important as a temporary resting place for a large number of birds during their flight. During the migration period, the number of waterbirds in one record reaches 75,000 individuals. Many curly and pink pelicans, small cormorants, spoonbills, sultan bird and other rare species have been recorded at the site.

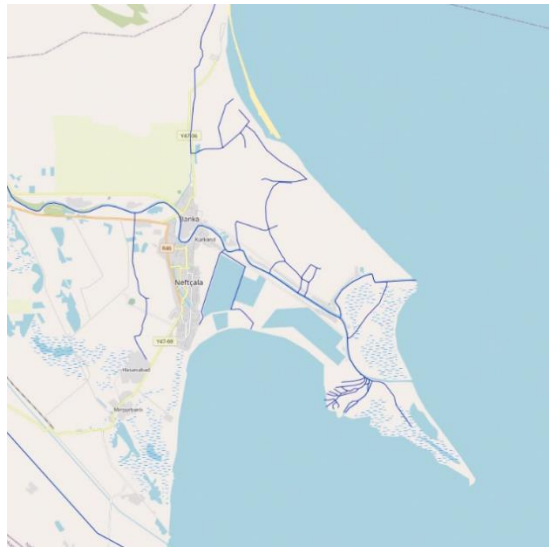


Figure 2: Concerned area near Neftchala (map from EPIRB project)

This area is dynamic with many and fast evolutions through the time. Some characteristics of the delta area are given in figures below.



Figure 3: Current hydrographic network in Kura delta



Number	Main points in Kura delta			Distance from mouth, km	Geographic coordinates		
	Name	City	Village		şimal en dairasi (N)	şarq uzunluq dairasi (E)	Elavation (mBs)
N-1	Küür-Surra	Sabirabad	Surra	212	40° 04' 07.5"	48° 31' 43.8"	-15.807
N-2	Kura-Şirvan	Şirvan	Şirvan	150	39° 56' 02.3"	48° 54' 17.8"	-16.953
N-3	Kura-Salyan	Salyan	Salyan	78	39° 36' 21.1"	48° 59' 19.3"	-20.803
N-4	Kura-Aşagi Surra	Neftchala and Salyan raions	Aşagi Surra	50	39° 29' 14.0"	49° 00' 34.8"	-25.112
N-5	Kura-Qadimkand	Neftchala raion	Qadimkand	40	39° 26' 39.1"	49° 01' 51.6"	-24.390
N-6	Kura-Xilli	Neftchala raion	Xilli	28	39° 25' 01.9"	49° 08' 27.4"	-23.690
N-7	Kura-Banka	Neftchala raion	Banka qasabasi	16	39° 24' 22.5"	49° 15' 14.0"	-24.681
N-8	Kura-mansab 6-cı km	Neftchala raion	Mayak	6	39° 21' 39.0"	49° 20' 49.4"	-26.765
N-9	Daughter Kura	Neftchala raion	Mayak	0	39° 22' 50.9"	49° 23' 33.3"	-26.284
N-10	New kanal	Neftchala raion	Mayak	0	39° 19' 41.2"	49° 23' 38.6"	-23.790



Figure 4: Characteristics of downstream Kura river bed

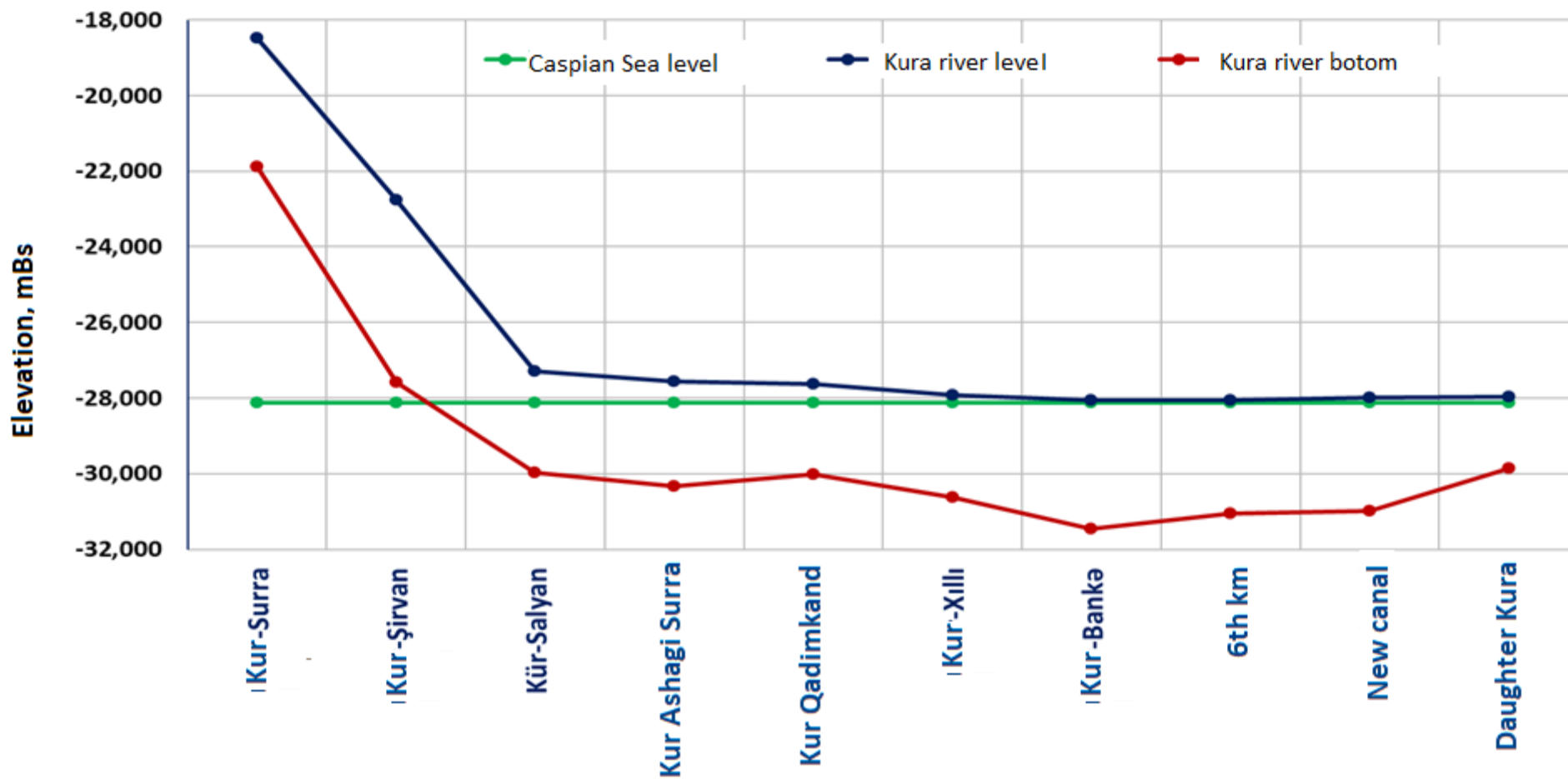


Figure 5: Changes of levels of Kura river, bed and Caspian Sea

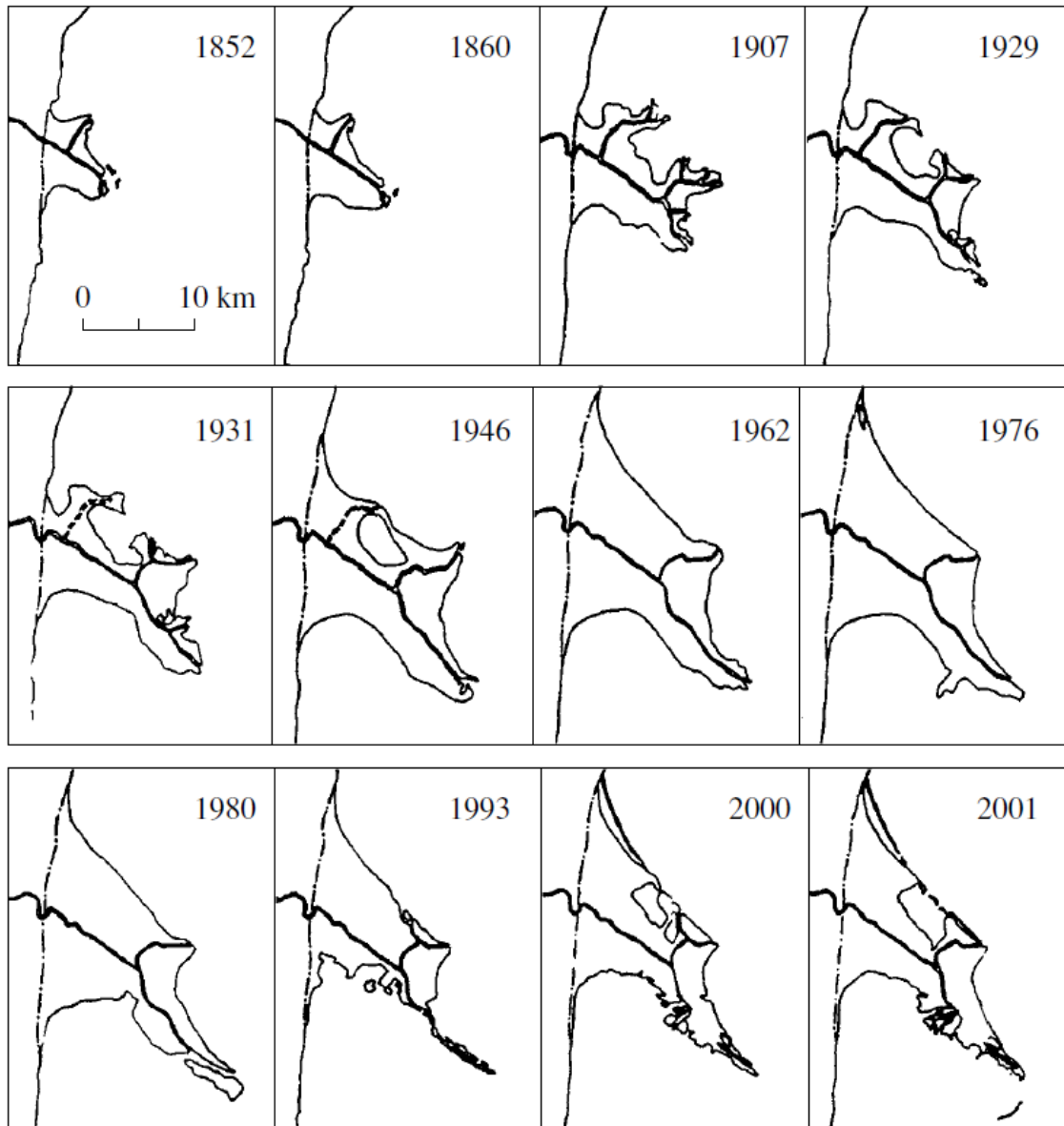


Figure 6: Dynamic of the Kura Delta over the period of 1852-2001



Figure 7: Demonstration of the recent dynamic of the area with satellite images 1985-2022 (Source: Aerokosmik metodlarından istifadə etməklə Kür çayı deltasında baş verən geomorfoloji dəyişikliklərin tədqiqi)

Description of the issues

The Kura delta faces several environmental challenges that have a significant impact on the ecosystem and the people living in the region. Some of the main issues of Kura delta include:

Salinity from Caspian Sea which impacts water supply upstream and irrigation (In such case, Azersu OJSC must provide water to the population by use of transport means; irrigation can increase soils salinity, etc.);

Some years, high salinity has been analysed more than 50 km upstream. These results indicate that the decrease of the Kura River discharge, observed for several decades, has reached a temporary critical point after which the river no longer presents a natural barrier for an intense seawater intrusion. The decrease of the river

discharge is certainly also based on large scale climate changes but largely on the excessive abstraction of water further upstream for different purposes (from EUWI+ report).

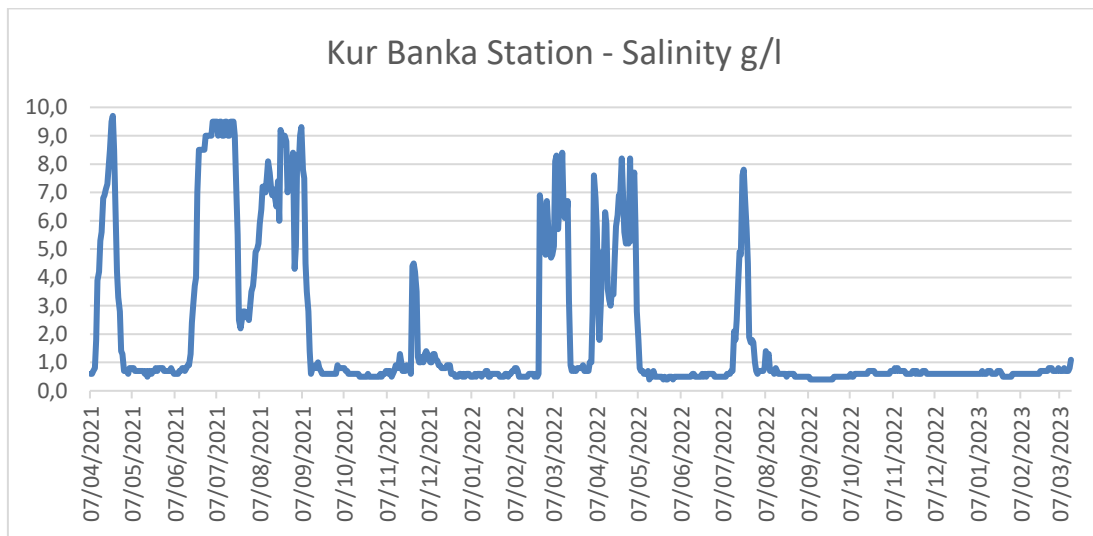


Figure 8: Evolution of salinity of the Kura at Neftchala, possible issues beyond 1 g/l (daily data: Hydromet)

Water Scarcity: The Kura River, which flows through the delta, is the main source of water for the region. However, due to climate change, upstream irrigation practices, dams, the river's water flow has decreased significantly. This has led to water scarcity, which affects the agricultural productivity of the region and the livelihoods of local communities.

Biodiversity Loss: The delta is home to several unique species of plants and animals. However, due to habitat loss (artificial hydraulic functioning, wetlands alteration, unorganised land use and works), overfishing, and poaching, many species are endangered or have become extinct. So, biodiversity potential is under valorised.

Objectives

The main objective is to bring back a natural functioning to this area with benefits for communities and ecosystems through Nature based Solutions (NbS). It could be an example for NbS implementation in Azerbaijan and in the region, considering the importance of Kura delta.

The benefits for communities could be: reduction of salinity of tap water, access to drinking freshwater, floods mitigation, wise use of the area to avoid any conflicts, agriculture with high added values, landscape amenity, etc.

There are several relevant indicators that can be used to monitor the results of the restoration activities in the Kura delta. These indicators can be used to track changes in the ecosystem, evaluate the effectiveness of restoration efforts, and inform future management decisions. These indicators can be monitored through various methods such as field observations, ecological surveys, remote sensing, and water quality sampling. By regularly monitoring these indicators, restoration practitioners and stakeholders can evaluate the effectiveness of restoration activities and make informed management decisions to ensure the long-term health and sustainability of the Kura delta ecosystem. Defining specific values for targets of the indicators mentioned requires a more detailed analysis of the current state of the delta's ecosystem, as well as a thorough understanding of the ecosystem's capacity to recover from degradation. However, as a general reference, here are some possible target values for the indicators mentioned. Some of the indicators that could be used to monitor the results of restoration activities in the Kura delta include:

Water Quality - Monitoring water quality indicators such as dissolved oxygen levels, pH, salinity and nutrient concentrations can help to assess the health of the aquatic ecosystem in the delta. Improvements in water quality can indicate successful restoration efforts.

Dissolved oxygen levels: 5 - 8 mg/L

pH: 6.5 - 8.5

Salinity: < 1 g/l

Nutrient concentrations: In compliance with local and national regulations for water quality

Habitat Quality - Monitoring changes in habitat quality indicators such as vegetation cover, soil moisture, and erosion rates can help to assess the health of terrestrial ecosystems in the delta. Increases in habitat quality can indicate successful restoration efforts.

Vegetation cover: > 60% of the delta's land area

Area of restored wetlands: 80%

Length of natural watercourses restored: 90%

Erosion rates: Less than 1 ton/ha/year

Biodiversity - Monitoring changes in biodiversity indicators such as species richness, population density, and distribution can help to assess the success of restoration efforts in restoring and conserving the delta's unique species.

Species richness: Increased by at least 10% over a five-year period

Population density: For threatened or endangered species, a minimum of 5% annual increase in population density

Distribution: Restoration of at least 50% of historical habitat range for target species

Ecosystem Services - Monitoring changes in ecosystem service indicators such as carbon sequestration, flood control, and soil fertility can help to assess the effectiveness of restoration efforts in supporting the ecosystem's ability to provide these critical services.

Carbon sequestration: At least 1 ton of CO₂ sequestered per hectare of restored land per year

Flood control: Reduction of flooding frequency by at least 20%

Soil fertility: Increase of soil organic matter content by at least 1% over a five-year period

Community Involvement and well-being - Monitoring community involvement indicators such as participation rates, level of engagement, and feedback can help to assess the success of restoration efforts in engaging and empowering local communities.

Drinking water supply: 100% of population with a safety drinking water supply all the time

Income for farmers and fishermen: positive trend

Participation rates: At least 60% of the local population participating in restoration activities

Level of engagement: Positive feedback from at least 80% of participants in community surveys

Feedback: Incorporation of community feedback in at least 50% of restoration project decisions

These target values are just a starting point and should be adapted to the specific context of the Kura delta ecosystem, taking into account the available data, local conditions, and management objectives. Baseline and targets will be defined during this first phase of the project with the local communities.

Consistency with policy

1.1.1. Of Azerbaijan

Azerbaijan's geographical location and its diverse climate make the country's water resources extremely sensitive to climate change and other environmental impacts.

Water cooperation has proven to offer multiple benefits that accelerate progress across almost all the SDGs and that is why it should be up scaled.

Azerbaijan is a vulnerable country to climate change effects, and especially with the increase in the number, duration of droughts and water shortages,

According to various climate scenarios water shortage will be increased up to 10-20% by 2040, which will have serious negative impacts to whole economy and particularly to agriculture.

As a downstream country, Azerbaijan attaches great importance to transboundary water cooperation and formulated its national water policy in line with the 2030 Agenda.

Key focuses are improving water treatment, reducing losses, creating alternative water resources and recycling, assessment of water resources, improvement of the accounting system, integration of data into the "Electronic Water Management" information system and transition to an integrated management system.

By the State Climate Change Commission and Water Commission, large-scale measures are being taken to minimize negative impacts of climate change and increase climate resilience and take decarbonisation pathway.

Azerbaijan continues to work with international partners to implement the relevant SDGs.

In order to ensure effective management of water resources and prevent water scarcity, Azerbaijan formulated its national water policy. Moreover, Azerbaijan's National Water Strategy is currently underway to develop an action plan based on integrated approach to water-climate policies in line with the SDGs.

Azerbaijan is actively working with international organizations to address environmental risks, including those related to water resources. Climate change is progressing day by day. In order to ensure resilience to hazardous hydrometeorological events, Azerbaijan is developing nationwide projects on establishing early warning systems. In addition, the modernization of hydrological observations has been ensured through the creation of automated observation systems. Azerbaijan has built the necessary capacity to monitor and manage water resources through the "Digitalized Water Management" information system. As a contribution to the UN Water Action Agenda Azerbaijan expresses readiness to act as a Regional Data Hub bringing together water information from the countries of the region on one platform to create the Global Water Information Services.

The project is in line with the orientations mentioned above.

1.1.2. Of the EU

The project aims to climate change adaptation considering the severe drought situation Azerbaijan will face (and higher salinity of water) in the coming years through the management of sea level, restoration of wetlands, etc.

Concerning the Green Deal, the project concerns mainly the output "Preserving and restoring ecosystems and biodiversity".

The EU supports biodiversity conservation and sustainable development through initiatives like the Biodiversity Strategy for 2030.

All these initiatives provide a framework for promoting the transition to a more sustainable and resilient economy, and for supporting biodiversity conservation and ecosystem restoration.

1.1.3. Of Other International Commitments

The main SDG concerned are mentioned below:



1.2. Components and activities

1.2.1. Component 1: Technical studies

Preliminary studies are necessary in order to prepare such large project and identified relevant works i.e. topography, hydrology, land use, biodiversity inventory, land property (by executive power, municipalities, private, long-term leases to farmers), water quality, water uses, etc. They could include specific monitoring campaigns or census.

The studies will address the characterisation of Kura Delta and propose courses of action for the restoration close of natural conditions to be discussed, reviewed, re-oriented under the component 3.

Courses of technical actions - mainly Nature based Solutions - could be:

- Rehabilitation of Mother Kura in its previous bed, instead of the 2010 canal, in order to restore natural conditions,
- Rehabilitation of the wetlands and associated hydrographic system,
- Forestry with adapted species (e.g. olive tree, halophyte plants, willow, etc.),
- Manage ecological continuity (Daughter Kura, Mother Kura, Canal),
- Monitoring of the technical results (water quality, flood, land use, etc.),
- Etc.

Important: Note that the project cannot solve all the Kura issues but it must be associated with the development of a River Basin Management Plan on the whole Kura and locally Water Allocation Quantitative Management Plans to tackle quantitative issues. Activities concerning the whole Kura basin will not be addressed in the frame of this project.

Results will be: technical reports characterising the Kura delta with a diagnostic and proposal of technical actions. Reports will be reviewed in the light of the results of the other components.

1.2.2. Component 2: Socio-economic valorisation

The component 2 will address specifically the benefits of the project for the population. From proposals from Component 1 and to be discussed under Component 3, socio-economic diagnostic will be the basis to build a participative socio-economic plan for the Kura delta to be discussed and reviewed under the Component 3.

The proposals could concern:

- Land management to organise the activities inside the Delta (agriculture, urbanisation, infrastructures, etc.),
- Action with farmers to adapt their practices to a new context and to high added values perspectives i.e. organic farming development (training, equipment, seeds, markets, etc.),
- Delineation of Protected areas with specific uses,
- Management of fishermen, proposal of fishing quota,
- Green tourism development,
- Valorisation of forestry (e.g. olive oil production),
- Improvement of waste water and sludge management,
- Improvement of drinking water supply,
- Reduction of floods risk,
- Implementation of a socio-economic monitoring to be shared in the communities,
- Production of clean energy (wind, solar),
- Establishment of a Sustainable local Committee for the Kura Delta
- Enforcement of controls against poaching and illegal practices,
- Etc.

Cost Benefit Analysis will be developed including evaluation of restored ecosystem services. To ensure the sustainability of the project, a common vision must be shared among the population. The idea is not to close an area and forbid all human activities but to organise human activities for the long-term balanced with ecosystems protection. The project could contribute to increase the resilience of the most vulnerable population to climate change.

Considering “One Health” concept, health of ecosystems, humans and animals is linked and the proposals must contribute to strengthen them.

Consistency of/with the concerned Districts Development Plans will be sought.

Results will be: socio-economic reports characterising the local communities’ activities with a diagnostic and proposal of actions. Reports will be reviewed in the light of the results of the other components.

1.2.1. Component 3: Stakeholders’ involvement

In order to ensure the sustainability of the project and its local ownership, an inclusive governance must be settled gathering: government representatives, districts representatives, municipal and local governments, local communities, experts, farmers, industries, local NGOs, etc. gathered in a gender balanced, in order to develop local partnership involving the population which is the success key for such approach.

By working together, they can ensure the long-term sustainability of the delta's unique ecosystem and the well-being of its inhabitants.

It must work as a decentralised process. Therefore, large activities of local facilitation teams, awareness raising, workshops, training, etc., would be implemented to associate the communities in the decision process.

The results of Components 1 and 2 will be discussed, shared, reviewed during component 3 activities.

Results will be: meetings reports, workshops, training, comments on results from the Components 1 and 2 and a final action plan with cost estimation, validated by the local stakeholders as a charter and/or a common agreement with a shared vision of an attractive future to bring back nature in Kura delta. The final participative action plan will be used to motivate donors.

1.3. Planning

The 3 Components mentioned above could be developed from January 2024 to mid-2025 as a phase 1.

During a phase 2, the measures defined and validated in a participative way during the phase 1 (works, monitoring, local rules, awareness raising, etc.) could be implemented from mid-2025 to mid-2027 subject to budget availability.

1.4. Budget

The forecast budget for the development of the 3 components mentioned above is 200 000 EUR including local and international expertise, additional monitoring, logistic, meetings organisation, etc. (phase 1).

Providing a rough estimation for the cost of restoration works in the Kura delta is challenging as the cost will depend on many factors, including the specific activities and interventions required, the timeline for implementation, and the availability of funding sources. The cost for restoration works could range from 1 000 000 EUR to 5 000 000 EUR, depending on the scale and complexity of the restoration activities and support socio-economic actions.

The cost of monitoring and evaluating the restoration works and socio-economic impacts could range from 10 000 EUR to 50 000 EUR, depending on the frequency and extent of the monitoring activities required to track the progress of the restoration.

1.5. Project owner

The project owner for the 3 components described above (phase 1) is the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan.

For the phase 2, the project owning will depend on the measures.