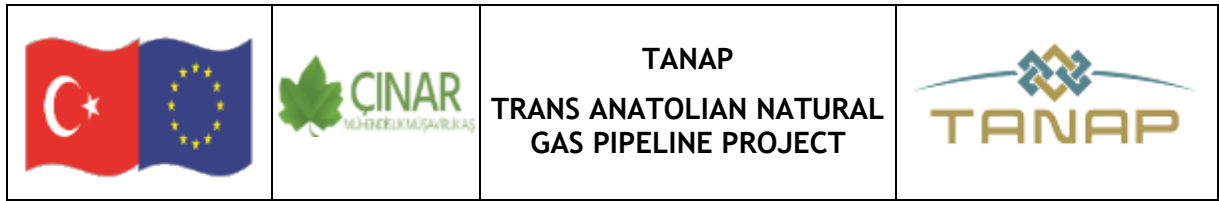





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<p>EXECUTIVE SUMMARY OF BAP (English Version)</p> <p>Agreement No INEA/CEF/ENER/M2014/0019</p>	
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BIODIVERSITY ACTION PLAN

The purpose of the Biodiversity Action Plan - an, prepared within the scope of the TANAP Project, is to identify the species and habitats, considering the priorities of national, international and local species and habitats and consequently to determine the applicable and area-specific actions to protect and conserve the biodiversity on the 36 m Right of Way (ROW) during construction, operation and decommissioning phases of the Project.

The presence of natural habitats, intersections of the ROW with the protected or conservation areas and ecologically sensitive species were observed in detail along the ROW. This screening procedure was done on the ground by a team of specialists, selected for their detailed knowledge of the study area.

Throughout the BAP preparation process, the findings produced in the baseline surveys carried out during the TANAP ESIA studies, were re-evaluated. Within this context, in the desktop studies:

- The findings of the baseline surveys performed during the ESIA studies in a 500 m Local Study Area (LSA) were re-assessed for 36 m ROW.
- Natural habitats, SCC's and potential SCC's were re-assessed, and field studies for potential SCC's were also planned.
- Field studies for considered species and habitats were planned by experts in the relevant disciplines.
- Intersects of the ROW with the protected areas or high biodiversity areas were reviewed.

Biodiversity Action plan was prepared by local ESIA Consultant, Çınar right after the completion of ESIA and receiving the approval from Ministry of Environment and Urbanization (MOEU) on 24th of July, 2014. The Project team includes several professors and associated professors from universities, who are expertized in their field and most of which have been attended the ESIA process, as well. During desktop studies, findings of the TANAP ESIA, in which critical species were identified in baseline studies and EUNIS habitat maps have been prepared, were re-evaluated. The findings of the 500 m LSA of ESIA Report were re-assessed for 36 m ROW. Field studies were conducted in August-October 2014 period and KP specific critical habitat sections were identified both for terrestrial and freshwater critical habitat types, specifying each related species under these critical habitat sections.

Critical habitats are defined as areas of high biodiversity value that include at least one or more of the five values specified in paragraph 16, IFC (2012) ¹ Performance Standard 6 and/or other recognised high biodiversity values. These values are as follows: (i) habitat of significant importance to Critically Endangered and/or Endangered species, (ii) habitat of significant importance to endemic and/or restricted-range species, (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species, (iv) highly threatened and/or unique ecosystems and/or (v) areas associated with key evolutionary processes. However, according to IFC (2012), identifying a critical habitat does not have to be limited to these criteria. Other recognised high biodiversity values may support the assessment of a habitat as critical and the suitability of such a decision is assessed at case basis.

¹ IFC, 2012, IFC Sustainability Framework - Effective January, 1, 2012, 1st January 2012. ed. International Finance Corporation, Washington DC, USA.

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As a result of the studies conducted within the framework of BAP, the followings were assessed:

a. TERRESTRIAL & FRESHWATER:

- 53 flora taxa belonging to 22 families,
- Three mammalian species belonging to three families,
- Seven bird species belonging to five families,
- Three reptilian species belonging to two families,
- One amphibian specie belonging to one family,
- 14 arthropod species belonging to 10 families and
- 23 natural terrestrial EUNIS habitat types,
- Nine fish species belonging to five families,
- One freshwater macroinvertebrate specie,
- Two natural freshwater EUNIS habitat types.

During the construction activities, route change occurred on certain critical habitats where some SCC species are present. *Neolycaena soezen* (CH57), *Hilara n.sp. 1* (CH17) and *Verbascum n.sp.* (CH63) is not located on the ROW of new route. Moreover, there is no additional new SCC species determined on the new route during the site surveys. Therefore, the impact does not increase due to these route changes.

The final SCC identified according to the IFC (2012) criteria and tiers, based on the SCC determined during the ESIA studies are as follows; 13 of 91 identified SCC species (14.2% of SCC Species) have CR (Critically Endangered) category according to the IUCN Red List and these are:

- *Alyssum dudleyi* (Plant)
- *Astragalus aytatchii* (Plant)
- *Cephalaria aytachii* (Plant)
- *Dianthus goekayi* (Plant)
- *Gypsophila heteropoda subsp. minutiflora* (Plant)
- *Gypsophila osmangaziensis* (Plant)
- *Hieracium sarykamyschense* (Plant)
- *Salvia tchihatcheffii* (Plant)
- *Vanellus gregarius* (Bird)
- *Montivipera wagneri* (Reptile)
- *Anguilla anguilla* (Fish)
- *Cobitis puncticulata* (Fish)
- *Oxyneomacheilus simavica* (Fish)

According to the impact assessment, there will be no long term or permanent significant impact for these "CR" category SCC's. There is no expectation of;

- long-term decrease in the size of population,
- fragment or increase fragmentation of an ecological community,
- reduce the area of occupancy of the species,
- fragment an existing population into two or more populations,
- substantially modify, destroy or isolate an area of important habitat for a migratory species,
- seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species,

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- adversely affect CH to the survival of a species,
- disrupt the breeding cycle of a population,
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,
- areas of the wetland being destroyed or substantially modified.

Determined SCC criteria, tiers and special mitigation measures are given in BAP.

There are 67 terrestrial and 27 freshwater critical habitats identified. Terrestrial critical habitats cover only 0.39% of the ESIA (500 m) corridor and 5.6% of the ROW (36 m) and regarding OP 4.04 of World Bank (WB) definitions, according to the quantitative impact assessment, of which have been conducted based on the methodology used in Environmental and Social Impact Assessment Studies (DPSIR framework, GIS based approach), there is low degree of impacts expected on natural and critical habitats, therefore significant permanent and long term impacts are not expected and the defined mitigation measures are sufficient for the recovery of habitats, therefore offsets are not required according to the local experts.

b. MARINE:

There are no critical habitats for marine environment, neither critical marine species nor marine protected & conservation areas elaborated along the project route during the ESIA process. In addition, the area where the offshore section of TANAP route passes from, is determined as a corridor for energy and infrastructure projects. There is an existing pipeline, Turkey – Greece Natural Gas Pipeline, in the area of offshore section of TANAP route. Thus, the area is already disturbed due to the construction activities of the existing pipeline.

IMPACTS:

Impact factors are considered to have a potential effect on habitats; the intensity of the impact factors during construction for the various project components is presented in the ESIA Report. Project activities will affect habitats in many ways (emission of dust, emission of gaseous pollutants, changes of local morphology etc.) but **mainly** through the;

- Removal of natural vegetation
- Reduction of topsoil quality/availability
- Introduction of alien species

Construction activities will affect habitats mainly through the removal of natural vegetation related to the site preparation phase prior to construction; typically trees are fallen along the pipeline ROW, while shrubs and grass species are removed by scraping. Ultimately if the presence of forest coverage of the area is compared with the ROW corridor, there is only low degree impacts expected. Their magnitude will not cause major change in land use or not cause modification that substantially minimizes the habitat's ability to maintain viable populations of its native species. Also, their flora and fauna species elaborated and if some species could be affected, some mitigation measures for them, species-specific, were defined. At the end of construction works, reforestation will be done by Construction Contractors, at least equal to the number of trees cut during site preparation, in line with the opinion of the Regional Directorates of Forestry. In addition, during permitting phase for the route of pipeline which passes through forest areas, the worth of the trees to be cut were paid to the Provincial Regional Directorates of Forest at least for one three. Within the scope of Social and Environmental Investment

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Program of TANAP (SEIP), a project will be developed for additional tree planting. Then, throughout the project, 1:3 ratio for tree planting is aimed to be met.

“Erosion, Reinstatement and Landscape Plan” was prepared, for removal of natural vegetation and reduction of topsoil quality/availability; before the construction works started and “Alien Invasive Species Guidance Document” is prepared for the prevention of ROW from the introduction of alien invasive species.

Moreover, “Biorestoration Monitoring Plan” is prepared that will be undertaken during TANAP Project, for the monitoring of the success of biorestoration of the project affected areas, as far as practicable to its pre-construction state.

This Biorestoration Monitoring Plan is applicable to the biorestoration activities performed in both terrestrial and freshwater critical habitats defined in BAP, which includes wetlands, river crossings, karstic and marl areas. In addition to critical habitats, other areas require biorestoration activities, such as slopes on ROW (steep slope, side slope, narrow ridge) and off-ROW sites, such as access roads, dump sites, camp sites etc. disturbed by project activities are included in the scope of this plan.

Biorestoration monitoring on the ROW consists of the vegetation cover and species diversity monitoring together with monitoring the success of pre and post-construction mitigation measures taken for SCC species identified in each critical habitat in BAP to ensure that the biorestoration objectives as set out in the ESIA and BAP are maintained during the operation phase.

Regarding the offshore section of the pipeline, according to results of baseline site surveys and impact assessment studies within the scope of ESIA and BAP, no SCC species and no critical habitat were identified. Thus, no biorestoration activities will be performed on the offshore section of the pipeline.

For the reduction of topsoil quality/availability and introduction of alien species, mitigation measures are stated in ESIA Report and BAP. Topsoil management and invasive species control are important within this respect. Some special mitigation measures are stated for some habitats. For example, gypsum steppes is one of the most important habitat type, which intersect with the project route, one mitigation measure for this habitat is storing the gypsum rocks/stones along one side of the ROW without mixing the topsoil, thus after construction activities, it will be spread over the ROW and habitat will be renewed.

“Invasive flora species control should be done in all critical habitats” is the mitigation measure for introduction of alien species, of which have been defined in the BAP and ESIA Report. General preventive measures for invasive species are listed below and a guidance document for the control of alien invasive species is prepared and presented in the BAP:

- Designate sites for cleaning tools, vehicles, and equipment (Clean tools, equipment, vehicles and animals before transporting materials and before entering and leaving worksites.)
- Avoid working during rain events and high winds. Wet conditions make it easier for seeds to be picked up by a vehicle and spread kilometres down the road.
- Avoid driving off-road whenever possible.
- Stop movement of invasive species materials.
- Minimize soil and vegetation disturbance.
- If the alien invasive species are observed in the area, a combination of farm tractors (grass cutter) and a manual team equipped with scythes to access and manually cut the weeds where access by machinery is unachievable. Also hand pulling or digging, constructing barriers,

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grazing by livestock and trapping are the examples of some eradication options for alien invasive species.

The detailed procedures for alien invasive species are given in the Alien Invasive Species Guidance Document.

Based on the analysis of the project; impact factors are considered to have a potential effect on terrestrial ecosystems and certain mitigation measures were suggested by local experts. There are many mitigation measures elaborated in both ESIA Report and BAP. **Key** mitigation measures for habitats and species are given below (Please see Table 9 and Table 10).

Table 1 Key mitigation measures for terrestrial habitats and species

FOR HABITATS	<ul style="list-style-type: none"> • Top soil management • Collect endemic and/or non-endemic seeds of natural plants of the regions to control erosion at sloping areas • Use certain endemic flora species seeds for bio-restoration (additional seeds will be collected from nearby areas against erosion on sloping areas) • Locate project components on previously disturbed areas rather than new areas where possible • Maximize the use of existing corridors/roads • Avoid using sensitive areas if extra land is required for project activities • Plan construction to complete works in shorter periods at sensitive areas • Reduce construction width at sensitive areas (30 m) • Restore stone and rocks • Scrap the top soil as a layer • Rehabilitate the riparian vegetation, aquatic and semi aquatic area • Control invasive flora species
FOR SPECIES	<ul style="list-style-type: none"> • Avoid construction during reproduction seasons of sensitive wildlife (Time constraints) • Seed or bulb collection, translocation, relocation • Minimize habitat loss • Minimize habitat fragmentation • Minimize habitat alteration • Minimize traffic and speed of traffic to prevent vehicle-wildlife collisions as well as dust and air emissions • Use existing corridors for main access roads and ROW • Giving some of the collected seeds of endemic species to the gene bank, use some of these seeds for biore restoration

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	<ul style="list-style-type: none"> • Carrying some SCC fauna species to the appropriate and close areas • Harvesting and storing herbaceous plants (which carrying SCC arthropod species eggs) along one side of the ROW in the aerated conditions, so eggs can be hatched and individuals will not has any damage.
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Table 2 Key mitigation measures for freshwater habitats and species

FOR HABITATS	➔	<ul style="list-style-type: none"> • Conduct construction works during the time when flow is low and limited timeframe (Time constraint: April-June) • Restore the water passages to the condition before the construction where possible • Minimize impact to riparian vegetation • Plan construction to complete works in shorter periods at sensitive areas • Avoid impact and removal of gravel • Minimize erosion • Install silt screens and sediment traps • Restore riparian vegetation
FOR SPECIES	➔	<ul style="list-style-type: none"> • Avoid construction during reproduction seasons of freshwater fish (Time constraints) • Minimize habitat loss • Restore the bottom structure • Restore the riparian vegetation (spawning areas)

Besides these mitigation measures, there are special mitigation measures given for certain species:

- Time constraints for these SCC hibernation, breeding, vegetation period or migration seasons;
- Carrying the individuals of certain fauna SCC to the appropriate and closed areas by specialist;
- Carrying and placing the nest materials (stored food found in the excavated gallery systems) to the new transferred nesting area;
- Stopping the construction works if any risk foreseen for congregatory bird species *Phalacrocorax carbo*, *Phalacrocorax pygmeus*, *Cygnus olor*, *Cygnus cygnuscygnus* and *Pelecanus onocrotalus* which constitute groups at critical habitats CH64 & CH67. The habitat locations are became a flooded wetland during their breeding season between February-March). Construction works will be stopped during this breeding period.

There is no seasonal constraint for marine construction because there is no breeding area in the sea crossing for marine fauna species. The construction activities are carried out outside the fish migration season (September-November) because of social constraints of fishermen.

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BAP and ESIA Reports (Chapter 8.2., Appendix 4.5 and Appendix 5.1) have detailed information for mitigation measures of which have been considered and incorporated in the ESMPs of CCs.

Also, general monitoring periods, given in the BAP, will be 1st, 3rd, 5th, 8th and 10th years. In these periods, achievement criteria given in the BAP will be monitored as presented below:

- * 1st year: The main purpose is to prevent erosion. To this end, especially in highly sloped areas, the seeds of the endemic plants of the region should be collected and planted on the ROW for erosion control. In the 1st year, observing 10% plant diversity in the area is a criterion of achievement.
- * 3rd year: The main purpose is that the vegetation cover growing on the ROW is 30% similar to the nearby natural vegetation; the flora and fauna species diversity being 40% identical is a criterion of achievement.
- * 5th year: The main purpose is that the vegetation cover growing on the ROW is 50% similar to the nearby natural vegetation; the flora and fauna species diversity being 60% identical is a criterion of achievement.
- * 8th year: The main purpose is that the vegetation cover growing on the ROW is 70% similar to the nearby natural vegetation; the flora and fauna species diversity being 80% identical is a criterion of achievement.
- * 10th year: The main purpose is that the vegetation cover growing on the ROW is 100% similar to the nearby natural vegetation; the flora and fauna species diversity being 100% identical is a criterion of achievement.

The BAP ecological field survey includes a database that offer consistent and useful information for the characterization and management of the ecological conditions of the ROW and to ensure that the impacts that may occur can be controlled and managed during the construction activities. The ecological field survey covers and focus on a 36m wide swath centred on the proposed ROW and the study area in some places up to 70 meters in width along the TANAP route. For the purposes of the BAP, the ESIA was considered as a regional overview and the BAP ecological field survey as a more specific, local approach, considering that the ESIA had a 500m wide study corridor and the BAP ecological field survey was restricted to a 36m-wide area. BAP ecological field survey focused on potential impacts within and along and immediately adjacent to the ROW (36-70m) and used the ESIA as a macro perspective of the ROW surroundings².

BAP constitutes the technical report and KP based drawings including both terrestrial and freshwater habitat locations, as well as the distribution length of the terrestrial critical habitats. Terrestrial critical habitat mitigations were defined for each estimated construction periods; Spring (March-May), Summer (June-August), Autumn (September-November), as well as closed construction period and the ideal time for topsoil stripping. Freshwater critical habitat mitigations were defined as pre-construction and post-construction mitigations demonstrating the time constraint for construction based on the desktop and site-specific studies conducted. Construction schedules of the contractors for each of their activities are prepared regarding the constraint periods of BAP.

² PERU LNG, Environment, Social, Health and Safety Management System (ESHSMS), Biodiversity Action Plan, Document Number: 02/ES/PJ/PN/009/A01.