

İKİZDERE REGULATOR AND HEPP FACILITY BIODIVERSITY ACTION PLAN

1.1 Entrance

The İikizdere Hydroelectric Power Plant (HPP), operated by Zorlu Doğal Elektrik Üretimi A.Ş., is located on the İikizdere River (downstream known as İyidere) within the borders of İikizdere District, Rize Province, in the Eastern Black Sea Basin. It is situated on the Tortum G45-a4 sheet of the 1/25,000 scale Topographic Map.

Construction of the İikizdere Hydroelectric Power Plant began in 1955, and it commenced production activities in 1961. In 1971, with the transition to the interconnected system, it was transferred to the Turkish Electricity Authority and, under the General Directorate of EÜAŞ, produced an average of 120 million kWh of electricity annually. In 2007, it was incorporated into Ankara Doğal Elektrik Üretim A.Ş., and the energy facilities were privatized as a state policy. In this context, the İikizdere Hydroelectric Power Plant was purchased by Zorlu Doğal Elektrik Üretimi A.Ş. and is operated under the production license EÜ/1723-42/1247 issued by the Energy Market Regulatory Authority (EPDK) on 01.09.2008.

Currently, the water taken by the Tirol-type Demirkapı Regulator, constructed at an elevation of 630.50 m on the İikizdere River, is transferred to the Cimil Regulator, constructed at an elevation of 625.50 m on the Cimil Stream, via a free-surface diversion tunnel 794 m in length. The flow diverted by both regulators is channeled to the loading pool at the end of a 3,327 m free-surface tunnel and then dropped to the İikizdere HPP, which has an installed capacity of 18.6 MWm - 17.14 MWe, at a tailwater level of 457.50 m, converting it into energy. The active volume of the loading pool is 570 m³.

The İikizdere HPP Project is located in the Black Sea Region, within the borders of Rize Province. Rize, surrounded by Of (Trabzon) to the west, İspir (Erzurum) to the south, Yusufeli and Arhavi (Artvin) to the east, and the Black Sea to the north, covers an area of 3,920 km² excluding its lakes. The Demirkapı Regulator is located 2.00 km southeast of İikizdere District, 2.00 km south of Mezra Neighborhood, 1.00 km north of Sancaklı Neighborhood, and at an elevation of 630.50 m on the İikizdere River. The Cimil Regulator is situated 1.60 km southeast of İikizdere District, 500.00 m south of Gündoğdu Neighborhood, 1.00 km north of Aylalar Neighborhood, 1.60 km

northwest of Punburluk Hill, and at an elevation of 625.50 m on the Cimil Stream, which joins the İkizdere River on the right bank downstream. The İkizdere HPP is located 1.80 km northwest of İkizdere District, 1.50 km south of Cami Neighborhood, 1.20 km northeast of Güney Neighborhood, 2.50 km southwest of İstarina Hill, and at a tailwater level of 4550 m on the right bank of the İkizdere River (downstream known as İyidere). The district center of İkizdere is situated in a deep valley at the confluence of the steep and high Rize mountains, which reach elevations of 2000 meters (Figures 3-4).

The Çağrankaya Mountains and plateaus lie to the east, while the Rüzgarlı Koyu Mountains and plateaus are to the west. The district, located at the confluence of the Camlık and Cimil Streams, which flow from the valleys of these two opposing mountains, is named "İKİZDERE," meaning "Twin Streams." With an area of 898 km², İkizdere is the largest district in Rize Province and borders Trabzon, İspir, Çamlıhemşin, Rize, Kalkandere, and Çayeli. The average elevation of the study area and its surroundings is 1773.83 m, with a maximum elevation of 3150 m and a minimum of 170 m, creating a varied topographic structure. There are significant wetlands in the planed area that may attract birds (Figure 5)



Figure 1: Satellite Image of the Project Site

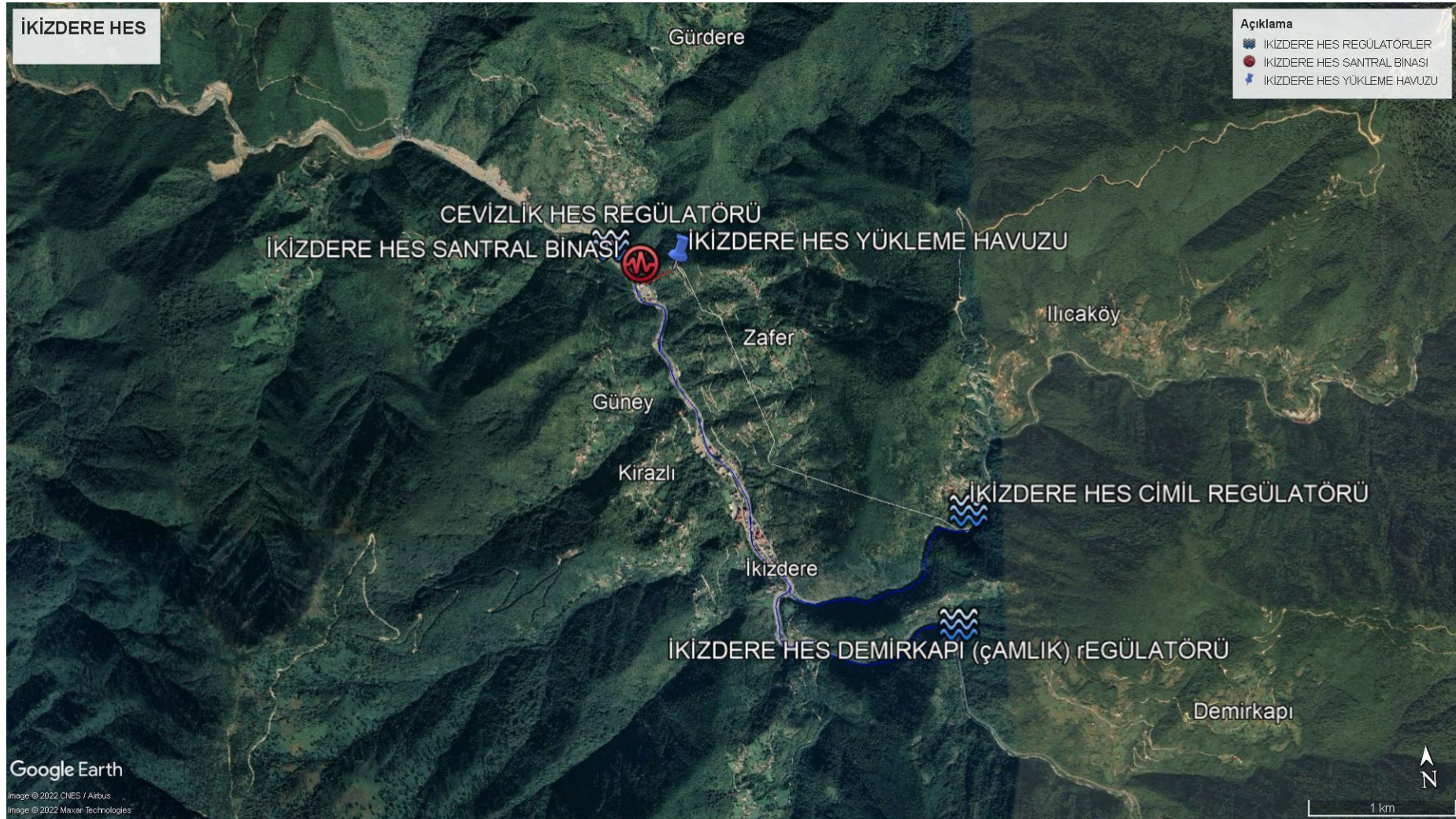


Figure 2: Satellite Image of the Project Site

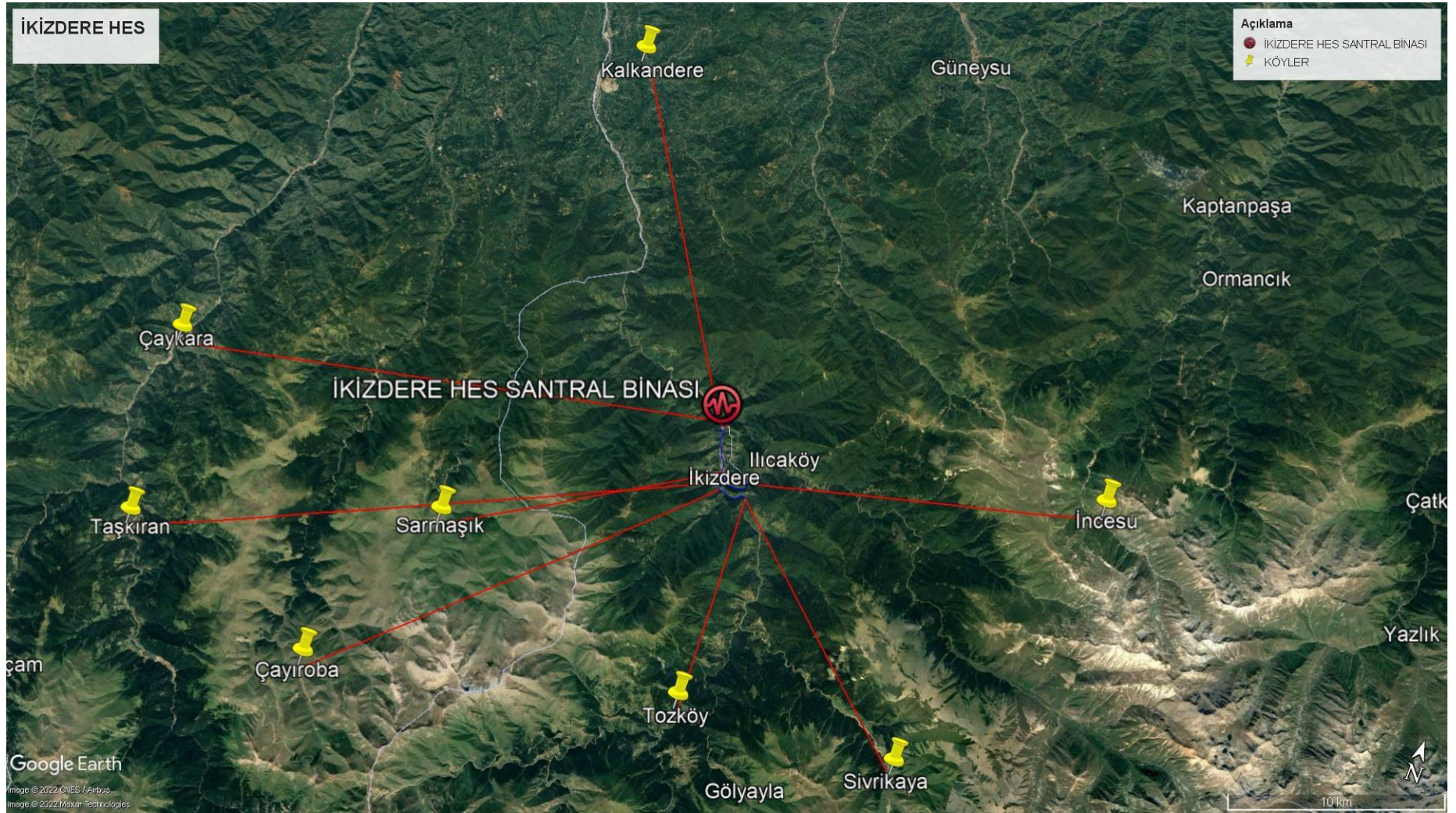


Figure 3: Village (Neighborhood) Settlements in the Vicinity of the Project Site

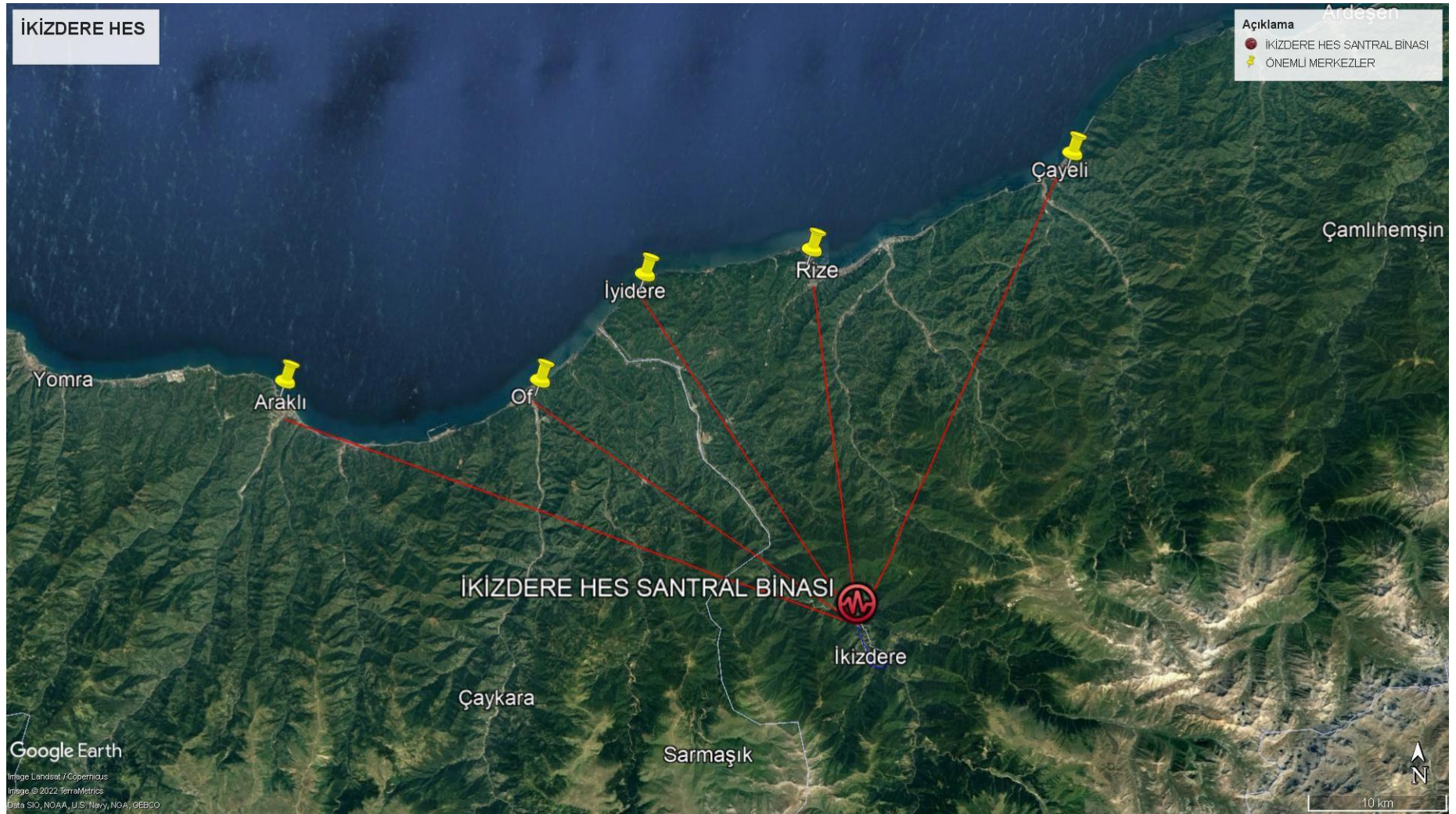


Figure 4: Settlements Near the Project Site



Figure 5: Significant Wetlands Surrounding the Project Area

1.2 Relationship of the Area with Protected and Special Status Areas

When evaluating the İkizdere HPP site and the surrounding protected areas and important natural sites, the project area is located within the Eastern Black Sea Mountains Important Natural Area (ÖDA). Additionally, the following significant areas are located at various distances from the project site: Çoruh Valley is approximately 45.5 km away, Isırlık Nature Park is 21.5 km away, Handüzü Nature Park is 12.2 km away, Uzungöl Nature Park is 25.5 km away, Kaçkar Mountains National Park is 23 km away, and Erzurum İspir Verçenik Mountain is 26.7 km away (Figures 6-7).



Figure 6: Satellite Image Showing the Relationship Between the Project Site and Protected Areas

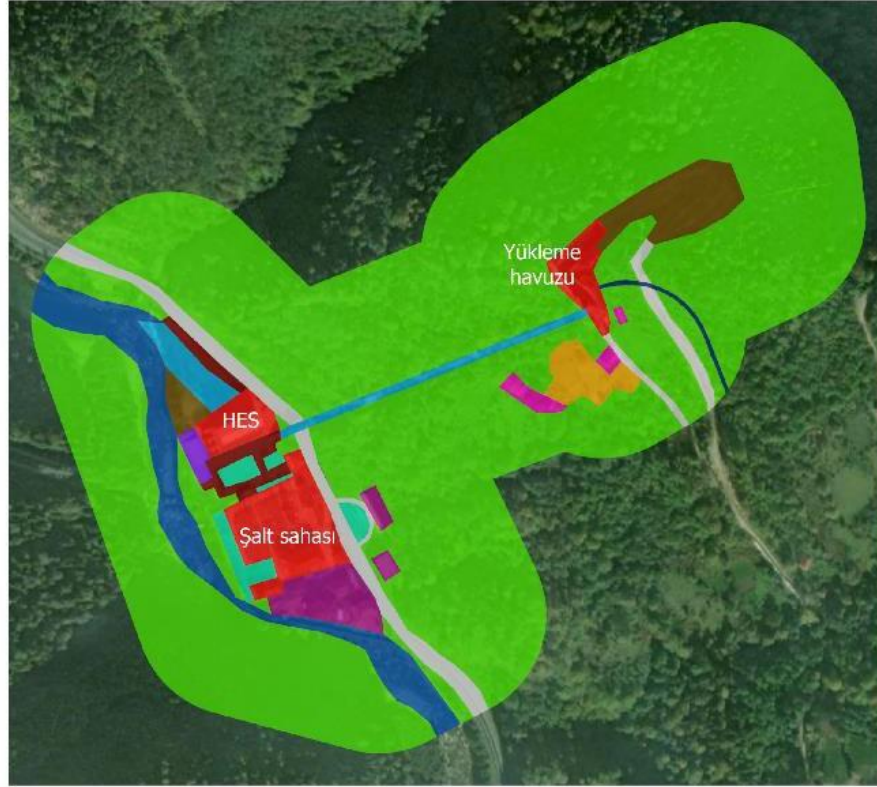


Figure 7: Satellite Image Showing the Relationship Between the Project Site and Protected Areas

1.3 Identification and Classification of Habitats in the Impact Area of İkizdere Regulator and HEPP Facility

Zorlu Doğal Elektrik Üretimi A.Ş. operates the İkizdere Hydroelectric Power Plant (HEPP) facility, which is located on İkizdere (İyidere downstream) within the borders of the Eastern Black Sea Basin, Rize Province, İkizdere District, and on the Tortum G45-a4 sheet of the 1/25,000 scale Topographic Map.

There are 12 different habitat types in the project area. 5 of these habitats are natural and the remaining 7 have modified habitat characteristics. The 1st, 2nd and 3rd Level codes and vegetation types of the vegetation types that develop in natural areas according to the EUNIS Habitat Classification are given below (Figure 8-10)



İkizdere HES EUNIS Habitat Haritası 1

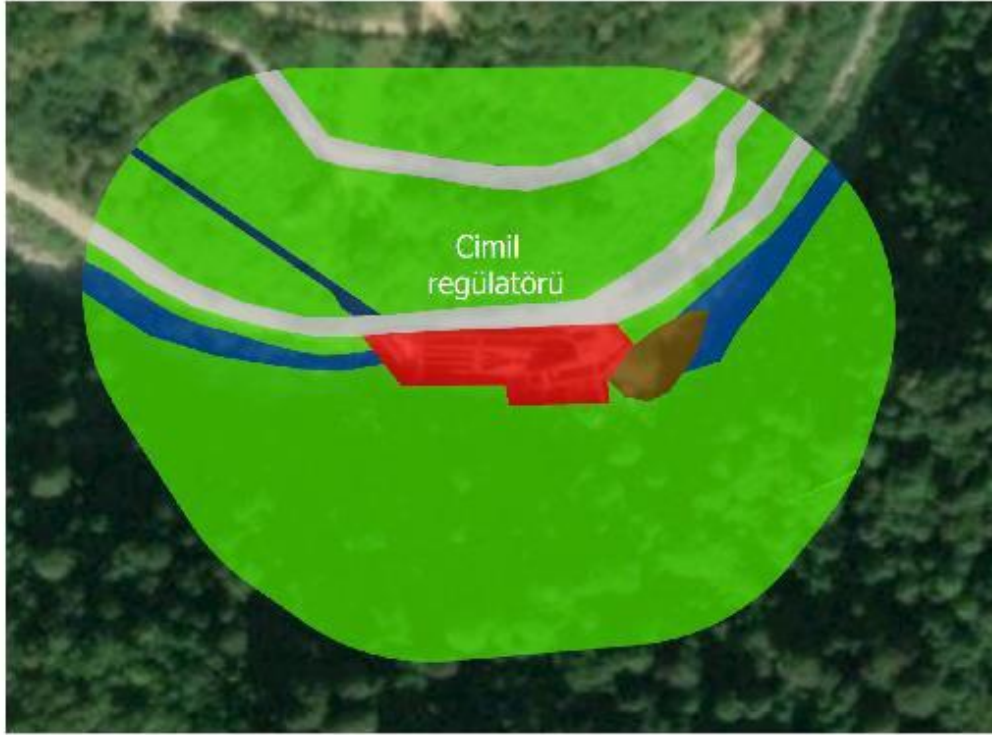
Ölçek: 1:6,000

- ** Tesis binaları
- * C2.2: Mevsimsel olmayan, hızlı akan akarsular
- ** E2.64: Çimlik alanlar, park çimlikleri
- * G4: Karışık ormanlar
- * H5: Bitki örtüsü seyrek açık alanlar
- ** I1.3: Yoğun olmayan tarımsal yöntemlerle yetiştirilen ürünlerin ekili olduğu tarım alanları
- ** J2.1: Kırsaldaki dağınık konutlar
- ** J2.3: Kırsaldaki aktif kullanılan endüstriyel yapılar
- ** J4.2: Yol ağları
- ** J4.6: Kaldırımlar, beton yüzeyler, rekreasyon alanları
- ** J5.41: İnsan yapımı tatlı su kanalları
- ** J5.43: İnsan yapımı yeraltı tatlı su kanalları
- ** J6.5: Endüstriyel atık depolama sahası



0 125 250
Meters

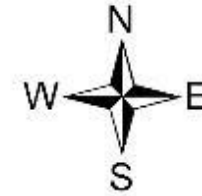
Figure 8: İkizdere HPP EUNIS Habitat Map 1



İkizdere HES EUNIS Habitat Haritası 2

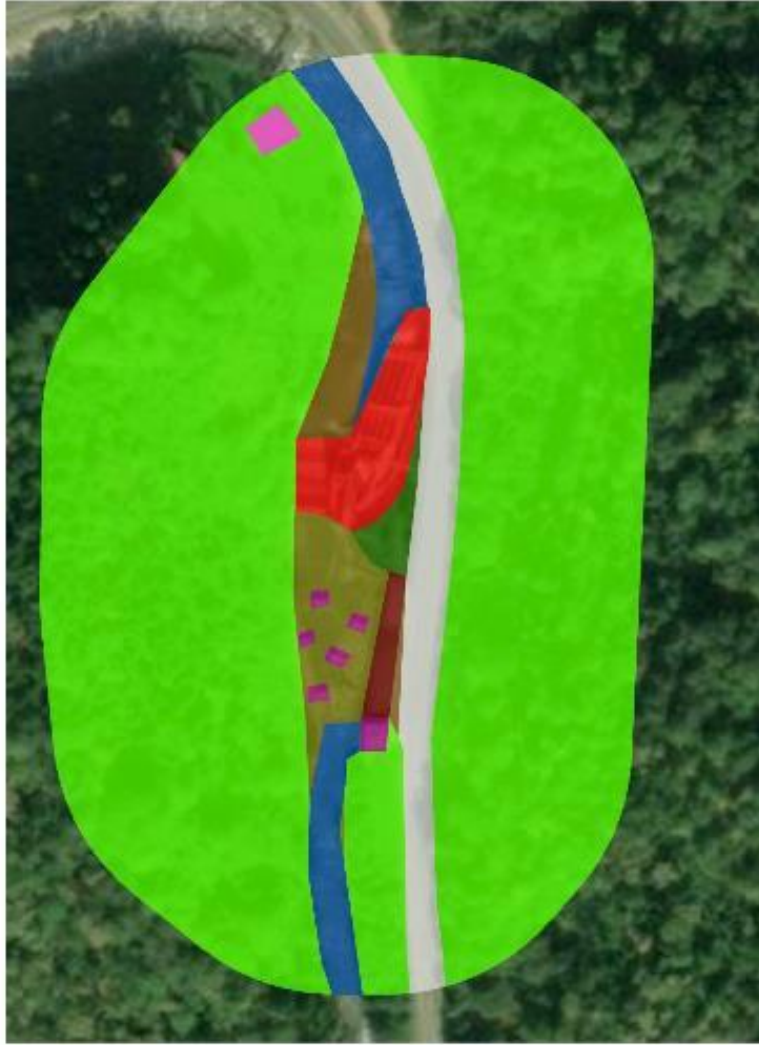
Ölçek: 1:4,000

- ** ■ Tesis binaları
- * ■ C2.2: Mevsimsel olmayan, hızlı akan akarsular
- * ■ G4: Karışık ormanlar
- * ■ H5: Bitki örtüsü seyrek açıklık alanlar
- ** ■ J4.2: Yol ağları
- ** ■ J5.43: İnsan yapımı yeraltı tatlı su kanalları



0 110 220
Meters

Figure 9: İkizdere HPP EUNIS Habitat Map 2



İkizdere HES EUNIS Habitat Haritası 3

Ölçek: 1:4,000

- ** ■ Tesis binaları
- * ■ C2.2 : Mevsimsel olmayan hızlı akan akarsular
- * ■ E3 : Islak çayırlar, mevsimsel ıslak çayırlar
- * ■ G4 : Karışık ormanlar
- * ■ G5 : Antropojenik ormanlar, baltalıklar, ağaç sıraları
- * ■ H5 : Bitki örtüsü seyrek açıklik alanlar
- ** ■ J2.1 : Kırsaldaki aktif kullanılan dağınık konutlar
- ** ■ J2.3 : Kırsaldaki aktif kullanılan endüstriyel yapılar
- ** ■ J4.2 : Yol ağları
- ** ■ J4.6: Kaldırımlar, beton yüzeyler, rekreasyon alanları



0 75 150
Meters

Figure 10: İkizdere HPP EUNIS Habitat Map 3

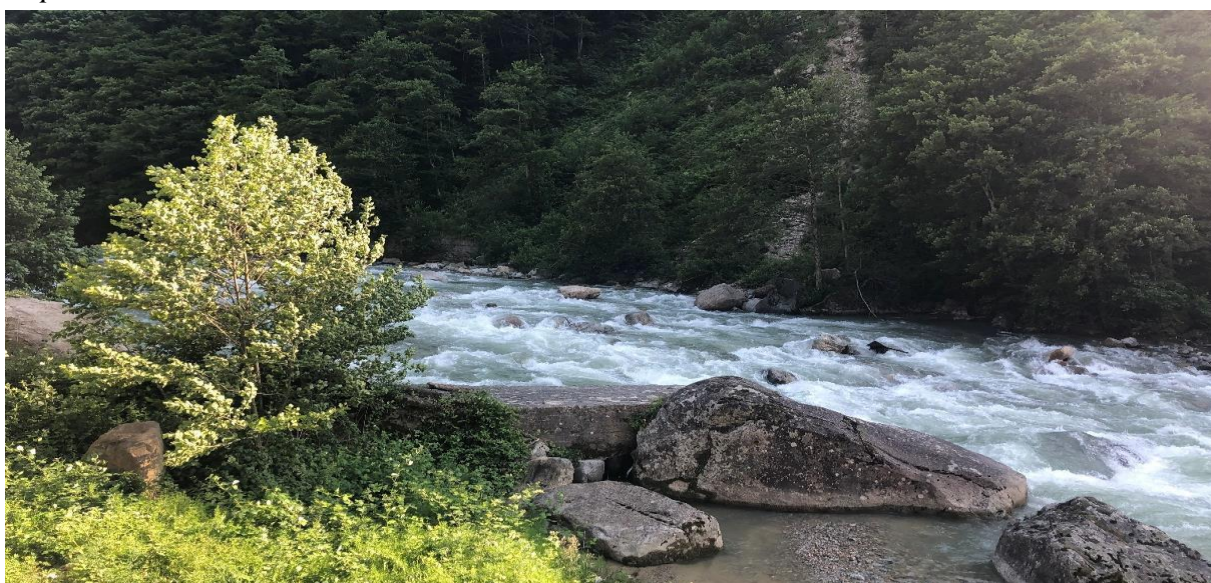
➤ Natural habitats

H5 Herb Cover Rare Openness Fields

In open areas at an altitude of 650-700 m; *polygala anatolica* , *Silene compacta* , *Eryngium giganteum* , *Logfia arvensis* , *Aster caucasicus* , *Doronicum balansae* , *Lapsana communis* subsp . *intermedia* , *Salix caprea* , *Carex caryophyllea* , *Carex caryophyllea* , *Cicerbita racemosa* , *Rhinanthus angustifolius* subsp . *grandiflorus* .

C2.2 seasonal Non, Fast Flowing Streams

Characteristic taxa of riparian habitats that form the streamside vegetation flowing throughout the year at an altitude of 480 m ; *alnus glutinosa* , *Arenaria rotundifolia* subspecies *rotundifolia* , *Hypericum androsaemum* , *Geranium pyrenaicum* , *Padus avium* , *filipendula ulmaria* , *Alchemilla retinervis* , *Epilobium colchium* , *Epilobium palustre* , *Saxifraga cymbalaria* var. *cymbalaria* , *Parnassia palustris* , *Chaerophyllum angelicifolium* , *Ligusticum alatum* , *Cephalaria gigantea* , *Cirsium arvense* subsp . *vestitum* , *Primula elatior* subsp . *pseudoelatior* , *Primula auriculata* , *Periploca graeca* var. *graeca* , *Centaureum erythraea* subsp . *turcicum* , *Solanum dulcamara* , *Scrophularia nodosa* , *Veronica anagallis-aquatica* subsp . *anagallis -aquatica* , *Odontites glutinosa* , *Pedicularis wilhelmsiana* , *Rhynchocorys elephas* subsp . *is elephas* .



Photos 1: Habitats with Surface Fluidity (EUNIS: C2.2)

G5. anthropogenic with character coppice Forests

G4 habitat in the code plant taxa closedness broken aspect This area They are valid in .

G4 Mixed Forests

These communities seen at an altitude of 500 m; *fagus orientalis* , *Picea orientalis* , *Castanea sativa* *Carpinus orientalis* , *Lycopodium clavatum* , *Osmunda regalis* , *Athyrium filix-foemina* , *Aconitum orientale* , *Cardamine bulbifera* , *Viola reichenbachiana* , *Geranium asphodeloides* subsp . *asphodeloides* , *Vicia crocea* , *Trifolium There is medium . medium* , *Laurocerasus officinalis* , *Epilobium montanum* , *Oenanthe pimpinelloides* , *Heracleum sphondylium* subsp . *cyclocarpum* .



Photos 2 Mixed Forests (EUNIS:G 4)

H5 Herb Cover Rare Openness Fields

In open areas at an altitude of 650-700 m; *polygala anatolica* , *Silene compacta* , *Eryngium giganteum* , *Logfia arvensis* , *Aster caucasicus* , *Doronicum balansae* , *Lapsana communis* subsp . *intermedia* , *Salix caprea* , *Carex caryophyllea* , *Carex caryophyllea* , *Cicerbita racemosa* , *Rhinanthus angustifolius* subsp . *grandiflorus* .

E3 Wet meadows, seasonal Wet meadows

In these streamside habitats observed at an altitude of 500 m; *Ranunculus constantinopolitanus* , *Thalictrum minus* var. *majus* , *Draba nemorosa* , *Cardamine impatiens* var. *pectinata* , *Myosoton aquaticum* , *Vicia cracca* subsp . *cracca* , *Chaerophyllum angelicifolium* , *Heracleum apiifolium* , *Inula orientalis* , *Gnaphalium luteo-album* subspecies *leuto-album* , *Conyza canadensis* plant taxa are widespread.

➤ Modified Habitats

J2.1, J2.3, Areas with habitat codes J4.2, J4.6, J5.41, J5.43, J6.5 are either concrete or asphalt and do not have a floral content. However, cleaning the seeds that germinate in the cracks in these structures is important for the integrity of the system. Care should be taken to ensure that only the plants used for landscaping and food purposes in the E2.64, J4.6 and I1.3 coded habitats are not invasive species.



Photos 3 in the countryside Active Used Industrial Buildings (EUNIS: J2.3)



Photos 4 Path networks With sidewalks And Recreation Fields (EUNIS: J4.2 And J4.6)



Photos 5 Person making Salty Non This channels (EUNIS: J5.41)



Photos 6 Person making Underground Stream lines (EUNIS: J5.43)



Photos 7 *alnus glutinosa*



Photos 8 *Carpinus orientalis*



Photos 9: *polygala anatolica*

When looking at the vegetation structure of the project site and its surroundings; It is a regulator and HEPP facility , a large part of which is settled in mixed deciduous and coniferous forests and has become compatible with the habitats over time . While it creates a riparian vegetation zone around the constantly fluid stream bed , there are grassy fields created as a result of constructions and landscaping activities created as a result of andropogenic activities in non-natural habitats .

➤ **Aquatic Habitats**

Habitat degradation and decline in aquatic ecosystems is increasing day by day due to anthropogenic and climate change. Interventions in the water regime, deterioration of water quality, poaching, and uncontrolled activities damage aquatic creatures and the habitats around them. It is important to have information about the spatial distribution of habitats and map habitats in order to understand, control and manage human impact on aquatic ecosystems.

In the classification of aquatic habitats in the area, the most current version of the EUNIS Habitat Classification was taken into consideration and an appropriate classification was made. This method of classification is a method that allows broader analysis of habitats in relation to ecological zones, climate, soil and pressures on the environment, as well as species, as well as being a way of comparing data with other countries, as well as using a standardized terminology. organized in main categories and their subheadings .

In the examinations and studies conducted, İkizdere No special habitat types were found in the HEPP area. Semi-natural habitats stand out in the regulator and power plant areas. Other areas are natural habitats along the stream. Fish that feed on algae, zooplankton or benthic creatures living in the area are at the top of the chain in the water. Fish habitats in the İkizdere HEPP area where observations were made are in Table 1. has been given.

Table 1: İkizdere HEPP aquatic habitat And Features

EUNIS CODE	HABITAT NAME	FEATURES	RAID SPECIES
C2	surface streams	in the field Other Continuous Or Seasonal Streams , This Habitat They are representatives of their type in the field	Top Trout generation; <i>salmo macrostigma</i> , Lower Trout generation; Trout And Golyan (Pearl) snapper (<i>Alburnoides bipunctatus</i>) moustachioed Fish Generation: moustachioed fish (<i>Barbus lacerta</i>), woodfish (<i>Acanthobrama marmid</i>) and the hornbill (<i>Chondrostoma regium</i>), fresh water mullet (<i>Squalius cephalus</i>) type diversity more is too much.

The stream bed generally looks like a natural habitat (Photo 11). The deteriorated habitat structures around İkizdere HEPP have adapted to the natural environment since there has been no external influence to date .



Photos 10 İkizdere HEPP in the field Exit juice around Semi-Natural habitat Structure



Photos 11th İkizdere HEPP of the field Natural habitat Structure

1.4 İkizdere HEPP facility Effect in the field floristic Defining Biodiversity

When we look at the vegetation structure of the project site and its surroundings; It is a regulator and HEPP facility , a large part of which is settled in mixed deciduous and coniferous forests and has become compatible with the habitats over time . While it creates a riparian vegetation zone around the constantly fluid stream bed , there are grassy fields created as a result of constructions and landscaping activities created as a result of andropogenic activities in non-natural habitats .

IFC PS-6 and Guidance in terms of floristics in the project area Considering the Note 6 criteria, no plant taxon or habitat containing it has been found with CR and EN status according to IUCN , within the scope of the Bern Convention and its annexes, the CITES convention and its annexes . All areas, except the untouched natural areas around the facility's session area and the man-made construction areas that have been integrated over time, have integrated with the natural areas by creating an integrated transition zone .

1.5 İkizdere HEPP facility Effect in the field faunistic biodiversity Definition

1.5.1 Amphibian

that are and are likely to be found in the project area are listed and critical species are given in the report. There are no endangered and/or endemic amphibian species in the project area. Amphibian species found in the area are common species. During field work abundant *Pelophylax ridibundus* (Lowland frog) was observed. The region is also **home to the Caucasian newt (*Mertensiella caucasica*)** is also located in its distribution area. The Caucasian salamander is a vulnerable species and is listed as **VU (Vulnerable)** by the IUCN.

Criterion 1: Refers to Critically Endangered (CR) and /or Endangered (EN) Species. There are no amphibian species in the CR and/or EN category in the project area.

Criterion 2: Refers to Endemic and/or Narrowly Ranged Species. There are no endemic and/or narrow-range amphibian species in the project area.

Criterion 3: Refers to Migratory and/or Community Concentrated Species. There is no amphibian species in the project area that meets this criterion.

Criterion 4: Refers to Highly Threatened and /or Uniquely Rare Ecosystems. Important habitats for amphibian species in the project area are aquatic habitats. The project has been operating in the area for many years. Life water is released into the stream bed. The river environment is largely composed of natural habitats. is formed. In the current situation, it is not possible to say that the river habitat and its immediate surroundings are under high threat.

1.5.2 reptiles

One of the endemic reptile species that may be found in the project area is the Baran viper (*Vipera barani*) . The IUCN criterion for the species is listed as NT . This species is directly dependent on water One type is not there And my species project in the field possible to their habitats project by One Since no harm was done, no negative impact on the species was observed.

Apart from this, there is no endangered or endemic reptile species in the project area .

are *Natrix* , which are partially or largely water-dependent reptile species. *tessellata* and *Natrix natrix* . The impact of these species may be due to the decrease in water in the stream bed due to not enough water being released into the stream bed. However, since the amount of lifewater released into the stream bed is at a very good level, no negative impact on these species has been observed in the current situation.

Criterion 1: Refers to Critically Endangered (CR) and /or Endangered (EN) Species. **There are no** reptile species in the CR and/or EN category in the project area .

Criterion 2: Refers to Endemic and/or Narrowly Ranged Species. It refers to Endemic and/or Narrowly Ranged Species. Baran viper (*Vipera*) , which is endemic to the project area barani) is widespread. The distribution area of this endemic species is more than 50,000 square kilometers. (km^2) is too much. To say that the project site is an area that regularly harbors $\geq 10\%$ of the global population size of that species and ≥ 10 breeding units of a species. It is not possible. In this regard, according to the available information, **the threshold value for Criterion 2 of the project site is does not meet.**

Criterion 3: Refers to Migratory and/or Community Concentrated Species. **There is no** reptile species in the project area that meets this criterion .

Criterion 4: Refers to Highly Threatened and /or Uniquely Rare Ecosystems. The important habitat types for reptile species in the project area are the natural habitats in the region. The project has been operating in the area for many years. Natural habitats in the project area have not been negatively affected by the project. Since the project has been in operation for many years, the negative effects that occurred during the construction phase seem to have largely returned to normal. Currently, no adverse effects **have been observed on the reptile species widespread in the region .**

1.5.3 Mammals

There is no endemic or endangered mammal species in the project region that will be directly negatively affected by the project. The mammal species most likely to be affected by the project is the Otter (*Lutra lutra*) . Since it feeds in water, if not enough water is released into the stream bed, there may be a possibility of negative effects as the amount of water in the feeding areas and the amount of fish that make up its food may decrease . However, since the amount of stream used in the project was quite high, it was observed that plenty of water was released into the stream bed. The IUCN criterion for the otter is NT and it is likely to be found in the region.

Criterion 1: Refers to Critically Endangered (CR) and /or Endangered (EN) Species. **There are no** mammal species in the CR and/or EN category in the project area .

Criterion 2: Refers to Endemic and/or Narrowly Ranged Species. There are no endemic and/or narrow-range mammal species in the project area.

Criterion 3: Refers to Migratory and/or Community Concentrated Species. **There is no** mammal species in the project area that meets this criterion .

Criterion 4: Refers to Highly Threatened and /or Uniquely Rare Ecosystems. The important habitat types for mammal species in the project area are the natural habitats and stream beds in the region. The project has been operating in the area for many years. Natural habitats in the region have not been negatively affected by the project. Since the project has been in operation for many years, the negative effects that occurred during the construction phase seem to have largely returned to normal. Currently, no adverse effects **have been observed on mammal species distributed in the region** .

Criterion 5: Topography, geology, soil, temperature, vegetation, and combinations of these factors One of the region structural features species local to take shape And ecological features It can affect the evolutionary processes that lead to In some cases, distinctive spatial features form populations or subpopulations of genetically unique plant and animal species. associated with their populations. Physical or spatial features have been identified as spatial catalysts for evolutionary and ecological processes, and such features are often associated with species diversity. Species (or subpopulations of species) that emerge due to the maintenance of basic evolutionary processes inherent in an area have become the main focus in recent years, along with the conservation of biodiversity , especially the process of preserving genetic diversity. By maintaining species diversity in an area, the genetic diversity within species as well as the processes that drive speciation ensure evolutionary resilience in a system, which is especially important in rapidly changing climate conditions.

For illustrative purposes, here are some potential examples of areal features associated with evolutionary processes,

Regions with high spatial heterogeneity are a positive force for speciation , as species are naturally selected for their ability to adapt and diversify .

gradients , also known as ecotones , produce transitional habitat that is associated with the process of speciation and high species and genetic diversity.

edaphic interfaces are areas of soil types (e.g. serpentine outcrops, limestone) that lead to the formation of unique plant communities characterized by both rarity and endemism . and gypsum sediments) are special sequences.

Connection between habitats (e.g. biological corridors), especially fragmented It is important in the maintenance of habitats and metapopulations and ensures species migration and gene flow. This connection also extends across elevation and climate gradients and across crest-to- coast to coast)” also includes biological corridors.

Areas with proven importance for adaptation to climate change for both species and ecosystems are also included in this criterion.

The importance of structural features in an area that can influence evolutionary processes will be determined on a case-by-case basis, and the determination of critical habitat will be largely based on scientific knowledge. In many cases, this criterion will apply to areas that have been previously investigated and are known or suspected to be associated with unique evolutionary processes. Although systematic methods exist to measure and prioritize evolutionary processes in a field, these methods are beyond the reasonable conditions of evaluations typically conducted by the private sector.

Criterion 5 was evaluated together for Amphibians, Reptiles and Mammals. Criterion 5 involves evaluating whether the region generally contains significant evolutionary processes. The area where İkizdere HEPP is located does not show a special evolutionary process. The region does not have a special geological structure or a special history and therefore does not contain a large number of critical and/or endemic species. In this regard, the area **does not meet** Criterion 5 .

1.5.4 Ornithology

As a result of the studies, a total of 103 bird species were identified in the project area and its immediate surroundings. The list of these species, their global Red List status, and the species' status in BERN, CITES and 2022 MAK decisions are given in Table 2 below.

Two of the species found around the facility are threatened on a global scale. These species are Turtle Dove (*Streptopelia turtur*) and the steppe eagle (*Aquila nipalensis*) . Of these species, the stepmother (*Streptopelia turtur*) global Red List status “VU” vulnerable, Steppe Eagle (*Aquila nipalensis*) "EN" has been identified as endangered. Of the species found around the facility, 76 are in BERN Agreement Annex-2, 14 are in BERN Agreement Annex-3, 2 are in CITES Annex-1, 11 are in CITES Annex-1 and 11 are in CITES Annex-2. is also located .

In this context, if we make a critical habitat assessment of the project area in line with faunistic data;

Habitats Important to Critically Endangered (CR) or Endangered (EN) Species

Aquila) spotted near the facility *nipalensis*) is a migratory species in the region and is seen during migration times in the region (Kirwan et al., 2008). The species nests and hunts in open steppe areas (Cramp , 1977 ; Kirwan et al., 2008). It is an important place for this species in the region. It is not considered to be habitat and therefore this criterion is not triggered.

Criterion 2: endemic And Narrow widespread Species For Important Habitats

Facility birds around This criterion It does not trigger.

Criterion 3: Habitats Hosting Globally Significant Numbers of Migratory and Foraging Species

It has been determined that there are migratory birds among the listed species in and around the facility area. Considering the topographic location of the facility, the project is not expected to cause a serious problem for migratory bird populations.

Criterion 4: High at level Threatening under And /Or Unique Rare Ecosystems

None of the habitats around the site are listed as high level or unique ecosystems on the IUCN Red List of Ecosystems and therefore this criterion will not be triggered.

Criterion 5: Important Evolutionary Processes With identified habitats

The study area does not differ significantly from the surrounding region in terms of elevation, moisture gradients , or any other geological, ecological, or evolutionary factor that indicates the region was vital for sustaining unique or distinctive evolutionary processes. Therefore, none of the habitats around the facility trigger Criterion 5.

Table 2: Project in the field Found and Finding Likely Bird Species

Type Scientific First Name	English Name	endemism	IUCN (Spherical)	BERN	MAKK	CITES
<i>Accipiter gentilis</i>	Northern Goshawk	Not endemic	LC	Annex 2	KD	Annex 2
<i>Accipiter nisus</i>	Eurasian Sparrowhawk	Not endemic	LC	Annex 2	KD	Annex 2
<i>Acrocephalus palustris</i>	Marsh Warbler	Not endemic	LC	Annex 2	KD	KD
<i>Actitis hypoleucos</i>	Common Sandpiper	Not endemic	LC	Annex 2	KD	KD
<i>Aegithalos caudatus</i>	Long-tailed Tit	Not endemic	LC	Annex 3	KD	KD
<i>Aegypius monachus</i>	Cinereous Vulture	Not endemic	LC	Annex 2	KD	KD
<i>Anthus spinoletta</i>	Water Pipit	Not endemic	LC	Annex 2	KD	KD
<i>Anthus trivialis</i>	Tree Pipit	Not endemic	LC	Annex 2	KD	KD
<i>Aquila chrysaetos</i>	Golden Eagle	Not endemic	LC	Annex 2	KD	Annex 2
<i>Aquila nipalensis</i>	Steppe Eagle	Not endemic	MOST	Annex 2	KD	Annex 2
<i>Ardea cinerea</i>	Grey Heron	Not endemic	LC	Annex 3	Annex 1	KD
<i>Buteo buteo</i>	Common Buzzard	Not endemic	LC	Annex 2	KD	Annex 2
<i>Buteo rufinus</i>	Long-legged Buzzard	Not endemic	LC	Annex 2	KD	Annex 2
<i>Calandrella brachydactyla</i>	Greater Short-toed Lark	Not endemic	LC	Annex 2	KD	KD
<i>Carduelis carduelis</i>	European Goldfinch	Not endemic	LC	Annex 2	KD	KD
<i>Carpodacus erythrinus</i>	Common Rosefinch	Not endemic	LC	Annex 2	KD	KD
<i>Certhia brachydactyla</i>	Short-toed Treecreeper	Not endemic	LC	Annex 2	KD	KD
<i>Certhia familiaris</i>	Eurasian Treecreeper	Not endemic	LC	Annex 2	KD	KD
<i>Cettia cetti</i>	Cetti's Warbler	Not endemic	LC	Annex 2	KD	KD
<i>Chloris chloris</i>	European Greenfinch	Not endemic	LC	Annex 2	KD	KD
<i>Cinclus cinclus</i>	White-throated Dipper	Not endemic	LC	Annex 2	KD	KD
<i>Clanga pomarina</i>	Lesser Spotted Eagle	Not endemic	LC	Annex 2	KD	Annex 2
<i>Coccothraustes coccothraustes</i>	Hawfinch	Not endemic	LC	Annex 2	KD	KD
<i>Columba livia</i>	Rock Dove	Not endemic	LC	Annex 3	Annex 2	KD

Type Scientific First Name	English Name	endemism	IUCN (Spherical)	BERN	MAKK	CITES
<i>Columba oenas</i>	Stock Dove	Not endemic	LC	Annex 2	Annex 1	KD
<i>Coracias garrulus</i>	European Roller	Not endemic	LC	Annex 2	KD	KD
<i>Corvus corax</i>	Common Raven	Not endemic	LC	Annex 3	Annex 1	KD
<i>Corvus cornix</i>	Hooded Crow	Not endemic	LC	KD	Annex 2	KD
<i>Corvus frugilegus</i>	Rook	Not endemic	LC	KD	Annex 2	KD
<i>Corvus monedula</i>	Eurasian Jackdaw	Not endemic	LC	KD	Annex 2	KD
<i>Coturnix coturnix</i>	Common Quail	Not endemic	LC	Annex 3	Annex 2	KD
<i>Crex crex</i>	Corn Crake	Not endemic	LC	Annex 2	KD	KD
<i>Cuculus canorus</i>	Common Cuckoo	Not endemic	LC	Annex 3	KD	KD
<i>Cyanistes caeruleus</i>	Eurasian Blue Tit	Not endemic	LC	Annex 2	KD	KD
<i>Delichon urbicum</i>	Common House Martin	Not endemic	LC	Annex 2	KD	KD
<i>Dendrocopos major</i>	Great Spotted Woodpecker	Not endemic	LC	Annex 2	KD	KD
<i>Emberiza cia</i>	Rock Bunting	Not endemic	LC	Annex 2	KD	KD
<i>Emberiza hortulana</i>	Ortolan Bunting	Not endemic	LC	Annex 3	Annex 1	KD
<i>Eremophila alpestris</i>	Horned Lark	Not endemic	LC	Annex 2	KD	KD
<i>Erithacus rubecula</i>	European Robin	Not endemic	LC	Annex 2	KD	KD
<i>Falco subbuteo</i>	Eurasian Hobby	Not endemic	LC	Annex 2	KD	Annex 2
<i>Falco tinnunculus</i>	Common Kestrel	Not endemic	LC	Annex 2	KD	Annex 2
<i>Fringilla coelebs</i>	Chaffinch	Not endemic	LC	Annex 3	Annex 1	KD
<i>Garrulus glandarius</i>	Eurasian Jay	Not endemic	LC	KD	Annex 2	KD
<i>Gypaetus barbatus</i>	Bearded Vulture	Not endemic	NT	KD	KD	KD
<i>Hieraetus pennatus</i>	Booted Eagle	Not endemic	LC	Annex 2	KD	Annex 2
<i>Hirundo rustica</i>	Barn Swallow	Not endemic	LC	Annex 2	KD	KD
<i>Iduna pallida</i>	Eastern Olivaceous Warbler	Not endemic	LC	Annex 2	KD	KD
<i>Lanius collurio</i>	Red-backed Shrike	Not endemic	LC	Annex 2	Annex 1	KD

Type Scientific First Name	English Name	endemism	IUCN (Spherical)	BERN	MAKK	CITES
<i>Lanius minor</i>	Lesser Grey Shrike	Not endemic	LC	Annex 2	KD	KD
<i>Larus michahellis</i>	Yellow-legged Gull	Not endemic	LC	Annex 3	Annex 1	KD
<i>Linaria cannabina</i>	Common Linnet	Not endemic	LC	Annex 2	KD	KD
<i>Linaria flavirostris</i>	Twite	Not endemic	LC	Annex 2	KD	KD
<i>Loxia curvirostra</i>	Red Crossbill	Not endemic	LC	Annex 2	KD	KD
<i>Luscinia megarhynchos</i>	Common Nightingale	Not endemic	LC	Annex 2	KD	KD
<i>Lyrurus mlokosiewiczi</i>	Caucasian Black Grouse	Not endemic	LC	KD	KD	Annex 1
<i>Melanocorypha bimaculata</i>	Bimaculated Lark	Not endemic	LC	Annex 2	KD	KD
<i>Merops apiaster</i>	European Bee-eater	Not endemic	LC	Annex 2	KD	KD
<i>Milvus migrans</i>	Black Kite	Not endemic	LC	Annex 2	KD	KD
<i>Monticola saxatilis</i>	Rufous-tailed Rock Thrush	Not endemic	LC	Annex 2	KD	KD
<i>Monticola solitarius</i>	Blue Rock Thrush	Not endemic	LC	Annex 2	KD	KD
<i>Montifringilla nivalis</i>	White-winged Snowfinch	Not endemic	LC	Annex 2	KD	KD
<i>Motacilla alba</i>	White Wagtail	Not endemic	LC	Annex 2	KD	KD
<i>Motacilla cinerea</i>	Grey Wagtail	Not endemic	LC	Annex 2	KD	KD
<i>Oenanthe isabellina</i>	Isabelline Wheatear	Not endemic	LC	Annex 2	Annex 1	KD
<i>Oenanthe oenanthe</i>	Northern Wheatear	Not endemic	LC	Annex 2	Annex 1	KD
<i>Parus major</i>	Great Tit	Not endemic	LC	Annex 2	KD	KD
<i>Passer domesticus</i>	House Sparrow	Not endemic	LC	KD	Annex 2	KD
<i>Perdix perdix</i>	Grey Partridge	Not endemic	LC	Annex 2	KD	KD
<i>Periparus ater</i>	Coal Tit	Not endemic	LC	Annex 2	KD	KD
<i>Phoenicurus ochruros</i>	Black Redstart	Not endemic	LC	Annex 2	KD	KD
<i>Phoenicurus phoenicurus</i>	Common Redstart	Not endemic	LC	Annex 2	KD	KD
<i>Phylloscopus collybita</i>	Common Chiffchaff	Not endemic	LC	Annex 2	KD	KD
<i>Phylloscopus nitidus</i>	Green Warbler	Not endemic	LC	KD	KD	KD

Type Scientific First Name	English Name	endemism	IUCN (Spherical)	BERN	MAKK	CITES
<i>Phylloscopus sindianus</i>	Mountain Chiffchaff	Not endemic	LC	KD	KD	KD
<i>Pica pica</i>	Eurasian Magpie	Not endemic	LC	KD	Annex 2	KD
<i>Prunella collaris</i>	Alpine Accentor	Not endemic	LC	Annex 2	KD	KD
<i>Prunella modularis</i>	Dunnoek	Not endemic	LC	Annex 2	KD	KD
<i>Prunella ocularis</i>	Radde's Accentor	Not endemic	LC	Annex 2	KD	KD
<i>Ptyonoprogne rupestris</i>	Eurasian Crag Martin	Not endemic	LC	Annex 2	KD	KD
<i>Pyrrhonorax graculus</i>	Alpine Chough	Not endemic	LC	Annex 2	KD	KD
<i>Pyrrhonorax pyrrhonorax</i>	Red-billed Chough	Not endemic	LC	Annex 2	KD	KD
<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch	Not endemic	LC	KD	Annex 1	KD
<i>Regulus ignicapilla</i>	Firecrest	Not endemic	LC	Annex 2	KD	KD
<i>Regulus regulus</i>	Goldcrest	Not endemic	LC	Annex 2	KD	KD
<i>Rhodopechys sanguineus</i>	Trumpeter Finch	Not endemic	LC	KD	Annex 1	KD
<i>Saxicola rubicola</i>	European Stonechat	Not endemic	LC	Annex 2	KD	KD
<i>Scolopax rusticola</i>	Eurasian Woodcock	Not endemic	LC	Annex 3	Annex 2	KD
<i>Serinus pusillus</i>	Red-fronted Serin	Not endemic	LC	Annex 2	KD	KD
<i>Serinus serinus</i>	European Serin	Not endemic	LC	Annex 2	KD	KD
<i>Sitta europaea</i>	Eurasian Nuthatch	Not endemic	LC	Annex 2	KD	KD
<i>Sitta krueperi</i>	Krüper's Nuthatch	Not endemic	NT	Annex 2	KD	KD
<i>Spinus spinus</i>	Eurasian Siskin	Not endemic	LC	Annex 2	KD	KD
<i>Streptopelia turtur</i>	European Turtle Dove	Not endemic	VU	Annex 3	Annex 2	KD
<i>Strix aluco</i>	Tawny Owl	Not endemic	LC	Annex 2	KD	Annex 2
<i>Sylvia atricapilla</i>	Blackcap	Not endemic	LC	Annex 2	KD	KD
<i>Tetraogallus caspius</i>	Caspian Snowcock	Not endemic	LC	KD	KD	Annex 1
<i>Tringa ochropus</i>	Green Sandpiper	Not endemic	LC	Annex 2	KD	KD
<i>Troglodytes troglodytes</i>	Eurasian Wren	Not endemic	LC	Annex 2	KD	KD

Type Scientific First Name	English Name	endemism	IUCN (Spherical)	BERN	MAKK	CITES
<i>Turdus merula</i>	Common Blackbird	Not endemic	LC	Annex 3	Annex 2	KD
<i>Turdus philomelos</i>	Song Thrush	Not endemic	LC	Annex 3	Annex 2	KD
<i>Turdus torquatus</i>	Ring Ouzel	Not endemic	LC	Annex 2	KD	KD
<i>Turdus viscivorus</i>	Mistle Thrush	Not endemic	LC	Annex 3	Annex 1	KD

1.1 Identification of Hydrobiological Biodiversity in the Impact Area of İikizdere Regulator and HEPP Facility

Project area in 4 separate alga to class belonging to total 78 taxon (type And subspecies) diagnosis has been made. Especially the Bacillariophyta (diatom) group of algae has become the richest class in terms of diversity. 52 taxa belonging to this class, 12 belonging to Chlorophyta , 11 belonging to Cyanophyta and 1 taxon belonging to Euglenophyta were found.

Project in the field, sampling stations built in all also raid class Bacillariophyta (Diatom) aspect has been found. of the region type diversity in terms of second raid group Chlorophyta And Cyanophyta is coming. This taxa Turkey's A lot from locality record reported as is wide One It has distribution. Chlorophyta belonging to species in Spirogyra sp. type comes to the fore. The most dominant species of the Cyanophyta class is Oscillatoria sp. has happened. Species belonging to this genus have a very wide distribution profile. Dinophyta and Euglenophyta classes were found in very few numbers in terms of species number and density. General aspect diagnosis made freshwater alga species all cosmopolitan is to the region There are no specific endemic, rare or endangered species.

During the examinations carried out in the project area, a total of 13 taxa belonging to Rotifera and Copepoda, which are groups that constitute zooplanktonic organisms, were identified. The most dominant group of these is the Rotifera group. Rotifera While there are 12 taxa belonging to the phylum Brachionus calyciflorus and Keratella cochlearis species are dominant. One taxon was identified from Copepoda and it was Cyclops sp. was found to be important in this group. The main factors affecting the distribution of zooplankton in freshwater systems can be classified as food, competition, mechanical relations with other living things, predation and parasitism, as well as the physical and chemical properties of the water. Depending on temperature, environmental Changes in factors affect the distribution of zooplanktonic organisms (Wetzel, 1983, Herzig , 1984). zooplankton Another important factor affecting community structure is predation . Many invertebrates and fish feed on Rotifera at least during a certain period of their lives (Herzig , 1980). In addition, current provides a disadvantage in the distribution of zooplanktonic organisms.

A total of 17 benthic invertebrate species belonging to four major groups were identified according to the samples taken at 4 different stations in the study area . Of these, 2 belong to Gastropoda , 1 to Crusteceae , 1 to Crustaceae , and 13 to Insecta .

In aquatic ecosystems, benthic organisms have a significant proportion of indicator species. These creatures are also an indicator group of communities that are polluted or under stress, especially as a result of anthropogenic effects. According to the sampling results, no species that could be described as a pollution indicator was found. In addition, in high mountain waters and Gammarus , which is considered a clean water indicator and belongs to Crustacea. The taxon is known as a clean water indicator. In particular, this taxon is the dominant group in both stations and are biological indicators that indicate that the area has clean water quality.

6 fish species belonging to 3 different families have been identified in the project area. The Cyprinidae family is represented by the highest number of species (3 species).

Among the most important species of the project area is *Salmo* , belonging to the Salmonidae family. *rizensis* (*Salmo macrostigma* -Mountain Trout), *Oncorhynchus mykiss* (Rainbow Trout) species are also included. Of these, *Salmo rizensis* (*Salmo macrostigma* -Mountain Trout) is the natural species of the region, *Oncorhynchus mykiss* It is a cultured species and not a natural fish of these waters. surrounding fish from their farms fugitive individuals This to environments adapt they have been .

Among the species identified from the area, two fish species (*Ponticola*) included in the Bern (Appendix III) list *Kessleri* And *salmo rizensis*) There are. Moreover *barbus tauricus* taxon Europe to the Red List (IUCN- Red Alburnoides is in the VU (vulnerable) category according to List bipunctatus and *Ponticola kessleri* species in the LC (low risk) category and other species *Salmo rizensis* , *Oncorhynchus mykiss* and *Capoeta tinca* species are also given as unevaluated.

Salmo fish species *rizensis* (*Salmo macrostigma* -Mountain Trout) and *Capoeta tinca* species are considered endemic. The distribution of these species in Turkey is in the river basins of the Central and Eastern Black Sea . They are not widespread endemic species.

Table 3 Project Area And Around belonging Alga Types

BACILLARIOPHYTA	<i>Melosira varians</i>	CYANOPHYTA
<i>cyclotella meneghiniana</i>	<i>meridion circulare</i>	<i>Chroococcus limneticus</i>
<i>cyclotella ocellata</i>	<i>Navicula arenaria</i>	<i>gomphosphaeria aponina</i>
<i>Melosira varians</i>	<i>N. bacillum</i>	<i>lyngbya aerugineo - caerulea</i>
<i>Achnanthes minutissima</i>	<i>N. cryptocephala</i>	<i>nostoc commune</i>
<i>amphora ovalis</i>	<i>N. cryptocephala there is. intermedia</i>	<i>Oscillatoria amphibia</i>
<i>A. ovalis there is. pediculus</i>	<i>N. cryptocephala there is. Veneta</i>	<i>HE. curviceps</i>
<i>anomoeoneis sphaerophora</i>	<i>N. radiosa</i>	<i>HE. limnetica</i>
<i>aulacoseria granulate</i>	<i>N. rhynchocephala</i>	<i>HE. limosa</i>
<i>caloneis permagna</i>	<i>Nitzschia constricta</i>	<i>HE. subbrevis</i>
<i>ceratoneis arcus</i>	<i>Nitzschia hungarica</i>	<i>HE. tenuis</i>
<i>C. arcus there is. amphioxys</i>	<i>Nitzschia palea</i>	<i>spirulina major</i>
<i>coconeis placenta</i>	<i>Nitzschia sigmoidae</i>	EUGLENOPHYTA
<i>cyclotella meneghiniana</i>	<i>Rhopalodia gibba</i>	<i>Euglena oxyuris</i>
<i>Cymatopleura solea</i>	<i>surirella angustate</i>	
<i>Cymbella affinis</i>	<i>S. linearis</i>	
<i>Cymbella cistula</i>	<i>S. ovalis</i>	
<i>C. amphicephala</i>	<i>S. robusta</i>	
<i>C. cymbiformis</i>	<i>S. robusta there is. splendida</i>	
<i>C. prostrata</i>	CHLOROPHYTA	
<i>C. sinuata</i>	<i>Chlamydomonas sp.</i>	
<i>C. tumidula</i>	<i>Scenedesmus sp.</i>	
<i>diatom vulgare there is. brevis</i>	<i>ulothrix variabilis</i>	
<i>didymosphenia geminata</i>	<i>oedogonium sp.</i>	
<i>Epithemia Argus</i>	<i>Closterium aciculare</i>	
<i>Epithemia sorex</i>	<i>Closterium littoral</i>	
<i>Fragilaria construens</i>	<i>C. lunula</i>	
<i>F. crotonensis</i>	<i>C. parvulum</i>	
<i>Fragilaria dilatata</i>	<i>cosmarium botrytis</i>	
<i>Fragilaria ulna</i>	<i>C. laeve</i>	
<i>gyrosigma acuminatum</i>	<i>C. vexatum</i>	
<i>gomphonema constriction</i>	<i>Spirogyra sp.</i>	
	<i>G. olivaceum</i>	
	<i>hantzschia amphioxys</i>	

Table 4 Project Area And Around belonging zooplanktonic Types

ROTIFERA
<i>Ascomorpha reign</i>
<i>brachionus quadridentatus</i>
<i>brachionus calyciflorus</i>
<i>cephalodella gibba</i>
<i>Euchlanis dilatata</i>
<i>filinia longiseta</i>
<i>keratella cochlearis</i>
<i>keratella quadrata</i>
<i>Lecane luna</i>
<i>Mytilina ventralis</i>
<i>notholca acuminata</i>
<i>polyarthra dolichoptera</i>
IN COPEPO
<i>cyclops sp.</i>

Table 5 Project Area And Around belonging benthic organisms

Branch: MOLLUSIAN
Class: GASTROPODA
Set: PROSOBRANCHIATA
Family: Valvatidae
<i>Valvata piscinalis</i> Müller
Set: PULMONATA
Family: Ancyliidae
<i>Ancylus fluviatilis</i> Müller
Branch: ANNELIDA
Class: CLITELLATA
Set: HIRUDINEA
Family: Erpobdellidae
<i>Erpobdella octoculata</i> L.
Branch: ARTHROPODA
Class: CRUSTACEA
Set: AMPHIPODA
Family: Gammaridae
<i>gammarus pulex</i> L.
Class: INSECTA
Set: EPHEMEROPTERA
Family: Baetidae
<i>Baetis rhodani</i> Pict .
Family: heptageniidae
<i>heptagenia sp.</i>
Family: Ephemerellidae
<i>ephemerella ignita</i> poda
Set: PLECOPTERA
Family: perlidae
<i>perla marginate</i> Sun .
Set: COLEOPTERA
Family: Noteridae
<i>noterus clavicornis</i> (Deg .)
Family: Elmidae
<i>Elmis sp.</i>

Set: TRICHOPTERA
Family: Rhyacophilidae
rhyacophila sp.
Family: Hydropsychidae
hydropsyche sp.
Set: DIPTERA
Family: Blephariceridae
liponeura sp.
Family: Limoniidae
Eriocera sp.
Family: Simuliidae
Simulium sp.
Family: Athericidae
Atherix ibis F.
Family: chironomidae
Chironomus sp.

Table 6 Project in the field Found Fish Types And Protection Status

Family	Type And subspecies	Turkish First Name	endemism	BERN	IUCN	CITES	natural kind	exotic species
Salmonidae	<i>salmo rizensis</i> * (<i>Syn : salmo macrostigma</i>)	mountain	X	Additional III	LC	-	X	-
	<i>oncorhynchus mykiss</i>	Rainbow trout	-	-	WHA T	-	X	-
Cyprinidae	<i>alburnoides bipunctatus</i>	Dotted Pearl snapper	-	-	LC	-	X	-
	<i>barbus tauricus</i>	moustachioed Fish	-		VU	-	X	-
	<i>Capoeta tinca</i> *	denfish	-	-	WHA T	-	X	-
Gobiidae	<i>ponticola Kessleri</i>	stone eater	X	Additional III	LC		X	-

1.6 biodiversity Risk Evaluation

1.6.1 Flora

The project site and its surroundings are floristically evaluated by IFC PS-6 and Guidance. Considering the Note 6 criteria, no plant taxon with CR and EN status within the scope of the IUCN convention, no plant taxon within the scope of the Bern Convention and its annexes, no plant taxon within the scope of the CITES convention and its annexes , and no habitat containing them have been identified. Therefore, critical species and habitat assessments have not been made within the scope of IFC (IUCN, Bern and CITES conventions and their annexes). The continuity of the existence of the facility, with the way it has been used to date , has become compatible with its environment, does not make this system harmful to the habitats where it is located and does not pose a risk to the floristic structure .

1.6.1.1 Invasive Species

Alien invasive species, either accidentally or intentionally, move beyond their natural geographic range and become problematic. They often arise due to the globalization of the economy through the movement of people and goods, such as ship transportation, shipments of wood products, consignments carrying insects, or transportation of ornamental plants to new regions. The EU developed ***Regulation (EU) 1143/2014*** to actively deal with alien invasive species .

Alien invasive species (IAS) can cause serious ecological impacts on invaded environments. They may lack natural predators in their new environment, allowing them to increase their abundance and spread rapidly. They can carry diseases, compete with or prey on native species, alter food chains, and even alter ecosystems, for example by altering soil composition or creating habitats that encourage wildfires. These impacts can lead to local or global extinction of native species and ultimately ecological destruction.

IAS can also have significant socio -economic impacts. The European Union (EU) faces losses worth EUR 12 billion annually due to the effects of IAS on human health, infrastructure damage and agricultural damage.

There are more than 12,000 alien species in Europe, 15% of which are invasive. IAS, European threat It is the third most serious threat to the species below. According to a report published in 2015, 354 endangered species (229 animals, 124 plants and 1 fungus) are among all threatened species in Europe. It is clearly affected by IAS, accounting for 19% of the species under it . The newly adopted EU Biodiversity Strategy highlights the importance of tackling this threat by proposing to manage established alien invasive species and reduce the number of Red List species they threaten by 50% by 2030.

In 2013, the European Commission (EC) put forward a proposed law within the framework of an EU Directive on IAS, providing for prevention of their introduction, early warning/rapid response and effective and coordinated management. topics forward It lasted. IUCN, WHITE with made One soap opera service contract and In collaboration with the IUCN Invasive Species Expert Group (ITUG) , it has been providing technical and scientific support to the implementation of the EU IAS Regulation since 2016.

Energy investment areas are areas shaped by human influence. Construction activities arising from the nature of the investment in these areas have been tried to be rehabilitated through landscape planning around the roads and buildings . The ability of some plant species used here to survive and spread in the area causes them to be called invasive species. Apart from rehabilitation studies, species carried by floods or faunistic sources may also have the same nature. For these reasons, in order to preserve the existence of the natural areas within the energy investment area, the individuals and diaspores (reproductive units) of these plants must be cleared from the area.

Timing: Controlling invasive plant species should be done before the plant goes to seed. If the plant is known for its above-ground parts before flowering, the removal is done in the spring; otherwise, it is removed immediately after flowering.

Table 7 Project in the field Found And Finding Likely Invader Species

<p><i>Acer negundo</i> (ash tree leafy maple) Areas open to andropogenic influence</p>	
<p><i>agropyron repens</i> (Separate herb) Field, open area</p>	
<p><i>ailanthus altissima</i> (Kokarağaç) andropogenic to the effect open spaces</p>	
<p><i>amaranthus retroflexus</i> (Fox dry) Field, open area</p>	

Boreava orientalis (Sariat) Field, roadside



chenopodium album (While crying) Flood, flood bearings



Cirsium arvense (Köygöçüren) Flood, flood bearings



conyza canadensis (cypress) andropogenic to the effect open fields



conyza bonariensis (Coyote) andropogenic to the effect open fields



conyza albida (Maplewort) andropogenic to the effect open spaces



Cuscuta campestris (Turkish) meadow-pasture habitats



Lepidium draba (Diġnik) andropogenic to the effect open spaces



nasturtium officinale (Suteresi) streamside








Reseda lutea (Love flower) Path edge, field



rumex acetocella (Sorrel) Path edge, field And barren places



<p><i>Senecio vernalis</i> (Canary herb) Path edge And person Fields shaped by the influence</p>	
<p><i>Sicyos angulatus</i> (Itdolanbacı) Damp fields</p>	
<p><i>Solanum americanum</i> (Push grape) This edge And damp shady places</p>	
<p><i>portulaca oleracea</i> (Purslane) Field, open area</p>	
<p><i>phytolacca americana</i> (Candymaker's paint) Stream beds and moist habitats</p>	

Paspalum distichum (This discrete) This communities inside on channels



Robinia pseudoacacia (White flowering liar acacia) roadsides



Xanthium strumarium (Big Pitarak) Flood, flood bearings



Xanthium spinosum (Yellow Pitarak) Flood, flood bearings



Viscum album (Lime herb) to the trees interference



1.6.2 Fauna

IFC PS-6 and Guidance Taking into account the Note 6 criteria, the "critical species" evaluation and "critical habitat" evaluation were made in section 35 , and there are no Critical species in terms of fauna (Amphibia, Reptile, Mammal) in the region, and accordingly, there is no critical habitat .

Risk Assessment for Otter (*Lutra lutra*) : Its presence in the project area has been confirmed by project staff. There is plenty of life water in the stream bed . No direct threat to the species has been observed.

Caucasian Salamander (*Mertensiella caucasica*): The project is located in the distribution area of the Caucasian salamander in Turkey and it is likely to be found in the streams in the project area. There is plenty of life water in the stream bed . No direct threat to the species has been observed .

1.6.3 Ornithology

IFC PS-6 and Guidance Taking into account the Note 6 criteria, the "critical species" evaluation and "critical habitat" evaluation were made in chapter 5 , and there are Critical species in terms of birds in the region. This species of steppe eagle (*Aquila nipalensis*) . Attention should be paid to the actions provided in the Biodiversity Action Plan for the species in question.

1.6.4 hydrobiology

in the region fishery activities promise subject being together busy aspect It is not done.

Rivers are complex and dynamic ecosystems. By changing these areas, lotic species will be affected and reduced by the loss of breeding grounds along with significant environmental change. River species normally live and spawn in shallow places and look for such habitats after the formation of the dam lake. If they cannot find it, they face losing competition with other lentic species due to the difference in their ecological niches. After the formation of such areas in HEPP-like applications, areas where some species can live should also be protected. Aquatic species; It adapts to the living conditions in a particular river section and creates characteristic biocoenoses shaped by the change of abiotic factors along the stream (Vannote et al. 1980). Algae, zooplankton and benthic organisms living in the stream environment can also create new communities within this biocenosis and create significant changes, especially in the food pyramid. More productive stagnant water environments can constitute important food areas for all aquatic creatures.

Within the scope of İkizdere HEPP project, in terms of wetland ecosystem, only the existence of stream habitat is in question. Wetlands are basically defined by two major ecosystem types: flowing and stagnant. However, it is possible to define subsystem types according to the physical and chemical properties of water. When viewed from this perspective, it can be seen that the streams are a lotic habitat with freshwater characteristics . However, the water collection area of the regulators that constitute the scope of this study is almost non-existent, because the incoming water is taken directly into sedimentation pools and tunnels without collecting behind the regulators. For this reason, there is a very limited area in terms of stagnant water habitat in the project area .

It is known that current environments are divided into smaller habitats that can be repeated one after another. While fast-flowing habitats (rhitron) are seen, especially at the upper elevations of the basin, depending on the slope, there are also slower and stagnant (potamon) habitats in some areas. These habitat structures are very evident throughout the İkizdere basin and can change sequentially.

Depending on these habitat structures, there are also changes in the composition of living species. Aquatic species in fast-flowing environments and living species in stagnant environments are quite different from each other. The project area has fast and stagnant water habitats defined as rithron and potamon . However, it has been observed that fast current areas are less represented and mostly normal and relatively slow current habitat structure is more dominant .

When the Eastern Black Sea river ecosystems are evaluated and the existing aquatic species are compared, İkizdere stream does not have a river habitat that is very different from others and has a unique sensitivity and rarity.

The steps of the existing fish passage, especially in the upper part, are filled with heavy stones, gravel and similar materials. It is necessary to pay attention to the issues given in the biodiversity action plan .

1.6.5 Environmental Risk Analysis

The project is not likely to adversely affect human health or the environment, directly or indirectly. Environmental Risk It is called. Estimating the magnitude of risk in all its activities and Deciding whether the risk can be tolerated is called **Risk Assessment** .

Environmental Risk Assessment, Appropriate methods are used to identify environmental hazards in the working environment, reveal risks and control risks through systematic methods. qualitative and/or It is a set of studies conducted using quantitative methods.

In order to determine the environmental impacts that are likely to occur in the periods determined within the scope of the environmental management and monitoring plan and to minimize the impacts of the project by collecting the relevant data and comparing the compliance of the studies carried out with the legislation ;

- of the business management,
- wastes ,
- weather emissions,
- noisy ,
- wastewater ,

like effects will be monitored.

A Waste Management Plan must be prepared for the wastes generated and likely to be generated within the scope of the project, and it is necessary to continue to act in accordance with the issues specified in the waste plan and the applicable legislation at all stages of the project. Waste Management that should be implemented within the scope of the project is given in Table 8 .

Table 8 Implementation Required Waste Management

STAGE	SUBJECT		PRECAUTION
BUILDING AND BUSINESS PHASE	Noisy And Vibration		During the operation phase of the project, noise generation will arise from vehicles. However, still operating owner by activity any One negative of the effect absence for the purpose of All necessary security measures must be taken and any complaints or suggestions from nearby settlements must be taken into consideration and necessary action must be taken by the activity owner.
	Weather emissions	Vehicle Welding	The vehicles used in the project area were published in the Official Gazette dated 11.03.2017 and numbered 30004. into force entering "Exhaust gas emission Control Regulation with Gasoline And Diesel quality "Regulation" to the provisions to be complied with is required.
	Waste Management	domestic Qualified Thick Wastes	Project in the scope of formed domestic qualified thick wastes smell, insect And negative to the effects It must be collected in sealed containers.
		PACKAGING waste	domestic qualified thick of waste management for 02.04.2015 history And 29314 numbered Official Newspaper' It is necessary to comply with the provisions of the "Waste Management Regulation", which was published and entered into force . Back gain possible non- organic origin domestic qualified thick wastes whereas mouth It should be collected in closed domestic waste bins and delivered to the relevant Municipality. Recyclable wastes (glass, paper/cardboard, metal, etc.) must be collected separately from other wastes, deposited in containers, and recycled by companies licensed by the Ministry of Environment, Urbanization and Climate Change. Regarding the issue dated 26.06.2021 and 31523 numbered Official Newspaper' also by publishing into force entering PACKAGING of waste The provisions of the Control Regulation must be complied with. of waste is accumulated containers continually aspect closed by keeping rodent animal And Pest prevention must be ensured .
		domestic Qualified Waste water	Business in the phase formed wastewater in the scope of 31.12.2004 History And 25687 Numbered In the Official Gazette by publishing into force entering "This pollution Control "Regulation" provisions must be complied with. Business during This pollution Control Regulation, Drinking-Use juice The provisions of the Regulation on the Protection of Basins must be complied with. of the project all in stages 23.12.1960 history And 10688 numbered Official Newspaper' also published "Law on Groundwater No. 167" and "On the Protection of Groundwater Against Pollution and Deterioration" published in the Official Gazette No. 28257 dated 004.2012 Regulation" to the provisions respect to be is required.

STAGE	SUBJECT		PRECAUTION
		Waste Battery And Accumulators	process in the scope of formed waste battery And accumulators in the scope of, Waste Battery And In accordance with Article 13 of the Accumulator Control Regulation; By collecting waste batteries separately from household waste, businesses that distribute and sell battery products or by municipalities will be created collection to the points waste batteries delivery After becoming waste, the resulting cells, accumulators and/or accumulators used in transformers should not be kept on a sealed surface within the site for more than ninety days until they are delivered to the manufacturer.31.08.2004 history And 25569 numbered Official in the newspaper by publishing into force entering "Waste Waste must be disposed of in accordance with the provisions of the "Battery and Accumulator Control Regulation".
		Medical Wastes	For medical waste generated within the scope of the activity; waste at the source -most member will download system establishmentof waste separate collection, moving And temporary storage with One accident instantly Preparing and complying with an in-unit industrial waste management plan that includes the measures to be taken. Collecting medical, hazardous and domestic wastes and packaging waste separately at the source without mixing with each other, Medical wastes with cutting-piercing waste while collecting technical features In the regulation using specified bags and containers,Separate collected medical And domestic qualified waste Only This work for allocation has been Vehicles with separate transported separatelywaste temporary to store for the purpose of temporary waste warehouse construction will be or It is required to have a container, Legislation to the provisions to be complied with is required.
		Waste Electronic Things	It is possible that electronic waste will be generated during the process. The electronic waste generated is temporary waste storage on the forehead by accumulating licensed disposal/return earnings to the company must be given. Compliance with the provisions of the Regulation on the Control of Waste Electrical and Electronic Equipment, which came into force after being published in the Official Gazette dated 22.05.2012 and numbered 28300.to be is required.
		Waste oils	Within the scope of waste oils generated at all stages of the project, the "Waste Oils Management Regulation", which came into force after being published in the Official Gazette dated 21.12.2019 and numbered 30985, and the "Waste Management Regulation", which came into force after being published in the Official Gazette dated 02.04.2015 and numbered 29314. "Regulation" to the provisions respect to be is required. Formed waste oils Temporary

STAGE	SUBJECT		PRECAUTION
			It is stored in the Waste Storage Area and collected by the Ministry of Environment, Urbanization and Climate Change. licence given by companies back gain and/or disposal ensuring is required
		Waste Vegetable Waste oils	of the project vegetable waste oil formation in case 06.06.2015 history And 29378 numbered Official It is necessary to comply with the relevant provisions of the "Regulation on the Control of Waste Vegetable Oils", which came into force after being published in the Gazette .
		of your life Completed Tires	Any One for this reason promise subject of waste welding in case your life expired tires, dated 25.11.2006 and numbered 26357 "Control of End-of-Life Tires" Regulation”) to the provisions respect to be is required.
		Dangerous Wastes	In case of fluorescent lamps used in lighting, printing toners from printers used in the administrative building, contaminated waste and other hazardous wastes at any stage of the process, they will be stored in the Temporary Waste Storage Area in accordance with waste codes. Environment urbanism And Climate change ministry by licence given by companies back gain and/or disposal ensuring is required
		Oily Mud mud	of the process any One in the phase or equipment care from his work caused Oily sludges must be sent to licensed companies and disposed of.

The relevant applications within the scope of the Regulation on Amendments to the Zero Waste Regulation of the facility have been completed and it has a zero waste certificate. Waste Management Regulation of the Facility in the scope of prepared Industrial Waste Management plan is available is, It has been determined that it has been approved by the Provincial Directorate of Environment, Urbanization and Climate Change. It has been determined that the packaging waste generated in the facility is separated on site in accordance with its codes and is regularly stored in the Temporary Waste Storage Area. The stored waste is recycled through licensed companies.

It was determined that waste scrap materials were stored on the ground floor in the facility. Care should be taken to store scrap materials on a concrete floor.

Domestic wastewater generated within the scope of the project is subjected to package treatment and discharged to the receiving environment. In this context, within the scope of domestic wastewater generated during the operation phase , the provisions of the "Water Pollution Control Regulation", which came into force after being published in the Official Gazette No. 25687 dated 31.12.2004, must be complied with. An analysis must be made by accredited companies by applying to the MELBES system of the Ministry of Environment, Urbanization and Climate Change at the package treatment outlet. In addition, the provisions of the Water Pollution Control Regulation and the Regulation on the Protection of Drinking and Domestic Water Basins must be complied with during the operation.

Wastewater Discharge dated 003.2019 within the scope of the Environmental Permit and License Regulation , and it has been determined that it is valid until 13.11.2022. Within the scope of the Environmental Permit and License Regulation, the Wastewater Environmental Permit must be renewed. However, all provisions in the Environmental Permit Certificate must be complied with.

1.7 biodiversity Action plan

İkizdere regulator And HEPP facility biodiversity Action plan							
Action Code	Habitat Class	Action Subject	Action Zone	Action Rationale	Action/Application Details	Action Period	Action Duration
i1	Business	Fauna Conservation of Species	Project Area And surroundings	Otter (<i>Lutra lutra</i>) And the Caucasian Salamander (<i>Mertensiella</i> Training for Facility Employees About <i>Caucasica</i>) Species should be given	Biologists who are experts on the subject Training Should Be Provided by	During Operation	2023 Year May 1 time
i2	All Habitats	Fauna Conservation of Species	Project Area And surroundings	the Baran Viper and the Caucasian Nosed Viper Species Facility To its employees Education should be given	Population by Expert Biologists At the level Tracing	During Operation	2023 Year May 1 time
i3	Business	Fauna Conservation of Species	Project Area And surroundings	in the region Bear (<i>Ursus Arctos</i>) is available. Human-Bear Encounters Can Sometimes Be Dangerous. bears To the region Garbage containing food should never be left open in the facility to avoid shrinkage. A Garbage Management plan How to Store Garbage That May Attract Bears and How to Store It was removed from About Application It must be reported.	Company By	During Operation	Continually

i4	All Habitats	Invader Blocking Species	Project Area And surroundings	Investigation of Invasive Species Found in the Project Area and Surroundings Project Area And Around by watching Dismantling Plan Must Be Prepared	Population by Expert Biologists Level Monitoring	During Operation	one Year Duration in July and August
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İkizdere regulator And HEPP facility biodiversity Action plan							
Action Code	Habitat Class	Action Subject	Action Zone	Action Rationale	Action/Application Details	Action Period	Action Duration
i5	Business	Fauna Conservation of Species	Project Area And surroundings	Pet Cats Should Never Be Kepted in the Facility. Although it is recommended not to have a pet dog, Even Especially at Night Free to their wanderings Permission should not be given	Company By	During Operation	April-May 2024
i6	Business	Fish Conservation of Species	Project Area	Some Fish Species Have Long Distance and Some Have Short Distance Distance Migration They are the species that can . Particularly Gene Diversity of Fish To prevent narrowing of the fish passage, cleaning And Maintenance is Important.	In the Coordination of Biologists Expert on the Subject By Company	During Operation	2023 February March Within Months
i7	All Habitats	Critical Conservation of Fauna Species	General Area	Endangered Fauna types His research particularly focused on the Steppe Eagle (<i>Aquila nipalensis</i>) Type in Project Area and Surroundings It should be investigated	Population by Expert Biologists Level Monitoring	During Operation	2 Year Duration: March- November Between

i8	Business	Preventio n of Environm ental Pollution	Project Area	Licensed in accordance with the Waste Codes for Hazardous Wastes Generated within the Business Companies Recycling /Disposal by to its facilities Must be Delivered .	Company By	During Operatio n	6 on the moon one
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İkizdere regulator And HEPP facility biodiversity Action plan							
Action Code	Habitat Class	Action Subject	Action Zone	Action Rationale	Action/Application Details	Action Period	Action Duration
i9	Business	Prevention of Environmental Pollution	Project Area	Licensed in accordance with the Waste Codes for Non-Hazardous Wastes Generated within the Business Companies Delivery to Recycling / Disposal Facilities by It should be done.	Company By	During Operation	per year one
i10	Business	Prevention of Environmental Pollution	Project Area	Ensuring Control of Domestic Wastewater It is necessary. In this context, from the package purification exit Environment, Ministry of Urbanization and Climate Change, analyzed by accredited companies by applying through the MELBES system. to have it done is required	Company By	During Operation	4 on the moon one

PROJECT TEAM

Name- Surname /Title	In Report/Study Department He is Assigned to	Sign ature
<i>Specialist Biologist Tariq BATUHAN</i>	Project And Report Coordination Ecological Assessment	
<i>Prof. Dr. Mustafa SÖZEN</i>	Fauna Evaluation	
<i>Prof. Dr. Tahir SHOOTER</i>	hydrobiological Evaluation	
<i>Dr. Lecturer . Member of Karim SOUTH</i>	Flora And Vegetation Evaluation	
<i>Kaan ÖZGENCİL</i>	Ornithological Evaluation And GIS Studies	
<i>Biologist Mehmet Ali YUKSEL</i>	Ecological Studies And Land Coordination	
<i>Experienced Bird Observer Ayhan BATUHAN</i>	Bird observation	