TÜRKİYE PETROLLERİ ANONİM ORTAKLIĞI

OTC OFFSHORE TECHNOLOGY CENTER

# SAKARYA GAS FIELD DEVELOPMENT PROJECT – ENHANCEMENT OF SUBSEA PRODUCTION CAPACITY AND FLOATING PRODUCTION UNIT

## Chapter 6.4 Socioeconomic Baseline

## COMPANY Doc. No. SC26-2A-OTC-PRJ-EN-REP-000014

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## Information Classification

| Code | Description of Information Classification |
|---|---|
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# 6.0 Environmental and Social Baseline

## 6.4 Socio-economic Baseline

### 6.4.1 Introduction

The main purpose of the socioeconomic baseline study is to determine the existing social and economic conditions of the settlements and households within the Project AoI. A socio-economic baseline study was undertaken prior to construction of the Phase 1. This study undertaken within the scope of the Phase 2 ESIA, also reflects the effects of Phase-1 construction and operation impacts on social components.

The socio-economic baseline is an integral part of the planning and implementation process, as it provides the baseline for measuring Project performance and evaluating both the positive (beneficial) and negative impacts on people and communities through regular monitoring and assessment throughout the Project's lifespan.

Sensitivity of each social component is presented in Section 7 Impact Assessment.

### 6.4.2 Data Collection Methodology

#### *Desktop Study (Secondary Data)*

Secondary Data was obtained from national institutions (ministries, research institutes, universities, national and local censuses, web-based published reports, assessment reports of local and national NGOs). Outputs of the secondary data analysis help to reach a common understanding about the social AoI. Secondary data was obtained more specifically through the following institutional websites;

- Zonguldak Governorship
- Çaycuma District Governorship
- Turkstat
- Provincial Directorate of Environment, Urbanization and Climate Change
- Zonguldak Provincial Directorate of Agriculture and Forestry
- Western Black Sea Development Agency

#### *Field Surveys (Primary Data)*

#### *Community Level Surveys (CLS)*

The aim of this survey was to determine socio-economic profile of each settlement within the AoI and focused on issues such as population, migration and reasons of migration, ethnic composition, age distributions, social facilities (schools, mosques, etc.) in the settlement, education level, local conflicts and problems, livelihoods and main income generation activities, economic production in the settlement, land use, services and infrastructure, vulnerable groups, and perceptions of Project impacts.

The settlements in the social AoI that were consulted in the scope of community level surveys are: **Sazköy, Aşağıihsaniye, Sefercik, Gökçeler, Derecikören, and Yeşilyayla**, presented in Figure 3-23 in Section 3 Project Description.

Community level surveys were performed with the mukhtars of the villages.

#### *Household Surveys (HHS)*

The household surveys comprised the following items:

- level of information on the planned Project,
- mechanisms of access to information,
- major complaints about construction and operation of 1st Phase,
- socio-economic features of the households, general conditions of houses,
- livelihoods and main income generating activities,
- land ownership and land use information,
- educational skills of household members that can be used in construction and operation stages of the Project.

The questionnaire also included a section on discussion of impacts of the Phase 1 and other on-going and planned projects in the region, in order to identify cumulative social impacts. The number of surveyed households within the villages in the social AoI is provided in the table below.

**Table 6-1: Number of Surveyed Households**

| Village Name | Number of Households | Number of HHSs | Percentage of households covered by the survey % |
|---|---|---|---|
| **Sazköy** | 45 | 26 | 57.77 |
| **Aşağıihsaniye** | 50 | 23 | 46.00 |
| **Sefercik** | 45 | 17 | 37.77 |
| **Gökçeler** | 68 | 22 | 32.35 |
| **Derecikören** | 120 | 17 | 14.16 |
| **Yeşilyayla** | 35 | 8 | 22.85 |
| **Total** | 363 | 113 | 31.12 |

### *Focus Group Discussions (FGD)*

FGDs have been designed to engage with specific segments of the community that might require special attention in consultation, e.g., women, youth, elderly, vulnerable people, beekeepers etc. During the social survey, it was observed that each category of the vulnerable groups was represented in the HHS, as a result only women FGDs were conducted in each settlement.

### *Fisheries Survey*

There are a few ports for fishers along the coast of Black Sea. Based on the socio-economic surveys undertaken for Phase 1 and interviews with the Mukhtars and the representatives of the aquaculture cooperative, only the fishers from the Filyos Port continue to fish in the AoI. fishers During the socio-economic surveys undertaken for Phase 1, it was confirmed by those interviewed that all harbours and fishers' cooperatives in the region have their own borders and there is no continuous interaction with each other outside the borders.

During the socio-economic survey, in depth interviews were completed with the representatives of Filyos Aquaculture Cooperative and 20 fishers to cover the following topics: main source of income, location and size of fishing activities, users of project area, main problems of fishers and the cooperative, benefits of the support provided during Phase 1, and fishers' recommendations to continue fishing.

### *Site Observations*

In addition to above-mentioned consultation methods, site observations were used by the social experts to analyse current practices in the AoI, in terms of effects of Phase 1 construction and operation, land use, interactions between the Project and local communities, management of complaints, local employment expectations and current labour conditions.

### *Field Work and Survey Team*

Survey team consisted of one social advisor and field coordinator, and four pollsters. The survey calendar can be seen below.

**Table-6-2: Fieldwork calendar**

| Date | Settlement | Survey Type |
|---|---|---|
| August 19, 2024 | Sazköy Village | Household survey |
| August 19, 2024 | Sazköy Village | Mukhtar Interview |
| August 19, 2024 | Sazköy Village | Women Focus Group Discussion |
| | | |
| August 20, 2024 | Aşağıihsaniye Village | Household survey |
| August 20, 2024 | Aşağıihsaniye Village | Mukhtar Interview |
| August 20, 2024 | Aşağıihsaniye Village | Women Focus Group Discussion |
| | | |
| August 20, 2024 | Yeşilyayla Village | Household survey |
| August 20, 2024 | Yeşilyayla Village | Mukhtar Interview |
| August 20, 2024 | Yeşilyayla Village | Women Focus Group Discussion |
| | | |
| August 21, 2024 | Sefercik Neighbourhood | Household survey |
| August 21, 2024 | Sefercik Neighbourhood | Mukhtar Interview |
| August 21, 2024 | Sefercik Neighbourhood | Women Focus Group Discussion |
| | | |
| August 21, 2024 | Derecikören Village | Household survey |
| August 21, 2024 | Derecikören Village | Mukhtar Interview |
| August 21, 2024 | Derecikören Village | Women Focus Group Discussion |
| | | |
| August 22&23, 2024 | Gökçeler Village | Household survey |
| August 22&23, 2024 | Gökçeler Village | Mukhtar Interview |
| August 22&23, 2024 | Gökçeler Village | Women Focus Group Discussion |
| | | |
| August 22, 2024 | Filyos Aquaculture Management | Focus Group Discussion |
| August 22, 2024 | Fishers of Filyos Shelter | Fisher Survey |

### 6.4.3 Determination of the Onshore Area of Influence

The Area of Influence (AoI) is the area that may be impacted by a project. Understanding the AoI is an essential requirement for a social impact assessment (SIA). Following that, the socioeconomic baseline must focus on the AoI, although the baseline may have a broader focus, depending on the nature and impacts of the project.

According to the Guidance Note 1 Assessment and Management of Environmental and Social Risks and Impacts of IFC (2012), where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project's AoI. This AoI encompasses, as appropriate:

The area likely to be affected by:

1. The project and the TP-OTC's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
2. Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
3. Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

Social AoI defines the communities and settlements that may experience positive and negative impacts from the Project's activities and socio-economic influences, including livelihoods, employment, purchasing, health, and safety, land use etc.

Since the Phase 2 construction and the operation stages will be in the same physical area AoI is determined as same as Phase 1. This has given opportunity to evaluate cumulative impacts and potential consequences of Phase 1 and 2.

The social AoI identified for Project is presented in Figure 6-1 and Figure 5-5 Map Showing Social Area of Influence Onshore, in Section 5 ESIA Methodology.

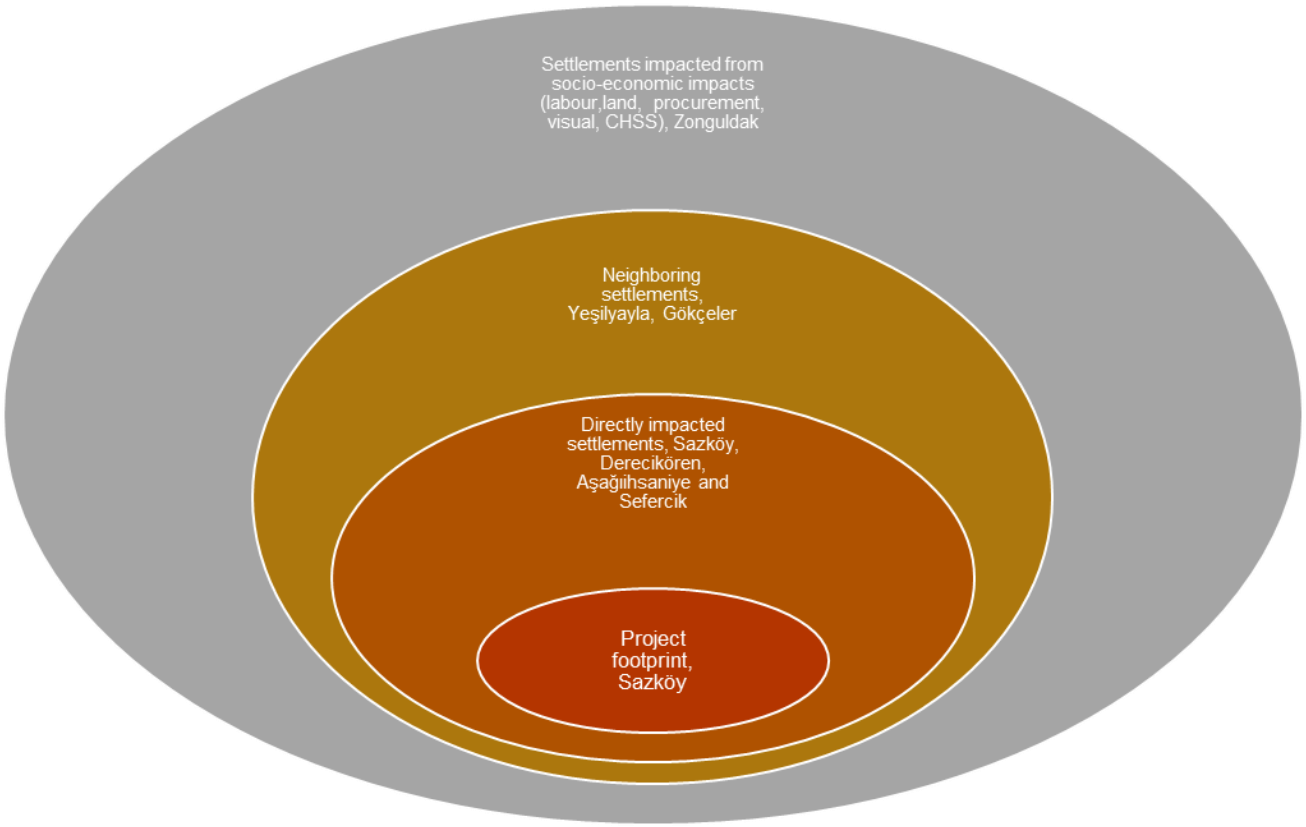



**Figure 6-1: Project Area of Influence**

### 6.4.4 Determination of the Offshore Area of Influence

Based on the interviews undertaken during Phase 1 and Phase 2 socio-economic surveys and ongoing engagement with the fishers, it is observed that only the fishers at the Filyos Port fishers are fishing at the Project Area up to 2 miles from the shore. The fishers can travel between the Işıkveren coast of Zonguldak and the Güzelcehisar coast of Bartın.

A NAVTEX (Navigational Telex) announcement is a type of maritime communication issued to provide important information to ships. NAVTEX broadcasts include navigational warnings, weather forecasts, search and rescue information, and urgent maritime safety notices. These announcements are transmitted automatically via radio signals,

In Türkiye, NAVTEX announcements are made by the Office of Navigation, Hydrography, and Oceanography (SHOD), which operates under the Turkish Naval Forces. SHOD is responsible for issuing maritime safety information, including NAVTEX broadcasts, which are transmitted from stations located along the Turkish coast. These broadcasts provide essential information for maritime navigation, such as navigational warnings, weather forecasts, and notices to mariners, ensuring safe navigation in Turkish waters.

During the construction of the Phase 1 offshore sections, several NAVTEX announcements were made. Upon start of the operation phase, the corridor along the Phase 1 offshore pipeline, where restrictions would be announced via NAVTEX announcements, was identified as 500 m on either side of the pipeline. Activities such as seabed exploration, unloading, dredging, trawling, and anchoring near the natural gas and MEG pipelines and the cable could damage the pipeline, these activities are restricted within 500 meters on either side of the

natural gas pipeline and are announced through NAVTEX announcements. Similarly, 500 m on either side of the Phase 2 export gas pipeline during construction will be subject to restrictions.

The boats cross the restricted corridor solely to travel from Filyos Port towards the eastern coasts, adhering to the restrictions along the pipeline route.

Accordingly, the offshore Area of Influence has been defined as the area extending 2 miles from the shore and 500 meters on either side of the Phase 2 gas export pipeline, encompassing the restricted NAVTEX area, as presented in Section 5, Figure 5-6, Map Showing Social Area of Influence.

### 6.4.5 Administrative Structure

Türkiye is subdivided into 81 provinces. Each province is further divided into districts, and each district is divided into villages or neighbourhoods according to the respective rural or urban setting. The provincial administrative structure consists of provincial governors, special provincial administrations, municipalities, while the district level administrative structure consist of district governors and district municipalities and villages/neighbourhoods are the sub administrative units of the districts. The following sections describe the details and responsibilities of these administrative structures. Figure-6-2 presents the administrative structure as found in the AoI.

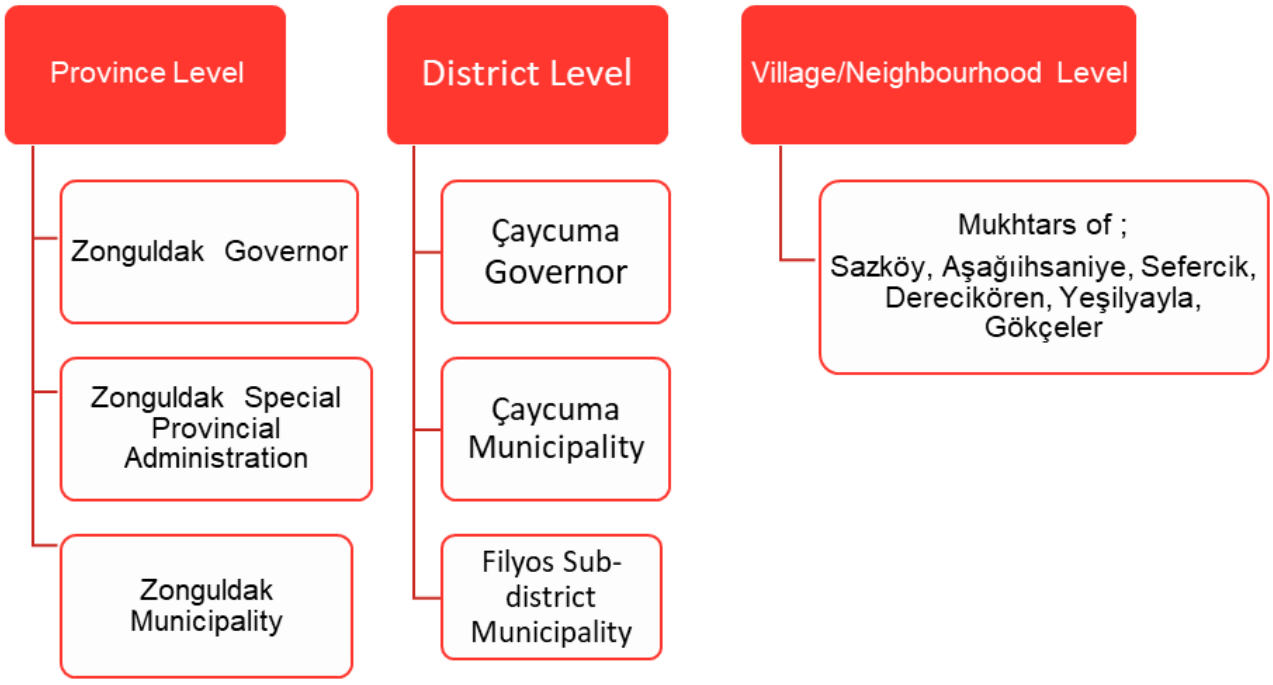



**Figure-6-2: Administrative Structure**

In reference to Figure-6-2, the following sections expand on the administrative structure.

#### *Provincial Governors*

The Governor of a province represents the Türkiye Central Administration (central government) at a provincial level. The Governor is appointed by the Council of Ministers with the approval of the President and reports to the Ministry of Interior. The Governor of Zonguldak represents the province.

In compliance with the Law number 5442, the responsibilities of the governors as follows:

- To ensure the security of the citizens and the public order,
- To guarantee the coordination and cooperation of different government and non-governmental organisations and institutions,
- To declare and implement legislation and governmental decrees,
- To supervise all provincial public institutions and organizations
- To collect taxes and other state revenues
- To preside over official ceremonies as a chief representative of the state,
- To contact consuls and accept their applications and visits,
- To prevent offences by using the police and gendarmerie forces due to their security related power
- Taking security measures in civil airports, ports and border gates in order to provide border and coast safety
- Appealing for help from military forces directly in the case of security threatening event which are not able to be prevented by law enforcement forces originally under their authority
- Being the head of the social assistance and solidarity foundations of the province
- To be the head of the investment monitoring and coordinating unit which operates for the purpose of monitoring and coordinating public investments and public services of provincial organizations under the authority of the governor
- Having hierarchical authority over different ministries civil servants who provide public services in the province
- To permit judicial investigations concerning the formal roles and duties of the civil servants and municipal staffs.

### *Special Provincial Administrations*

In Türkiye, special provincial administrations (SPAs) function at a provincial level. SPAs also have a municipal function in the rural areas. The SPA work towards reducing poverty and improving physical and socio-economic infrastructures, particularly in rural villages.

SPAs provide a broad range of services. The SPAs are in charge of the construction and maintenance of the physical infrastructures for education, healthcare, and sports. The SPAs have a strong community development focus. The emphasis is on preventative health and social services, as well as contributing to the development of industry and trade sectors, including agriculture.

The AoI is mainly composed of rural settlements. The Zonguldak Special Provincial Administration's focus is on these villages.

### *Municipalities*

Municipalities are represented in the respective provincial and district capitals, and in communities with at least 5,000 inhabitants. Approximately 93% of the population of Türkiye live within municipal boundaries. The villages located in the AoI are connected to Çaycuma District and Filyos sub-District. Tahsin Erdem is elected head of

Zonguldak Municipality, Bülent Kantarci is elected head of Çaycuma district and Erol Acar is head of Filyos subdistrict municipality head.

Municipalities prepare master plans and detailed development plans, authorise construction permits, control works and operate the territory of the municipality. Municipalities are responsible for the development of urban infrastructure and provide various services. These services include waste disposal, security, fire, emergency aid, relief, ambulance, traffic, cemeteries, parks and green areas, housing, culture and artworks and maintenance of education facilities.

#### *Villages*

Mukhtars represent the villages. Mukhtars are elected by villagers through local elections held once every five years. The village, as a public legal entity, has full administrative and financial autonomy. Village administration consists of a Mukhtar, an executive committee and a village association. The state pays every village Mukhtar a salary approximately equal to the minimum wage for the public services. The Mukhtar discharges functions such as identifying the poor and the provision of assistance, renewing voter registers, informing the relevant agencies of problems and failures in education, health, security and sanitation.

İsmail Yılmaz was elected as the Mukhtar of Sazköy, İlker Bakar was elected as the Mukhtar of Aşağıihsaniye, İrfan Sefercik was elected as the Mukhtar of Sefercik, Meftun Coşkun was elected as the Mukhtar of Yeşilyayla, Sema Kara was elected as the Mukhtar of Derecikören, Ergin Gökçe was elected as the Mukhtar of Gökçeler village during the local elections held on March 31, 2024.

### 6.4.6 Demographic Profile

#### *6.4.6.1 Introduction*

The Project is located Çaycuma District of the Zonguldak Province. Demographic profile at the provincial and district level information were obtained from secondary resources and the village level demographical information were collected through the in-depth interviews with the Mukhtars.

| | |
|---|---|
| **Description** | Population and demography are key components to have a good understanding of the characteristics of a community. |
| **Study Area** | **RSA:** the Province of Zonguldak<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3 and 6.4.4) |
| | **AoI:** The villages of Aşağıihsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören<br><br>**Rationale:** See Social Area of Influence Chapter |
| **Data sources** | **Primary sources**: Socio-economic surveys (Section 6.4.2) |
| | **Secondary sources:** Socio-economic surveys (Section 6.4.2) |

According to TURKSTAT data of 2023, the total population of Zonguldak was recorded as 591,492. The male population is 294,001 people, while the female population is 297,491. The average household size in the province is 2.8, with a net migration rate of 7.1. Please refer to the following table for the population distribution of the province.

**Table 6-3: Distribution of Provincial Population**

| Zonguldak | Number |
|---|---|
| **Total Population** | 591,492 |
| **Male population** | 294,001 |
| **Female population** | 297,491 |
| **Average household size** | 2.8 |
| **Net migration rate** | 7.1 |

*Source: TURKSTAT, 2023*

It can be noticed that the population change in Zonguldak province does not correspond to the population change across Türkiye. The province's population has fallen by about 10,075 persons in the last ten years.

In recent years, the number of pensioners in Zonguldak has surpassed the number of active populations. While there are 148,014 active insured people in the city, there are 168,784 pensioners, according to data from the Zonguldak SGK Provincial Directorate, as of December, 2023. The city has a total population of 21,143 pensioners and employees. The decline in interest in hard coal in the energy sector, as well as the reduction in the number of workers at the Turkish Hard Coal Institution (TTK), from 35,000 thousand in 1990, to 7000 in 2021 and 8416 as of January, 2024, are among the factors driving the migration from the city. Young individuals are having difficulty obtaining work due to a shortage of job opportunities. Population change of the province is shown in the table below.

**Table 6-4: Provincial Population Change According to Years**

| Year | Population | Male Population | Female Population |
|---|---|---|---|
| 2023 | 591,492 | 294,001 | 297,491 |
| 2022 | 588,510 | 291,854 | 296,656 |
| 2021 | 589,684 | 291,822 | 297,862 |
| 2020 | 591,204 | 293,068 | 298,136 |
| 2019 | 596,053 | 295,832 | 300,221 |
| 2018 | 599,698 | 297,303 | 302,395 |
| 2017 | 596,892 | 294,494 | 302,398 |
| 2016 | 597,524 | 295,033 | 302,491 |
| 2015 | 595,907 | 294,679 | 301,228 |
| 2014 | 598,796 | 295,878 | 302,918 |
| 2013 | 601,567 | 296,910 | 304,657 |
| 2012 | 606,527 | 299,301 | 307,226 |

| Year | Population | Male Population | Female Population |
|---|---|---|---|
| 2011 | 612,406 | 302,370 | 310,036 |
| 2010 | 619,703 | 307,550 | 312,153 |
| 2009 | 619,812 | 306,075 | 313,737 |
| 2008 | 619,151 | 304,997 | 314,154 |
| 2007 | 615,890 | 302,827 | 313,063 |

*Source: TURKSTAT, 2023*

By analysing data of 2023, it can be noted that Ereğli is the most populous district in Zonguldak province followed by the Central district and the Çaycuma districts, respectively. Table 6-5 shows the population distribution by district. It should be noted that only the Çaycuma District is located in the AoI.

**Table 6-5: Population Figures According to Districts**

| Year | District | Population | Male Population | Female Population |
|---|---|---|---|---|
| 2023 | **Ereğli** | 175,374 | 87,286 | 88,008 |
| 2023 | **Merkez** | 117,360 | 57,701 | 59,659 |
| 2023 | **Çaycuma** | 91.968 | 45.822 | 46.146 |
| 2023 | **Devrek** | 57,562 | 28,770 | 28,792 |
| 2023 | **Kozlu** | 50,908 | 24,825 | 26,083 |
| 2023 | **Alaplı** | 43,417 | 21,835 | 21,582 |
| 2023 | **Kilimli** | 33,639 | 17,026 | 16,613 |
| 2023 | **Gökçebey** | 21,394 | 10,786 | 10,608 |

Source: *TURKSTAT, 2023*

The population of the Çaycuma district in Zonguldak province was 90,362 in 2021 and is 91,968 in 2023. The entire male population of Zonguldak province's Çaycuma district is 45,822, while the total female population is 46,146. The district centre has a population of 32,292 people, with 15,643 men and 16,649 women. The district town/village has a total population of 59,676. The total male population of the district town/village is 30,179, while the total female population is 29,497.

**Table 6-6: Distribution of Çaycuma District Population**

| Çaycuma | Number |
|---|---|
| **Total population** | 91,968 |
| **Total male population** | 45,822 |

| Çaycuma | Number |
|---|---|
| **Total female population** | 46,146 |
| **Number of villages within district borders** | 79 |
| **Number of neighbourhoods within district borders** | 38 |

Source: *TURKSTAT, 2023*

It can be noted that the population of the district has been decreasing over the years. The population, which reached a peak of 97,528 in 2008, decreased to 91,968 by 2023.

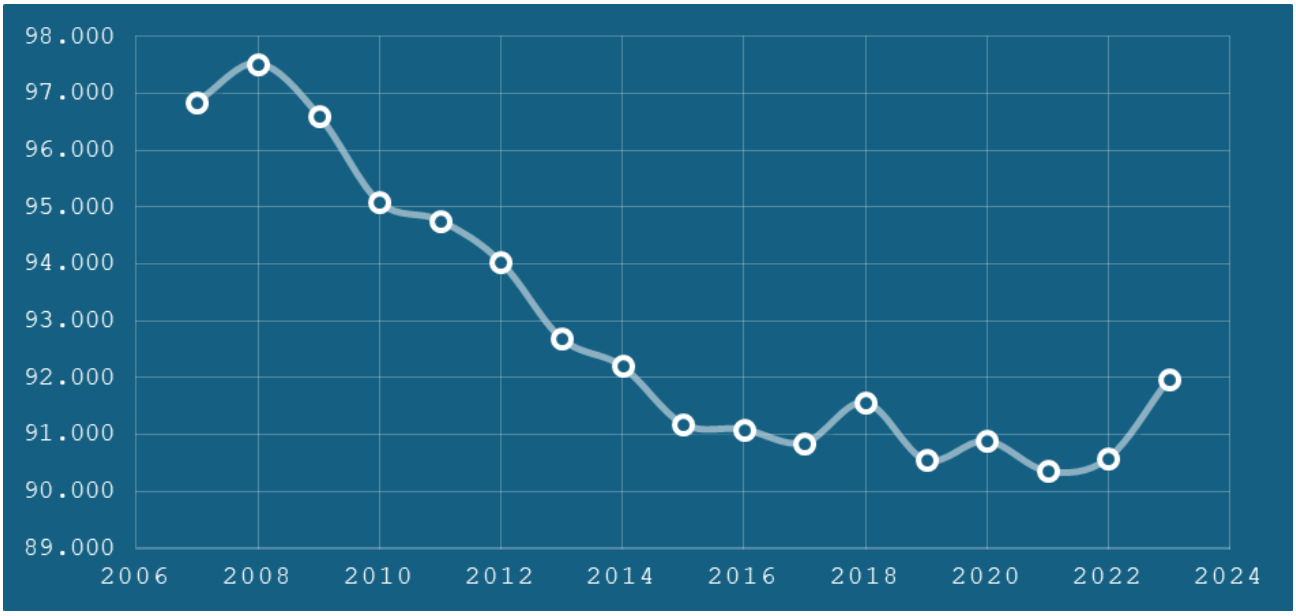



**Figure 6-3: Population Growth of Çaycuma**

Source: *TURKSTAT, 2023*

## *Sazköy*

According to the result of the interview conducted with the Mukhtar of Sazköy on August 19, 2024, the village's total population is approximately 140 people, with a total of 40 households. The village's average household size is determined as 2.77. The settlement has a seasonal increase, with the population increasing to roughly 200 persons during the summer months. According to the results of the interviews with the Mukhtar, in the last 3 years, 3 households of TP-OTC employees came to village as tenants. In addition, the young residents of the village have returned to the village as there are job opportunities.

According to TURKSTAT data, the total population of Sazköy is determined as 329 as of 2023 The total population gradually declined from 214 in 2007 to 127 in 2021. In last two years the population increased gradually, reaching 233 in 2022 and 329 in 2023.

**Table 6-7: Distribution of Population Data of Sazköy Village by Year**

| Year | Population of Sazköy Village | Male population of Sazköy Village | Female population of Sazköy Village |
|---|---|---|---|
| **2023** | 329 | 267 | 62 |
| **2022** | 233 | 178 | 55 |
| **2021** | 127 | 70 | 57 |
| **2020** | 134 | 73 | 61 |
| **2019** | 141 | 74 | 67 |
| **2018** | 148 | 80 | 68 |
| **2017** | 139 | 72 | 67 |
| **2016** | 155 | 80 | 75 |
| **2015** | 161 | 84 | 77 |
| **2014** | 158 | 85 | 73 |
| **2013** | 169 | 90 | 79 |
| **2012** | 180 | 93 | 87 |
| **2011** | 190 | 102 | 88 |
| **2010** | 197 | 107 | 90 |
| **2009** | 199 | 104 | 95 |
| **2008** | 212 | 112 | 100 |
| **2007** | 214 | 110 | 104 |

*Source: TURKSTAT, 2023*

### *Aşağıihsaniye*

An in-depth interview was held with the Mukhtar of Aşağıihsaniye on August 20, 2024. According to the results of the interview, the village population is determined around 170 people consists of 55 households in total. The average household size was determined as 2.87. During the summer period, the total population reaches to 300 people consists of approximately 90 households. The main reason for this increase is temporary migration of the young people for the agricultural production who have lands in the village. Nevertheless, it was noted that reverse migration among the young population increased within 2-3 years due to new job opportunities.

According to TURKSTAT data, the total population of Aşağıihsaniye Village declined between 2007 and 2017, increased in 2017 but declined again after 2019. In 2023, it increased again.

**Table 6-8: Distribution of Population Data of Aşağıihsaniye Village by Year**

| Year | **Population of Aşağıihsaniye Village** | **Male population of Aşağıihsaniye Village** | **Female population of Aşağıihsaniye Village** |
|---|---|---|---|
| **2023** | 163 | 90 | 73 |
| **2022** | 149 | 78 | 71 |

| Year | Population of Aşağıihsaniye Village | Male population of Aşağıihsaniye Village | Female population of Aşağıihsaniye Village |
|---|---|---|---|
| **2021** | 156 | 82 | 74 |
| **2020** | 156 | 84 | 72 |
| **2019** | 160 | 87 | 73 |
| **2018** | 163 | 89 | 74 |
| **2017** | 130 | 71 | 59 |
| **2016** | 165 | 91 | 74 |
| **2015** | 178 | 97 | 81 |
| **2014** | 179 | 95 | 84 |
| **2013** | 175 | 97 | 78 |
| **2012** | 177 | 93 | 84 |
| **2011** | 183 | 95 | 88 |
| **2010** | 188 | 96 | 92 |
| **2009** | 187 | 93 | 94 |
| **2008** | 197 | 98 | 99 |
| **2007** | 220 | 111 | 109 |

*Source: TURKSTAT, 2023*

### *Sefercik*

An in-depth interview was held with the Sefercik Mukhtar on August 21, 2024. According to the information obtained, there are approximately 169 people in the village. The total number of households in the village was determined as 45 and the average household size was 2.41. During the summer period, the population of the village rises to around 200 people with the 65 households. It was stated that the reason for the seasonal increase was for the purpose of vacation. The population has not been changed in 3 years.

According to TURKSTAT data, the total population of Sefercik Village declined from 220 in 2007 to 159 in 2020. However, it increased slightly in 2021 and reached 176 in 2023.

**Table 6-9: Distribution of Population Data of Sefercik Neighbourhood by Year**

| Year | Population of Sefercik village |
|---|---|
| **2021** | 166 |
| **2020** | 159 |
| **2019** | 166 |
| **2018** | 171 |
| **2017** | 170 |
| **2016** | 175 |

| Year | Population of Sefercik village |
|---|---|
| **2015** | 175 |
| **2014** | 175 |
| **2013** | 178 |
| **2012** | 192 |
| **2011** | 208 |
| **2010** | 211 |
| **2009** | 211 |
| **2008** | 215 |
| **2007** | 220 |

*Source: TURKSTAT, 2023*

### *Gökçeler*

An in-depth interview was conducted with the Mukhtar of Gökçeler village on August 22, 2024. According to the information received, approximately 173 people live in the village and there are an average of 68 households. The average size of the Gökçeler households was determined as 3. There is no seasonal variation in the village population. Generally elderly population live in the village and in the last 2-3 years, retirees have returned to the village and population has increased by a few people.

According to TURKSTAT data, the total population of Gökçeler Village started to decline between 2007 and 2021, though not regularly. The total population declined from 246 in 2007 to 152 in 2022 but increased to 174 in 2023.

**Table 6-10: Distribution of Population Data of Gökçeler Village by Year**

| Year | Population of Gökçeler Village | Male Population of Gökçeler Village | Female Population of Gökçeler Village |
|---|---|---|---|
| **2023** | 174 | 83 | 91 |
| **2022** | 152 | 72 | 80 |
| **2021** | 157 | 75 | 82 |
| **2020** | 161 | 77 | 84 |
| **2019** | 161 | 75 | 86 |
| **2018** | 166 | 79 | 87 |
| **2017** | 169 | 78 | 91 |
| **2016** | 173 | 82 | 91 |
| **2015** | 195 | 92 | 103 |
| **2014** | 186 | 88 | 98 |
| **2013** | 193 | 91 | 102 |

| Year | Population of Gökçeler Village | Male Population of Gökçeler Village | Female Population of Gökçeler Village |
|---|---|---|---|
| **2012** | 207 | 98 | 109 |
| **2011** | 208 | 103 | 105 |
| **2010** | 218 | 108 | 110 |
| **2009** | 233 | 115 | 118 |
| **2008** | 247 | 122 | 125 |
| **2007** | 246 | 122 | 124 |

*Source: TURKSTAT, 2023*

### *Derecikören*

The Mukhtar of Derecikören village was interviewed on August 21, 2024. According to the data obtained within the scope of the interview, approximately 300 people live in the village. Based on the data provided there are 120 households in total in the village and the average household size is determined as 3.53. In the summer period, the population rises to the level of 500 people. The reason for the population increases in the summer period is stated as the vocation. It was stated that there has been no significant change in the population in the last 3 years. The village population consists mainly of elderly and retired people.

According to TURKSTAT data, the total population of Derecikören Village started to decline between 2007 and 2021, though not regularly. The total population declined from 355 in 2007 to 272 in 2023.

**Table 6-11: Distribution of Population Data of Derecikören Village by Year**

| Year | Population of Derecikören Village | Male Population of Derecikören Village | Female Population of Derecikören Village |
|---|---|---|---|
| **2021** | 295 | 135 | 160 |
| **2020** | 287 | 126 | 161 |
| **2019** | 293 | 129 | 164 |
| **2018** | 301 | 137 | 164 |
| **2017** | 285 | 124 | 161 |
| **2016** | 297 | 132 | 165 |
| **2015** | 307 | 144 | 163 |
| **2014** | 300 | 140 | 160 |
| **2013** | 308 | 145 | 163 |
| **2012** | 325 | 155 | 170 |
| **2011** | 338 | 158 | 180 |
| **2010** | 354 | 169 | 185 |
| **2009** | 363 | 170 | 193 |
| **2008** | 361 | 170 | 191 |

| Year | Population of Derecikören Village | Male Population of Derecikören Village | Female Population of Derecikören Village |
|---|---|---|---|
| **2007** | 355 | 170 | 185 |

*Source: TURKSTAT, 2023*

### *Yeşilyayla*

The village Mukhtar of Yeşilyayla was interviewed on 20 August 2024. According to the information received within the scope of the interview, the total population of the village is approximately 140 people and there are 35 households in total in the village. The average household size was determined as 2.88. During the summer period, the population of the village rises to 160 and the biggest reason for this is agricultural production. Young population has been increased during last 3 years, some of them return to village to work at TP-OTC and some to do animal husbandry.

**Table 6-12: Distribution of Population Data of Yeşilyayla Village by Year**

| Year | Population of Yeşilyayla Village | Male Population of Yeşilyayla Village | Female Population of Yeşilyayla Village |
|---|---|---|---|
| **2023** | 135 | 76 | 59 |
| **2022** | 133 | 74 | 59 |
| **2021** | 133 | 74 | 59 |
| **2020** | 138 | 76 | 62 |
| **2019** | 133 | 73 | 60 |
| **2018** | 132 | 72 | 60 |
| **2017** | 126 | 69 | 57 |
| **2016** | 132 | 70 | 62 |
| **2015** | 141 | 74 | 67 |
| **2014** | 144 | 76 | 68 |
| **2013** | 153 | 80 | 73 |
| **2012** | 156 | 79 | 77 |
| **2011** | 151 | 76 | 75 |
| **2010** | 147 | 75 | 72 |
| **2009** | 158 | 83 | 75 |
| **2008** | 152 | 79 | 73 |
| **2007** | 162 | 82 | 80 |

*Source: TURKSTAT, 2023*

### 6.4.6.2 Age and gender distribution

#### Zonguldak Province

In Zonguldak province, people between the ages of 40 and 44 are determined as the province's largest age group. Individuals between the ages of 45 and 49 are ranked as second, and those between the ages of 50 and 54 are ranked third. The Figure 6-4 below depicts the age distribution of the province's total population.

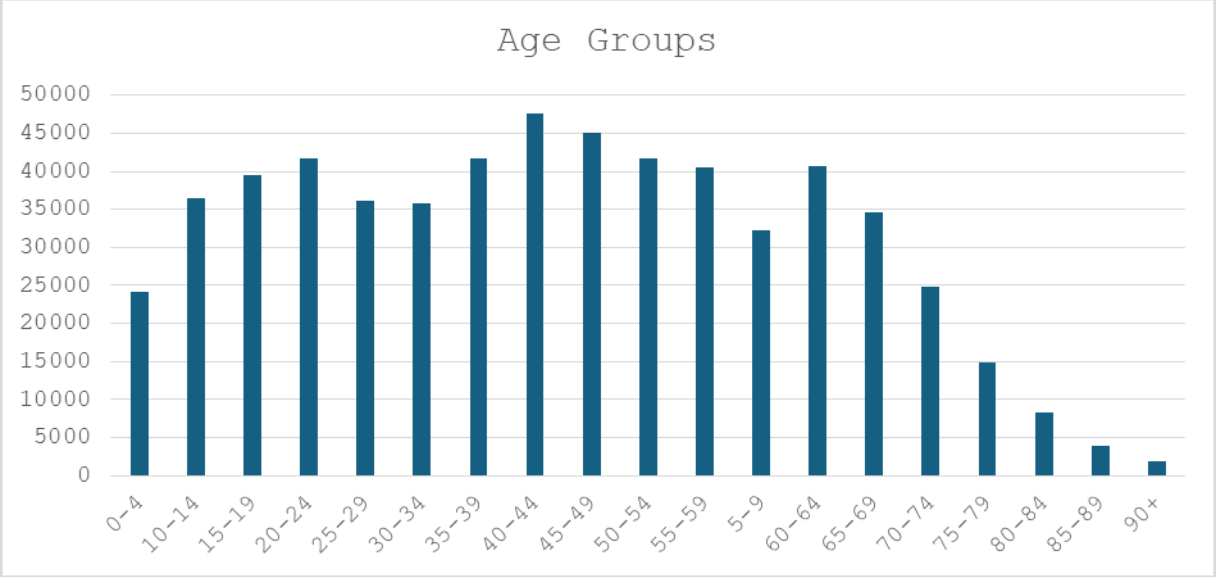



**Figure 6-4: Age Distribution of Zonguldak Province**

According to TURKSTAT data of 2023, female population consists of 49.7% and the male population consists 50.3% of the total population of Zonguldak Province.

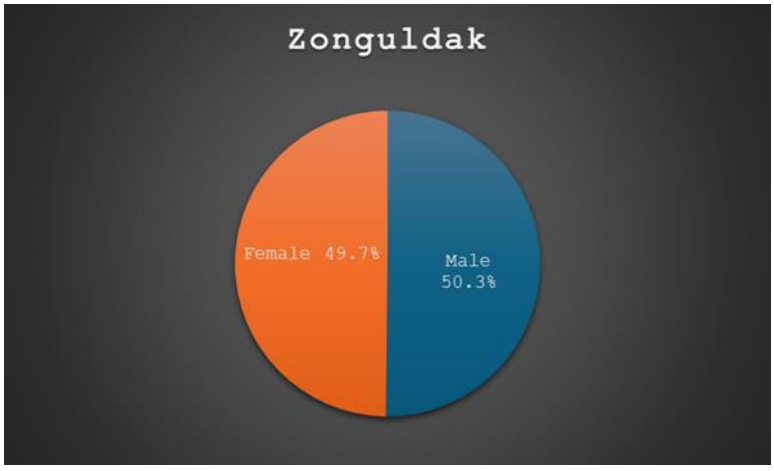



**Figure 6-5: Gender Distribution of Zonguldak Province**

#### Çaycuma District

Considering the age distribution of Çaycuma District, it is seen that the largest group is people aged between 60 and 64. The detailed age distributions of the district are presented below.

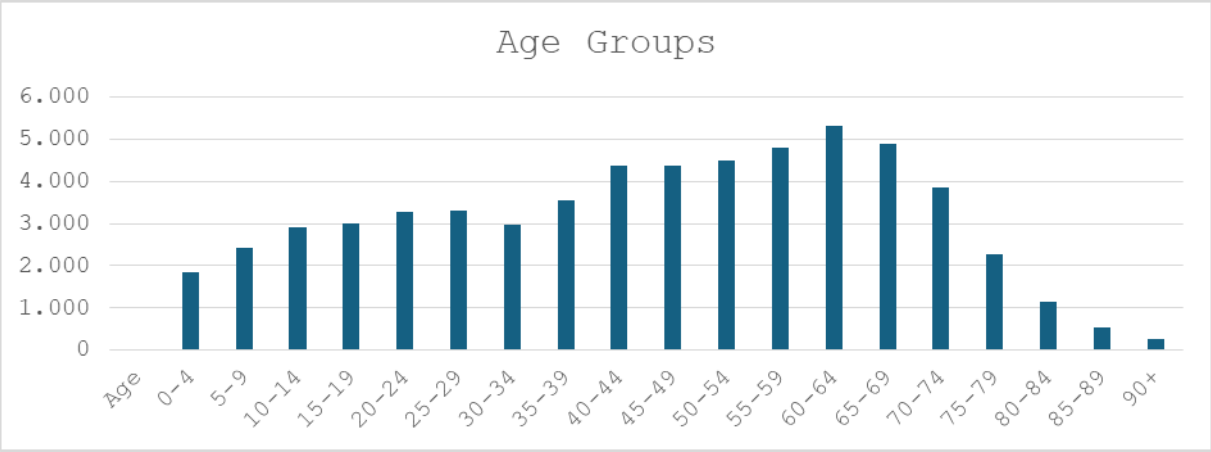



**Figure 6-6: Age Distribution of Çaycuma District**

According to TURKSTAT data of 2023, female population consist of 50.6% and the male population consists 49.4% of the total population of Çaycuma District.

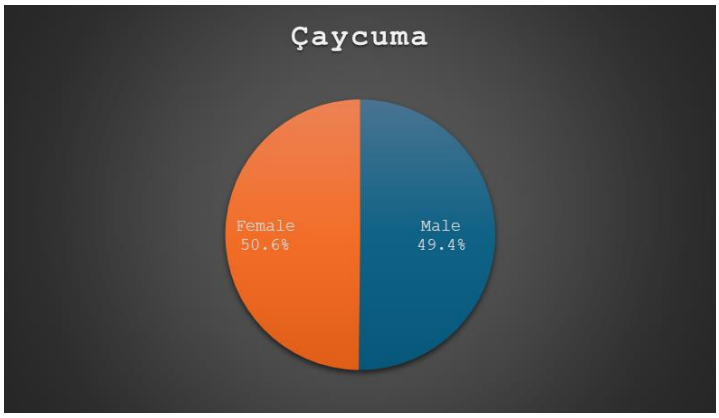



**Figure 6-7: Gender Distribution of Çaycuma District**

### *Sazköy Village*

In Sazköy, the female population represents 18.8% of the total population while the male population accounts for 81.2% of the total population. The main reason for the difference is the male employees of TP-OTC and its contractors who come from outside and register in Sazköy after being recruited.

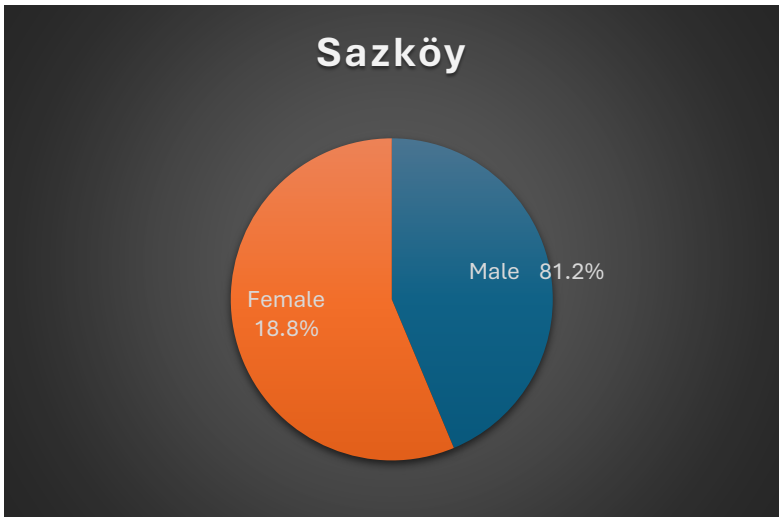



**Figure 6-8: Gender Distribution of Sazköy Village**

### *Aşağıihsaniye Village*

The female population represents 44.8% of the total population while the male population accounts for 55.2% of the total population in Aşağıihsaniye.

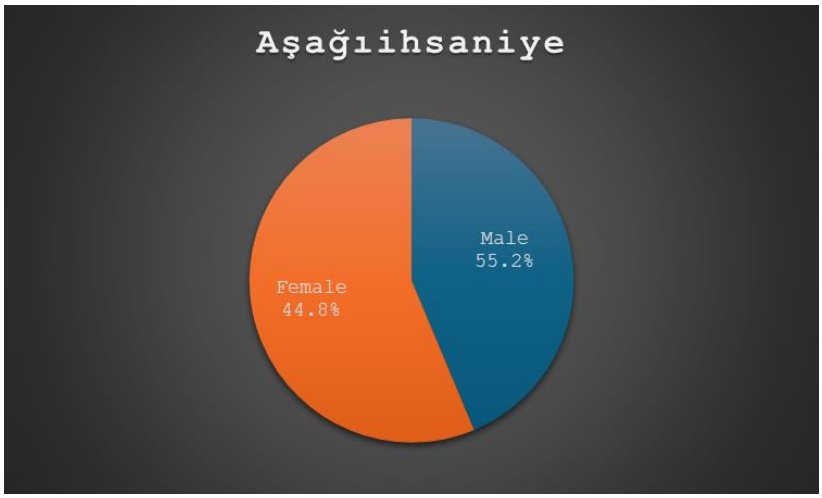



**Figure 6-9: Gender Distribution of Aşağıihsaniye Village**

### *Sefercik Neighbourhood*

In Sefercik, the female population represents 50.5% of the total population while the male population accounts for 49.4% of the total population.

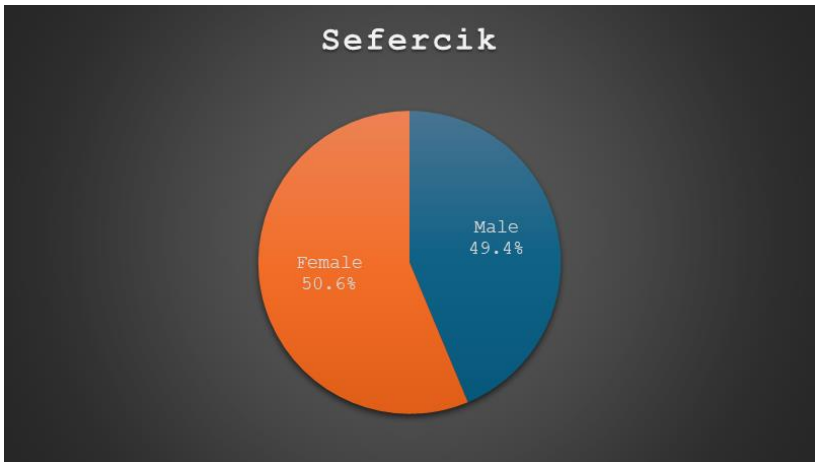



**Figure 6-10: Gender Distribution of Sefercik Neighbourhood**

### *Gökçeler Village*

In Gökçeler, female population represents 52.3% of the total population while the male population accounts for 47.7% of the total population.

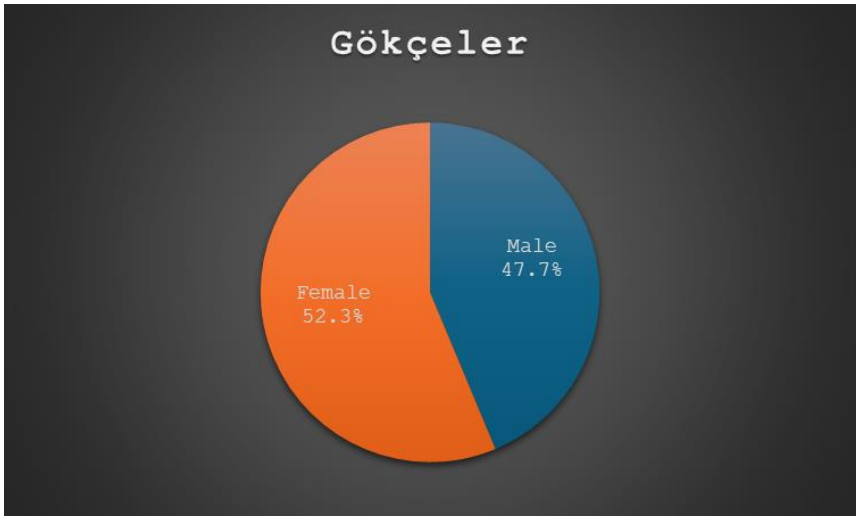



**Figure 6-11: Gender Distribution of Gökçeler Village**

### *Derecikören Village*

In Derecikören, female population represents 53.7% of the total population while the male population accounts for 46.3% of the total population.

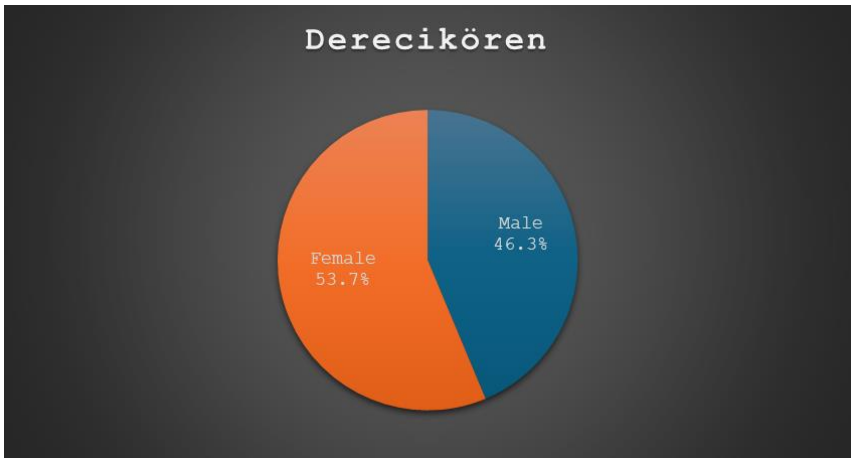



**Figure 6-12: Gender Distribution of Derecikören Village**

### *Yeşilyayla Village*

In Yeşilyayla, female population represents 43.7% of the total population while the male population accounts for 56.3% of the total population.

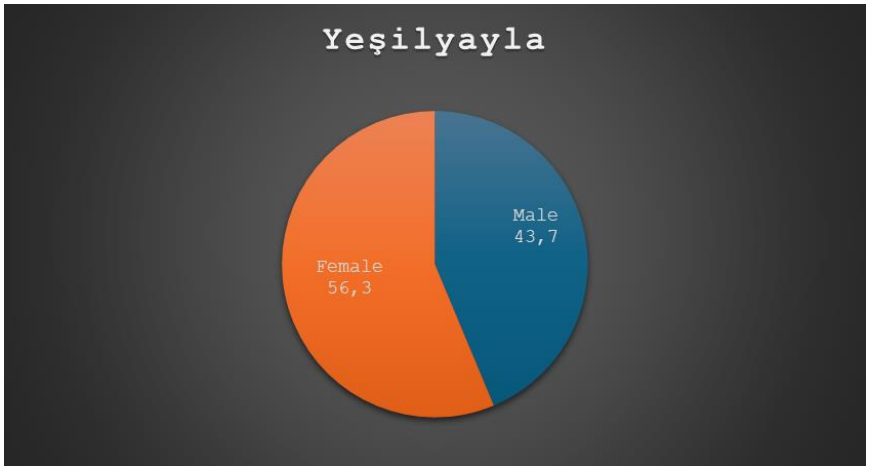



**Figure 6-13: Gender Distribution of Yeşilyayla Village**

## *6.4.6.3 Ethnicity, Language, and Religion*

The province of Zonguldak has experienced a population increase from the beginnings of 1940s. Especially Ereğli Iron and Steel Factory, which was put into operation in 1964, the demand for coal in the region increased more and it caused more production and more workers to migrate to the region, as a result, the province had a cosmopolitan ethnic and cultural structure.

When the settlements within the area of influence were assessed, it was determined that whole villagers of Aşağıihsaniye are from Republic of Abkhazia. Other than Aşağıihsaniye village, communities of 5 village expressed themselves as Turkish and Sunni and they have homogeneous ethnic structure.

#### 6.4.6.4 Migration pattern

Zonguldak is a province that sends a lot of immigrants due to the lack of livelihood and due to unemployment. During the survey, it was observed that there is a minor reverse migration within AoI due to the job opportunities created by TP-OTC. Migration and detailed population information are evaluated in the section above.

### 6.4.7 Land Use

#### 6.4.7.1 Introduction

Aim of this Chapter is to reflect existing land use, including residential areas, existing industry, agricultural areas of Zonguldak, Çaycuma and the villages located in the AoI. The information provided in this chapter was gathered through the available secondary data, GIS studies, in-depth interviews with the Mukhtar and official CORINE data.

| | |
|---|---|
| **Description** | Land Use Patterns allows to understand what type of activities are performed on land and what forms of tenure are common in the AoI. |
| **Study Area** | **RSA:** the Province of Zonguldak<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |
| | **AoI:** The villages of Aşağıihsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |
| **Data sources** | **Primary sources**: s Socio-economic surveys (Section 6.4.2) |
| | **Secondary sources:** Socio-economic surveys (Section 6.4.2) |

#### 6.4.7.2 Land Tenure and Ownership

The total land use area in Zonguldak Province is 318,489.27 hectares. According to the current land use calculation of Zonguldak province and its districts, Devrek District is the largest district in terms of surface area. The area sizes of the districts are not proportional to the number of settlements they contain or the population size. This difference also shows itself in terms of land use values.

For example, the size of the urban settlement area of Devrek District, which has the greatest value in terms of surface area, is less than the Central District. The total land use area is 318,489.27 hectares, of which 3,357% is urban settlements, 5.226% is rural settlements (including villages), 29.595% is agricultural lands, 61.088% is wooded areas, 0.145% is central business areas and 0.413% industrial areas (organized industrial zone, other industrial areas, free zone and thermal power plant). Uses other than these uses are proportionally very small within the total area.

#### 6.4.7.3 Spatial Planning

Zoning Plan (2007): There are hardly any areas suitable for settlement within the boundaries of Zonguldak Municipality. 80% of the existing construction is shantytown. Although the urban population does not increase, planned construction areas are needed. It is obvious that the whole city needs a zoning plan as a result of the

improvement zoning practices that were tried to be implemented in stages in the region before the 2007 plan and even partial progress was not achieved. The biggest problem that Zonguldak Province had to deal with while trying to make a planned development was the property problem. However, the legalization of these areas with the shanty amnesty laws prevented measures to be taken in objectionable areas and led to the formation of an unhealthy housing pattern. According to the information received from the Zonguldak Municipality, there are 15 improvement plans, which are being tried to be made in stages, from past to present, within the framework of the laws specified in the table below.

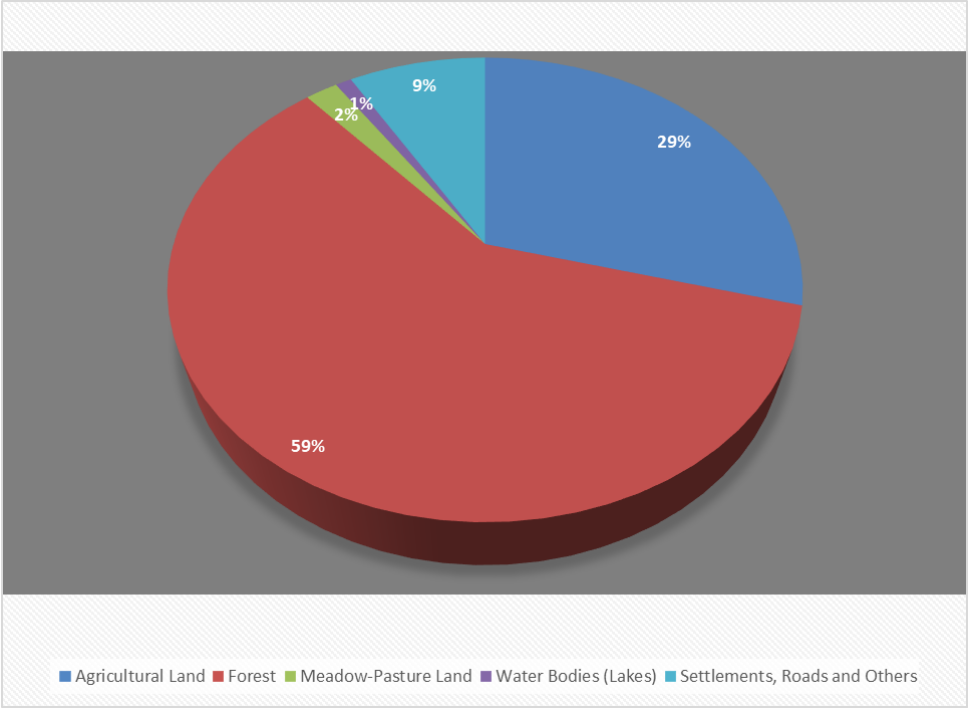
1/100.000 Zonguldak-Bartın-Karabük Environmental Plan, which was approved on 12.05.2009 in accordance with the 7th Article of the Decree Law on the Organization and Duties of Republic of Türkiye Ministry of Environment, Urbanisation and Climate Change No. 644, was prepared by UTTA Planning. “Basin Management Model” is suggested as a planning approach in the 1/100 000 Scale Environmental Plan of Zonguldak–Bartın–Karabük Planning Region. In the Environmental Plan, the decisions regarding the Basin Management are planned in a way to cover especially water resources, which are formed within the framework of the topographic situation and climatological conditions. The plan approach has been determined as considering the "Zonguldak-Bartın-Karabük Planning Region 1/100 000 Scale Environmental Plan" as an "Integrated Regional Resource Management Model" as an extension and an integral part of long-term development plans.

1/100,000 Scale Environmental Plan; It has been prepared to create an "Integrated Regional Resource Management Model" with the aim of solving problems such as the prevention of floods and floods, erosion, control and monitoring of water pollution, improvement of pastures, identification and monitoring of forest areas, control of urbanization and industrialization and planned development. The difficulty of making a planning that includes spatial decisions and strategies has been tried to be overcome, and a physical planning pattern integrated with Scenarios, Plan Explanation Report and Plan Provisions has been created. In this context; In the three Basins, which are handled with a Basin-Based approach; It is recommended to establish "Basin Management Units" in Ereğli, Filyos and Bartın.

1/25000 Environmental Plan 1/25.000 Zonguldak Environmental Plan approved on 08.08.2014 in accordance with the 7th Article of the Decree Law No. 644 on the Organization and Duties Republic of Türkiye Ministry of Environment, Urbanisation and Climate Change BELDA Proje ve Danışmanlık Ltd.Şti. made by Environmental Plan of Zonguldak with Scale of 1/25.000; By targeting the year 2030, it aims at the best and most rational use of the provincial space in a way that will enable the development of economic and social sectors. The plan also includes; It envisages a socio-economic development that ensures the development of a liveable and sustainable environment in which the balance of protection and use is ensured, the protection of natural, cultural and historical resources and their transfer to future generations, and the best use of the potential. In the aforementioned Plan, the population acceptance for 2030 is calculated as 760,000 people. The distribution of this population in the planning area is given in the map below, and these developments are linked to the Filyos Valley project and Oyak investments.

#### *6.4.7.4 Land Use Patterns*

The total surface area in the Zonguldak province is 318,489.27 hectares. The land use types of the province are presented below figure.




*https://webdosya.csb.gov.tr/db/ced/icerikler/zonguldak-ilcdr-2022-20230906093456.pdf*

**Figure 6-14: Land use of Zonguldak Province**

Please refer for the detailed land type of the province in below table.

**Table 6-13: Land Types of Zonguldak Province**

| CORINE DATA (Code 18) | Land Type | Area (ha) |
|---|---|---|
| 111 | Continuous urban fabric | 449.7033 |
| 112 | Discontinuous urban fabric | 6563.0385 |
| 121 | Industrial or commercial units | 1073.0893 |
| 122 | Road and rail networks and associated land | 385.1397 |
| 123 | Port areas | 488.1512 |
| 124 | Airports | 114.9726 |
| 131 | Mineral extraction sites | 369.0038 |
| 133 | Construction sites | 191.9002 |
| 142 | Sport and leisure facilities | 122.4234 |
| 211 | Non-irrigated arable land | 17769.1809 |
| 212 | Permanently irrigated land | 4357.6611 |
| 222 | Fruit trees and berry plantations | 20650.5661 |
| 231 | Pastures | 3426.0944 |

| CORINE DATA (Code 18) | Land Type | Area (ha) |
|---|---|---|
| 242 | Complex cultivation patterns | 63642.0732 |
| 243 | Land principally occupied by agriculture. with significant areas of natural vegetation | 36453.6693 |
| 311 | Broad leaved forest | 97673.6095 |
| 312 | Coniferous forest | 5204.8940 |
| 313 | Mixed forest | 37218.5259 |
| 321 | Natural grassland | 5020.3328 |
| 324 | Transitional woodland-shrub | 11381.0001 |
| 331 | Beaches, dunes, sands | 293.2869 |
| 332 | Bare rocks | 28.8471 |
| 333 | Sparsely vegetated areas | 156.7517 |
| 511 | Water courses | 2790.1889 |
| 512 | Water bodies | 303.6755 |
| 523 | Sea and ocean | 137.1067 |

A large part of Çaycuma district is composed of agricultural lands (63%), followed by forest lands, and pasture meadows.

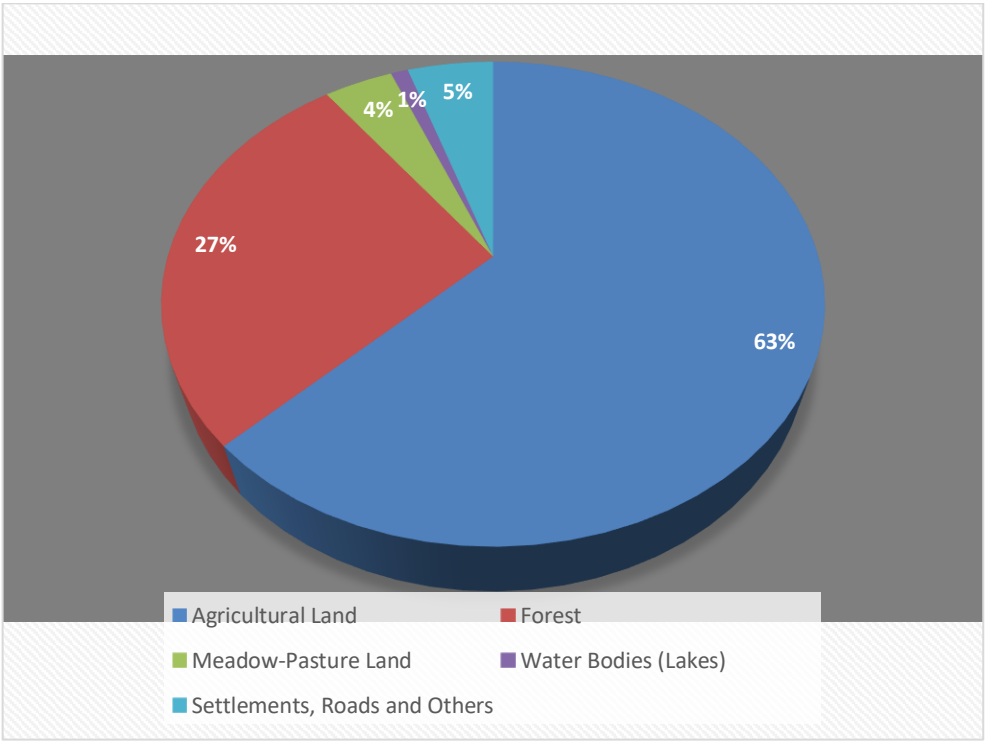



**Figure 6-15: Land use of Çaycuma District**

Detailed land type of the district is given table below.

**Table 6-14: Land Types of Çaycuma District**

| Çaycuma District (48511.175 ha) | | |
|---|---|---|
| **CORINE DATA (Code 18)** | **Land Type** | **Area (ha)** |
| 112 | Discontinuous urban fabric | 1920.2270 |
| 121 | Industrial or commercial units | 221.6150 |
| 123 | Port areas | 7.0949 |
| 124 | Airports | 114.9726 |
| 131 | Mineral extraction sites | 92.0475 |
| 133 | Construction sites | 26.7241 |
| 142 | Sport and leisure facilities | 28.2962 |
| 211 | Non-irrigated arable land | 6534.2541 |
| 212 | Permanently irrigated land | 2185.1081 |
| 231 | Pastures | 951.3366 |
| 242 | Complex cultivation patterns | 15712.6581 |
| 243 | Land principally occupied by agriculture, with significant areas of natural vegetation | 5795.2037 |
| 311 | Broad leaved forest | 10937.6096 |
| 312 | Coniferous forest | 14.6893 |
| 313 | Mixed forest | 689.5554 |
| 321 | Natural grassland | 1142.5279 |
| 324 | Transitional woodland-shrub | 951.4967 |
| 331 | Beaches, dunes, sands | 242.1964 |
| 332 | Bare rocks | 28.8471 |
| 511 | Sparsely vegetated areas | 894.1844 |
| 523 | Sea and ocean | 17.3558 |

## 6.4.8 Economy and Livelihoods

### *6.4.8.1 Introduction*

This section of the report represents primary and secondary economic activities, ecosystem service usage baseline data gathered trough the reports of the West Black Sea Development Agency and the community level and household surveys.

| | |
|---|---|
| **Description** | Economy and employment is a key social component to have an understanding of the livelihood conditions of the local community and of the economic trends that are occurring. |
| **Study Area** | **RSA:** the Province of Zonguldak<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |

| | |
|---|---|
| | **AoI:** The villages of Aşağıihsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |
| **Data sources** | **Primary sources**: Socio-economic surveys (Section 6.4.2) |
| | **Secondary sources:** Socio-economic surveys (Section 6.4.2) |

### *6.4.8.2 Economic Activities*

### *6.4.8.3 Primary sectors*

Zonguldak shows an economic structure guided by the natural resources in the province. The province is one of the few provinces where non-agricultural segments gain weight. There are two main sectors that mark the economic structure of Zonguldak province. The first of these is mining, which dates back to the middle of the 19th century, while the second is the iron-steel industry, which came to the fore with the Republican period.

The share of agriculture in the GDP of the province is 4.1%, the share of industry is 37.3%, and the share of the services sector is 47.2%.

In the province, which has a very rough terrain, 56% of which is covered with mountains, the area showing the quality of agricultural land is 28% of the total area. herbal production; concentrates on cereals, fruit growing and, in recent years, vegetable growing.

The prominent product in fruit production in the province is hazelnut. Especially Alaplı district has a large share in hazelnut production. While hazelnut ranks first in terms of production area and production amount, it is seen that the most productive product is apple. Almost all hazelnut and strawberry cultivation is carried out in Ereğli and Alaplı Districts. The cultivation of Ottoman Strawberry, which is also a variety unique to the region, is also concentrated in this region. Walnut, apple, pear, plum and cherry cultivation is mostly done in Çaycuma, Devrek and Gökçebey districts. Walnut is an important fruit variety for the region.

Although there are restrictions arising from geographical and local conditions in animal production in the whole region, poultry farming has gained momentum especially since 2000.

In Çaycuma district, an organized industrial zone was established on an area of 125 hectares for new investments in 2015 by council of ministers' decision. As of 2021, Sakarya Gas Field Development Project, which is one of the biggest investments in the region has been developed. The SGFD with the planned operating life of 20 years, has already contributed to the economy and the livelihoods of the region.[1]

The basic economic activities that came to the fore in the work area are waged/salaried work and retirement income. Residents engage in agriculture and animal breeding both for subsistence and trade. However, agriculture and animal breeding are generally seen as a source of side income. The people who migrated to settlements generally work in the mining sector or supply chain industries in the region.

**In Sazköy Village**, main livelihoods are wage employment and pension. It was mentioned during the interviews that since the Project has acquired land in agricultural and grazing areas, agricultural production has decreased

[1] http://www.caycuma.gov.tr/ilcemiz

in recent years. In addition to this, the usage area has decreased considerably due to the military area built in the forest. Only one of the households interviewed is continuing to ovine husbandry in the village with 121 sheep, and there 25 cattle in the village in total. Since the cultivated land decreased, beekeeping also decreased in parallel.

The main crops cultivated in the village include orchard, hazelnut, pumpkin, bean, and watermelon. Bay leaf collection from the permitted forest land is one of the other income source especially for women for the last few years. In Sazköy Village, households undertake both dry and irrigated agricultural activities.

According to the results of the interviews with the Mukhtar, the young residents of the village have returned to the village as there are job opportunities at the Project.

**In Aşağıihsaniye Village**, basic income sources are agriculture and animal breeding. Primary product is hazelnut and there are households producing vegetables in greenhouses and sell at district bazaar. Mainly corn, pepper, bean, apple, plum are being produced in the village. Grazing lands of Aşağıihsaniye acquired by the Project so that animal breeding decreased in a few years. There are 150 cattle and 100 sheep in total. Chestnut honey production is also popular in the village, for which about 800 beehives are available.

According to the Mukhtar, there is a significant growth in job opportunities in the region and some of the villagers work at TP-OTC.

**In Sefercik Village**, basic income are mainly salaried jobs and retirement. Both irrigated and dry agriculture is carried out in the agricultural lands. Maize, pomegranate, honey and figs are produced, mainly for households' own use. There are 30 cattle and 100 beehives in the village.

**In Gökçeler Village**, main livelihoods are wage employment and pension, besides this vegetable producing and market trading is available as side income source. Orchard, corn, walnut, bean, and hazelnut are the main products in the village. The village has only 40-50 cattle and 2 sheep. Due to the road and tunnel construction in and close to the village beekeeping is nearly finished.

**In Derecikören Village**, main income source is pension. Households generally cultivate maize, bean, tomato, pea, potato, and eggplant for their own consumption. Livestock breeding is another effort for the villagers to produce their own needs and sell them to their neighbours. Accordingly, clover cultivation has developed. There are 100 cattle in the village.

**In Yeşilyayla Village**, main livelihoods are wage employment and pension. There are 5 people working at the Project. However agricultural producing, livestock husbandry and mining are the other income sources. Vegetable cultivation, clover production for animals, milk and dairy products are common in the village. There is a decrease of animal presence in the village, 40 cattle and 60 sheep, and 10 beehives in total.

The detail of the economic activities carried out in the villages is provided below.

### *6.4.8.4 Ecosystem Services*

#### 6.4.8.4.1 Fisheries

Compared to other provinces in the Black Sea, fishing is less developed in Zonguldak. According to the Report prepared by Ministry of Agriculture And Forests Directorate of Aquaculture Central Research Institute of Trabzon (2021), fishing in Filyos has not developed for many years.

The Project area is used by the Filyos fishers for most of the year, as such this section includes data obtained from the management and members of Filyos Aquaculture Cooperative.

The Filyos Aquaculture Cooperative was established in 2007, with Zeki Çakar serving as its president. Since then, members and amateur fishers have taken responsibility to develop the Filyos Fishing Shelter together. Although construction of the Filyos fishing port began in 1996, it was not completed until 2006. Prior to that, fishing boats had to be pulled ashore using capstans and wooden beams. Before the 1980s, fishing in the Filyos area was nearly non-existent. Low fish prices, small boats, and traditional, primitive fishing methods did not provide a sustainable income or security for fishers. Additionally, the region lacked a sufficient number of skilled fishers. There was no significant increase in the number of fishers until after the 2000s, with the number of active fishers remaining at just 5 or 6 during this period. The existence of coal mining activities in the region, brick factory in Filyos, SEKA, Bartın cement factory in Çaycuma, Ereğli, Karabük Demirçelik enterprises may have put fishing in the second place (Atış and Çelikoğlu, 2019).

The present management of Cooperative is elected last year once again with the same team. The in-depth interview was completed with president of the cooperative is Zeki Çakar, Deputy President Kerem Parlak, and Accountant Zeki Kaçar, on August 22, 2024.

There are 22 registered members fishing between the Işıkveren and Güzelcehisar coasts with 25 registered boats. In addition to these, there are non-commercial amateur hobby fishers, fish for leisure in small boats in the region.

Almost more than half of the members have retired from other paid jobs and are engaged in fishing as a side income.

The Cooperative collects a monthly fee which is 150 TL from each members. The main tasks of the cooperative are to provide a safe place for the shelter with fencing and security cameras, to organise the cleaning of the quay, to guide the fishers to complete the paperwork with the Port Authority.

Stakeholder Engagement Plan and the grievance mechanism prepared for the during Phase-1 construction and operation was shared with the fishers and the TP-OTC Social Team engages regularly with the fishers.

TP-OTC has supported Cooperative by granting 2 containers, which are located at Filyos Shelter and used as president office and meeting room.

**Figure 6-16: Containers granted by TP-OTC**

Fishing nets of 4 members whose nets were damaged were renewed by TP-OTC.

A Livelihood Restoration Plan for Phase 1 was prepared and disclosed to the fishers in December 2022. Cash compensation for diesel consumption of each fisher was paid by TP-OTC in June 2023. The calculation was based on the engine power of each boat.

With the start of Phase-1 construction, some of the fishers quit fishing and sold their boats. On the contrary, one person has just started fishing in the area as a hobby.

As described by the fishers, the fishing area is between Işıkveren coast of Zonguldak and Güzelcehisar coast of Bartın. According to the statements, fishers do not experience any problems passing through the Phase 1 AoI or areas restricted via NAVTEX announcements.

In addition, the maximum distance that boats can travel from land is mostly 1 mile, for some up to 2 miles. Fishers mentioned that the depth increased after that distance and the nets were damaged. They stated that they only caught bonito fish after this distance.

According to the President's statement, relationship with other shelters such as Kilimli, Bartın, Tarlaağzı, Kastamonu is to inform each other when migrating fish pass through their borders. This happens 3-4 times a year, apart from this, each shelter knows its own fishing zones and does not go beyond them.

The Public Participation Meeting of the Phase 2 national EIA was held in August 2024, prior to the interviews held for the ESIA in August 2024. The fishers aware about the Phase -2 construction. The Management of the Cooperative has attended to Phase-2 Public Participation Meeting. The President said they would like to know the new coordinates and after the EIA approval they should be provided with a map and the buoy positions can be checked.

During the survey and interviews, it was observed that although fishing is not the primary income for any of them, they are willing to continue fishing.

Their demands from the Project are mostly related to developing projects to make the shelter and common areas safer and to support the financial responsibilities of the co-operative.

**Figure 6-17: Meeting and interviews with the Cooperative Management and the Members**

All of the fishers in the Project AoI is from Filyos Port, 20 of 22 members were interviewed during the study. One of those who cannot be interviewed was at his paid job, and the other was the president of the Cooperative.

List of registered fishers and boat features are presented below;

**Table 6-15: List of Fishers**

| No | Boat Name | Boat Owner | KW | HP | Plate Number | Depth | Width | Length | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KURT-67 | Musa Kayıkçıoğlu | 8.95 | 12 | 67 D 1567 | 0.6 | 1.7 | 5.65 | Beam trawl/Fishing |
| 2 | KUM-67 | Hüseyin Keser | 89.55 | 120 | 67 D 1912 | 0.64 | 2.31 | 6.6 | Fishing |
| 3 | YİĞİT | Cenk Özdemir | 7.46 | 10 | 67 D 1560 | 0.7 | 1.5 | 5.7 | Fishing |
| 4 | ALPERİM | Ayberk Kumbas | 12.68 | 17 | 67 D 1585 | 0.7 | 1.9 | 6.14 | Fishing |
| 5 | BABA NAZİF-1 | Kemal Ülkeri | 67.16 | 90 | 67 D 2017 | 1.7 | 4.5 | 9.6 | Fishing |
| 6 | ALİ DAYI | Ali Erişir | 55.22 | 74 | 67 D 1980 | 1.2 | 3.3 | 7.2 | Fishing |
| 7 | KASAP-1 | Kerem Yücel | 100.71 | 135 | 67 D 1543 | 1.3 | 2.75 | 8.3 | Fishing |
| | KASAP REİS-2 | | 89.55 | 120 | 67 D 1359 | 0.6 | 1.7 | 7.6 | Fishing |
| 8 | ŞAFAK-1 | Demet Sefercik | 46.25 | 62 | 67 D 1776 | 0.8 | 2.3 | 6.05 | Fishing |
| 9 | KARA ZEKİ | Zeki Kaçar | 186.57 | 250 | 67 C 1951 | 1.6 | 4.9 | 10.8 | Beam trawl/Fishing |
| | İLKAY T | | 59.68 | 80 | 67 D 1742 | 1.1 | 3.1 | 8.7 | Beam trawl/Fishing |
| 10 | KORAT | Hasan Mutlu | 67.14 | 90 | 67 C 2045 | 1.7 | 4.65 | 10.2 | Beam trawl/Fishing |
| 11 | KORKMAZLAR-A | Ali Korkmaz | 15.67 | 21 | 67 D 1738 | 0.95 | 2.16 | 6.45 | Fishing |
| 12 | CINAR TURGUT | Özcan Hakan Telçeker | 6.71 | 9 | 67 D 1901 | 1.02 | 6.2 | 4 | Fishing |
| 13 | MACİROĞLU-2 | Zeki Çakar | 85.82 | 115 | 67 D 1983 | 0.68 | 2.3 | 6.4 | Fishing |
| 14 | BEYBABA-1 | Sedat Köktürk | 60.45 | 81 | 67 D 1573 | 0.9 | 1.7 | 6.3 | Fishing |
| 15 | BURAK REİS-2 | Burak Kayıkçıoğlu | 23.87 | 32 | 67 D 1174 | 0.65 | 2.15 | 7 | Fishing |
| 16 | MELİHCAN | İsmail Arslan | 16.05 | 22 | 67 D 1027 | 0.77 | 1.67 | 6 | Fishing |
| 17 | ŞEF | Aykut Aydın | 61.19 | 82 | 67 D 1977 | 1 | 2.8 | 8.04 | Fishing |
| 18 | AKGÜNLER A | Osman Akgün | 89.55 | 120 | 67 D 1990 | 1 | 3.18 | 8.04 | Fishing |
| 19 | MACİR REİS | Şükrü Çakar | 186.57 | 250 | 67 C 1876 | 1.66 | 4.7 | 10.3 | Beam trawl/Fishing |
| 20 | AKSA-67 | Kerem Parlak | 78.36 | 105 | 67 D 1611 | 1.15 | 3.28 | 7.82 | Fishing |
| 21 | ONUR 67 | Nezaket Katırcı | 41.79 | 56 | 67 D 1207 | 0.87 | 2.62 | 7.27 | Fishing |
| | DERİNDENİZ 67 | | 20.15 | 27 | 67 D 2008 | 0.64 | 1.8 | 4.9 | Fishing |
| 22 | ERCÜMENT | Haldun Çakar | 114.93 | 154 | 67 D 1574 | 0.6 | 2.43 | 6.6 | Beam trawl/Fishing |

### *Age Distribution and Education Level of Fishers*

After the survey for Phase 1, it was noted that there were fishers over the age of 65. Also majority of the fishers are at the age of 40 and above. The primary reason of the density of the elderly population is in parallel with the retired fisheries. The table below summarizes the age distribution of the fishers based on the survey undertaken in August 2024.

**Table 6-16: Age Distribution of the Fishers**

| Port | Age Groups | No of participants | % |
|---|---|---|---|
| Filyos | 19-25 | 1 | 5.0 |
| | 26-39 | 3 | 15.0 |
| | 40-55 | 9 | 45.0 |
| | 56-65 | 4 | 20.0 |
| | 65+ | 3 | 15.0 |
| | Total | 20 | 100.0 |

20% of the fishers are middle school graduate or primary education graduated, followed by primary school graduates and high school graduates, and university respectively.

**Table 6-17: Education Levels of the Fishers**

| Port | Education Status | Frequency | Percent |
|---|---|---|---|
| Filyos | Primary school graduated | 6 | 30.0 |
| | Middle School graduate or primary education graduated | 4 | 20.0 |
| | High school or university graduated | 10 | 50.0 |
| | Total | 20 | 100.0 |

### *Project Information Level of Fishers*

It has been observed that, 85% of the fishers in Filyos, have information on the Project. The majority of the fishers receive information from the Project Owner and a few from the Coast Guard and Project staff.

**Table 6-18: Information on the Project among Fishers**

| Port | Information | Frequency | Percent |
|---|---|---|---|
| Filyos | Yes | 17 | 85.0 |
| | No | 3 | 15.0 |
| | total | 20 | 100.0 |

The fishers mainly wanted to be informed about the new boundaries of the areas to be restricted via NAVTEX announcements, duration of the Project, additional impacts on fisheries and aquaculture, transit corridors and benefits for fishers.

## *Income sources of the Fishers*

According to the results of the in-depth interviews, it was seen that the fishing is the side income for Filyos. The 40% of the members who declared fishing as their first source of income are retired fishers who earn more income from fishing than their pension. The rest of them have a paid job at the moment. Half of this group of retirees stated that fishing income becomes their primary source of livelihood if the season is productive.

In addition, fishers were asked about their main expenditures and almost all of the answers were declared as repair and maintenance of boats, nets and other fishing equipment and diesel expenses.

**Table 6-19: First Income Source of the Fishers**

| Port | First income source | Frequency | Percent |
|---|---|---|---|
| Filyos | State officer | 1 | 5.0 |
| | Retired | 6 | 30.0 |
| | Paid / Salaried | 5 | 25.0 |
| | Fishery | 8 | 40.0 |
| | total | 20 | 100.0 |

In response to the question whether there has been a change in the level of income in the last 2 years, almost all fishers answered that it has decreased. The Project, Eren Energy Port and dolphins were cited as the reason.

The average monthly income of fishers is presented in the table below. It is seen that the average income of most of the fishers is nearly double of the minimum wage level.

**Table 6-20: Average Incomes of the Fishers**

| Port | Average Incomes | Frequency | Percent |
|---|---|---|---|
| Filyos | 0-10,000 TL | 1 | 5.0 |
| | 15,000-20,000 TL | 2 | 10.0 |
| | 20,000-25,000 TL | 3 | 15.0 |
| | 25,000-30,000 TL | 2 | 10.0 |
| | over 30,000 TL | 11 | 55.0 |
| | No answer | 1 | 5.0 |
| | Total | 20 | 100.0 |

## *Fishing Areas*

According to the results of the interviews it is seen that Işıkveren coast of Zonguldak and Güzelcehisar coast of Bartın provinces is being used for fishing by the Filyos fishers.

Respondents were asked about the main challenges of fishing around the Project area. The majority of the fishers said that the fishing pasture has been narrowed and they are not allowed to fish in the restricted area although the nets do not go deep. In addition, they cannot see the fish because of the Project lights.

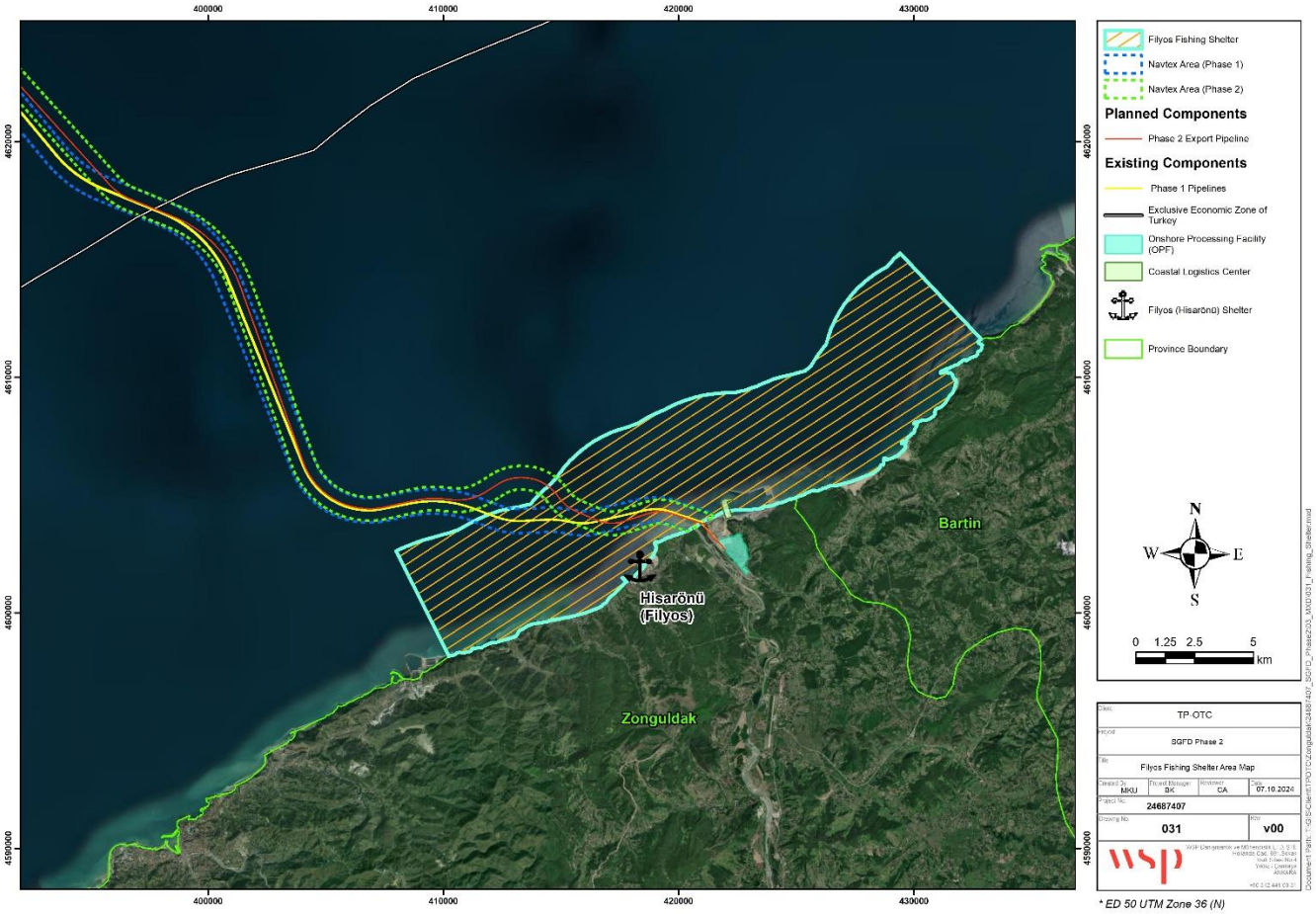



**Figure 6-18: Map of Fishing Areas**

## *Type of Fishing*

According to the results of the interviews with the fishers it has been observed that the most fishers has their own boats and only 23.8% of the fishers are using their boats with their family members.

**Table 6-21: Type of Fishing Activities**

| | Boat Ownership | Frequency | Percentage |
|---|---|---|---|
| Filyos | Owned by the fisher | 15 | 71.4 |
| | Shareholder with the family members | 5 | 23.8 |
| | No answer | 1 | 4.8 |
| | Total | 21 | 100.0 |

According to the site observations and the outputs of the interviews it has been observed that majority of the fisher uses small boats around 10 m length. Only 12% of the participants in Filyos port has boats over 10 m length.

It is seen that fishing is usually done full time, i.e. most of the fishers are retired, so they do not wait if there are fish. Fishing seasons are presented in the table below.

**Table 6-22: Fishing Type**

| | Fishing Type | Frequency | Percentage |
|---|---|---|---|
| Filyos | Full time | 9 | 45.0 |
| | Seasonal | 7 | 35.0 |
| | Half time / side job aspect | 3 | 15.0 |
| | No answer | 1 | 5.0 |
| | total | 20 | 100.0 |

It can be seen that almost every month there is income from fishing. According to the statements of fishers, table of appearance of fish species by month is presented below.

**Table 6-23: Fish Species by Month**

| Fish Species /Month | Snail | Bonito | Whiting | Red Mullet | Horse Mackerel | Garfish | Turbot | Chinook | Bluefish |
|---|---|---|---|---|---|---|---|---|---|
| January | | | | | | | | | |
| February | | | | | | | | | |
| March | | | | | | | | | |
| April | | | | | | | | | |
| May | | | | | | | | | |
| June | | | | | | | | | |
| July | | | | | | | | | |
| August | | | | | | | | | |
| September | | | | | | | | | |
| October | | | | | | | | | |
| November | | | | | | | | | |
| December | | | | | | | | | |

## *Satisfaction Level from Income of Fishing*

The responses to the question 'What are the most important problems you have encountered in fisheries in recent years?' are as follows; narrowing of pastures due to the Project, increase in expenses, and decrease in fish species, increase of dolphins and Eren Energy Port.

**Table 6-24: Satisfaction Level from Income**

| Port | Satisfaction Level | Frequency | Percentage |
|---|---|---|---|
| Filyos | Yes | 3 | 15.0 |
| | No | 17 | 85.0 |
| | total | 20 | 100.0 |

It has been observed that most of the fishers do not desire to give up fishing. On the other hand, they do not prefer their children to start fishing as an income-generating activity. 20% of the fishers stated that they would quit fishing in the future due to high costs and low income.

Fishers do not encounter any problems in marketing and they prefer restaurants, cooperatives and fish market.

The main problems of Filyos Shelter are stated as lack of a boat maintenance place, lack of a closed area for fishing nets, theft, lack of sheds and toilets, damage to boats due to the filling of the entrance and exit of the docks with sand, and the lack of income source of the co-operative.

According to the statements, 40% of the fishers have loan debts due to fishing.

The reasons why fishers started fishing were examined. According to the responses from participants, approximately 25% cited an interest in the sea as the main reason, 50% mentioned it being their father's occupation, 20% attributed it to insufficient job opportunities in the region, and 5% said they started for hobby purposes.

#### 6.4.8.4.2 Beekeeping

There are also beekeeping activities in the province. According to the Beekeeping Production Report, 2024 of Ministry of Agriculture and Forestry, Zonguldak has 1,508 beekeeping enterprises, 64,764 new hives, 195 tonnes of honey and 12 tonnes of beeswax production, and 3 kg of efficiency.

Thanks to the presence of laurel, linden, blackberry, rhododendron, oak, acacia and chestnut trees in the existing vegetation, it has been determined that the honey produced in Türkiye is the most valuable honey in terms of antibiotic and antioxidant properties.

According to the results of the Community Level Survey there are approximately 15 beehives in the village of Sazköy, 100 in Sefercik, 800 in Aşağıihsaniye, 10 in Yeşilyayla and 5 in Derecikören.

#### 6.4.8.4.3 Forest Products

The main forest product in the region is laurel collection from the forest. Distribution of Laurel Plant within the boundaries of Zonguldak Regional Directorate of Forestry; It starts from Kapısuyu – Başköy region of Kurucaşile district of Bartın province in the northeast, mainly along the coast up to the border of Akçakoca district in the southwest direction, and in the inner part in the direction of Bartın province Kumluca and Kozcagiz towns.

Laurel collection is under the control of the Forestry Department and the collection areas change every year. In the last few years only the villagers of Sazköy, especially women, have been earning money from this source of side income.

### *6.4.8.5 Employment and Unemployment*

The labour force participation rate of Zonguldak province is 52.7%. The rate of employment is 46.9%. In 2023, the unemployment rate in Zonguldak province was 11% against the country rate of 9.6% between the age group of 15-64.

**Table 6-25: Zonguldak Labour Indicators**

| Zonguldak | % |
|---|---|
| **Labour force participation rate** | 52.7 |
| **Rate of employment** | 46.9 |

| Zonguldak | % |
|---|---|
| **Rate of unemployment** | 11.0 |

*Source: TURKSTAT 2023*

### Sazköy

- It has been stated that the main sources of income has been changed in last few years. Wage employment, pensions, and job opportunities in projects in the region are basic income sources.
- There are 25 cattle, 121 sheep and goats in the village.
- In the last 3 years, employment opportunities have increased due to investment projects in the region. It has been stated that the average household income is around minimum wage of 17,000 TL.
- In the last 3 years, there has been an increase in purchasing power due to job opportunities near to the village. Some of the unemployed people have jobs now.

### Aşağıihsaniye

- In Aşağıihsaniye village, basic income sources are agriculture and animal breeding. Primary product is hazelnut and there are households producing vegetables in greenhouses and sell at district bazaar.
- There are approximately 150 cattle, 100 sheep and goats, and 800 beehives in the village.
- It has been stated that there is a significant growth in job opportunities in the region and some of the villagers work at Project. Average household income is around twice the minimum wage.
- Because of the regular income of the villagers purchasing power increased slightly.

### Sefercik

- In Sefercik village, economic activities are mainly salaried job and retirement.
- There are 30 cattle and 100 beehives in the village.
- Since there are alternatives in the region there has been no change in job opportunities for Sefercik villagers.
- It is stated that job opportunities has been increased for women with the Project and the average income of the households is 1.5 times of minimum wage.

### Gökçeler

- In Gökçeler village, the basic income sources are pensions, besides this vegetable producing and market trading is available as side income source.
- Agricultural activities are carried out only for subsistence economy.
- The village has only 40-50 cattle and 2 sheep. Due to the road and tunnel construction in and close to the village beekeeping is nearly finished.
- In last 3 years, employment opportunities did not change for the villagers.
- It is stated that the average household income has decreased, and nearly under minimum wage.

### *Derecikören*

- The main source of income in Derecikören village is pensions.
- Agriculture and animal breeding are only for in-house consumption.
- There are 100 cattle in the village.
- It was stated that there are industrial investments around the village but the villagers do not benefit from them. Therefore there has been no change in purchasing power.
- Average household income is around minimum wage.

### *Yeşilyayla*

- In Yeşilyayla village, salaried jobs and pensions are main incomes. However agricultural producing, livestock husbandry and mining are the other income sources.
- The number of cattle in the village is 40, the number of sheep and goats is 60, and 10 beehives.
- In the last three years, there has been an increase in job opportunities due to industrial developments in the region. As a result of this purchasing power increased in last 3 years.
- Average household income is around twice minimum wage.

## 6.4.9 Vulnerable groups

### *6.4.9.1 Introduction*

Social aid and solidarity foundations linked with the Provincial Governor's Office provide support to vulnerable groups at the provincial level. Although the actual number of vulnerable people at the provincial level is unknown, according to the list disclosed at the social solidarity foundation of the governorate, the following number of individuals have received aid from the foundation in 2021.

**Table 6-26: Vulnerable People in Zonguldak**

| Type of Assistance | Number of Individuals receiving assistance |
|---|---|
| Cash Assistance | 3,513 |
| Food aid | 1,438 |
| Foundation Funded accommodation | 13 |
| Project for orphans | 170 |
| Heating aid | 3,092 |
| Funded accommodation | 9 |
| Educational aid | 1,071 |
| Health aid | 478 |
| Military family assistance | 33 |
| Widowed women | 30 |
| Those who receive assistance under the Law No. 2022 | 1,016 |

| Type of Assistance | Number of Individuals receiving assistance |
|---|---|
| Orphan | 12 |
| Migrant aid | 223 |
| Electricity bill help | 1,364 |
| Poverty aid in the pandemic process | 4,146 |
| Other Foundation aids | 542 |
| Pandemic social support program | 3,459 |
| Poverty aid in the pandemic process-2 | 2,369 |
| Soup kitchen | 336 |
| Vefa Project | 100 |

*Source: http://www.zonguldak.gov.tr*

The number of individuals identified as vulnerable in the AoI through the HHS is presented in below table.

**Table 6-27: Vulnerable Groups in AoI Villages**

| | Number of People by Villages | | | | | |
|---|---|---|---|---|---|---|
| **Vulnerable Groups** | **Sazköy** | **Aşağıihsaniye** | **Sefercik** | **Gökçeler** | **Derecikören** | **Yeşilyayla** |
| **Illiterate** | 1 | - | 3 | 2 | - | 1 |
| **Female head of household** | 3 | 3 | 5 | 1 | - | 1 |
| **Of school age but not attending school** | - | - | - | - | - | - |
| **Over 70 years of age living alone** | 2 | - | 1 | - | - | - |
| **Nomadic beekeeper** | - | - | 1 | - | - | - |
| **Refugee/Asylum Seeker** | - | - | - | - | - | - |
| **Non-Turkish speaking** | - | - | - | - | - | - |
| **Living on state subsidies** | 2 | - | 2 | 5 | 2 | - |
| **Living with the help of the association** | - | 1 | - | - | 1 | - |
| **Seasonal worker (from the neighbourhood)** | - | - | - | - | - | - |

| | Number of People by Villages | | | | | |
|---|---|---|---|---|---|---|
| **Vulnerable Groups** | **Sazköy** | **Aşağıihsaniye** | **Sefercik** | **Gökçeler** | **Derecikören** | **Yeşilyayla** |
| **Chronically ill** | 19 | 14 | 13 | 15 | 9 | 4 |
| **Bedridden patient** | 1 | - | - | - | 1 | 1 |
| **Nomad** | - | - | - | - | - | - |
| **Physically disabled** | 4 | - | 2 | 3 | 1 | 1 |
| **Mentally disabled** | 1 | 1 | - | - | - | 1 |

### *6.4.9.2 Gender issues*

According to the HHS results, female heads of households are included as vulnerable group. Numbers of female headed houses were determined as 3 in Sazköy, 3 in Aşağıihsaniye, 5 in Sefercik, 1 in Gökçeler and 1 in Yeşilyayla. It is observed, females of both new and older generations have equal rights in inheritance, also young females has equal opportunities to reach to education rights.

Following the field observations, FGDs were organised with women in each settlement of the AoI to understand women's daily lives, their contribution to household livelihoods, their perceptions about the Project, etc.

**Sazköy Village**

Women generally do daily housework and look after children. There are also university students/graduates in the village. Most of the young women contribute to the household economy by collecting laurel leaves and hazelnuts. The women stated that they had attended the project information meeting once and 2 years ago, the women expressed that they wanted to voice their concerns and suggestions regarding the project.

**Aşağıihsaniye Village**

Most of the women are doing agriculture as income generating activity. There were complaints regarding employment, pipeline, Energy Transmission Line, expropriation payments, and traffic load which are very close to their houses.


**Figure 6-19: Women meetings at Sazköy and Aşağıihsaniye villages**

### Sefercik Neighbourhood

Generally women are busy with their gardens, animals and house works. The Mukhtar is their contact point for the Project. 4-5 women are employed by TP-OTC. Their questions were regarding the payments to the private lands which were taken during road construction, special meetings for women about the Project, and an opportunity to sell their agricultural products.

### Gökçeler Village

Women are aware that there is no direct relationship between the Project and their villages. They have concerns about other investments closer to the village. Their demand from the Project is to be in more dialogue with the management as in previous years. They have employment expectations for the young population living outside the village.


**Figure 6-20: Women meetings at Sefercik and Gökçeler Village**

### Derecikören Village

Derecikören is the only village in AoI with a woman head. There are strong relationships between women. The villagers are very concerned about the construction of a fertiliser factory near the village.

**Yeşilyayla Village**

Women are often concerned about road safety for their children and animals. They stated that they cannot attend the Project meetings and there is a need for a separate women's meeting. As in other villages, they do housework, take care of their gardens and go hazelnut picking.

**Figure 6-21: Women meetings at Derecikören and Yeşilyayla Villages**

### *6.4.9.3 Elderly and retired*

It is observed that the majority of the population within the Project AoI is elderly. Considering the education level of the elderly and their difficulties in adapting to the changes arising from the project, this group is considered as a vulnerable group. There are 2 in Sazköy and 1 Sefercik over 70 years of age and living alone.

### *6.4.9.4 Chronically ill*

Although not related to the project, there are many villagers with chronic diseases in AoI. The effects of the Project in terms of contamination, dust, noise will be submitted at Health section.

### *6.4.9.5 Poverty*

In Türkiye, the poverty limit for a family of four in 2023 was set at about 47,009 TL and over 15 million people are employed with a minimum wage of 17,002 TL as of January, 2024. Türkiye's poverty rate rose above 12.3% last year.

It has been seen that there are needy people who living with state subsidies in AoI.

## 6.4.10 Education

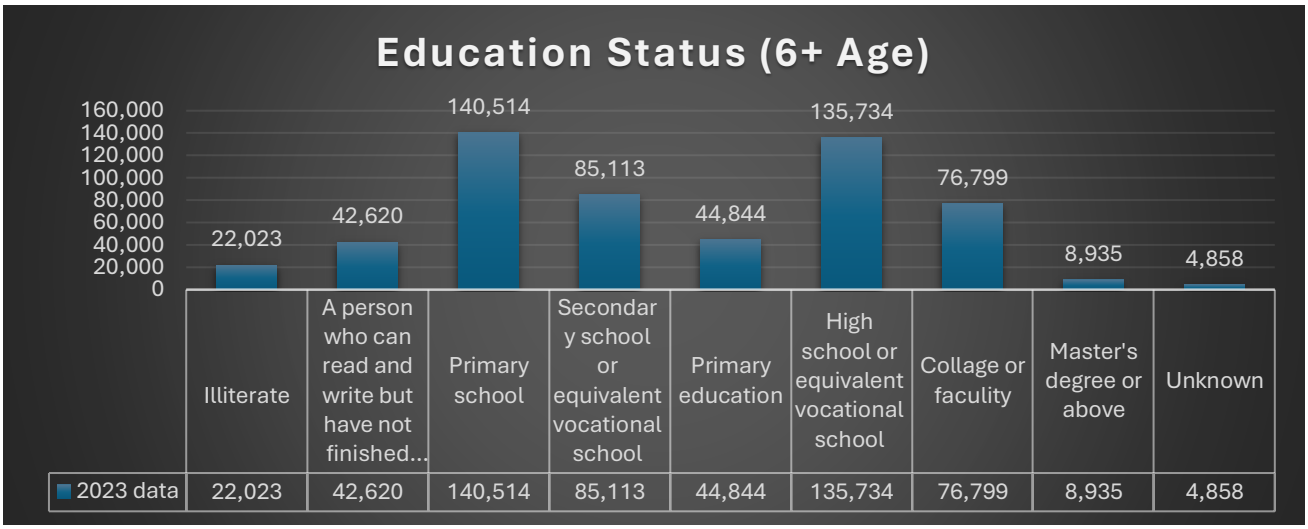
### 6.4.10.1 Introduction

This section provides baseline information about education facilities, quality of the education, detailed literacy levels in AoI, access to higher education and local challenges. Baseline information is presented from the provincial to the Project impact level and the secondary sources and the Ministry of Education's Reports are used for the provincial and district level data and primary information is used for the village level education baseline.

### 6.4.10.2 Education Facilities and Personnel

According to 2024 data of the Ministry of National Education, there are 448 schools will be on education with the 92.230 students and 6722 teachers for 2024-2025 Educational Year in Zonguldak province. The selected education indicators of the Province is presented in the below table.

**Table 6-28: Education Status of Zonguldak**




*Source: https://nip.tuik.gov.tr/?value=EgitimDurumu*

**Table 6-29: Student numbers of Zonguldak**

| 2022 Academic Year | Preschool | Secondary school | Secondary education |
|---|---|---|---|
| Number of Students | 26,732 | 29,401 | 38,044 |
| Number of Teachers | 2,004 | 2,374 | 2735 |
| Number of Schools | 189 | 126 | 89 |
| Number of Students Falling to Teachers | 13 | 12 | 11 |

Source: TUIK, 2023

Because the number of students is insufficient, there is no school in AoI villages.

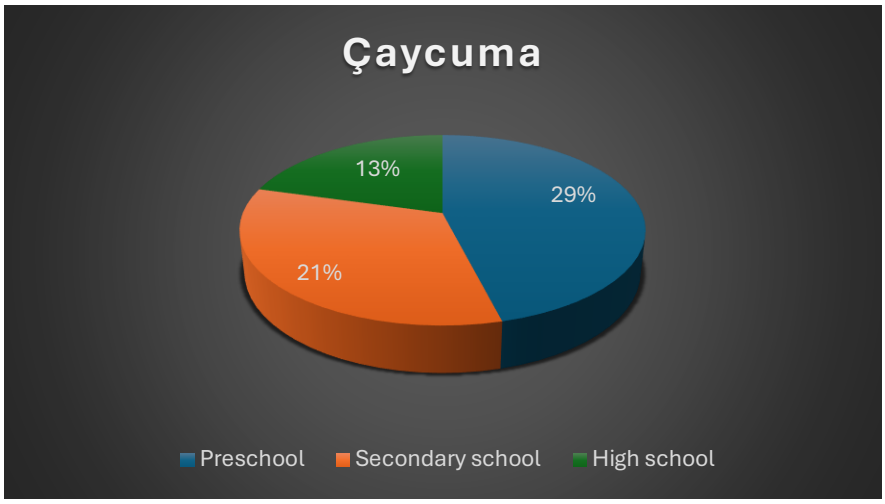



*Figure 6-22: Educational level percentage of Çaycuma*

*Source: www.caycuma.meb.gov.tr,2023*

In Sazköy, primary and secondary school students go to Saltukova Township, 10 km away from the village. High school students go to Çaycuma, which is approximately 23 km away. All basic education students use the transport provided by the Ministry of National Education.

The nearest school to AşağıİhsaniyeAşağıİhsaniye village is located in Saltukova District which is located 5 km away from the village. Students for kindergarten, primary, secondary and high school go to Saltukova by the transportation provided by the Ministry of Education. Several students are boarding at Eren Enerji Vocational and Technical Anatolian High School.

The students of the village, go to Filyos which is 2,5 km away from the neighbourhood.

Students in the village of Gökçeler go to Filyos by the transportation provided by the Ministry of Education.

The nearest school to Derecikören village is located in Filyos which is located 5 km away from the village and there are high school students boarding at Eren Enerji Vocational and Technical Anatolian High School.

The nearest school to Yeşiyayla village is located in Saltukova District which is located 8 km away from the village. The student goes to Saltukova by the transportation provided by the Ministry of Education.

In Saltukova Town there is one multi-programme high school, Saltukova Multi-Program Anatolian High School, in addition to Saltukova Gazi Secondary School, Saltukova Primary School, , Saltukova Çocuklar Gülsün Diye Kindergarten.

### 6.4.10.3 Literacy Levels

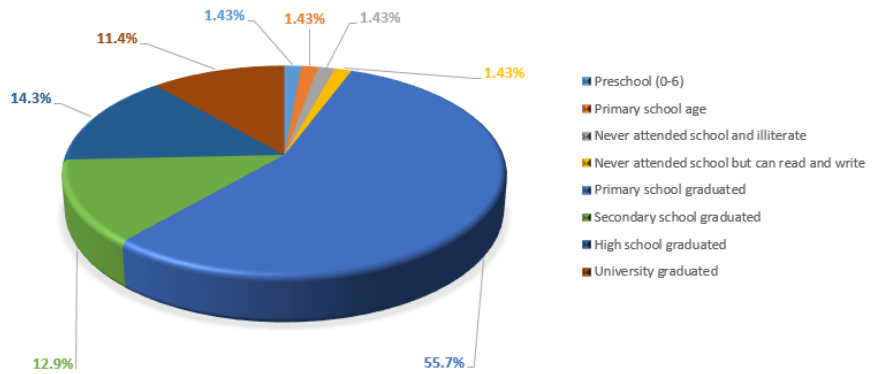
This section is focused to AoI. According to the results of the household surveys, number of people by education levels is given below.

**Table 6-30: Education statistics of the villages**

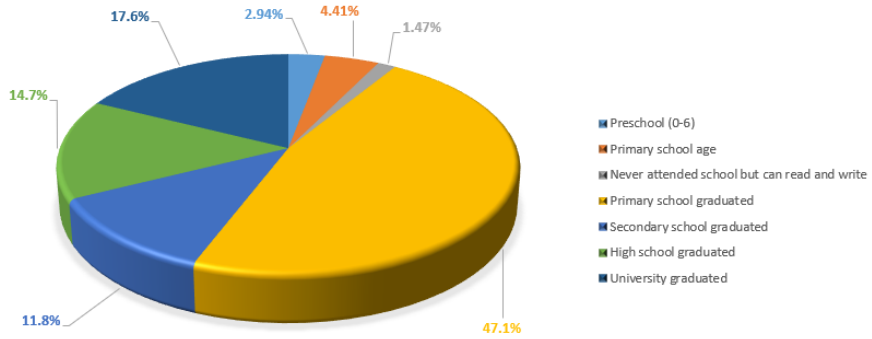
| | Number of People by Villages | | | | | |
|---|---|---|---|---|---|---|
| **Education Status** | **Sazköy** | **Aşağıihsaniye** | **Sefercik** | **Gökçeler** | **Derecikören** | **Yeşilyayla** |
| **Preschool (0-6)** | 1 | 2 | - | - | 1 | 1 |
| **Primary school age** | 1 | 3 | 1 | 1 | 1 | - |
| **Never attended school and illiterate** | 1 | - | 4 | 2 | - | - |
| **Never attended school but can read and write** | 1 | 1 | - | 1 | - | - |
| **Primary school graduated** | 39 | 32 | 19 | 32 | 31 | 14 |
| **Secondary school graduated** | 9 | 8 | 3 | 9 | 8 | 4 |
| **High school graduated** | 10 | 10 | 9 | 11 | 9 | - |
| **University graduated** | 8 | 12 | 4 | 9 | 9 | 4 |

Percentages of educational status of AoI villages were asked on HH level and charts given by villages.

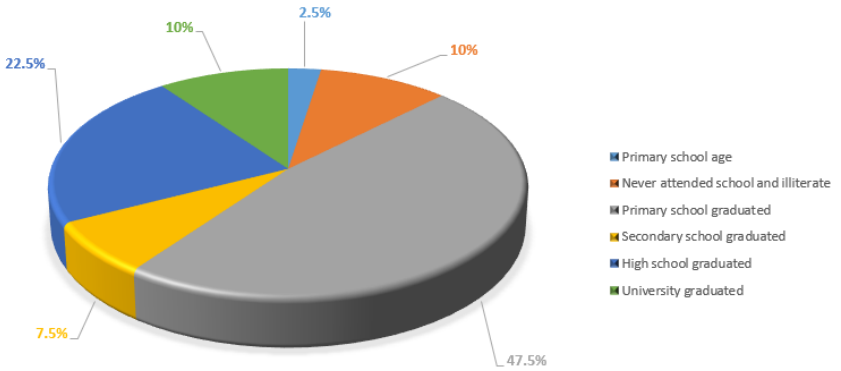
**SAZKÖY**



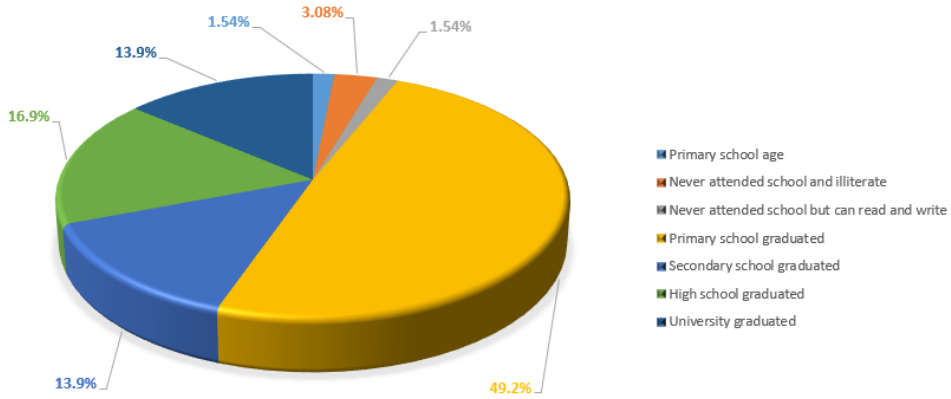

**AŞAĞIİHSANİYE**




**SEFERCİK**




**GÖKÇELER**



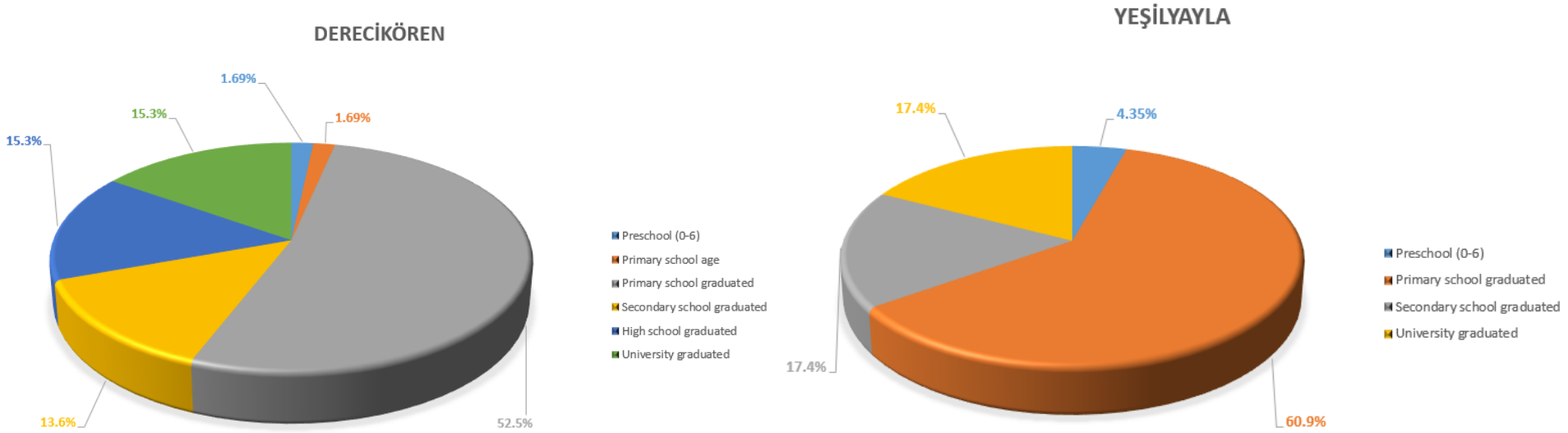



**Figure 6-23: The Literacy Levels of the Villagers**

### 6.4.10.4 Access to higher education (industry-related training opportunities)

In the Province of Zonguldak, there is Bulent Ecevit University consists of 15 Faculties, 3 Institutes, 4 Colleges, 1 State Conservatory, 8 Vocational Schools and 32 Research and Application Centres and 3 departments affiliated to the Rectorate. The academic staff of the university includes 1.302 people.

The number of students at Bulent Ecevit University 34.526 in the 2023-2024 academic year. University has the following faculties.

- Faculty of Medicine
- Faculty of Sciences
- Faculty of Engineering
- Faculty of Economics and Administrative Sciences
- Kdz. Eregli Faculty of Education
- Faculty of Dentistry
- Faculty of Fine Arts
- Faculty of Communication
- Faculty of Pharmacy
- Faculty of Theology
- Faculty of Maritime Affairs
- Kdz.Eregli Faculty of Tourism
- Faculty of Architecture and Design
- Faculty of Health Sciences
- Faculty of Humanities and Social Sciences

### 6.4.10.5 Local Challenges

In Türkiye, it is called mobile education, which is carried out by daily transportation of primary school students in villages with a low population and scattered to larger settlements such as provinces and districts.

This system started with the 2012 academic year. In addition to its financial burden, mobile education has brought many problems. As the transported education became widespread, the village schools within its sphere of influence were also closed. The absence of schools and teachers in the villages has led to migration, the schools in the villages to be idle, the education level of the individuals living in the villages to decrease, and the children to travel constantly and encounter problems related to public health and safety.

It is seen that there is no school in any of the villages within the AoI. The students continue their education using the mobile education system and by far the majority of the people in the villages only have a primary school education.

## 6.4.11 Health

### *6.4.11.1 Introduction*

Aim of Health baseline Chapter is to provide information on health indicators of Zonguldak, Çaycuma and local study area.

The baseline information presented in this Chapter has been gathered from household surveys, key informant interviews and relevant secondary data.

| | |
|---|---|
| **Description** | Health issues and facilities aims at identifying main health determinants in the AoI, the presence of health structures and the level of service provided to local communities. |
| **Study Area** | **RSA:** the Province of Zonguldak<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3 and 6.4.4) |
| | **AoI:** The villages of Aşağıihsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3 and 6.4.4) |
| **Data sources** | **Primary sources**: Socio-economic surveys (Section 6.4.2) |
| | **Secondary sources:** Socio-economic surveys (Section 6.4.2) |

### *6.4.11.2 Healthcare facilities and personnel*

According to the Provincial Heath Directorate of Zonguldak there are 10 governmental, 3 private, and one university hospital serving in Zonguldak. Total number of the available beds in the province is 1,152. The province also has 8 primary health care units and 2 community health care centre. A total of 1,172 health personnel, including 582 specialist doctors and 590 general practitioners, work in Zonguldak (including the Faculty of Medicine and private hospitals), and there are 509 people per doctor.

*Source: **http://zonguldak.gov.tr/saglik***

District Health Directorates of Zonguldak is:

- Alapli District Health Directorate
- Caycuma District Health Directorate
- Devrek District Health Directorate
- Kdz. Ereğli District Health Directorate
- Kilimli District Health Directorate
- Kozlu District Health Directorate

Çaycuma State Hospital, which was opened in 1985 with 50 beds, is one of the most important health institutions of Zonguldak in terms of health services. While it was 50 bed capacity in 2002, Çaycuma State Hospital was increased to 200 bed capacity as a result of the merger with SSK Hospital after the Ministry of Health took over the hospitals.

Çaycuma State Hospital serves an average of 150 thousand people since it is in the area of influence of the district and nearby settlements such as Gökçebey and Devrak district.

Due to this intense demand, the lack of personnel, the inadequacy of the service building and the inadequacy of the polyclinics to meet the intense demand cause frequent disruptions in the service.

Again, the lack of access to the hospital from all over the city is another problem. In addition to all these, due to the frequent transfer of doctors from the hospital or their transfer to other private or university hospitals, the lack of alternatives during the periods when the doctors are out of the district for annual leave or training and conferences, patients in the district often turn to private hospitals in Karabük and Bolu, and to neighbouring cities such as Ankara, Düzce and Istanbul.

In particular, private hospitals in Karabük and Bolu are the places where patients in the city show the most interest. Every morning, hospital services of 25 people come from Bolu and Karabük and take the patients to the private hospitals here on a daily basis and bring them back to their homes in the evening.

Source:https://www.researchgate.net/publication/372991555_Fonksiyonel_Ozellikleri_Bakimindan_Caycuma_Ilcesinin_Yerlesme_Cografyasi

The hospital provides service at the following branches;

- Anaesthesiology and Reanimation
- Child Health and Diseases
- Skin and Venereal Diseases
- Dentistry (General Dentistry)
- Infectious Diseases
- Physical therapy and rehabilitation
- General Surgery
- Chest Diseases
- Eye diseases
- Internal Medicine (Internal Medicine)
- Gynaecology and Obstetrics
- Cardiology
- Ear Nose Throat Diseases
- Neurology
- Orthopaedics and Traumatology

- Psychiatry
- Urology.

*Source: **https://caycumadh.saglik.gov.tr/***

In Addition to Çaycuma State Hospital the villagers are using Saltukova Family Health Center which provides services with 3 Family Physicians, 3 Family Health Workers and 3 Auxiliary Health Personnel.

Among the services provided: Examination, prescription of regularly used medicines, laboratory, family planning services, pregnancy follow-up, baby follow-up, vaccination, emergency intervention, injection, dressing etc. services.

1) Polyclinic services

2) Preventive Health Services

3) Follow-up of Women Aged 15-49

4) Pregnant and Postpartum Monitoring

5) Infant and Child Monitoring

6) Obesity Monitoring

7) Reproductive Health Services

8) Injection and Dressing Services

9) Examination and Analysis Services

*Source: https://saltukovaasm.net*

### 6.4.11.3 Quality of Healthcare

During the social field research, the quality of health services at the local level was questioned and it was learned that there is no health centre in the villages.

In parallel with the Family Medicine system, there is a doctor on duty in Saltukova for all settlements except Sefercik. This system provides a doctor visit to each village 1 day a week, but villagers stated that this system has not been implemented for several years. Since Sefercik is connected to the centre of Filyos, villagers go directly to hospitals and health centres in Filyos.

In 2021 TPAO constructed and emergency health care centre in the village of Aşağıihsaniye as a corporate social responsibility project. Mostly the villagers of Sazköy, Aşağıihsaniye, and Yeşilyayla are being used the Health Center of TPAO for emergency cases and ambulance services.

The Health Centre employs 3 doctors, 12 paramedics, 15 emergency medical technicians, 6 nurses, 2 call centre staff, 1 chief driver, 1 project coordinator, 1 manager and 1 cleaning staff.

At the same time, it provides service with a total of 4 ambulances, three fully equipped and one 4x4.

Provided services includes; injection, Glucose Measurement and Monitoring, Serum Catheter Insertion, Blood Pressure Measurement and Follow-up, Suturing Procedures, Dressing - Wound Care, Urine Catheter Procedures, Nutrition Probe Procedures, Blood Collection, Blood Group Observation, Ear Lavage, Vascular

Access, Nail Pulling, Pregnant Follow-up, Steam Air Application, Surgical Interventions and Emergency Aid Applications

The proximity of the centre for the main hospitals of Zonguldak as follows;

- BEÜ Health Application and Research Center = 73,9 km (78 Minutes)
- Zonguldak Atatürk State Hospital = 64,4 km (67 Minutes)
- Uzun Mehmet Chest and Occupational Diseases Hospital = 63,20 km (63 Minutes)
- Kdz. Ereğli State Hospital = 105 km (103 Minutes)
- Çaycuma State Hospital = 20,8 km (25 Minutes)
- Devrek State Hospital = 47,4 km (45 Minutes)
- Alaplı State Hospital = 123 km (125 Minutes)
- Gökçebey District State Hospital = 37,1 km (40 Minutes)
- Level Hospital = 63,5 km (64 Minutes)
- Ereğli Echomar = 110 km (111 Minutes)
- Ereğli Anadolu Hospital = 110 km (113 Minutes)

#### *6.4.11.4 Main health concerns (trends in illness)*

During the household surveys, health related questions were asked to the participants including access to health services, any expected effects of Project on health, possible effects of noise, dust and contamination and their recommendations were also gathered through the surveys.

Participants expecting an impact on health opportunities were asked whether this impact would be "positive or negative". Replies were summarised at table below.

**Table 6-31: Expecting Impact on Access to Health Opportunities**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| AşağıİhsaniyeAşağıİhsaniye | Positive | 17 | 73.9 |
| | Negative | 0 | 0 |
| | No impact | 6 | 26.1 |
| | Don't know | 0 | 0 |
| | Total | 23 | 100 |
| Derecikören | Positive | 3 | 17.6 |
| | Negative | 0 | 0 |
| | No impact | 14 | 82.4 |
| | Don't know | 0 | 0 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Total | 17 | 100 |
| Gökçeler | Positive | 0 | 0 |
| | Negative | 0 | 0 |
| | No impact | 21 | 95.5 |
| | Don't know | 0 | 0 |
| | Total | 22 | 100 |
| Sazköy | Positive | 18 | 69.2 |
| | Negative | 0 | 0 |
| | No impact | 7 | 26.9 |
| | Don't know | 1 | 3.8 |
| | Total | 26 | 100 |
| Sefercik | Positive | 4 | 23.5 |
| | Negative | 0 | 0 |
| | No impact | 13 | 76.5 |
| | Don't know | 0 | 0 |
| | Total | 17 | 100 |
| Yeşilyayla | Positive | 6 | 75 |
| | Negative | 0 | 0 |
| | No impact | 2 | 25 |
| | Don't know | 0 | 0 |
| | Total | 8 | 100 |

Perceptions of the Project's impact on the health of household members is listed at table below. The majority of the interviewees compared the construction and operation activities with Phase-1 and answered this question as “no impact”.

**Table 6-32: Perception of health impact on HHs**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| AşağıİhsaniyeAşağıİhsaniye | Positive | 2 | 8.7 |
| | Negative | 6 | 26.1 |
| | No impact | 12 | 52.2 |
| | Don't know | 2 | 8.7 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Total | 23 | 100 |
| Derecikören | Positive | 0 | 0 |
| | Negative | 1 | 5.9 |
| | No impact | 14 | 82.4 |
| | Don't know | 2 | 11.8 |
| | Total | 17 | 100 |
| Gökçeler | Positive | 0 | 0 |
| | Negative | 2 | 9.1 |
| | No impact | 19 | 86.4 |
| | Don't know | 1 | 4.5 |
| | Total | 22 | 100 |
| Sazköy | Positive | 0 | 0 |
| | Negative | 6 | 25 |
| | No impact | 17 | 70.8 |
| | Don't know | 1 | 4.2 |
| | Total | 24 | 100 |
| Sefercik | Positive | 0 | 0 |
| | Negative | 1 | 5.9 |
| | No impact | 14 | 82.4 |
| | Don't know | 1 | 5.9 |
| | Total | 17 | 100 |
| Yeşilyayla | Positive | 0 | 0 |
| | Negative | 1 | 12.5 |
| | No impact | 7 | 87.5 |
| | Don't know | 0 | 0 |
| | Total | 8 | 100 |

The detailed responses according to the construction or operation periods of the respondents who answered negatively are as follows.

**Table 6-33: Construction and operation separation of the impact on health**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Aşağıİhsaniye | Construction | 4 | 66.7 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 6 | 100 |
| Derecikören | Construction | 1 | 100 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 1 | 100 |
| Gökçeler | Construction | 1 | 50 |
| | Operation | 1 | 50 |
| | Both construction and operation | 0 | 0 |
| | Total | 2 | 100 |
| Sazköy | Construction | 4 | 66.7 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 6 | 100 |
| Sefercik | Construction | 1 | 100 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 1 | 100 |
| Yeşilyayla | Construction | 1 | 100 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 1 | 100 |

Regarding the dust generation the respondents think that there will be dust effect during the construction and will be minimised after construction completion.

**Table 6-34: Concern on Dust**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Aşağıİhsaniye | Positive | 0 | 0 |
| | Negative | 11 | 47.8 |
| | No impact | 12 | 52.2 |
| | Don't know | 0 | 0 |
| | Total | 23 | 100 |
| Derecikören | Positive | 0 | 0 |
| | Negative | 4 | 23.5 |
| | No impact | 11 | 64.7 |
| | Don't know | 2 | 11.8 |
| | Total | 17 | 100 |
| Gökçeler | Positive | 0 | 0 |
| | Negative | 4 | 18.2 |
| | No impact | 18 | 81.8 |
| | Don't know | 0 | 0 |
| | Total | 22 | 100 |
| Sazköy | Positive | 0 | 0 |
| | Negative | 11 | 45.8 |
| | No impact | 12 | 50 |
| | Don't know | 1 | 4.2 |
| | Total | 24 | 100 |
| Sefercik | Positive | 0 | 0 |
| | Negative | 5 | 29.4 |
| | No impact | 12 | 70.6 |
| | Don't know | 0 | 0 |
| | Total | 17 | 100 |
| Yeşilyayla | Positive | 0 | 0 |
| | Negative | 0 | 0 |
| | No impact | 8 | 100 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Don't know | 0 | 0 |
| | Total | 8 | 100 |

Among the negative ones construction – operation separation is investigated below.

**Table 6-35: Construction and operation separation of dust**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Aşağıİhsaniye | Construction | 3 | 27.3 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 11 | 100 |
| Derecikören | Construction | 1 | 25 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 4 | 100 |
| Gökçeler | Construction | 3 | 75 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 4 | 100 |
| Sazköy | Construction | 7 | 63.6 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 11 | 100 |
| Sefercik | Construction | 1 | 20 |
| | Operation | 2 | 40 |
| | Both construction and operation | 0 | 0 |
| | Total | 5 | 100 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Yeşilyayla | Construction | 0 | 0 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 0 | 100 |

Similar to the dust impact, villagers perceive that they will be more affected by noise during construction than during operation.

**Table 6-36: Concerns on Noise**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| AşağıİhsaniyeDerecikören | Positive | 0 | 0 |
| | Negative | 8 | 34.8 |
| | No impact | 15 | 65.2 |
| | Don't know | 0 | 0 |
| | Total | 23 | 100 |
| | Positive | 0 | 0 |
| | Negative | 4 | 23.5 |
| | No impact | 12 | 70.6 |
| | Don't know | 1 | 5.9 |
| | Total | 17 | 100 |
| Gökçeler | Positive | 0 | 0 |
| | Negative | 3 | 13.6 |
| | No impact | 19 | 86.4 |
| | Don't know | 0 | 0 |
| | Total | 22 | 100 |
| Sazköy | Positive | 0 | 0 |
| | Negative | 11 | 45.8 |
| | No impact | 12 | 50 |
| | Don't know | 0 | 0 |
| | Total | 24 | 100 |
| Sefercik | Positive | 0 | 0 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Negative | 6 | 35.3 |
| | No impact | 10 | 58.8 |
| | Don't know | 1 | 5.9 |
| | Total | 17 | 100 |
| Yeşilyayla | Positive | 0 | 0 |
| | Negative | 1 | 12.5 |
| | No impact | 7 | 87.5 |
| | Don't know | 0 | 0 |
| | Total | 8 | 100 |

The detailed responses according to the construction or operation periods of the respondents who answered negatively are as follows.

**Table 6-37: Construction and operation separation of noise**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Aşağıİhsaniye | Construction | 3 | 37.5 |
| | Operation | 1 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 8 | 100 |
| Derecikören | Construction | 0 | 0 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 4 | 100 |
| Gökçeler | Construction | 2 | 66.7 |
| | Operation | 0 | 0 |
| | Both construction and operation | 1 | 33.3 |
| | Total | 3 | 100 |
| Sazköy | Construction | 6 | 54.5 |
| | Operation | 0 | 0 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Both construction and operation | 0 | 0 |
| | Total | 11 | 100 |
| Sefercik | Construction | 3 | 50 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 6 | 100 |
| Yeşilyayla | Construction | 0 | 0 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 1 | 100 |

When household members were asked about the impact of the Project on their households in terms of pollution, the following responses were received.

**Table 6-38: Concerns on Pollution**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| AşağıİhsaniyeDerecikören | Positive | 0 | 0 |
| | Negative | 6 | 26.1 |
| | No impact | 17 | 73.9 |
| | Don't know | 0 | 0 |
| | Total | 23 | 100 |
| | Positive | 0 | 0 |
| | Negative | 1 | 5.9 |
| | No impact | 13 | 76.5 |
| | Don't know | 3 | 17.6 |
| | Total | 17 | 100 |
| Gökçeler | Positive | 0 | 0 |
| | Negative | 2 | 9.1 |
| | No impact | 20 | 90.9 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Don't know | 0 | 0 |
| | Total | 22 | 100 |
| Sazköy | Positive | 0 | 0 |
| | Negative | 10 | 38.5 |
| | No impact | 14 | 53.8 |
| | Don't know | 2 | 7.7 |
| | Total | 26 | 100 |
| Sefercik | Positive | 0 | 0 |
| | Negative | 3 | 17.6 |
| | No impact | 14 | 82.4 |
| | Don't know | 0 | 0 |
| | Total | 17 | 100 |
| Yeşilyayla | Positive | 0 | 0 |
| | Negative | 0 | 0 |
| | No impact | 8 | 100 |
| | Don't know | 0 | 0 |
| | Total | 8 | 100 |

The detailed responses according to the construction or operation periods of the respondents who answered negatively are as follows.

**Table 6-39: Construction and operation separation of pollution**

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| Aşağıİhsaniye | Construction | 3 | 50 |
| | Operation | 2 | 33.3 |
| | Both construction and operation | 0 | 0 |
| | Total | 6 | 100 |
| Derecikören | Construction | 0 | 0 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |

| Settlement | Answers | Frequency | Percentage |
|---|---|---|---|
| | Total | 1 | 100 |
| Gökçeler | Construction | 1 | 50 |
| | Operation | 1 | 50 |
| | Both construction and operation | 0 | 0 |
| | Total | 2 | 100 |
| Sazköy | Construction | 8 | 80 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 10 | 100 |
| Sefercik | Construction | 2 | 66.7 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 3 | 100 |
| Yeşilyayla | Construction | 0 | 0 |
| | Operation | 0 | 0 |
| | Both construction and operation | 0 | 0 |
| | Total | 0 | 100 |

### 6.4.12 Utilities, Infrastructure, and Services

This Chapter provides baseline information infrastructure and services in the Project impact area, including housing, water sources, wastewater and sanitation, electricity, heating source, waste disposal, fire services, police service, telecommunication, transportation and public space and recreation. Baseline information is presented from the Zonguldak, Çaycuma and the villages located in the AoI through the information gathered through the secondary and the primary data.

| | |
|---|---|
| **Description** | Infrastructure and services are key social components that allows having an understanding of the type of infrastructures present in the AoI, of the access for local communities and of the level of services provided. |
| **Study Area** | **RSA:** the Province of Zonguldak |

| | |
|---|---|
| | **Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |
| | **AoI:** The villages of Aşağıihsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören<br><br>**Rationale:** Detailed in Determination of the Onshore and Offshore Area of Influence Sections (6.4.3and6.4.4) |
| **Data sources** | **Primary sources**: see Socio-economic surveys (Section 6.4.2) |
| | **Secondary sources: see** Socio-economic surveys (Section 6.4.2) |

### *6.4.12.1 Housing*

According to the Turkish Statistical Institute, the population of Zonguldak is 591,492 in the year of 2023. Population change over the years can be seen in the table below.

**Table 6-40: Population of Zonguldak Province Over the Years**

| Year | Population |
|---|---|
| **2023** | 591,492 |
| **2022** | 588,510 |
| **2021** | 589,684 |
| **2020** | 591,204 |
| **2019** | 596,053 |
| **2018** | 599,698 |
| **2017** | 596,892 |

*Source: Turkish Statistical Institute*

According to the Zonguldak Province 2022 Year Environmental Status Report, the total land use area is 318,489.27 hectares, of which 3.357 percent are urban settlements and 5.226 percent are rural settlements (including villages). The data for the construction and housing of the Zonguldak Province is presented in the table below.

**Table 6-41: Data for the Construction and Housing of Zonguldak Province**

| Number of Buildings by Building License | Number of Flats by Building License | Surface Area According to Building License ($m^2$) | Number of Buildings by Occupancy Permit | Number of Flats by Occupancy Permit | Surface Area According to the Occupancy Permit |
|---|---|---|---|---|---|
| 454 | 4198 | 679 620 | 198 | 1605 | 327,988 |

*Source: Turkish Statistical Institute,2023*

According to Çaycuma Municipality 2020 December data, 15,505 people live in the city.

There are dwellings provided. Since it is linked to the number of population, the number of housing in terms of the number of dwellings, 36.6% and 5630 dwellings in New Neighbourhood ranked first with 20.5 percent, followed by it is followed by Çay neighbourhood with 3179. Yeni and Çay neighbourhoods constitute the centre of the city and the gathering of private and public workplaces together have been effective.

Housing the neighbourhood with the lowest number of counts is Sofular Quarter with 1.9% and 294 counts.

Sofular Neighbourhood. Due to its distance to the city centre, until recently was a settlement with village status, but later became a neighbourhood of the city centre location with a more rural settlement landscape character the land on which it was established is located in a valley compared to other neighbourhoods, as well as The fact that it is the smallest neighbourhood in terms of area with 62.9 ha are effective factors in this.

*Source:https://www.researchgate.net/publication/372991555_Fonksiyonel_Ozellikleri_Bakimindan_Caycuma_Ilcesinin_Yerlesme_Cografyasi*

### 6.4.12.2 Water Sources (drinking, utility, irrigation)

The water sources are divided into surface water and groundwater. Streams, natural lakes, ponds and reservoirs are surface waters. According to the Zonguldak Province 2022 Year Environmental Status Report, in Zonguldak province there are 9 streams connected to the Fiyos River, 5 streams connected to Gülüç River, 1 stream connected to Alaplı Stream, 1 creek connected to Ulutan Stream, 1 creek connected to Acılık Stream, 3 creeks connected to Büyük Stream. Apart from these, there are 4 separate streams.

Some selected stream data of Zonguldak Province is presented in the table below.

**Table 6-42: Rivers of Zonguldak Province**

| Stream Name | Total Length (km) | Provincial Boundaries in Length (km) | Flowrate ($m^3$/sec) | Tributary Stream |
|---|---|---|---|---|
| **Filyos River** | 350 | 45.54 | 101,439 | Filyos River |
| **Yenice Stream** | 63 | 14.13 | 56,165 | Filyos River |
| **Devrek Stream** | 95 | 62.39 | 19,364 | Filyos River |
| **Gülüç Stream** | 84 | 84 | 21,887 | Filyos River |
| **Alaplı Stream** | 42 | 42 | 26,952 | Filyos River |
| **Çaycuma Stream** | 25 | 25 | 2,961 | Filyos River |
| **Kokarsu Stream** | 25 | 25 | 1,100 | Filyos River |

*Source: Zonguldak Province Environmental Status Report,2022*

According to the Zonguldak Province 2022 Year Environmental Status Report, there is no natural lake in the Zonguldak province. Drinking and potable waters are provided from artificial lakes. These sources are Kozlu-Ulutan (Ulutan) Dam Lakes in the center, Gülüç and Kızılcapınar Dam Lakes in Kzd.Ereğli, Dereköy Pond in Çatalağzı and Çobanoğlu Pond in Karapınar. There is no pond used for irrigation purposes.

The groundwater potential in Zonguldak Province is presented in the table below.

**Table 6-43: The Groundwater Potential in Zonguldak Province**

| Year | Designation of Drinking-Potable Water ($hm^3$/year) | Designation Industrial Water ($hm^3$/year) | Designation of Potable Water ($hm^3$/year) | Total Designation ($hm^3$/year) | Total Reserve ($hm^3$/year) | Residual Reserve |
|---|---|---|---|---|---|---|
| 2017 | 13.5 | 2.49 | 1.09 | 16.63 | 71.57 | 54.94 |

*Source: Zonguldak Province Environmental Status Report,2022*

### 6.4.12.3 Wastewater and Sanitation

There are three Organised Industrial Zones operating in our province. These are Çaycuma District Organised Industrial Zone, Kdz.Ereğli District Organised Industrial Zone and Alaplı District Organised Industrial Zone. There are wastewater treatment plants for domestic wastewater in two Organised Industrial Zones, namely Çaycuma District Organised Industrial Zone and Kdz.Ereğli District Organised Industrial Zone. In Alaplı District Organised Industrial Zone, the construction of the wastewater treatment plant has been completed and the commissioning of the plant is in progress. Some enterprises operating in these three organised industrial zones have industrial wastewater treatment plants according to their process conditions. On the other hand, there is an area declared as a free industrial zone within the borders of Filyos Town, Çaycuma District of our province and the works in this area are in progress.

**Table 6-44: The Infrastructure Data for Wastewater and Sanitation of Zonguldak Province**

| Infrastructure Statistics | |
|---|---|
| Ratio of Municipal Population Served with Wastewater Treatment Services to Total Municipal Population (%) | 67 % |
| Daily Per Capita Amount of Wastewater Discharged at Municipalities (L/cap.day) | 135 |
| Ratio of Municipal Population Served by Sewerage Network to Total Municipal Population (%) | 91 % |
| Ratio of Municipal Population Served by Drinking and Potable Water Network to Total Municipal Population (%) | 99 % |
| Ratio of Municipal Population Served by Drinking and Potable Water Treatment Plant to Total Municipal Population (%) | 72 % |

*Source: Turkish Statistical Institute,2022*

### 6.4.12.4 Electricity

Türkiye Electricity Distribution Inc. (TEDAŞ) is the state economic enterprise responsible for the distribution and retail sale of electrical energy in Türkiye. TEDAŞ consists of a central organization and a provincial organization. TEDAŞ provincial organization was privatized by dividing it into 21 regional electricity distribution companies. For the Zonguldak Province, assigned supply company is Enerjisa Enerji Inc. and the distribution company is Başkent Electricity Distribution Inc. (Başkent EDAŞ).

Başkent EDAŞ is a company that carries out the construction, maintenance and operation activities of the electricity distribution network within the scope of the provinces in the Başkent Electricity Distribution Region. It provides access to electricity distribution for 7.5 million people in the Başkent Electricity Distribution Region, which covers the provinces of Ankara, Bartın, Çankırı, Karabük, Kastamonu, Kırıkkale and Zonguldak.

It was emphasised during the interviews with the Mukhtars, women and HH members, that due to the old electricity lines in the region, there are constant interruptions and voltage drops, and therefore, especially electrical household appliances break down.

#### 6.4.12.5 Heating Source

Zonguldak meets its energy needs from the Northwest Anatolian electricity grid. There is Çatalağzı Thermal Power Plant (ÇATES), one of the largest thermal power plants in the country, is located in the Zonguldak Province. Also, Zonguldak Eren Thermal Power Plant (ZETES) is located within the borders of Çatalağzı municipality in Zonguldak province. It has a total installed capacity of 2790 MW.

According to the Natural Gas Sector Report for 2020 of the Energy Market Regulatory Authority, in 2020 the national natural gas consumption amount was 48,261,352 million standard cubic meters ($Sm^3$) in Türkiye. In 2020, 595,502 million $Sm^3$ of pipe gas, 4.693 million $Sm^3$ of liquefied natural gas (LNG) and a total of 600,195 Million Sm3 of natural gas were consumed in Zonguldak.

During the field surveys, it was observed that all villagers, including women, elderly and young people, had an expectation from the Project to bring natural gas to the villages, as in Sefercik.

This expectation was fuelled by the fact that BOTAŞ facilities are located in their villages and natural gas is very close by the villages.

#### 6.4.12.6 Waste Disposal

Municipalities within the border of Zonguldak benefit from the solid waste storage facility of ZONÇEB (Zonguldak Special Administration and Municipalities Environment Infrastructure Services Union) which is the establishment of Municipalities and Special Provincial Administration. Domestic solid wastes to a certain extent are collected separately at the source.

The villages of Sazköy, Aşağıihsaniye, Yeşilyayla, Derecikören and Gökçeler are under the responsibility of Saltukova Municipality, which collects waste 1 or 2 times a week. These villages are concerned about the lack of waste containers, especially in the summer months as the population increases with visitors.

Since Sefercik has neighbourhood status of Filyos, municipal services are being given by Filyos Municipality.

Number of waste treatment facilities in Zonguldak Province as of 2022 is presented in the table below.

**Table 6-45: Waste Management Facilities in Zonguldak**

| Facility Type | Number |
|---|---|
| Class II Landfill (Municipal Waste and Non-hazardous Waste) | 1 |
| Licenced Collection and Sorting Facilities and Recycling Facilities | 12 |
| Hazardous Waste Recovery Facilities | 1 |
| Waste Oil Recovery Facility | 0 |
| Vegetable Waste Oil Recovery Facility | 0 |
| Waste Battery and Accumulator Recovery Facility | 0 |
| End-of-life Tire Recovery Facility | 0 |
| End-of-Life Vehicle Temporary Storage Areas | 0 |

| Facility Type | Number |
|---|---|
| End-of-Life Vehicle Processing Facilities | 0 |
| Medical Waste Sterilisation Facility | 1 |
| Non-Hazardous Waste Recovery Facility | 14 |
| Waste Electrical and Electronic Equipment Processing Facility | 0 |
| Mine Waste Disposal Facility | 0 |
| Waste Oil Refining Facility | 0 |
| Coastal Waste Receival Facility* | 3 |
| Excavated Soil, Construction and Demolition Waste Storage/Recycling Facility | 0 |

Source: Zonguldak Provincial Environmental Status Report for 2022, 2023

*There are 3 coastal waste receival facilities in Zonguldak Province whose are operated by Zonguldak Turkish Hard Coal Enterprise General Directorate, Ereğli Iron and Steel Factories Inc. and Eren Energy Electricity Generation Inc. In addition, BER Environmental Logistics Inc., operating under the port operation of the Zonguldak Turkish Hard Coal Enterprise General Directorate has a waste receiving ship.

### 6.4.12.7 Fire service

According to the Laws of Municipalities, it is the duty of municipalities to establish fire organizations. Under this law Municipality of Zonguldak and district municipalities has fire organizations. According to the Zonguldak Municipality Performance Program, 2024 report there are 10 vehicles in the Zonguldak Fire Authority.

If there is a need for fire service TP-OTC fire department has authority to help the villages in AoI.

*Source: https://www.zonguldak.bel.tr/images/ZonguldakBelediyesi2024PerformansProgram.pdf*

### 6.4.12.8 Police

In Türkiye, internal security is carried out by the general directorate of security and the police force affiliated with it. There is Zonguldak Provincial Police Department and Çaycuma District Police Department. In addition, there are gendarmerie stations affiliated to the gendarmerie general command in areas outside the jurisdiction of the police. In this context, the gendarmerie station commands in the Çaycuma district are:

- Çaycuma Filyos Gendarmerie Station Command
- Çaycuma District Gendarmerie Command
- Çaycuma Karapınar Gendarmerie Station Command
- Çaycuma Merkez Gendarmerie Station Command
- Çaycuma Perşembe Gendarmerie Station Command
- Çaycuma Saltukova Gendarmerie Station Command

There is a Gendarmerie Point officially affiliated to Çaycuma District Gendarmerie Command at the main gate of the TP-OTC site. This security unit is also authorised to intervene in public order incidents in the immediate vicinity.

### 6.4.12.9 Telecommunications

Türkiye has a well-established fixed-line and mobile network, with leading companies like Türk Telekom, Turkcell, Vodafone, and TTNET providing a range of services. Mobile penetration is high, and the transition to 4.5G (LTE) has been widely adopted since its launch in 2016, offering fast internet speeds across urban and rural areas.

Satellite communication, facilitated by Türksat, plays a significant role in providing coverage to remote areas. The telecommunications sector is regulated by the Information and Communication Technologies Authority (ICTA), ensuring compliance with national policies and international standards.

Çaycuma, also benefits from the telecommunications services available in the region, though with some variability depending on how remote or urban the specific area is:

Mobile Networks: Turkcell, Vodafone, and Türk Telekom Mobile provide coverage in Çaycuma, similar to other parts of Zonguldak Province. These providers offer 4.5G (LTE) services, enabling high-speed mobile internet and reliable cellular connectivity. Coverage is generally good within the town center and main areas, but it may become less consistent in more rural or remote parts of the district.

Fixed-Line and Broadband Internet: Türk Telekom is the primary provider of fixed-line and DSL services in Çaycuma. Most residents can access standard DSL services.

### 6.4.12.10 Transportation and Road Infrastructure)

**Highway**

Zonguldak province is affiliated with the 15th Regional Directorate of Highways, which has a coverage area of Kastamonu, Bartın, Karabük and Çankırı provinces within its borders. According to the website of the 15th regional directorate of the General Directorate of Highways,1473 km of state road, 1534 km and a total of 2996 km of road are within the region of responsibility of the 15th Regional Directorate of Highways. 98% of the road network is asphalt pavement. The population of the region is 1,617,800. There are 99 $km^2$ of road and 53 people per $km^2$. The number of registered vehicles within the borders of the region is 495.113. There is 1 vehicle for 3 people.

The total road length is 421 km, of which 194 km are divided roads and the length of rural roads is 3,682 km in Zonguldak. Existing Roads under the 15th Regional Directorate of Highways is given in Figure 6-24 below.

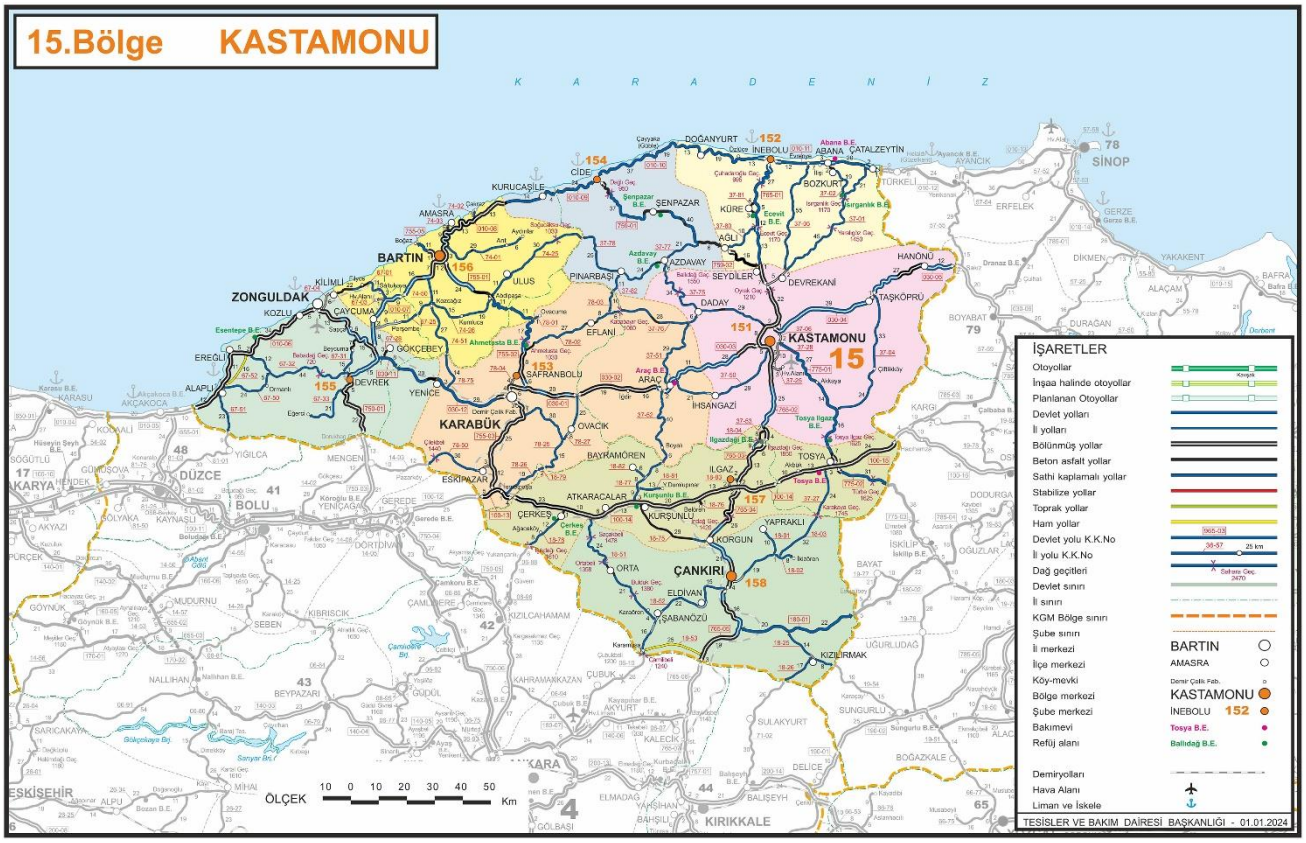



**Figure 6-24: Existing Roads under the 15th Regional Directorate of Highways**

It is assumed that 10% of the traffic load on the road leading to the SGFD site will be distributed to the village roads from the junction point. Estimation of traffic volume at the provincial roads is given in Figure 6-25 below.

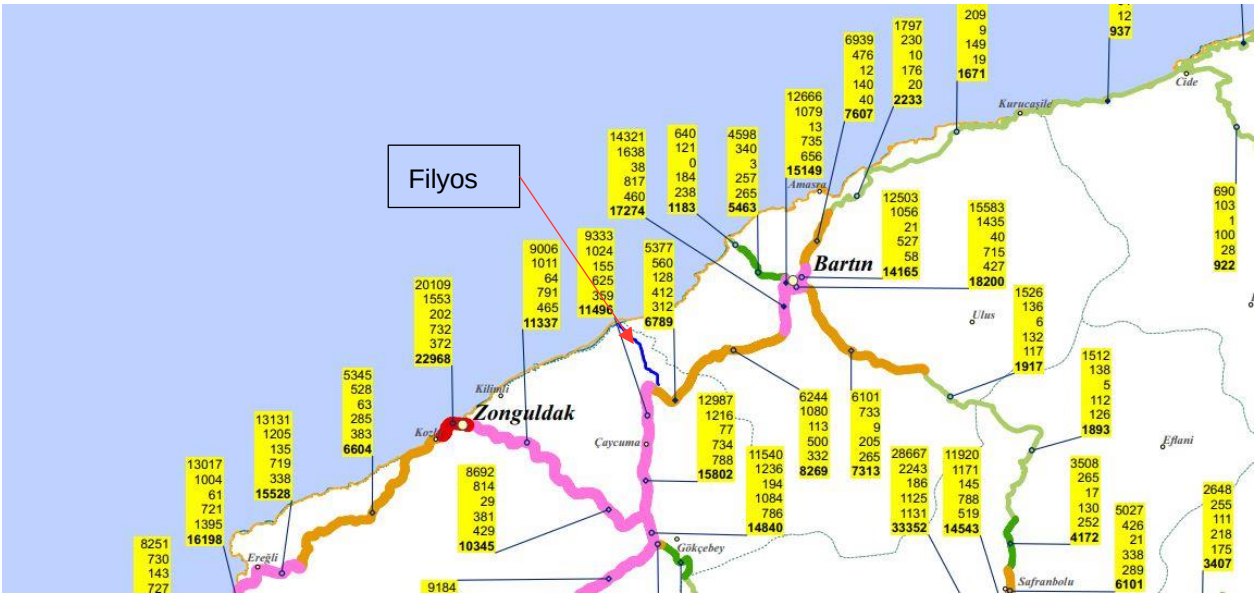



**Figure 6-25: Estimation of Traffic Volume at the Provincial Roads**

Traffic Load on Filyos District= (11496 - 6789) x 0.9=4236

**Table 6-46: Road Network in Zonguldak Province**

| Road Network By Surface Type (km) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Asphalt Roads | | | Parquet | Stabilize | Soil | Other Roads | Network Length |
| | Asphalt Concrete | Surface Coating | Total | | | | | |
| **State Road** | 127 | 63 | 190 | - | - | - | - | 190 |
| **Provincial Road** | 22 | 192 | 214 | 1 | - | - | 16 | 231 |
| **Total** | 149 | 255 | 404 | 1 | - | - | 16 | 421 |

*Source: https://www.kgm.gov.tr/Sayfalar/KGM/SiteTr/Bolgeler/15Bolge/Iller/IlZonguldak.aspx*

The accident statistics in Zonguldak Province are presented in the table below.

**Table 6-47: The accident statistics in Zonguldak Province for 2023**

| Number of traffic accidents | Number of Accident Deaths | Number of Accidents Injured |
|---|---|---|
| **1594** | 46 | 2490 |

*Source: Turkish Statistical Institute,2023*

**Railway**

The length of the railway network in the province is 69 km. The railway line is connected with industrial zones. Regular deliveries are made to KARDEMİR operating in Karabük. Freight transport continues to inland regions via the Irmak-Zonguldak line. Passenger transport is limited to Karabük. The number of passengers carried in 2022 is 602.526.

According to the website of the Zonguldak Municipality, the Çaycuma district has a 30 km railway network on the Zonguldak-Ankara railway route.

It was seen during the interviews that there are train stations in Sefercik, Gökçeler and Derecikören which is quite beneficial for the villagers.

**Airway**

Located in Çaycuma district of Zonguldak, Zonguldak Airport has the status of an international airport and is a regional airport addressing Zonguldak, Karabük and Bartın provinces. From Zonguldak Airport, reciprocal flights are operated to Düsseldorf, Cologne and Münster cities of Germany for international flights and to Istanbul Airport for domestic flights.

### *6.4.12.11 Public Space and Recreation*

According to the Turkish Statistical Institute 2023 data there are:

- 9 public libraries
- 6 theatres with a total of 1413 seats
- 24 cinema halls with a total of 2674 seats

- 9 Public libraries with a total of 190.062 books inside
- 2 museums affiliated with the Ministry of Culture and Tourism with a total of 9.594 artifacts
- 1 private museum with a total of 1815 artifacts
- 2 cultural heritage sites

There are 18 beaches in the province as of 2022. According to the results of pollution measurements made on the beaches, all beaches have met the eligibility criteria. There are 2 beaches in our province, 'Karadeniz Ereğli Municipality Sevgi Beach Facility' and 'Karadeniz Ereğli Municipality Barış Beach Facility', which are entitled to receive the blue flag. In addition, efforts to obtain blue flags for other beaches in our province continue by beach operators. In addition, there are no fish farms in the seas in the province.

In Sazköy and Aşağıihsaniye the villagers complained about the restricted beaches because of the Project where that were using previously as a recreation area of the village.

According to the Çaycuma Municipality, there is Public Library, Culture and Art Center, municipal cinema, a municipal band, a theatre community, parks and gardens, and sports fields in the Çaycuma district.

### 6.4.13 Marine Infrastructure

The objective of this section is to present an overview of existing maritime infrastructure, including pipelines and cables, as well as details on shipping, navigation, and maritime traffic within the AoI. Information has been sourced from available secondary data, GIS studies, and in-depth interviews with stakeholders, along with official maritime traffic databases.

| | |
|---|---|
| **Description** | Maritime infrastructure details allow for an understanding of the types of maritime activities in the area and the nature of operational routes and infrastructure (e.g., pipelines) within the AoI. |
| **Study Area** | **RSA:** The Black Sea region, encompassing the Turkish coastline along which pipelines and cables intersect key shipping routes.<br><br>**Rationale:** Outlined in the Determination of the Offshore Area of Influence Sections (6.4.4) |
| | **AoI:** Focuses on maritime routes intersecting Project activities near the Sakarya Gas Field, impacting pipelines, shipping lanes, and navigation.<br><br>**Rationale:** Outlined in the Determination of the Offshore Area of Influence Sections (6.4.4) |
| **Data sources** | **Secondary sources:** Publicly available online databases, statistics and reports |

#### *6.4.13.1 Pipelines and Cables*

It is known that the Turkstream pipeline passes within the Project area of influence. The natural gas pipeline and the Project area are presented below map.

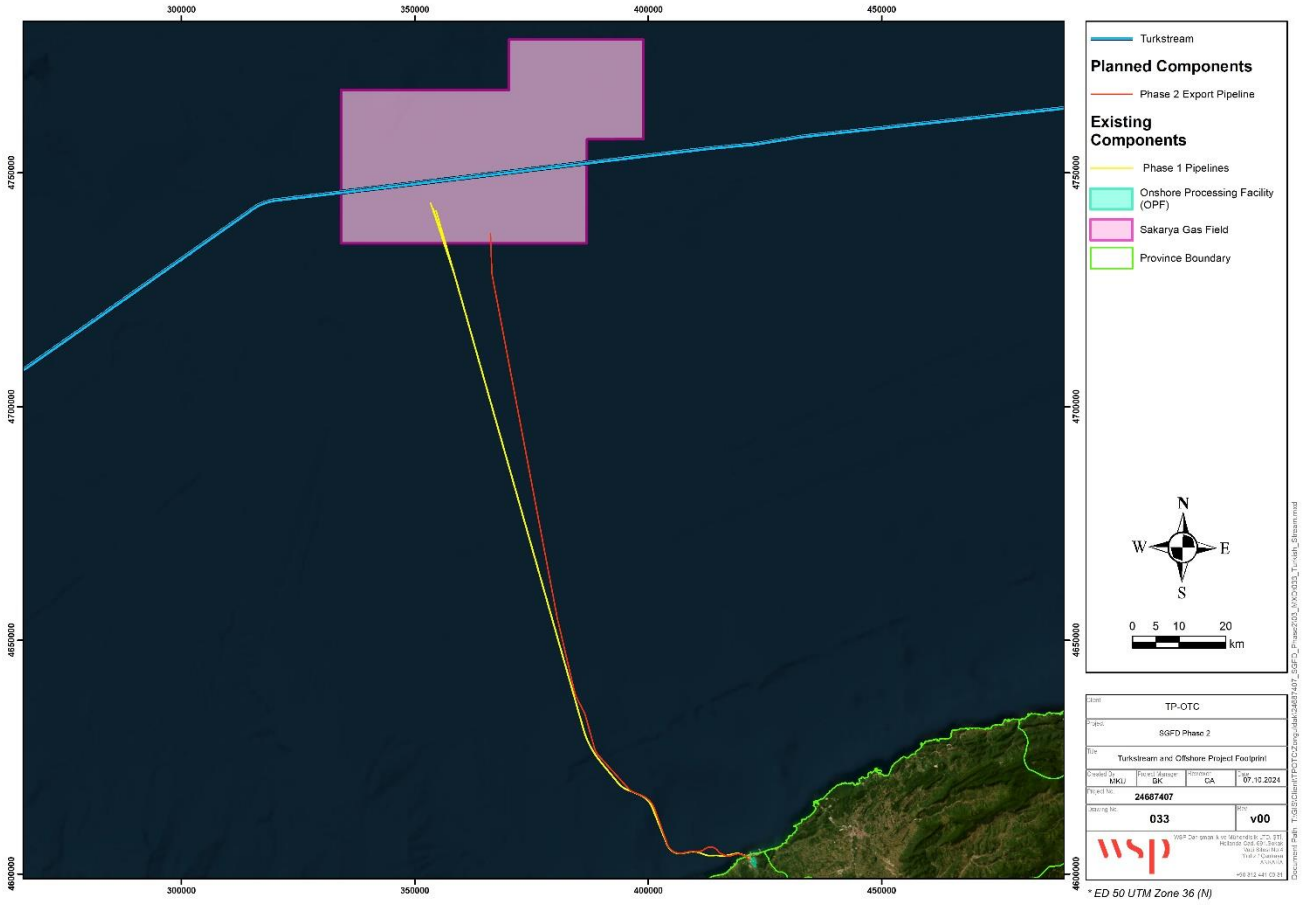



**Figure 6-26 Map Showing Turkstream and Project Components**

### *6.4.13.2 Maritime Traffic*

Maritime traffic plays a key social role, as areas along major marine routes linking harbours or channels experience heavy vessel activity, which could impact Project operations. Likewise, the Project's offshore activities may influence both national and international maritime routes.

There are 5 ports in Zonguldak of which 4 are active, under the operation of the Zonguldak Harbour Master. Approximately 23 million tonnes of cargo was handled in these ports in 2022.


**Figure 6-27 Map Showing Ports in Zonguldak Harbour Master's Jurisdiction**

Zonguldak Port is operated by the Turkish Hard Coal Authority and has an annual capacity of 2.2 million tonnes. There is also a railway connection.

Erdemir Port has a capacity of 20 million tonnes and is mainly used for the company's own needs. It also serves the private sector.

Eren Port is a port integrated to the thermal power plant and has a railway connection. With a capacity of 13.5 million tonnes, the port mainly serves the coal needs of the thermal power plant and Kardemir's import and export.

Filyos Port has a capacity of 25 million tonnes and is the largest port in Zonguldak province and one of the 3 largest ports in Türkiye. The is currently used by the Turkish Petroleum Corporation.

Bozhane Port is currently being renovated and upgraded and is anticipated to re-open by 2025.

The total number of vessels that were processed witin the boundaries of the Zonguldak Harbour Master in 2023 are presented below.

*Source: http://www.zonguldak.gov.tr/kurumlar/zonguldak.gov.tr/planlama/Zonguldak-Il-Brifingi-Agu_23.pdf*

**Table 6-48: Total Number of Vessels Processed by Zonguldak Harbour Master in 2023**

| Harbour Master | Home Trade | | International | | Transit | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # of Ships | GT* | # of Ships | GT* | # of Ships | GT* | # of Ships | GT* |
| Zonguldak | 82 | 98,964 | 465 | 7.1M | 11 | 165824 | 558 | 7.4M |
| Türkiye | 11,662 | 60M | 44803 | 715M | 3730 | 118M | 60195 | 894M |

**Gross Tonnage*

The Project-related offshore activities will interact with national and international marine traffic due to the proximity to the Bosphorus Strait, which connects the Black Sea to the Mediterranean Sea.

**Regional context (RSA)**

The RSA, defined here as the whole Black Sea, hosts around 65 ports, 30 of them located on the Turkish coast of the Black Sea. Additionally, more than 100 smaller marinas are also present in the Black Sea region, with 42 along the Turkish coastline. The position of the main route between Filyos Port and Sakarya Gas Field, and along which the gas pipeline will be positioned, crosses the routes of approximately 600 to 1000 vessels (mostly cargo vessels and tankers) per year moving between the Bosphorous strait and the north-east of the Black Sea (Figure 1). The higher traffic density is registered along the routes to the Sea of Azov, and to three major ports in the north-east, namely Novorossiysk, Tuapse and Poti. All the data reported here were collected using MarineTraffic, which is the world's leading provider of ship tracking and maritime intelligence (marinetraffic.com).

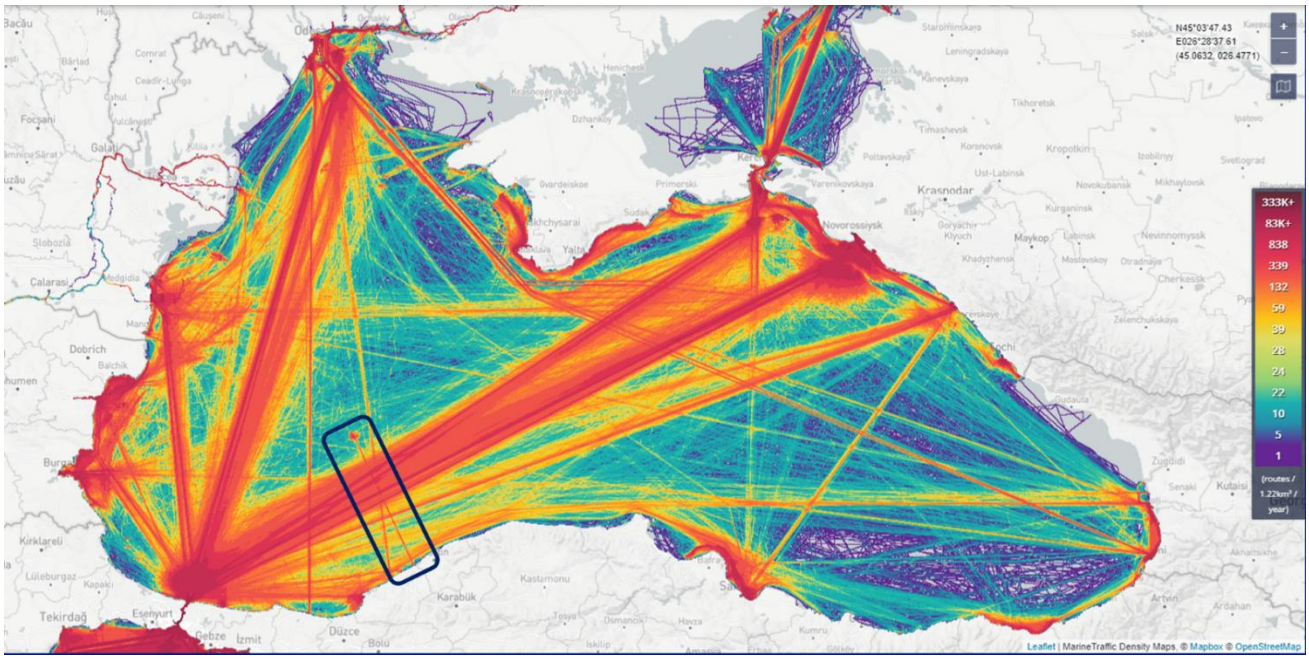



**Figure 6-28: Maritime Traffic routes and statistics across the Black Sea.**

The blue shape indicates the route between Filyos Port and Sakarya Gas Field (source: marinetraffic.com).

**Local context (AoI)**

At a local level the maritime traffic is again linked to AoI crossing the main routes between the Bosphorus strait to the east and north-east of the Black Sea (Figure 2). In addition, there is some activity linked to Sakarya Gas Field and Filyos Port, a commercial route from Zonguldak to Odessa, crossing again the AoI, and some local traffic of recreational vessels and commercial fishers navigating between the smaller marinas.

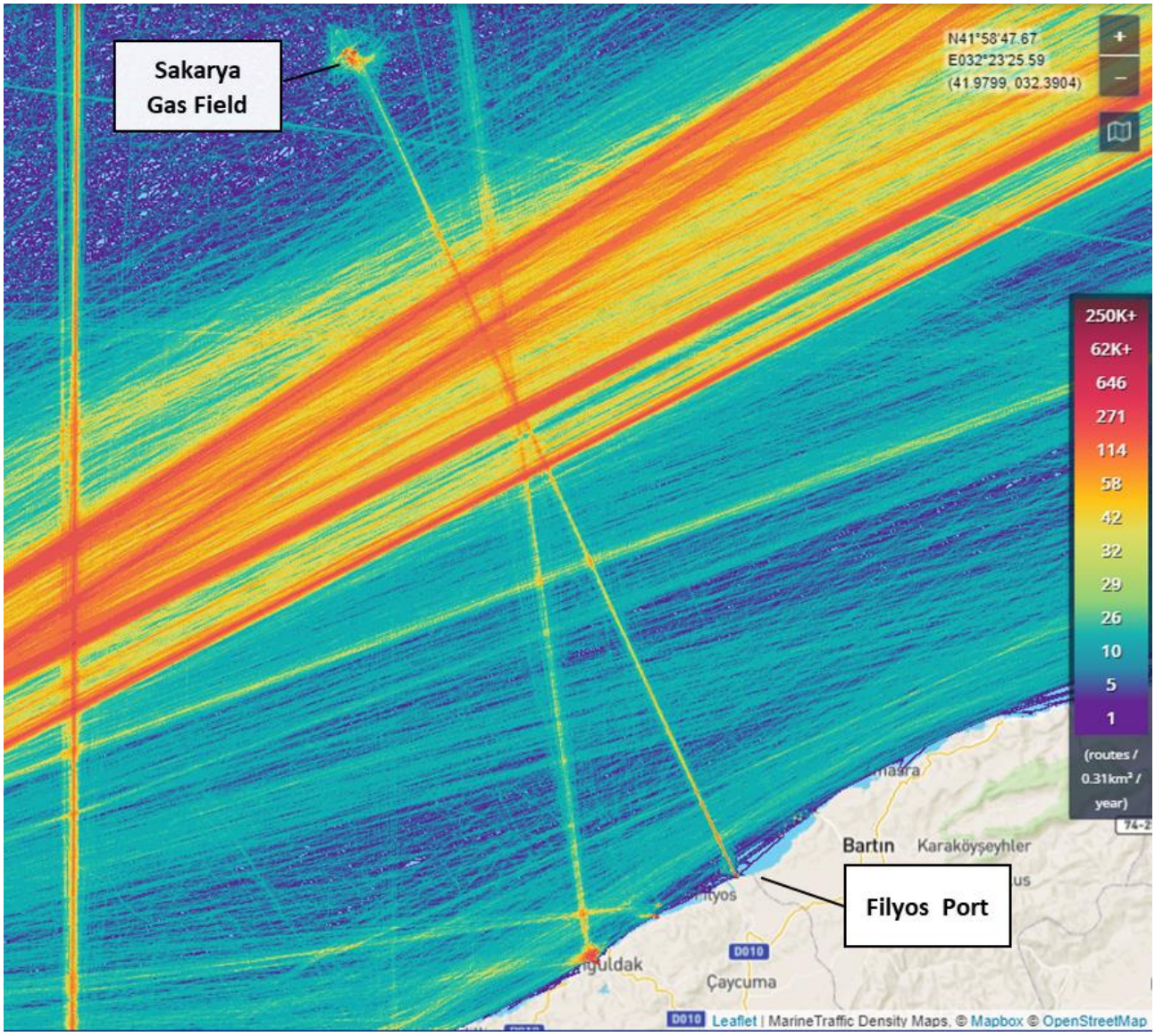



**Figure 6-29: Main route between Filyos Port and Sakarya Gas Field**, including maritime traffic statistics (source: marinetraffic.com)

There are 22 registered members of the Filyos Aquaculture Cooperative, 14 licensed fishers that are not registered with the cooperative and non-commercial amateur fishers fishing between the Işıkveren and Güzelcehisar coasts as elaborated in Section 6.4.8.4.1.

**Receptors**

Vessels crossing from and to the Bosphorus strait, from and to Zonguldak on the main route to Odessa in the north-west, and local traffic to and from nearby ports.

## 6.4.14 Cultural Heritage

### *6.4.14.1 Onshore Archaeology*

| | |
|---|---|
| **Definition** | According to definition of IFC PS8, cultural heritage refers to (i) tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and (iii) certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles. |
| **Study area** | **RSA:** Zonguldak Provincial borders (Regional Social AoI)<br><br>**Rationale:** Provincial level RSA is selected to understand the historical distribution of archaeological assets in the region. |
| | **AoI:** Onshore Project footprint within SGFD for tangible cultural heritage and Onshore Social AoI for intangible heritage<br><br>**Rationale:** Impacts (if any) on tangible cultural heritage may only occur in the Project footprint because of the overlapping of the Project components with archaeological heritages and impacts (if any) on intangible cultural heritage may occur in the Onshore Social AoI because of the potential intangible forms of culture in the region. |
| **Data sources** | **Primary sources**:<br><br>▪ Historical maps;<br>▪ Inventory Records of the Ministry of Culture and Tourism of the Republic of Türkiye;<br>▪ Official opinion letter of Karabük Regional Board for the Protection of Cultural Heritage<br>▪ Detailed surface survey undertaken within the scope of the Phase 1 ESIA. |
| | **Secondary sources:**<br><br>▪ Academic publications on archaeological sites in the project site and its immediate vicinity;<br>▪ Reports on the results of previous cultural heritage studies and surface surveys. |

**Tangible Cultural Heritage**

In Türkiye, "movable and immovable" all cultural assets are protected by the Law No. 2863 on the Protection of Cultural and Natural Assets (Adoption Date: 21.07.1983, Published in the Official Gazette Date: 23.07.1983 Issue: 18113) as amended[2] by the Law No. 3386. Cultural and natural heritage protected by the relevant law is defined as follows.

- Immovables built until the end of the 19th century with natural assets that need to be protected.

[2] https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2863.doc

- Immovables constructed after the specified date and classified as "important assets to be protected" by the Ministry of Culture and Tourism;
- Immovable cultural assets within the protected area (In the law, protected areas are defined as historical areas and ruins that have the social, economic and architectural characteristics of the period they belong to. Areas where important historical events take place and places where natural or cultural assets with natural or cultural characteristics that need to be protected are also defined as protected areas);
- Buildings that have been the scene of great historical events in the establishment of the National Struggle and the Republic of Türkiye without the concept of time and registration due to the measures in our national history and the areas to be determined and
- All houses and buildings used by Mustafa Kemal ATATÜRK without the concept of time and registration.

According to the relevant law, the Ministry of Culture and Tourism and local organizations (Cultural Heritage Conservation Boards, Museums) are the national official institutions that can decide on the determination and registration of the cultural assets defined above, and the determination of the conservation or use conditions related to these areas. Regional Cultural Heritage Protection Regional Boards affiliated to the Ministry are official institutions for the determination of protection or mitigation measures in archaeological or cultural heritage areas that may be exposed to adverse effects such as official identification and registration of all archaeological or cultural areas, determination of the site status of the areas, construction activities such as tourism facility, hotel construction, housing construction, etc., and the decisions taken are binding for the relevant project.

According to the Law No. 2863 on the Protection of Cultural and Natural Assets, all cultural and natural assets that need to be protected are state property. Regional conservation boards are therefore empowered to approve or reject any activity that has the potential to have a negative impact on such protected areas, such as construction, road construction, demolition and excavation. Currently, the responsible board for the project site is the Muğla Regional Board for the Protection of Cultural and Natural Heritage.

In addition to the Law No. 2863 on the Protection of Cultural and Natural Assets, there are also some regulations prepared regarding the management of cultural and natural assets. The first of these is the principle decision of the Supreme Council for the Protection of Cultural and Natural Heritage of the Ministry of Culture of the Republic of Türkiye on "Archaeological Sites, Conservation and Use Conditions" dated 5 November 1999 and[3] numbered 658. According to this decision, Archaeological Protected Areas are evaluated at 3 main levels.

- **1st Degree Archaeological Protected Areas:** Areas requiring the highest level of protection, except for scientific excavations for protection. Structuring and construction is not permitted in these areas in any way. All kinds of construction, excavation and renovation works are prohibited for these areas. On the other hand, in paragraph a) of the relevant principle decision, it is stated that the subject should be evaluated in the conservation board with the opinion of the museum directorate and the head of excavation, if any, for the infrastructure applications to be made by official and private institutions in compulsory situations in exceptional cases.
- **2nd Degree Archaeological Protected Areas:** The protection and use conditions are the protected areas to be determined by the conservation boards and to be protected, except for scientific studies for conservation. In addition, all kinds of construction, excavation and renovation works are prohibited for these areas. As in 1st degree protected areas, Regional Protection Boards may allow the execution of construction

[3] https://kvmgmtktb.gov.tr/TR-44310/ilke-karari--karar-no-658--karar-tarihi-05111999.html

activities with the opinion of the museum directorate and the head of excavation, if any, for infrastructure applications to be made by official and private organizations in exceptional cases.

- **3rd Degree Archaeological Protected Areas:** It has the lowest level of protection. These are archaeological areas where new regulations can be allowed in line with conservation-use decisions. Construction may be permitted subject to the decision of the regional conservation boards. Before the construction is carried out, the results of drilling excavations and drilling excavations in these areas should be prepared by the relevant museum directorate or the scientific excavation department, if any, and submitted to the opinion of the regional conservation boards. Boards may request an extension of the scope of drilling excavations before making any decisions.

Procedures related to other advanced research methods such as rescue excavations, archaeological drilling excavations that may be required are defined in the "Directive on the Execution of Surface Research, Drilling and Excavation Works Related to Cultural and Natural Assets", which entered into force with the approval of the Ministry of Culture and Tourism dated 13/03/2013 and[4] numbered 94949537-160.99-51264.

**Intangible Cultural Heritage**

The "Convention on the Protection of Intangible Cultural Heritage" was adopted by the United Nations Educational, Scientific and Cultural Institution, shortly known as UNESCO, in 2003. The aforementioned contract was accepted by Türkiye in 2006 and entered into force.

According to the definition in Article 2 of the contract;

- "Intangible cultural heritage" means practices, representations, narratives, knowledge, skills and related tools, tools and cultural spaces that communities, groups and, in some cases, individuals define as part of their cultural heritage. This intangible cultural heritage, passed down from generation to generation, is constantly recreated depending on the interactions of communities and groups with their environment, nature and history, and this gives them a sense of identity and continuity; thus contributing to respect for cultural diversity and human creativity. In the context of this Agreement, only intangible cultural heritage that complies with the principles of international human rights instruments and that complies with the mutual respect requirements of communities, groups and individuals and the principles of sustainable development shall be considered "[5].

General outlines Items within the scope of intangible cultural heritage,

a) Verbal traditions and narratives together with the language that serves as a carrier in the transfer of intangible cultural heritage;

b) Performing arts;

c) Social practices, rituals and feasts;

d) Knowledge and practices related to nature and the universe;

e) Handicraft tradition.

Türkiye is a party to the UNESCO Convention on the Intangible Cultural Heritage.

[4] https://teftis.ktb.gov.tr/TR-50815/kultur-ve-tabiat-varliklariyla-ilgili-yapilacak-yuzey-a-.html

[5] Convention for the Protection of the Intangible Cultural Heritage, Paris, 17 October 2003

In 2022, archaeological studies were carried out with the participation of expert archaeologists of HERMES Arkeoloji Çevre ve Sosyal Danışmanlık company (Hermes) covering the SGFD area, which includes the Phase 2 AoI onshore. The study involved desktop and site surveys.

**Historical Geography of the Region**

The name Zonguldak is a combination of the French words "zone" and "Gölağı" in Turkish.

The coal mines in and around Zonguldak were first operated by the French. In this period, the French chose Lake, the highest altitude in the region, to indicate the coal basin, and added the word "zone", which means "area, region". The word "Zone Lake" gradually became Zonguldak among the people.

The first historical data about the region are reached with the Early Chalcolithic Age (approximately 5500-4500 BC). As it is known, with the use of plow in agriculture with the Chalcolithic Age, the population in Anatolia increased. As a result, the villages left their places to settlements the size of towns. In this period, when the use of stone tools decreased and copper and copper-arsenic alloy tools and ornaments increased, some different cultural areas such as Thrace-Northwest Anatolia, Lakes Region, Konya Plain, Çukurova, East-Southeast Anatolia were formed.

It is understood that in BC 4000 thousand years - early in the Late Chalcolithic Age - some immigrants from the northwest, that is, through the Balkans and the Straits, had a settlement or had a close relationship with these nations.

It is seen that the region was under the influence of the Thracian-Northwestern Anatolian cultural environment in the First Bronze Age (3000-2000 BC). As a matter of fact, Ezero or Ezerovo-Sozopol culture has been reported to be widespread especially in Yassıkaya settlement near Kdz Ereğli. Therefore, it is thought that this culture is valid for the whole region.

It is seen that the population is increasing, cities are emerging, as a result of this, social and executive classes are emerging, the tunc obtained with the mixture of copper and tin is used intensively, and trade increases in this period when a development towards production is observed in every field.

In the region, both Early-Late Chalcolithic and First Bronze Age settlements include Türbe Tepe, Buldan, Boncuklar, Kargılık Mevkii and Kadıköy Necropolis.

Information about the region begins later, between 650-550 BC, when the Ion city states established some city states in the Black Sea Region. The reason for the establishment of the colonies here was to focus on the rich grape/wine and fish reserves in the region and the timber trade. Especially the settlements in the inner parts of the region are thought to have been viticultural to the wine and amphora producers Herakleia Pontika and Amastris on the coast.

There are many ancient sources from the colonies in the Western Black Sea Region, especially from Herakleia/Kdz Ereğli, Tieion/Filyos and Sesamos/Amastris/Amasra. These settlements are one of the most important trade centers of the region[6].

Tieion/Filyos is the colony of Miletus. Tieion, which was[7] stated by Strabon, *one of the most important historians of the ancient period, "There is nothing important to say about* it", is an important city that mints coins. A river

[6] Karauğuz, G., AKIŞ, A., KUNT, İ.H., Zonguldak Bölgesi Arkeoloji, Eskiçağ Tarihi ve Coğrafya Araştırmaları, Konya: Çizgi kitapevi, 2010, sf. 137, 139, 140, 143.

[7] Strabon, Geographika (The Geography of Strabon), (Antik Anadolu Coğrafyası: XII.III.8) çev. A. Pekman, İstanbul 1993.

named Filyos/Billaios flows in the east of the city. The founder of the city is a priest named Tios from Miletus. The city came under the rule of the Kingdom of Pontos, the Kingdom of Bithynia and the Roman Empire, respectively.

Historical and archaeological artifacts and archaeological sites of the province, which have not yet come to light, are an important cultural tourism potential and cities such as Herakleia Pontike and Teion, which constitute their historical environment, have been the subject not only of history but also of mythology. Zonguldak has not yet been able to present its hidden power in terms of tourism to the tourism market like many regions of our country.

**Karadeniz Ereğli (Mariandin/Marianydn, Herakleia Pontike)**

The first name of Ereğli, which came from the Phrygian lineage in the 6th century BC, was Mariandyn. Later, the city named Herakleia Pontike was founded by Heracles, the famous hero of mythology. Herakleia Pontike, one of the seven cities established under the name of "Herakleia" in mythology, was looted in various periods of history despite experiencing Roman, Byzantine Seljuk, Anatolian Seljuk and Ottoman civilizations.

In addition to the tombs, sarcophagi, columns and tumulus in Çeştepe, Bozhane Mosque, Halil Pasha Mosque, Kırmanlı Mosque, Molla Halil Mosque, Ali Molla Mosque, İskele Mosque, Ağa Mosque, Hacı Eşref and Akarca Masjids, Kayabaşı Ziyaretgahı, Aktaş Sheikh Tomb, Seyit Nasrullah Efendi Tomb, Demirci Dede in Keşif Hill (Çeştepe), Kuştepe in the city and Mersin Dede entombed saints in the coast, Hacı Mehmet Çeşme and Murtaza Mahallesi Çeşme in the coast, eighteen examples of civil architecture are registered values in Karadeniz Ereğli[8].

Although the site in question is an important ancient city for the region, it is located at a distance of approximately 60 km from the Project Site.


**Figure 6-30: Map Showing Historical Geography of Bithynia Region and Tieion/Tieum Ancient City[9]**

[8] http://www.zonguldak.gov.tr/tarihsel-yapitlar

[9] *Bithynia. Asia citerior. Auctore Henrico Kiepert Berolinensi. Geographische Verlagshandlung Dietrich Reimer (Ernst Vohsen) Berlin, Wilhemlstr. 29. (1903)*

In the source research conducted on the relevant website of the Ministry of Culture and Tourism[10], the number of immovable cultural assets in Zonguldak province are summarized below.

**Table 6-49: Zonguldak Province, Statistics on Immovable Cultural Assets to be Protected 2021 Year-end**

| Immovable Cultural Assets | Number |
|---|---|
| Administrative Structures | 29 |
| Cultural Structures | 47 |
| Military Structures | 5 |
| Industrial and Commercial Structures | 11 |
| Religious Structures | 20 |
| Cemeteries | 141 |
| Civil Architecture Example | 136 |
| Residues | 42 |
| Total | 431 |

**Intangible Cultural Heritage**

*General Information*

Türkiye is a multicultural country. The people of Türkiye consisted of indigenous people and immigrants from the Balkans, Caucasus, Crimea and Inner Asia since the 19th century. The people who came to Türkiye in the last periods of the Ottoman Empire and in the early periods of the Republic include Muslim immigrants from the Balkans, Turkish-speaking Crimean Tatars and Nogays, Azerbaijani, Uzbeks, Turkmens, Kazakhs, Kyrgyz and other Inner Asian Turkic peoples who were deported by the Russian Empire and the USSR, and the Turkic Afghans who were later torn apart by the war, as well as the North and South Caucasian peoples such as Circassians, Abkhazes, Dagestani, Karachay-Balkarla, Chechens and Muslim Georgians. In addition to Turkish-speaking immigrants, non-Turkish-speaking immigrants such as Bosniaks, Pomaks, Albanians, Macedonians, Greek Muslims, etc. are among the Balkan immigrants.

Among the indigenous population, Turks are the majority, including rural and urban Turks, ex-migrant Turkmens and semi-immigrant Yörüks. The second main indigenous groups are Kurds and Zazas who speak western Iranian languages. There are also Laz people who speak a South Caucasian language. Sunni and Nusayri Arabs follow them. There are also minorities in Türkiye, such as some non-Muslim Orthodox Greeks, Gregorian and Catholic Armenians, Jews, Assyrians and Keldanians, and a small number of Molokans (Russian peasants who refused to obey the Russian Orthodox Patriarchate).

The vast majority of the population in Türkiye is Muslim (98.8%). There are two main Muslim sects: Sunnis and Alawites. Sunni Turks and Kurds are dominant in Türkiye, but Turkish, Kurdish and Arab Alawites have a significant population (approximately 20% of the total population). Alawite ceremonies are performed in Turkish, whether they are Turkish or not. Although Alawite worship is related to Imam Shia, it is different from the regular Shiite doctrine in terms of faith and belief.

[10] https://kvmgmtktb.gov.tr/TR-44799/illere-gore-korunmasi-gerekli-tasinmaz-kultur-varligi-i-.html

In addition to respecting the formal adaptation of faith such as regular mosque or church participation, the people in Türkiye have also developed beliefs and ceremonial practices that can be considered as the beginning of folk faith based on their local environment. At the center of such practices lies the creation of saints in Christianity, marriages and investments in Sunni Islam, or cultural personalities such as grandparents or stoves in Alawism. These are seen as intermediaries between the people and divinity. Holiness is attributed to the tombs or tombs of these people and to the places where they are in some part of their lives. In addition, the tombs or tombs of others, called Sayyid and believed to be descended from the Prophet, are also known as sacred. Such people, who are believed to be blessed, are buried where they die or where their blood shed. After their deaths, these places are visited by people who perform certain worship practices in certain ways, hoping that wishes will come true. In addition, in their faith, these places are visited by people who pray to these sacred people for good deeds in the eyes of God in order to earn a good deed. People visit these places for various reasons; in order to have a child; in order to heal a sick person; in order to overcome other difficulties, etc., the graves of these people are then transformed into dome-shaped buildings surrounded by rocks to protect them and provide a more comfortable prayer/worship environment for people.

Sometimes the people here are forgotten or unknown, but people continue to visit, pray and offer sacrifices. Graves belonging to forgotten Christian saints or monks in some places have turned into Muslims over time or people who have converted to Islam have maintained these beliefs under the traditional Islamic cover. For the person who performs these ceremonial practices, it is enough to know that there is a holy or saintly person lying there.

In some temples and tombs, a sacrifice is made to fulfill a wish. If it happens, the place is visited again, and whoever is the intermediary is sacrificed to his soul as an animal offering. Sacrifice meat and other prepared meals are distributed to neighbours and those in need. In some places in Türkiye, practices to worship tree or to cult are performed. Among these, the most popular application is to tie a cloth to the tree with a wish.

In addition, it is also present in religious or non-religious periodic and ceremonial practices such as village festivals, pro bono village entertainment, sacrifices, ceremonies (such as circumcision, baptism), memorials, feasts (Ramadan and Sacrifice) and Friday prayers, oil lamps, martyr days and rain prayers. These are generally traditions created as an exception from ancient traditions such as religious celebrations and ceremonies such as Hıdrellez, Bairam and Friday prayers, harvest festivals.

*General Information on Cultural Activity in Zonguldak Province*[11]

Mining, weaving and woodworking are specific business branches. The Phrygians, who settled in the region (Paflagonya) in the 1200s, processed the mine known as red arsenic (red, orange silhouette minaralli, realgar), known as Sandrake, and used it to make paints and medicines. Zonguldak Stream, which is referred to as Sandrake in the sources, has taken this name from the name of the mineral in question. Weaving products of Phrygians, who are also competent in wood carving, have also been the subject of historical texts. Although weaving, woodworking, and handicrafts are seen in almost every region of the province, the development of textile and apparel, weaving products for human beings (sieve, pellet cloth, wringing cloth, weave); the presence of motor vehicles in life instead of animal power, and the touching of animal products (saddle, saddlebag, horse rider, running gear, column, feed bag) have not been adversely affected.

[11] https://www.kulturportali.gov.tr/turkiye/genel/kulturatlasi/?etiket=zonguldak

In Kdz.Eregli, "elpek" was woven with linen and cotton yarn on hand looms called "regular", which is also known as "cloth" in "pelemet" and other settlements in Çaycuma. This cloth, which is used in underwear, is famous for keeping the body temperature in the cool part in summer. Today, it is evaluated in the form of vest, blouse, bag and souvenir by being embroidered with regional embroidery.

Fine woven cloths are common woven products used as pressure (kerchief, cotton kerchief); thick and patterned woven cloths (leech cloth) are tableware, cedar knitwear and sponge; blue dyed cloth men's trousers; and cloths are common woven products used as women's knee shalwar.

Zonguldak embroidery (18th and 19th centuries), embroidery cloth (raw silk, linen), embroidery type (Turkish style), embroidery technique (moussaka, flat and verev, pesent, guzeme, kesme ajur, tel kırma altın simle yapılan balık sırtı verev), used color, paint (coarse paint, women's hair) and motif-oriented superior features are used in weaving such as peschkir.

"Tel kırma", which is a characteristic embroidery technique of Zonguldak, Bartın, Karabükk (Safranbolu, Eflani, Ulus) Provinces, continues today. It is treated with a material and special tool called “kırma teli" on any cloth. It is used as a cross-dressing and a cross-dressing in women's outerwear.

Due to the plateau tradition that lives in Alaplı, Gümeli, columns and similar products are woven on hand looms.

In addition, the walnut tree chest is an example of woodworking in the direction of building boats in Alaplı, with built-in cupboards, shelves (gauges), doors, woodworking on ceilings, crotch, dough lodge, clogs (nalın), tools used in production and Kdz.Eregli[12].

*Caneism:* Ali Ziya Efendi, the Devrekli carpenter master who was captured by the British in Egypt, started to make the cane he learned from the British in Devrek. The caneism developed with the efforts of Aziz Salman Usta, Münnteka Çelebi Usta and other masters is the same as Devrek. Classical Circuit Cane is a handicraft product. Its body is cranberry and its stem is a walnut tree, and its body has two snake motifs with their heads wrapped around the stem.

Today, canes made of different shapes and materials with paint, silver, pearl, copper-worked motifs are made.

*Cultural Activities in Zonguldak*

It is possible to witness various activities throughout Zonguldak province. Because the vitality of the Black Sea Region, the production economy, and the artistic skills produced or demonstrated locally were intended to be introduced through various festivals. Although many of them are about to disappear, some living and continuing festivals and customary practices continue throughout Zonguldak province.

- Kdz. Eregli International Ottoman Cultural and Cultural Festival (June),
- Kdz. Eregli International Festival of Love, Friendship and Peace Culture (First Week of July)
- Kdz. Eregli Anchovy Festival (First Week of July)
- Çaycuma Culture and Yogurt Festival (June),
- Devrek Cane and Culture Festival (7-10 July),

[12] Nature Conservation and National Parks Directorate, Zonguldak Nature Tour Development Plan, 2013 Türkiye Transportation Authority General Directorate (TTK) workshops in miner sculpture and relief, miner lighthouse, table-top nameplate, model ram wagon are among the products of production culture reflecting souvenirs, model ships of ship modelists.

- Zonguldak/Karaelmas Black Sea International Culture and Art Festival (21-27 June)
- Great Plateau Festival (July)
- Kümur Day (November 8)[13]

## Official Opinion Letters for the Onshore and Offshore Sections of the SGFD

The SGFD is located in the immediate vicinity of some registered archaeological sites. In this context, during the national EIA studies of Phase 1 and Phase 2 the opinion of Karabük Regional Board for the Protection of Cultural Heritage have been requested. In the opinion of the institution dated 18.06.2021 and numbered E-75059364-611.02-1470277 for the Phase 1 national EIA it is stated that;

- *In the examination made by Bodrum Underwater Archaeology Museum with the reference letter (c), it was stated that no cultural asset was encountered on the natural gas route in question. In this context, there is no inconvenience to our Directorate in the applications to be made in the area specified in the reference (ç) letter attachment and coordinates.*
- *However, if any cultural assets are encountered in the said project areas within the scope of the Law o. 2863, it is reported that it is necessary to act in accordance with Article 4 of the Law ".*

The onshore sections of the Phase 2 fall within the SGFD boundaries for which the above opinion letter was obtained in 2021. This official opinion is repeated in the letter obtained for the revised national EIA process for Phase 2, in 2024, and additionally the opinion for the new offshore sections is presented. The national EIA boundary of the Project has been identified to not overlap with any cultural heritage sites offshore.

### *Onshore Cultural Heritage Survey*

During the 2022 study, Teion, also known as Filyos Ancient City, was visited, whose scientific excavations have been ongoing. During the interviews with the excavation team, information was obtained about the historical geography of the region, and the team was informed that surface surveys were conducted from time to time in order to investigate the historical geography in and around the ancient city. Some previous surface investigation reports have also been taken into consideration during studies.

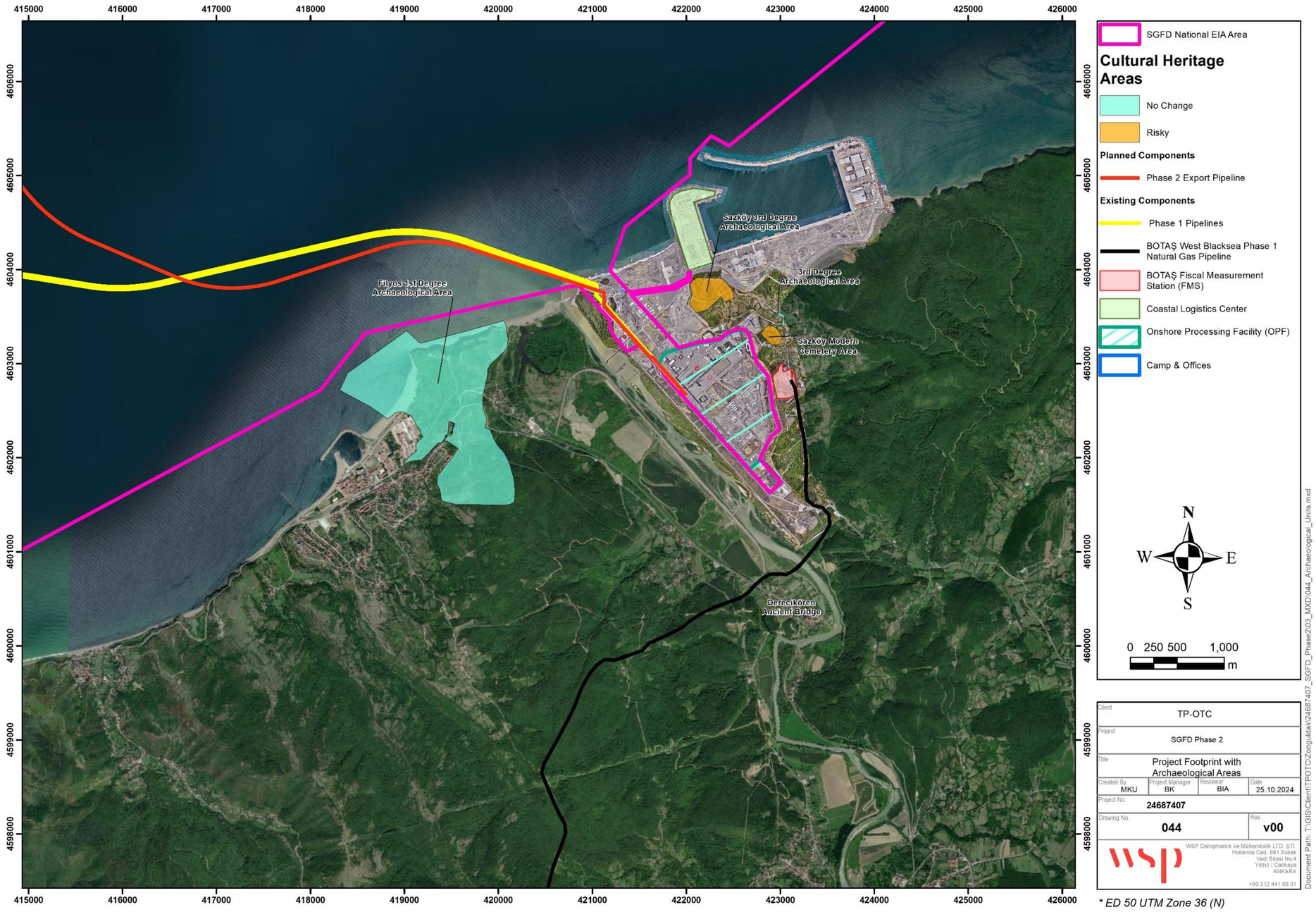
Registration status of identified archaeological assets and their distance to Project components are given below. Satellite image showing SGFD and general archaeological assets in the vicinity is presented in Figure 6-31.

[13] a.g.e

**Table 6-50: Information on the Archaeological Assets Identified Around the SGFD**

| No | Site name | Archaeological Area Registration Status[14] | | | Province | District/Village | Distance to SGFD (m) |
|---|---|---|---|---|---|---|---|
| | | Registered | Unregistered | Unknown | | | |
| 1 | Filyos 1st Degree Archaeological Site | X | | | Zonguldak | Filyos | 1500 |
| 2 | Sazköy 3rd Degree Archaeological Site | X | | | Zonguldak | Filyos / Sazköy | 30 |
| 3 | 3rd Degree Archaeological Site | X | | | Zonguldak | Filyos / Sazköy | 480 |
| 4 | Sazköy Modern Cemetery | | X | | Zonguldak | Filyos / Sazköy | 15 |
| 5 | Derecikören Ancient Bridge | X | | | Zonguldak | Filyos / Derecik ruin site | 1300 |

[14] Project EIA Report and Archaeology Baseline Report




** ED 50 UTM Zone 36 (N)*

**Figure 6-31: Satellite Image Showing Project Site and General Archaeological Status**

(Note: The boundaries of the protected area given on the map are approximately determined)

**Filyos (Tios, Tieion, Thianon, Thium)**

According to the legend, the city was established in the 7th century BC. Throughout its history, it has been called by different names (Tios, Tieion, Tianon, Tium). The city, which could not create political power throughout its history and remained in the shadow of Ereğli and Amasra, was burned and looted in the Roman Period in 70 BC. Later, it was rebuilt and continued its life as a trade and fishing city. The city became an important religious center in the 5th century AD during the Byzantine Period. During the Seljuk and Ottoman periods (14-15th century), it gradually lost its importance and turned into a small fishing village.


**Figure 6-32: Teion Ancient City Map[15]**

Today, in the area where Filyos Town is located, the castle, which dates back to the Roman, Byzantine and Middle Ages, can be seen coastal walls, aqueduct, vaulted gallery, theatre, defense tower and various tombs as aboveground ruins from the old city. Scientific research and excavations of Tios City have been in progress since 2006. In the studies conducted under the scientific presidency of Prof. Dr. Sumer ATASOY, the abundance of structures and pottery varieties belonging to the Hellenistic Period (4th century BC) within the castle shows the richness of the trade. In the radar measurements made in the fields south of the coastal wall, the structures of the old city were determined. In the drillings here, the walls dating back to the Hellenistic Period, the ruins of

[15] https://www.researchgate.net/figure/Map-of-Ancient-City-of-Tios-Bellow-map_fig1_320860255

the Roman-Byzantine period, the coins of the Roman Period and pottery pieces were revealed. In the immediate vicinity of the aqueduct, a monumental square fountain was found. Two pieces of marble sculpture were found in the cleaning works carried out in the theatre.

**Figure 6-33: Remnant of Aqueduct Visible on the Surface to Ancient City of Teion[16]**

**Figure 6-34: A Visual, Architectural Wall Remnant and Floor Slab from the Excavations of the Ancient City of Teion[17]**

Research and excavation of the city of Tios is of great importance for the history and archaeology of the Black Sea. Because it is the first and only ancient city excavated on the Black Sea coast of Türkiye. The information

[16] https://www.kulturportali.gov.tr/turkiye/zonguldak/gezilecekyer/filyos-tios

[17] https://www.kulturportali.gov.tr/turkiye/zonguldak/gezilecekyer/filyos-tios

and documents to be obtained from here are of great importance and it is thought that there is a large city with its roads, square, bathhouse, religious structures, houses, warehouses, shops and graves just below the soil[18]

Considering its relationship with the Project components, it is located at a distance of approximately 1.5 km to the boundaries of the SGFD (see Figure 6-31). The borders of the ancient city were determined according to natural elevation. There is an alluvial delta formed by Filyos River located between the Project site and the city border. The aforementioned alluvial delta is not available in ancient settlements and its general appearance is swamp and reeds.

**Sazköy 3rd Degree Archaeological Site (Sazköy Necropolis)**

Sazköy 3rd Degree Archaeological site is the necropolis area located approximately 30 m northeast of the SGFD boundary and on the slope (see Figure 6-31). Since the area is close to the security zone of the SGFD and TPAO/TP-OTC facilities and port, entrances from the security point is tracked and controlled strictly by the TP-OTC. The archaeological site is protected, fenced and unauthorized entries are prevented with fences and a locked door. The road passing through the archaeological site is not in use due to fencing and locked entrance. It is informed by the TP-OTC that Karadeniz Ereğli Museum Directorate has performed a preliminary survey on the site by opening 10 wells. It is expected that detailed archaeological study for this site will start by the end of 2024.

**Figure 6-35: Sazköy 3rd Degree Archaeological Site, Overlooking the Slope**

[18] https://www.kulturportali.gov.tr/turkiye/zonguldak/gezilecekyer/filyos-tios

The road between Sazköy and the Filyos Port passes through the foothills of the area designated as a necropolis. In the previous years, there have been shifts in soil sections over time due to the destruction of nature due to the road from this area. Depending on this mobility in the soil sections, it has been observed that tile/ceramic pieces used as the top cover of human bones and graves have spread around (see Figure 6-36). The archaeological site is not affected by the structures built within the scope of the SGFD.

**Figure 6-36: Ceramic and Human Bone Pieces at Sazköy 3rd Degree Archaeological Site**

### 3rd Degree Archaeological Site

Another protected area around the SGFD is located on the road leading to the Sazköy coast, approximately 480 meters east of the SGFD (see Figure 6-31). It has been stated that five pieces of broken sarcophagus and ceramic pieces have been seized in the sit plug of the area registered with the decision of Karabük Regional Board for the Protection of Cultural Heritage dated 10.06.2010 and numbered 1880.

**Figure 6-37: 3rd Degree Archaeological Site and General View of Sazköy Village**

### Sazköy Cemetery

A reception center intended for an observation terrace was constructed in the northeast corner of the SGFD and in the west of Sazköy Village. The boundary of the TP-OTC SGFD site is clear. In the examinations made in the aforementioned area and its immediate vicinity, it has been determined that there is a cemetery area

close to the area. In the examinations made in the cemetery, it was understood that there are two tombstones that we can date to the Late Ottoman period as well as today's tombs (see Figure 6-38, Figure 6-39).

However, it has been observed that there are also tombs that do not have tombstones and/or whose area is determined simply by stones. Late Ottoman/Early Republican period dates can be given among the mentioned tombs. Active use of the relevant cemetery continues today.

**Figure 6-38: Overview of Tombs with Present and Late Ottoman Inscriptions**

**Figure 6-39: Late Ottoman Period, Ottoman Inscribed Gravestone**

It can be inferred that Sazköy Village has experienced continuous habitation from ancient times to the present, given the presence of both a necropolis and a residential area dating back to the Roman/Byzantine period, along with elements from the late Ottoman era incorporated into the modern cemetery.

**Derecik Ören Village, Ancient Bridge Remnant**

During the examinations in the AoI, an arched bridge belonging to the ancient period was found near the Derecikören village highway, where the Zonguldak-Çaycuma highway passes, at a distance of 1300 m from the SGFD.

Regarding the bridge, no information could be found in the research reports made in the region. The bridge is considered to be registered by the relevant institutions. The bridge appears to be built at a point where the Filyos River narrowed in the ancient period and lost its importance as a result of the change of the riverbed. As far as can be seen on the surface, an arch structure is robust and exposed. There is a seasonal stream underneath. However, as known from similar bridges, there are multiple arches and eyes for water passage on arched bridges of this type.

**Figure 6-40: Arched Bridge Remains Discovered Near Derecikoren Village**

Regarding the structure reminiscent of the Roman period as a construction technique, it can be said that it is quite well preserved and has a solid structure. The visible parts on the surface have a length of approximately 30 m, a width of 2-3 m and a height of approximately 3-4 m. The arch is made by overlapping the stones with the keystone at the middle point.

**Intangible Cultural Heritage**

Interviews were held with Derecikören Village and Sazköy Mukhtars in the vicinity of the SGFD and also with some people living in the region regarding festivals and cultural activities in the region. According to the interviews:

- Every year, Nevruz is celebrated in the central places of the settlements or in the playgrounds on 21 March. The common practice in nephrous is to jump over by lighting a fire, dyeing eggs and an egg contest. It was

informed that spring celebrations such as Nevruz and Hıdrellez were celebrated until recently in a flat area approximately 2250 m away from the Project Site and between Derecikören and Çömlekçi Villages.

- It was learned that agricultural products grown in Sazköy and Derecikören villages were used for promotion and marketing purposes in festivals held in various periods throughout Zonguldak.
- It was reported that no cultural activities were carried out in their region, and that citizens participated in various organizations organized throughout the province.

### *Management of Cultural Heritage by SGFD*

The SGFD has developed a project specific Cultural Heritage Management Plan and Chance Find Procedure. SGFD employs a designated archaeologist to implement management measures and to manage chance find heritages.

## *6.4.14.2 Marine archaeology*

| | |
|---|---|
| **Description** | Marine Archaeology is a discipline focused on human interaction with the sea through the study of associated physical remains (e.g. vessels, objects, coastal infrastructures). |
| **Study Area** | **RSA:** The Black Sea with focus on the coastal area of Zonguldak and Bartin<br><br>**Rationale:** All the Black Sea is characterized by the anoxic waters that would allow extraordinary organic preservation, especially ships from antiquity, because typical wood-devouring organisms could not survive there. |
| | **AoI:** The marine portion of the pipeline/cable corridor<br><br>**Rationale:** Impacts (if any) may only occur in the close vicinity of the pipeline/cable laying zone because of the excavation of the trench and or the overlapping of pipeline and cable with archaeological heritages. |
| **Data sources** | **Primary sources**:<br>▪ Side Scan Sonar data and ROV survey carried out within the pipeline corridor.<br>▪ Official opinion letter of Karabük Regional Board for the Protection of Cultural Heritage |
| | **Secondary sources:** Secondary data from scientific papers, grey literature, and databases. |

## Methodological approach

The methodology for the identification of archaeological heritages in the AoI consists in the following steps:

- Preliminary analysis of Side Scan Sonar imagery mosaics, as well as other sonar data (MBES, SBP, MAG), by experts and identification of the anomalies (potential archaeological targets) present within the trench excavation section of the pipeline AoI.

- Classification of all the anomalies according to archaeological potential and position within the pipeline corridor.
- Based on the prioritization of anomalies, visual investigations of the points of interest with ROV.

In conclusion, a catalogue of anomalies, supplied after the geophysical surveys, recognized by SSS, MAG and SBP data, and the relevant survey report (report "Hydrographical and Oceanographic Survey Report" by DenAr Deniz Araştırmaları A.Ş.) have been prepared and analysed focusing the attention on all the potential archaeological targets.

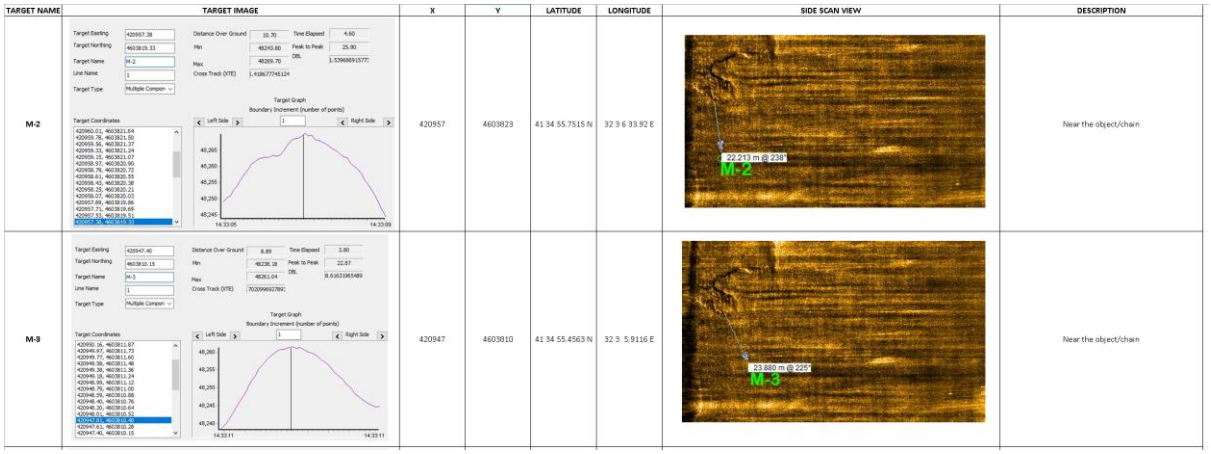



**Figure 6-41:Example of the target catalogue from the report "Hydrographical and Oceanographic Survey Report" by DenAr Deniz Araştırmaları A.Ş.**

As concerns the RSA the same data sources used for the onshore coastal study were considered.

## Regional context (RSA)

The cultural development of this region is inextricably linked to maritime activity and the deep seafloors of the Black Sea are recognized as having great potential for the preservation of submerged archaeological heritage because of the typical wood-devouring organisms could not survive at the depth below about 100 m.

Regional context is defined in detail at start of this Chapter.

## Local context (AoI)

During Phase 1 surveys and studies of a wide area sector of seabed, extending from shore to about 100 m water depth across the pipeline/cable routes, has been performed by a combination of geophysical methods (MBES, SSS, SBP, MAG). Several anomalies and contacts were identified and analysed in the archaeological perspective, concluding that just one had a possible archaeological significance: a small wreck (M230 and M233 in the targets catalogue included in the Hydrographical and Oceanographic Survey Report" by DenAr Deniz Araştırmaları A.Ş.) lying 500 m eastward the landing point at a water depth of 5 m. No other potential archaeological targets were recognized along the corridor, neither in the temporary storage area.

Some very small, isolated anomalies, interpreted possibly as scraps or junk materials, have been localized near the corridor (T-11, T-119, T-38, T-39, T-41, T-40). None of these were lying on the pipeline/cable corridor and nothing dealing with marine archaeology has been reported during the visual inspection carried out by ROV along the pipeline/cable corridor (February 2022 survey).

Furthermore, the presence of signs of fishing activities (nets traces or anchor trails), common in the AoI and the neighbouring zones, justify the presence of some targets attributable to fishing abandoned materials/gears.

At time of Phase 1, according to the geophysical data analysis (especially SSS geotiff), the review of the targets catalogue and the results of the ROV visual inspection excluded the presence of archaeological targets along the pipeline/cable route.

During the national EIA study, examination was made by Bodrum Underwater Archaeology Museum. It was stated in the opinion letter of Karabük Regional Board for the Protection of Cultural Heritage that no cultural asset was encountered on the natural gas route in question and there is no inconvenience to the Directorate in the applications to be made in the area.

Subsequently the laying of the Phase 1 pipeline, several surveys have been carried out (MBES, SSS, SBP) since December 2022 (as built survey) up to May 2024 (6 surveys for Inspection, Maintenance, Repair – IMR - purpose) in the nearshore section of the corridor (from KP 0 to 5.2) ranging from land to about 70m WD. The analysis of the collected data undertaken for this ESIA resulted in no target/contact with possible archaeological implications being recognized in this coastal area.

On the escarpment section of the corridor, ranging from 40 to 1800 m WD (up to KP 30), a detailed bathymetric survey was carried out by AUV (Kongsberg 2040 MBES) in the first half of 2024 with 0.50 m resolution and 40 m line spacing. Bathymetric images and depth variations shown by segmented bathymetric views are presented in the seafloor morphology defined in Chapter 6.3.1.1.

This high detail bathymetric dataset allowed to recognize only a possible modern shipwreck at a depth of 1384m, about 100 m long and 22 m wide (Figure 6-42) positioned about 190 m from the Phase 2 pipeline route. This is still awaiting a targeted ROV investigation planned for the end of the year. No other target/contact has been recognized along this section of the corridor.

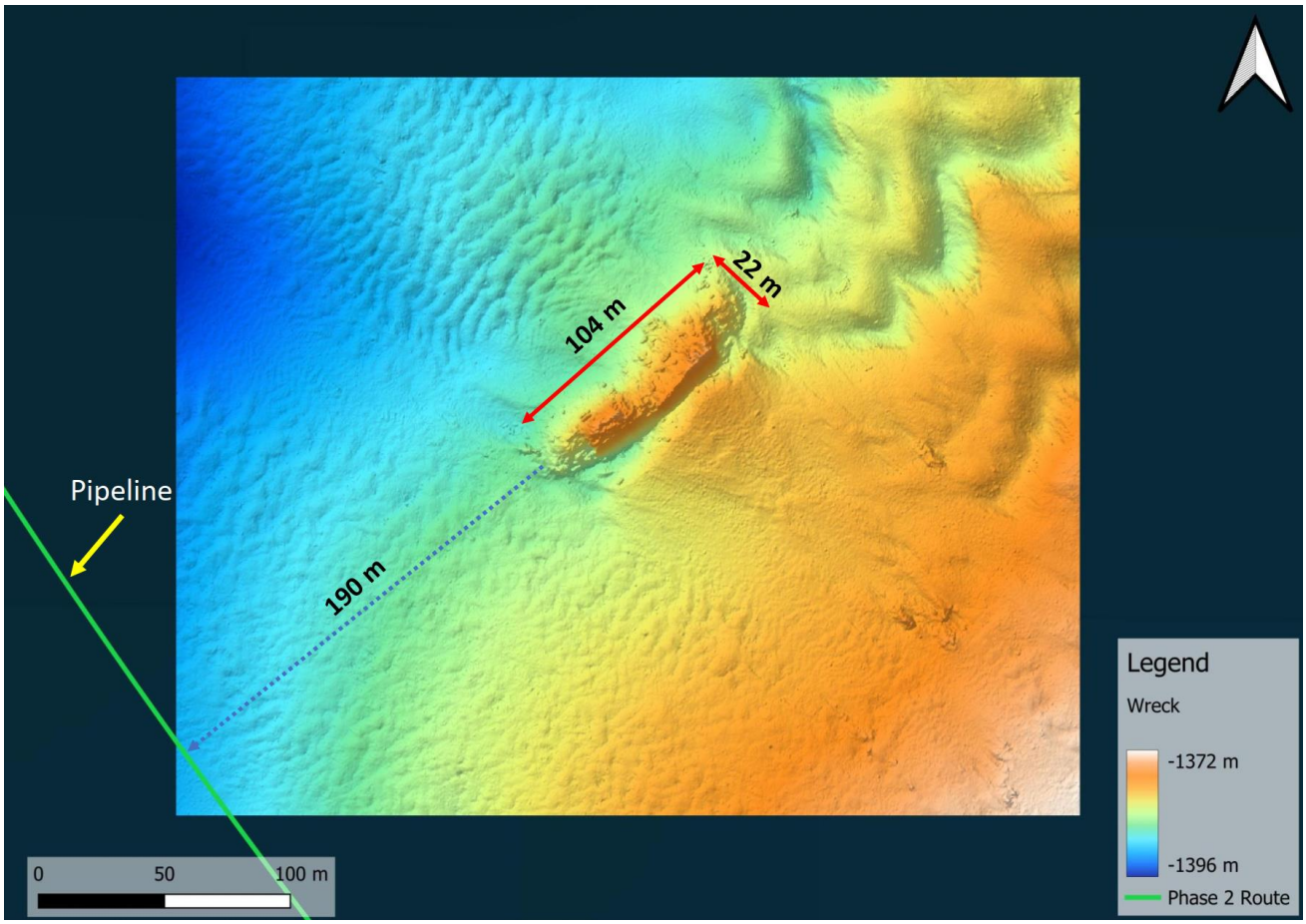



**Figure 6-42. The possible shipwreck laying 190m off the pipeline at 1384m WD.**

In conclusion, after several surveys, no archaeological features were found in the proximity of the facilities in the marine portion of the Project.

The morphological studies highlighted that only the closest section (first kilometre) to shore of the corridor shows wide bathymetric variations in relation of the Filyos River discharge which, during seasonal variations of sedimentary regime, can potentially uncover eventual materials.

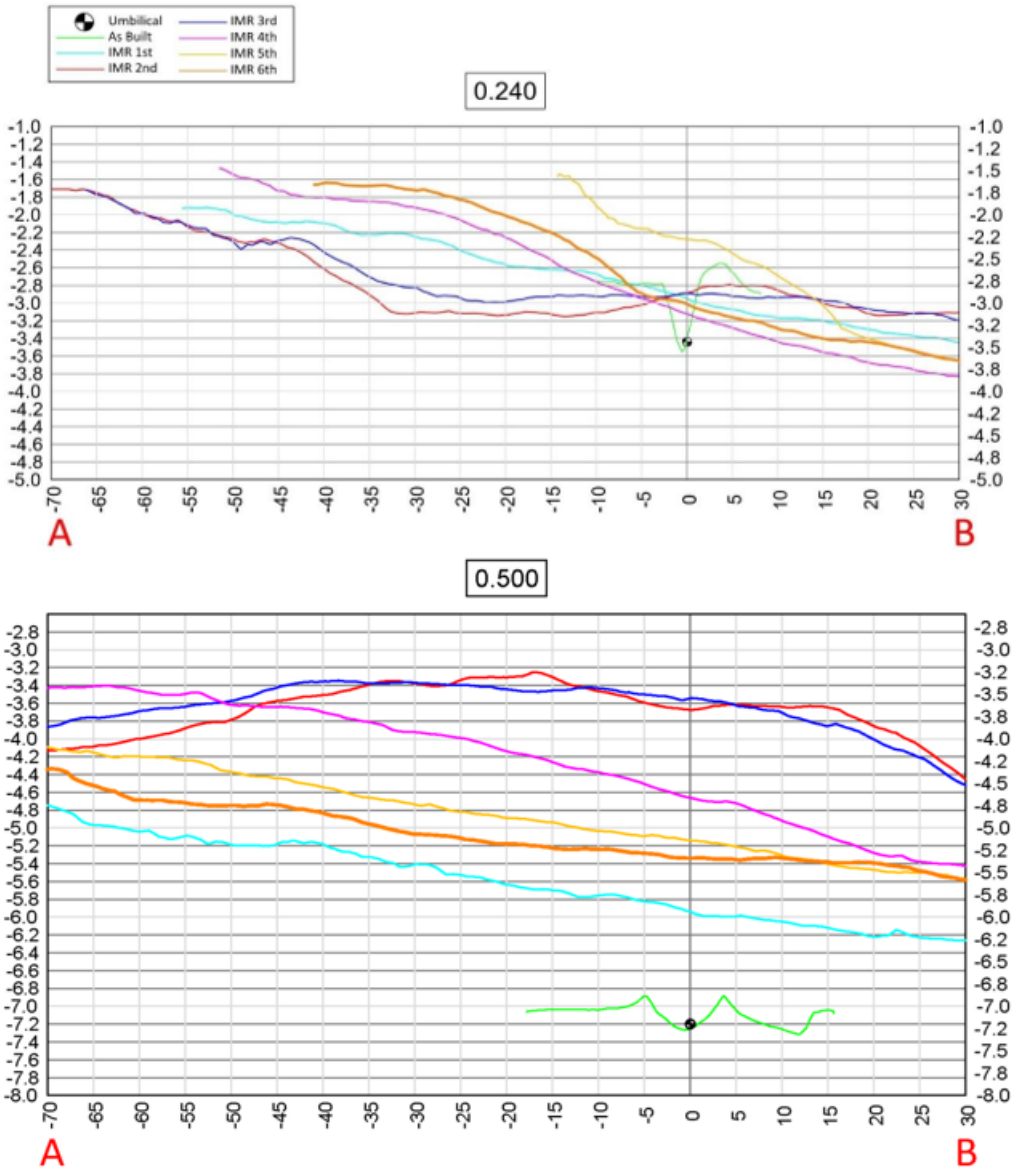



**Figure 6-43. Cross Sections at KP 0.240 and 0.500, comparing each IMR survey and As-Built survey, show wide bathymetric variations (images from 6th IMR report).**

The several surveys revealed a wide case history of morphological fluctuations with changes up to 3 m in the bathymetry (Figure 6-43) without making evident any buried target. In the Black Sea it is considered that bottom currents and the force applied by the river currents to underwater material can destroy or mobilize archaeological material. It is possible to foresee a dragging effect to the close ancient harbour (Approximately 2.5 km from the Filyos Modern Port site) where some shipwrecks were discovered in the docks dating to the Roman period. These are the first tangible data for the underwater archaeology of the Black Sea.

### 6.4.15 Visual Aesthetics

| | |
|---|---|
| **Description** | Visual aesthetics represent the visual appeal, the perception of beauty and therefore the likability of a subject. In this case we refer to the areas interested by the Project and we use visual aesthetic parameters as important indicators of the visual quality of these areas. |
| **Study Area** | **RSA:** Zonguldak Province and Bartın Province (Onshore) and the Black Sea area up to 155 km from their shores (Offshore).<br><br>**Rationale:** The area interested by the Project operations and the provinces where the Project onshore facilities will be located. |
| | **AoI:** A 1,000 m buffer zone from the Project Area<br><br>**Rationale:** The buffer is based on similar physical components (e.g. noise and vibration) affecting the nearby receptors (i.e. communities) that could be affected by the potential deterioration of the aesthetics of the area. |
| **Data sources** | **Primary sources**: Drone pictures of the Project Site |
| | **Secondary sources:** National EIA Report and ESIA Report of the SGFD Phase-1 |

## Regional context (RSA)

**Offshore**

The Project offshore area consists of an open sea section of the Black Sea that will hold only Filyos Port as a visible structure above water Zonguldak and Bartin provinces also comprises five ports and four marinas affecting the aesthetics of the Black Sea region included in the RSA with a sustained vessel traffic.


**Figure 6-44: View of the Onshore Section of the Project Area, Looking at the North/Offshore RSA**

**Figure 6-45: View of the Onshore Section of the AoI, looking at the NorthWest/Offshore RSA, from the embankment**

### Onshore

The Project's onshore RSA section include both natural and modified areas presenting different visual aesthetic characteristics. This comprises coastal areas, forests and protected areas (i.e. Amasra KBA and IBA), agricultural areas, rivers and streams, and urban areas (Figure 6-46).

**Figure 6-46: Example View of a Rural Urban, and Forest Area in the North-east of the RSA (Bartın Province) (Source: ESIA Report of SGFD Phase-1 Project)**

## Local context (AoI)

Within the AoI the following areas have been identified:

### Coastal Dune Area

The coastal dune area (Figure 6-47) sits on the north section of the Project's onshore area and consists of coastal sand dunes with a characteristic low vegetation and a coastal pond with riparian vegetation, including waterweeds and trees (Figure 6-48). The east section of this area has already been modified during site preparation operations with the construction of an access road and the transplantation of some sensitive flora species to a different location.

**Figure 6-47: Section of the Coastal Dune Area Within the AoI (Source: ESIA Report of SGFD Phase-1 Project, 2022)**

**Figure 6-48: The Coastal Pond Located within the AoI**

### Industrial Area

As defined in the previous sections of this ESIA Report, Sakarya Gas Field Development Project has been initiated to extract, transport to shore and process the natural gas discovered in the Sakarya Gas Field, in the exclusive economic zone of Türkiye, off the Western Black Sea Region, and the natural gas reserves to be discovered through the ongoing exploration. Phase 1 involves natural gas production with the subsea production system (SPS) from 12 wells in the Sakarya Gas Field. The gas is transported onshore through an approximately 170 km long, 16-inch (40.64 cm) diameter steel pipeline, processed at the Onshore Processing facility (OPF), and delivered to the Petroleum Pipeline Corporation (BOTAŞ). The infrastructure for Phase 1, including the SPS, SURF (Subsea Umbilicals, Risers, and Flowlines), and OPF, has been installed. The first gas arrival onshore was achieved in 2023.

In the scope of this Project (i.e. Phase 2) involves natural gas production with the SPS from approximately 11 wells in the Sakarya Gas Field. SPS will be connected to the floating production unit (FPU), with SURF (subsea umbilicals, risers and flowlines), where the gas will be processed. The processed, dried gas in the FPU then will be transported to onshore through an approximately 170 km long, 16-inch (40.64 cm) outer diameter steel dry gas offshore export pipeline and delivered to BOTAŞ through a tie-in in the existing OPF.

Therefore, the Project's onshore section consists of a highly modified industrial area (Figure 6-50-Figure 6-54) where vegetation has been already removed and the ground has been prepared for construction. Existing service roads were improved and new service roads were built inside the SGFD area.


**Figure 6-49: Google Earth View showing Locations of Drone Images**


**Figure 6-50: Drone image of SGFD SITE Onshore Facilities and Filyos Port (Taken at Image Location 2)**


**Figure 6-51: Drone image of SGFD SITE Onshore Facilities and Filyos Port (Taken at Image Location 3)**


**Figure 6-52: Drone image of SGFD SITE Onshore Facilities, Campsites, Sazköy and Planned Phase-2 Pipeline (Taken at Image Location 4)**


**Figure 6-53: Drone image of SGFD SITE Onshore Facilities, Campsites, Filyos River and Planned Phase-2 Pipeline (Taken at Image Location 5)**

**Figure 6-54: Drone image of SGFD SITE Onshore Facilities, Campsites, Filyos River, Pond and Offshore (Taken at Image Location 6)**

### River and Estuarine Area

The west boundary of the onshore Project area consists of the terminal section of Filyos River (Figure 6-53 and Figure 6-54). The river flows from south to north meeting the Black Sea on the west corner of the dune area described above. Along both its sides are present strips of riparian vegetation including weeds and trees and several vegetated islets. A relatively new bridge, and the collapsed remains of a dismissed service one, cross the river just west of the industrial area.

## Visual Receptors

Only one settlement is located within the AoI that falls into the visual zone of visual influence (with direct line of sight on the industrial area), the village of Sazköy is positioned east of SGFD SITE and comprises 45 households and a population of 329 with an additional 15 to 20 located further away around the village (Figure 6-52) Derecikören is the next closest village upstream from the SGFD Site with 120 households and a population of 295 people, the village is located within AoI.

## General State Considerations

The overall aesthetic condition of the AoI is expected to remain relatively unchanged. Onshore facilities have already been established and evaluated in the Phase 1 of the SGFD SITE's disclosed ESIA Report.