



SAKARYA GAS FIELD DEVELOPMENT PROJECT - ESIA

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Chapter 6 Environmental and Social Baseline

Chapter 6.1. Socioeconomic Baseline

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6.0 ENVIRONMENTAL AND SOCIAL BASELINE

This chapter is aimed at providing a description of the environmental (physical and biological) and social context in the Regional Study Area (RSA) and Area of Influence (AoI) of the project prior to its realization.

Following the directions outlined in the Methodology (5.0), the work presented here will include information on all relevant components to provide an understanding of the environmental and social state of the area (e.g., air quality, terrestrial fauna and flora, marine habitats, land use, etc.), and to assess their sensitivity.

All information reported in this chapter represent the starting point to the following Impact Assessment (7.0).

The baseline description process has been aligned to the identified project components (3.0) by grouping all the relevant environmental and social elements into two operational areas, namely Offshore and Onshore.

As part of the ESIA process a preliminary baseline area identification was undertaken showing that, at a general level, the RSA and AoI relative to each Project component and action include both natural and modified habitats (as per definition of IFC standards, PS6). These mostly consist of open seas, coastal waters, native vegetated areas, farmed land, pastures and industrial areas (see 6.1 and 6.3).

Although, it is possible for modified habitats to hold biodiversity value (IFC PS6 and GN6), IFC standards also indicate that “Clients should endeavour to site the project in modified habitat rather than on natural or critical habitat and demonstrate this effort through a project alternatives analysis conducted during the risks and impacts identification process” (IFC Guidance Notice 6, GN36).

Within the onshore area, in particular, the processing facility and most of the Project’s associated facilities have been planned to be constructed within Filyos Industrial Area. The selection of this onshore location is, therefore, in accordance with IFC standards as the industrial area had already been constructed prior to the Project’s genesis and was undertaken under the responsibility and ownership of a different government agency (Ministry of Transport and Infrastructure General Directorate of Infrastructure Investments) with no specific intent of being developed for the Project. Works for the construction of Filyos Port and the adjacent industrial area, and the relative modification of the original natural habitat, commenced in 2017, following Turkish environmental laws and requirements. The area for the Onshore Processing Facility was preliminarily allocated to TP-OTC with the Preliminary Allocation Letter (dated 8 February 2021) of the Ministry of Energy and Natural Resources (Appendix J).

The offshore Project area generally consists of more natural habitats with disturbance events related to the common activities of fishing vessels, maritime traffic, the exploration activities of the Gas field area, and, possibly, the residual social and environmental impacts from the construction of Filyos Industrial Port (e.g., vessel traffic, fishing, currents, benthic communities, etc.).

6.1 Socioeconomic Baseline

6.1.1 Introduction

The main purpose of the social baseline study is to determine the existing social and economic conditions of the settlements and households within the project area. This is also part of the planning and implementation process as it provides a basic criterion by which the project performance and positive (beneficial) and negative effects of the project on people and communities can be measured via regular monitoring and assessment throughout the project lifespan.

6.1.2 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) and Project specific documents such as EIA and ESIA reports. Outputs of the secondary data analysis help to reach a common understanding about the social Aol. Secondary data was obtained more specifically through the following institutional websites;

- Zonguldak Governorship
- Zonguldak Municipality
- Turkstat
- Provincial Directorate of Environment, Urbanization and Climate Change
- Zonguldak Provincial Directorate of Agriculture and Forestry
- Western Black Sea Development Agency:
- Zonguldak Chamber of Industry and Commerce
- Zonguldak Employment 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 Aol 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 Aol that were consulted in the scope of community level surveys are: **Sazköy, Derecikören, Aşağıhsaniye, Gökçeler, Sefercik and Yeşilyayla.**

Community level surveys were performed with the mukhtars or opinion leaders of the villages.

Household Surveys (HHS)

The household surveys comprised the following items:

- level of information on the planned Project,

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- mechanisms of access to information,
- major complaints about on-going activities, such as industrial zone development, earth works in the region,
- 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 Project 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 Household	Number of HHSs	Percentage of households covered by survey %
Aşağıhsaniye	55	13	23.63
Gökçeler	70	13	18.57
Yeşilyayla	40	5	12.5
Sazköy	40	26	65
Sefercik	45	23	51.11
Derecikören	120	11	9.16
Total		91	

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.

Key Informant Interviews (KII)

Key informants are regarded as representatives of organizations who are well-informed on their community as a result of their leadership features, problem solving skills and positive communications with communities. They have specific knowledge and/or expertise about some aspects of emergency, about the general characteristics of the settlement and the community, and also about major or sensitive issues in the settlement

Below is a list of KIIs, inclusive of NGOs, local authorities, government authorities that were consulted during the survey:

- a) Çaycuma District Governorship
- b) Zonguldak Governorship

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- c) Filyos Municipality
- d) Saltukova Municipality
- e) Filyos Chamber of Craftsmanship
- f) Filyos Fishing Cooperative
- g) Environmental Protection Association
- h) West Black Sea Development Agency
- i) Provincial Port Manager
- j) District Agriculture Directorate

During the KII interviews, snowball sampling was used during the consultations in order to reach all affected or interested and influential key informants.

Fisheries Survey

According to the outputs of the preliminary surveys with the Mukhtars and the representatives of the aquaculture cooperative, 110 fisheries are located in the Project area. During the social survey 41 in depth interview with the fishers were conducted, covering the following issues: main source of income, years of the experience, monthly and annual income, size of fishing activities (number of the personnel's and the number and the size of the boats), common fishes caught etc.

Site Observations

In addition to above-mentioned consultation methods, site observations were used by the social experts to analyse current practices in the Aol, in terms of land use, visual impacts, interactions between the Project and local communities, management of complaints and current labour conditions.

Survey Team

Survey team consisted of the following experienced sociologists.

Table 6-2: Survey Team

Names	Role
Elçin Kaya	Sociologist and Field coordinator
Semra Erişmiş	Sociologist/ Enumerator
Büşra Ayna	Sociologist/ Enumerator
Sena Satılmış	Sociologist/ Enumerator
Onur Ali Taşkın	Sociologist/ Enumerator
Gülçin Uçak	SPSS Specialist

6.1.3 Determination of the Onshore Area of Influence

The Area of Influence (Aol) is the area that may be impacted by a project. Understanding the Aol is an essential requirement for a social impact assessment (SIA). Following that, the social baseline must focus on the Aol, 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 Aol. This Aol encompasses, as appropriate:

The area likely to be affected by:

1. The project and the client'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.

In short, the Aol should include all project related structures and ancillary facilities, owned or managed by the project owner and subcontractors and the associated activities strongly dependent on the project. In addition, areas and communities directly impacted upon by the proposed project and ancillary facilities form part of the Aol. Cumulative impacts and potential unintended, but predictable, project consequences should also be considered in the delineation of the Aol. From a social viewpoint, the Aol perspective is also influenced by direct and induced socio-economic influences (including relocation, livelihood, health, and safety aspects), spatial implications, intrusion impacts and stakeholder typology.

The social Aol identified for Project is presented in **Figure 6-1**.

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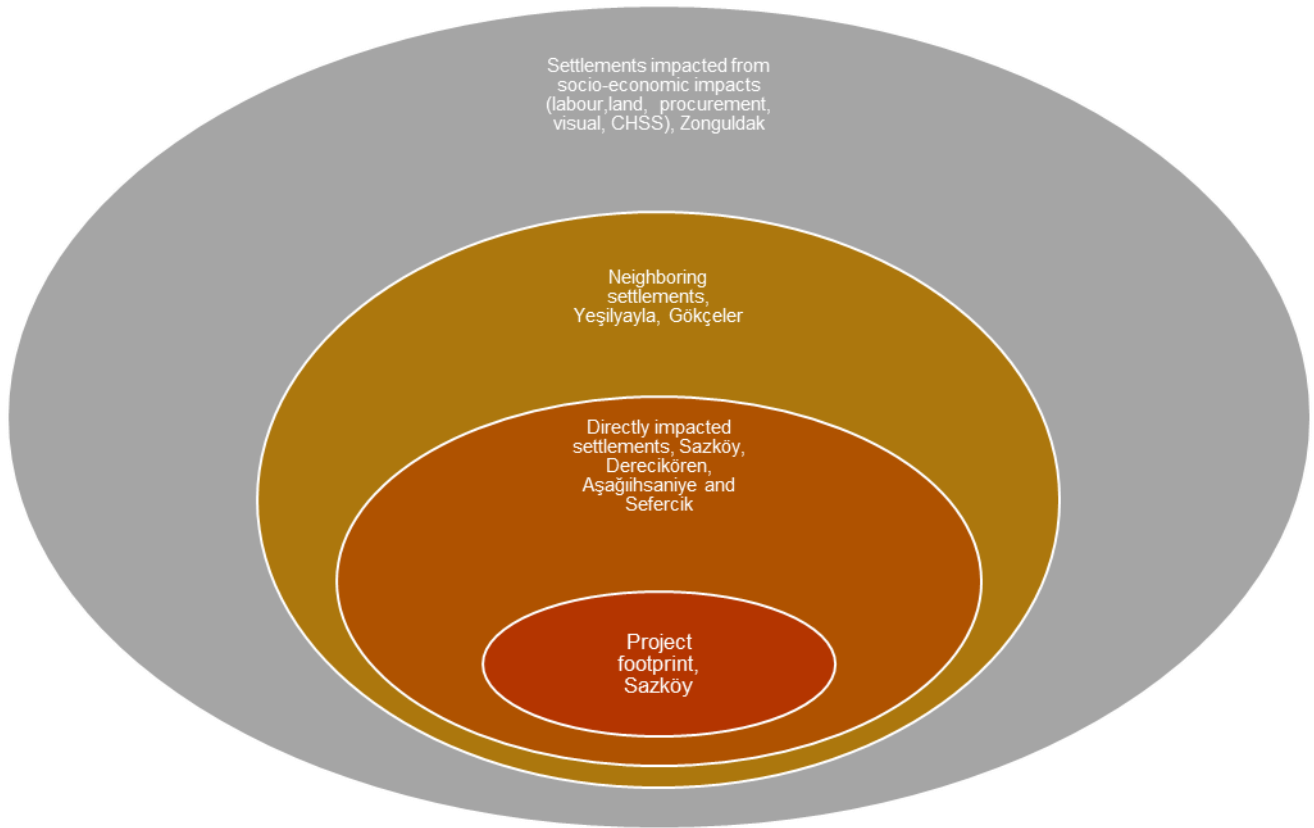


Figure 6-1: Project Area of Influence

Based on the local EIA report of the Project, Gap Analysis Report of Golder and the site visit, discussions with Project officials, the settlements which may be directly affected from Project-related activities and hence identified as social Area of Influence, are determined as Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören villages. In addition, within the context of the social baseline, a Regional Study Area for the collection of baseline information at a wider scale has been defined and includes the Province of Zonguldak. The location of villages included in the social Aol is shown in the figure below.

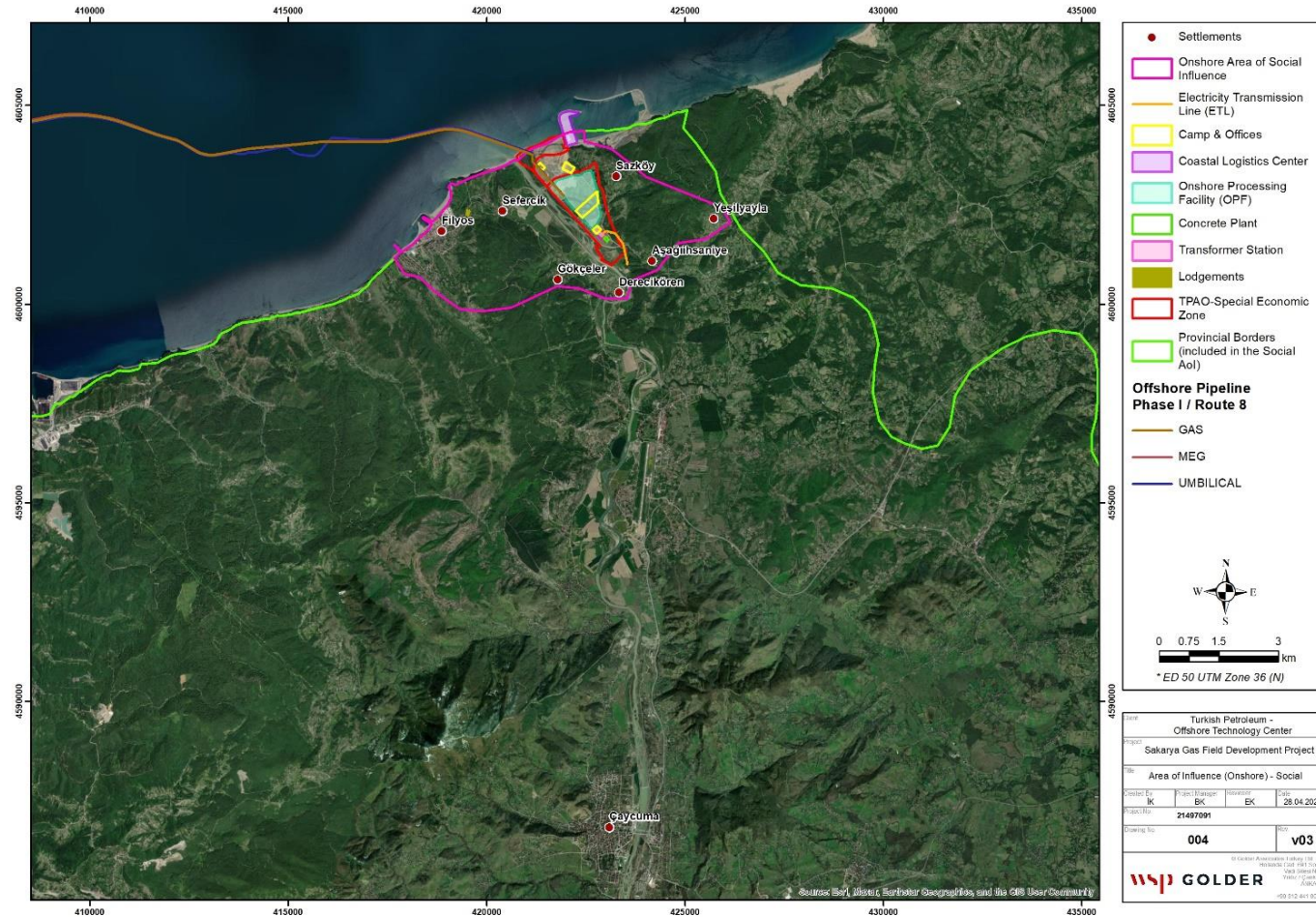


Figure 6-2 Social Aol Map

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6.1.4 Determination of the Offshore Area of Influence

Although the local impact area within the scope of the project is 2 km from each site of the pipeline, which was announced by the Navtex decision, it was observed during the field studies that not only Filyos fishing port but also Bartın Stream and Tarlaağzı fishing ports used this area. Within the framework of the conducted interviews, it is seen that the ports fish within 3 miles of the shore. Considering the effects of the project on the income sources of the fishers, the following Area of Influence has been determined as the intersection of the pipeline and the Navtex restriction area.

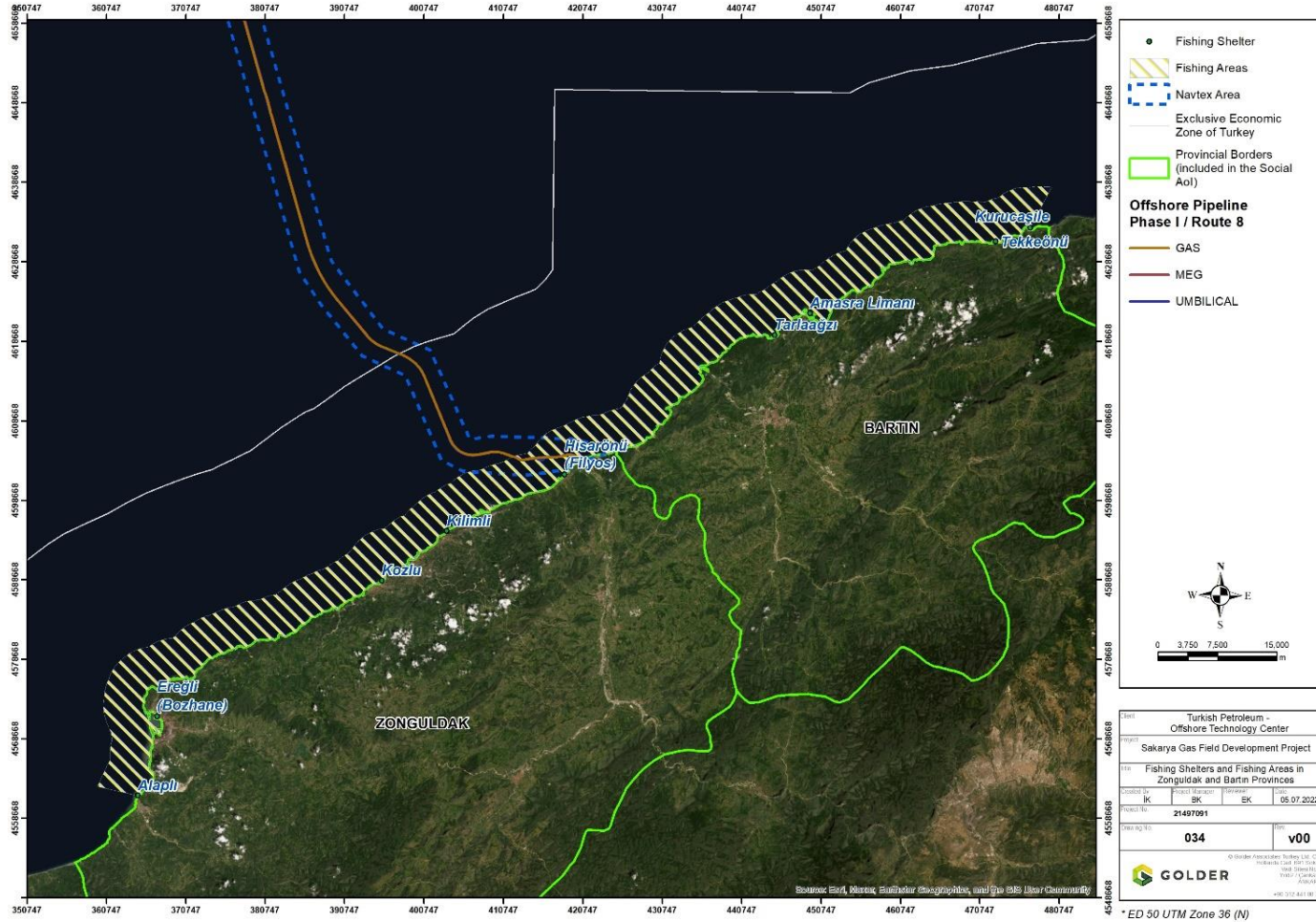


Figure 6-3: Social AoI Map

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6.1.5 Administrative Structure

Turkey 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 6-4 presents the administrative structure as found in the Aol.

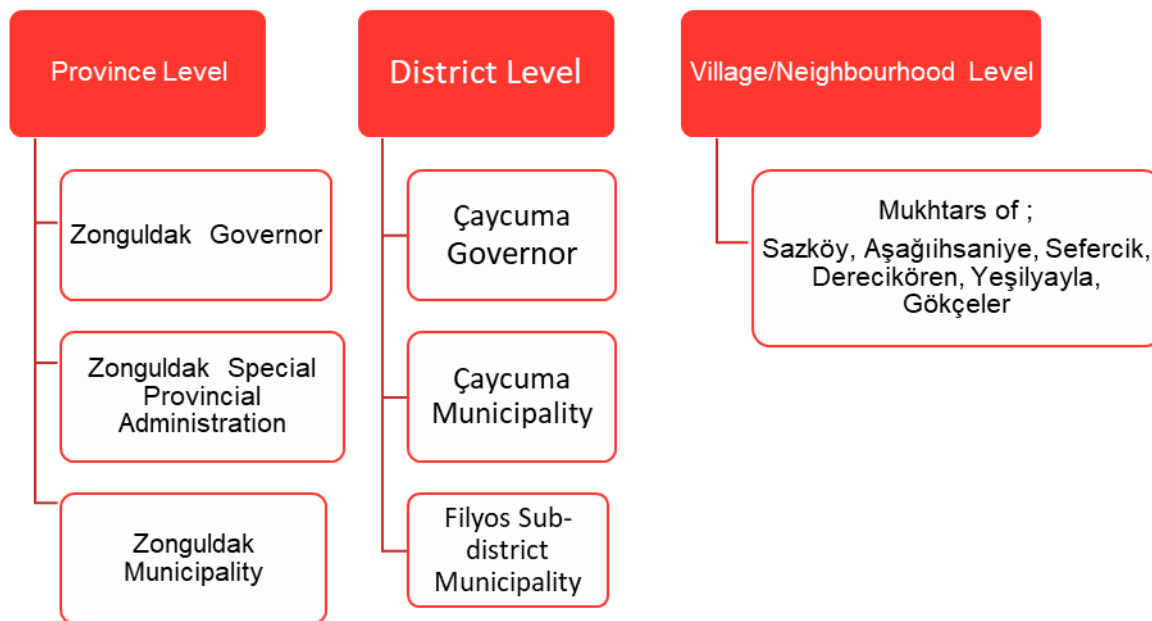


Figure 6-4: Administrative Structure¹

In reference to Figure 6-4, the following sections expand on the administrative structure.

Provincial Governors

The Governor of a province represents the Turkey 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,

¹ It should be noted that Filyos is a sub-district of Çaycuma District and district level of the baseline data also covers Filyos.

- 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 Turkey, 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 Aol 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 Turkey live within municipal boundaries. The villages located in the Aol are connected to Çaycuma District and Filyos sub-District. Ömer Selim Alan is elected head of Zonguldak Municipality, Bülent Kantarci is elected head of Çaycuma district and Ömer Ünal 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

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aid, relief, ambulance, traffic, cemeteries, parks and green areas, housing, culture and artworks and maintenance of education facilities.

Villages

Mukhtars represent the village. 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

6.1.6 Demographic profile

6.1.6.1 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
	Rationale: See Social Area of Influence Chapter
	Aoi: The villages of Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören
Data sources	Rationale: See Social Area of Influence Chapter
	Primary sources: see Social Baseline Collection Methodology chapter
	Secondary sources: see Social Baseline Collection Methodology chapter

According to TURKSTAT data of 2021, the total population of Zonguldak was recorded as 589,684. The male population is 291,822 people, while the female population is 297,862. The average household size in the province is 2.85, with a net migration rate of -1.88.² Please refer Table 6-3 for the population figures of the province.

Table 6-3 Distribution of Provincial Population

Zonguldak	Number
Total Population	589,684
Male population	291,822
Female population	297,862

² <https://cip.tuik.gov.tr/#>

Zonguldak	Number
Average household size	2.85
Net migration rate	-1.88%

Source: TURKSTAT, 2021

It can be noticed that the population change in Zonguldak province does not correspond to the population change across Turkey. The province's population has fallen by about 23,000 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 141,650 active insured people in the city, there are 162,793 pensioners, according to data from the Zonguldak SGK Provincial Directorate. 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 just over 7,000, are among the factors driving the exodus 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 Table 6-4 below.

Table 6-4: Population Change According to Years

Year	Population	Male Population	Female Population
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
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, 2021

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By analysing data of 2021, 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 Aol.

Table 6-5: Population Figures According to Districts

Year	District	Population	Male Population	Female Population	Population %
2021	Ereğli	175,726	87,340	88,386	29.80
2021	Merkez	120,395	59,407	60,988	20.42
2021	Çaycuma	90,362	44,476	45,886	15.32
2021	Devrek	56,925	28,012	28,913	9.65
2021	Kozlu	48,890	23,866	25,024	8.29
2021	Alaplı	42,927	21,420	21,507	7.28
2021	Kilimli	33,620	16,952	16,668	5.70
2021	Gökçeşey	20,839	10,349	10,490	3.53

The population of the Çaycuma district in Zonguldak province in 2021 is 90362. The entire male population of Zonguldak province's Çaycuma district is 44,476, while the total female population is 45,886. The district centre has a population of 28,060 people, with 13,557 men and 14,503 women. The district town/village has a total population of 62,302. The total male population of the district town/village is 30,919, while the total female population is 31,383.

Table 6-6 Distribution of District Population

Çaycuma	Number
Total population	90,362
Total male population	44,476
Total female population	45,886
Number of villages within district borders	83
Number of neighbourhoods within district borders	33

Source: TURKSTAT

It can be noted that the population of the district has been decreasing over the years. The population, which reached a peak of 95,000 in 2008, decreased to 90,000 by 2021.

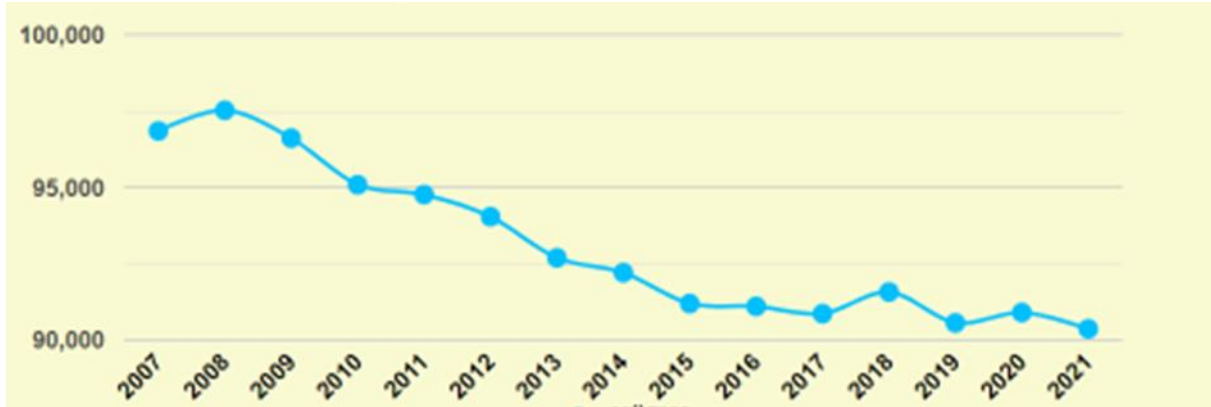


Figure 6-5 Population Growth of Çaycuma

Sazköy

According to the result of the interview conducted with the Mukhtar of Sazköy on February 15, 2022, the village's total population is approximately 120 people, with a total of 40 households. The village's average household size is determined as 3. The settlement has a seasonal increase, with the population increasing to roughly 180 persons during the summer months. Pandemic and tourism were cited as the primary causes of the seasonal increase. According to the results of the interviews with the Mukhtar, a population growth tendency has been observed, however it has not been recorded in the population registry system, since the job opportunities created so far are temporary.

According to TURKSTAT data, the total population of Sazköy is determined as 127 as of 2021. The total population gradually declined from 214 in 2007 to 127 in 2021.

Table 6-7: Population Figures of Sazköy

Year	Name of the Village	Population of sazköy Village	Male population of sazköy Village	Female population of sazköy Village
2021	Sazköy	127	70	57
2020	Sazköy	134	73	61
2019	Sazköy	141	74	67
2018	Sazköy	148	80	68
2017	Sazköy	139	72	67
2016	Sazköy	155	80	75
2015	Sazköy	161	84	77
2014	Sazköy	158	85	73
2013	Sazköy	169	90	79
2012	Sazköy	180	93	87
2011	Sazköy	190	102	88
2010	Sazköy	197	107	90

Year	Name of the Village	Population of sazköy Village	Male population of sazköy Village	Female population of sazköy Village
2009	Sazköy	199	104	95
2008	Sazköy	212	112	100
2007	Sazköy	214	110	104

Source: TURKSTAT, 2021

Aşağıhsaniye

An in-depth interview was held with the Mukhtar of Aşağıhsaniye on February 18, 2022. According to the results of the interview, the village population is determined around 160 people consists of 55 households in total. The average household size was determined as 2.7. During the summer period, the total population reaches to 300 people. The main reason for this increase is temporary migration of the young people for the agricultural production who have lands in the village. It was stated that the population has been decreasing in the last five years due to the lack of job opportunities in the region. There are 1 person between the ages of 0-5, 11 people between the ages of 6-18, 5 people between the ages of 19-25, 58 people between the ages of 26-55, 50 people between the ages of 56-65, and 33 people between the ages of 65 and over.

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

Table 6-8: Population Information of Aşağıhsaniye by Year

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

Year	Name of the Village	Population of aşağıhsaniye Village	Male population of aşağıhsaniye Village	Female population of aşağıhsaniye Village
2007	Aşağıhsaniye	220	111	109

Source: TURKSTAT, 2021

An in-depth interview was held with the Sefercik Mukhtar on February 16, 2022. According to the information obtained, there are approximately 165 people in the village. The total number of households in the village was determined as 45 and the average household size was 3.7. During the summer period, the population of the village rises to around 200 people. It was stated that the reason for the seasonal increase was for the purpose of vacation. The population has been decreasing in the last five years. The reason for this is the migration of the young population. There is 1 person between the ages of 0-5 and 8 people between the ages of 6-18 in the village. 78% of the total village population consists of people aged 56 and over.

According to TURKSTAT data, the total population declined from 220 in 2007 to 159 in 2020 but had a slight increase in 2021.³

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

Year	Name of the Village	Population of Sefercik village
2021	Sefercik	166
2020	Sefercik	159
2019	Sefercik	166
2018	Sefercik	171
2017	Sefercik	170
2016	Sefercik	175
2015	Sefercik	175
2014	Sefercik	175
2013	Sefercik	178
2012	Sefercik	192
2011	Sefercik	208
2010	Sefercik	211
2009	Sefercik	211
2008	Sefercik	215
2007	Sefercik	220

Source: TURKSTAT, 2021

³ <https://www.tuik.gov.tr/>

Gökçeler

An in-depth interview was conducted with the Mukhtar of Gökçeler village on February 14, 2022. According to the information received, approximately 150 people live in the village and there are an average of 70 households. The average size of the Gökçeler households was determined as 2.2. There is no seasonal variation in the village population. There has been a decrease in the village population in the last five years. The reason for this was stated as the migration of the young people. There are 50 people between the ages of 0-18, 50 people between the ages of 40-60 and 55 people over the age of 60 in the village.

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 157 in 2021.⁴

Table 6-10: Population Information of Gökçeler by Year

Year	Name of the Village	Population of Gökçeler Village	Male Population of Gökçeler Village	Female Population of Gökçeler Village
2021	Gökçeler	157	75	82
2020	Gökçeler	161	77	84
2019	Gökçeler	161	75	86
2018	Gökçeler	166	79	87
2017	Gökçeler	169	78	91
2016	Gökçeler	173	82	91
2015	Gökçeler	195	92	103
2014	Gökçeler	186	88	98
2013	Gökçeler	193	91	102
2012	Gökçeler	207	98	109
2011	Gökçeler	208	103	105
2010	Gökçeler	218	108	110
2009	Gökçeler	233	115	118
2008	Gökçeler	247	122	125
2007	Gökçeler	246	122	124

Source: TURKSTAT, 2021

Derecikören

The Mukhtar of Derecikoren village was interviewed on 19 February 2022. 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 2.5. 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

⁴ <https://www.tuik.gov.tr/>

last five years. It has been observed that there are 20 people between the ages of 0-5, 25 people between the ages of 6-18, 53 people between the ages of 19-55, 15 people between the ages of 56-65 and about 185 people over the age of 65.

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 295 in 2021.

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

Year	Name of the Village	Population of Derecikören Village	Male Population of Derecikören Village	Female Population of Derecikören Village
2021	Derecikören	295	135	160
2020	Derecikören	287	126	161
2019	Derecikören	293	129	164
2018	Derecikören	301	137	164
2017	Derecikören	285	124	161
2016	Derecikören	297	132	165
2015	Derecikören	307	144	163
2014	Derecikören	300	140	160
2013	Derecikören	308	145	163
2012	Derecikören	325	155	170
2011	Derecikören	338	158	180
2010	Derecikören	354	169	185
2009	Derecikören	363	170	193
2008	Derecikören	361	170	191
2007	Derecikören	355	170	185

Source: TURKSTAT, 2021

Yeşilyayla

The village Mukhtar of Yeşilyayla was interviewed on 18 February 2022. According to the information received within the scope of the interview, the total population of the village is approximately 130 people and there are 40 households in total in the village. The average household size was determined as 3.3. During the summer period, the population of the village rises to 200 and the biggest reason for this is agricultural production. It has been observed that there the population of the village is stable. The reason for this is the job opportunities created due to new investments in the region. 6 people aged 0-5, 10 people aged 6-18, 3 people aged 19-25, 25 people aged 26-55, age 56-65. There are 74 people and 15 people over the age of 65.

According to TURKSTAT data, the total population of Yeşilyayla Village has declined since 2007 but has remained fairly stable since 2016.

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

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

Source: TURKSTAT, 2021

6.1.6.2 Age and gender distribution

In Zonguldak province, 8.13 percent prevalence, people between the ages of 40 and 44 are determined as the province's largest age group. Individuals between the ages of 35 and 39 are ranked as second, and those between the ages of 45 and 49 are ranked third. The Figure 6-6 below depicts the age distribution of the province's total population.

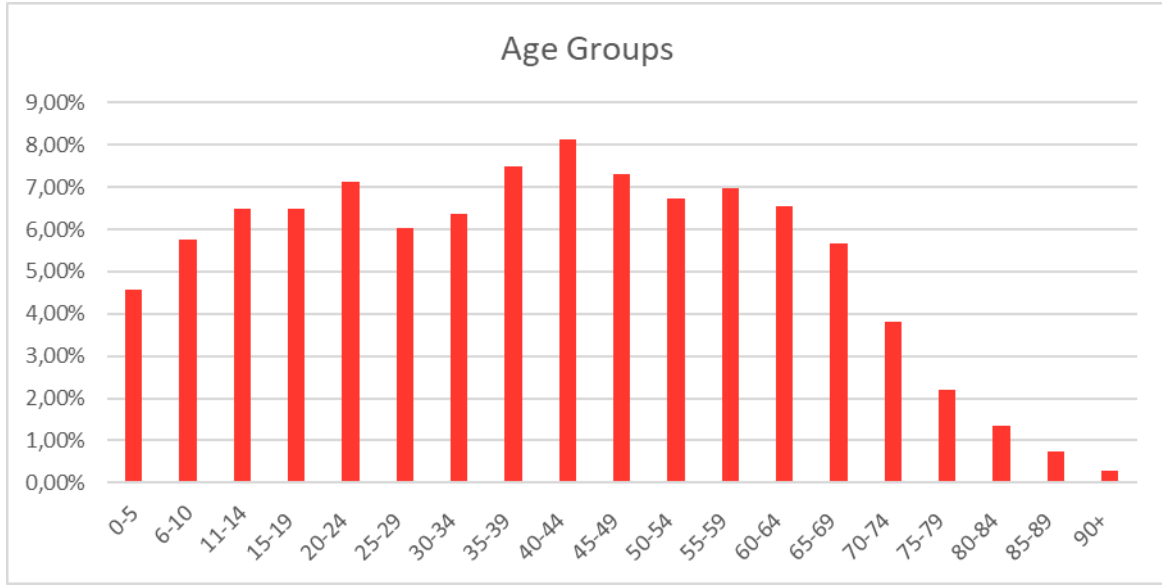


Figure 6-6 Age Distribution of Zonguldak

According to TURKSTAT data of 2021, female population consists of 51% and the male population consists 49% of the total population of Zonguldak Province.

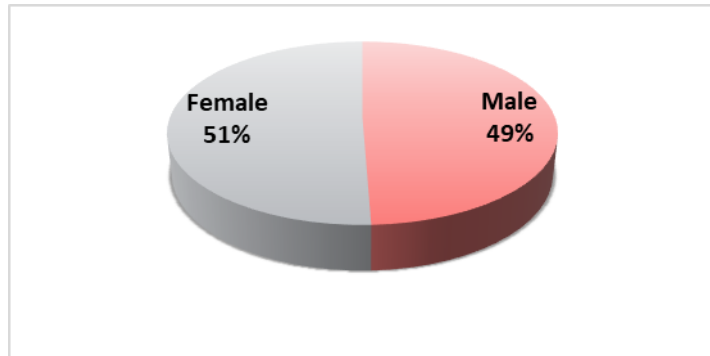


Figure 6-7: Gender Distribution of Zonguldak

Considering the age distribution of Çaycuma District, it is seen that the largest group is people aged 65 and over with 18%. The detailed age distributions of the district are presented below.

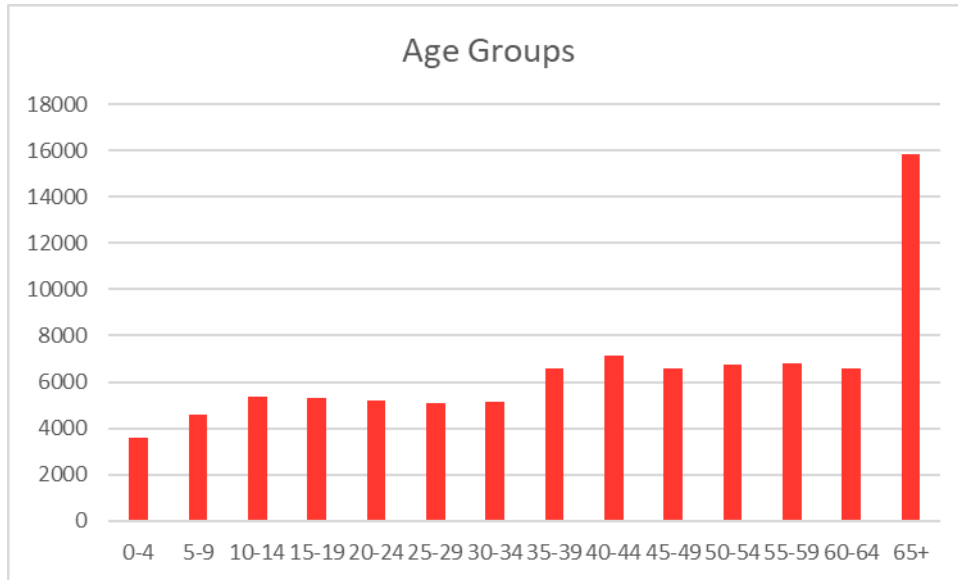


Figure 6-8: Age Distribution of Çaycuma District

According to TURKSTAT data of 2021, female population consist of 51% and the male population consists 49% of the total population of Çaycuma District in parallel with Zonguldak.

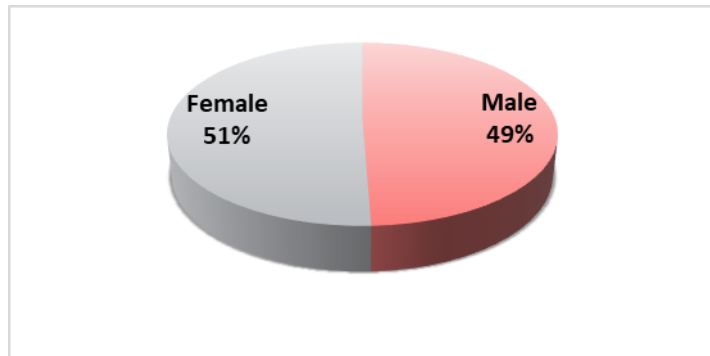


Figure 6-9: Gender Distribution of Çaycuma District

In Sefercik, the female population represents 51% of the total population while the male population accounts for 49% of the total population.

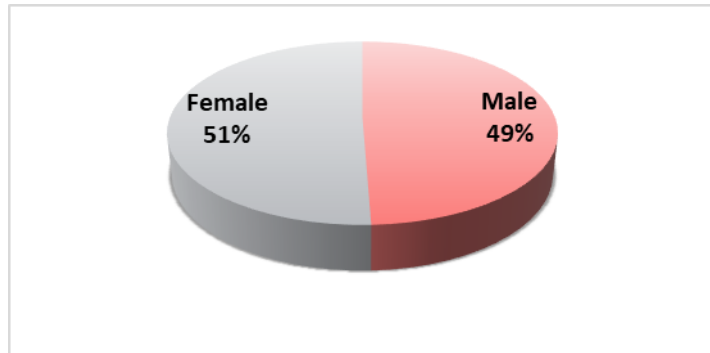


Figure 6-10: Gender Distribution of Sefercik Village

Age distribution of the population of the village of Sefercik is provided in below figure.

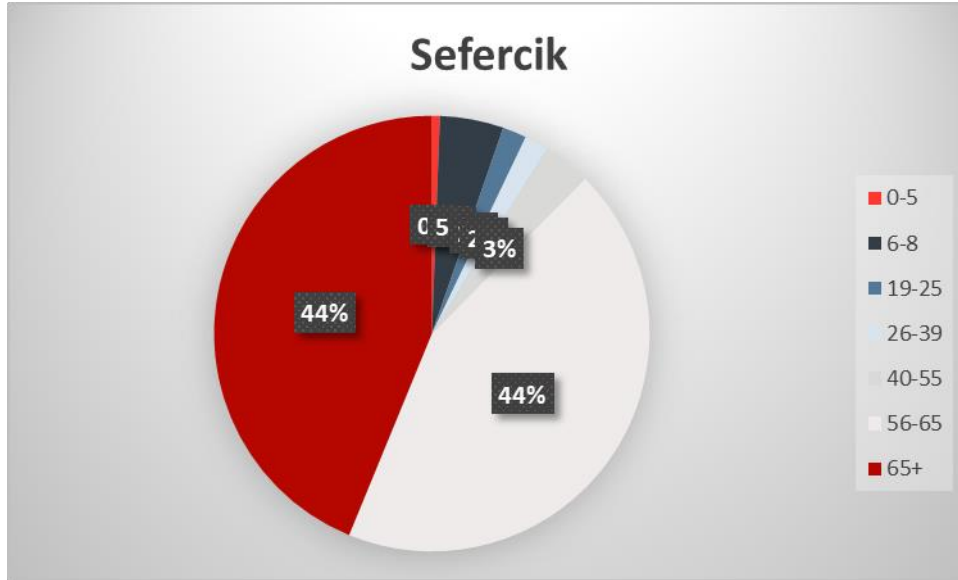


Figure 6-11: Age Distribution of Sefercik Village

In Sazköy, the female population represents 45% of the total population while the male population accounts for 55% of the total population.

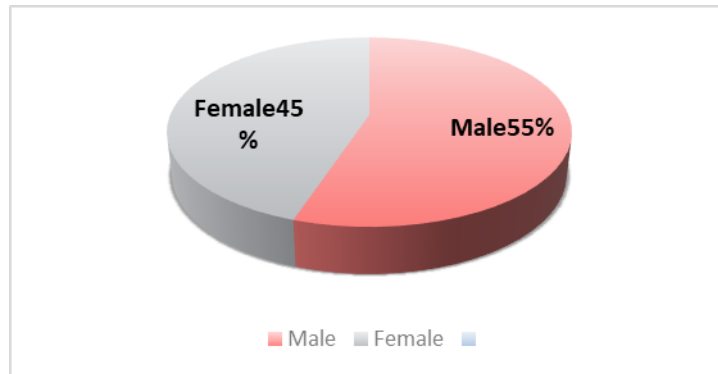


Figure 6-12: Gender Distribution of Sazköy Village

Age distribution of the population of the village of Sazköy provided in below figure.

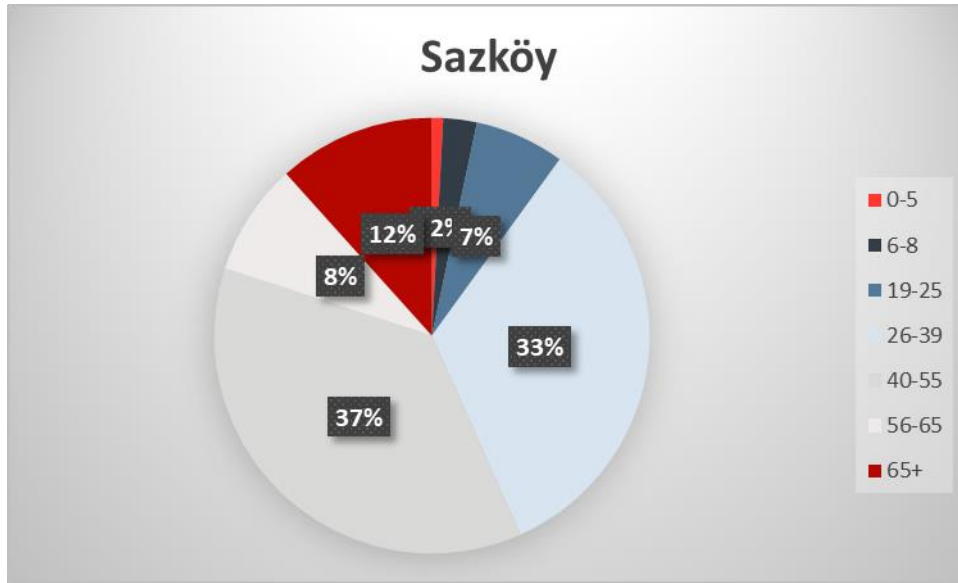


Figure 6-13: Age Distribution of Sazköy

The female population represents 47% of the total population while the male population accounts for 53% of the total population.

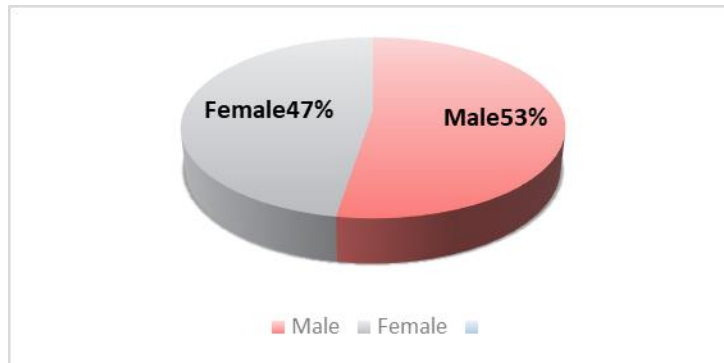


Figure 6-14: Gender Distribution Aşağıhsaniye Village

Age distribution of the population of the village of Aşağıhsaniye is provided in below figure.

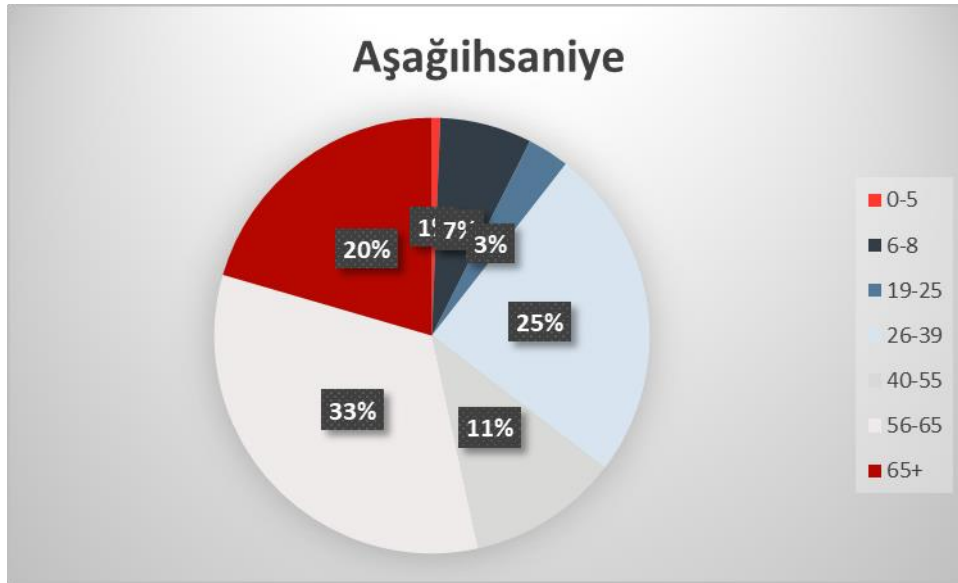


Figure 6-15: Age Distribution of Aşağıhsaniye Village

In Gökçeler, female population represents 52% of the total population while the male population accounts for 48% of the total population.

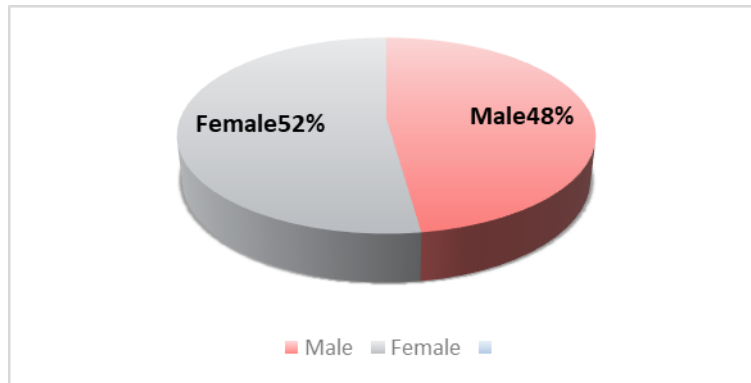


Figure 6-16: Gender Distribution Gökçeler Village

Age distribution of the population of the village of Gökçeler is provided in below figure.

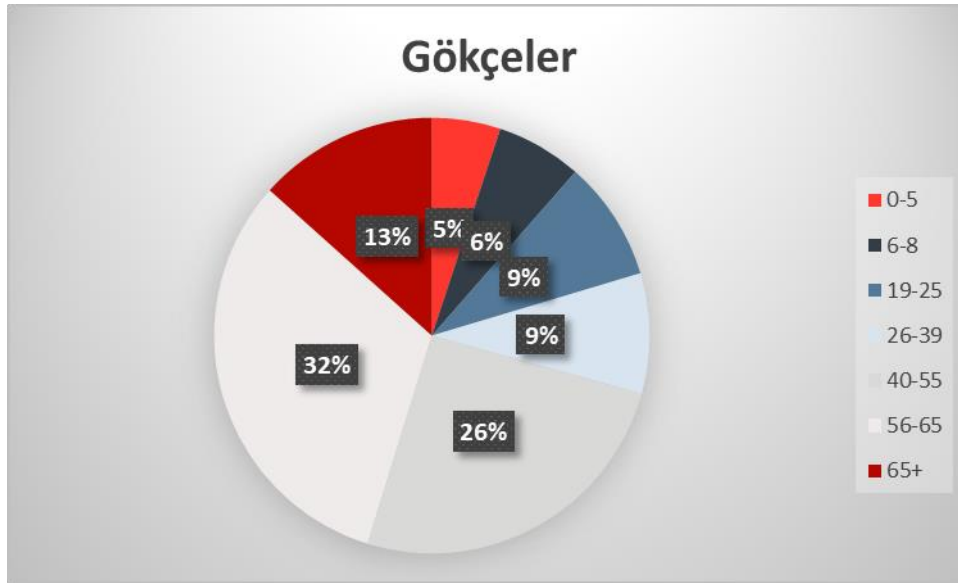


Figure 6-17: Age Distribution of Gökçeler

In Derecikören, female population represents 54% of the total population while the male population accounts for 46% of the total population.

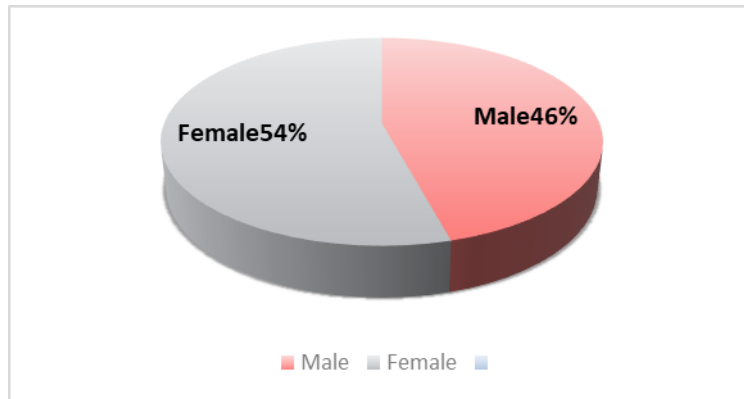


Figure 6-18: Gender Distribution of Derecikören Village

Age distribution of the population of the village of Derecikören is provided in below figure.

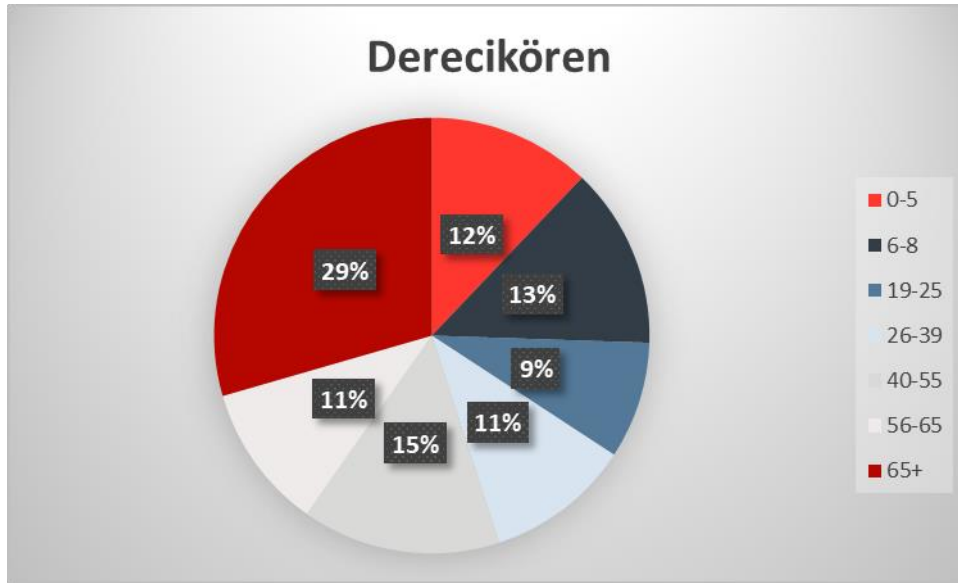


Figure 6-19: Age Distribution of Derecikören Village

In Yeşilyayla, female population represents 44% of the total population while the male population accounts for 56% of the total population.

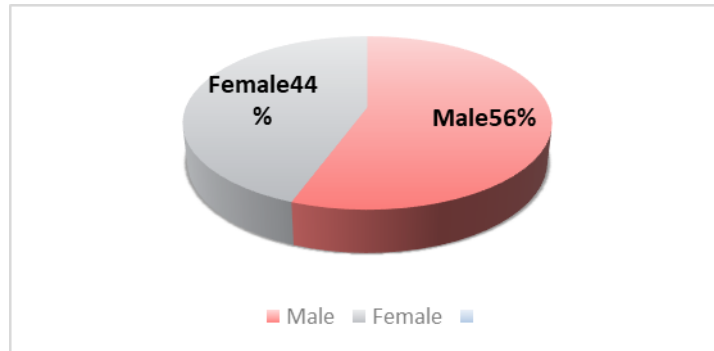


Figure 6-20: Gender Distribution of Yeşilyayla Village

Age distribution of the population of the village of Yeşilyayla is provided in below figure.

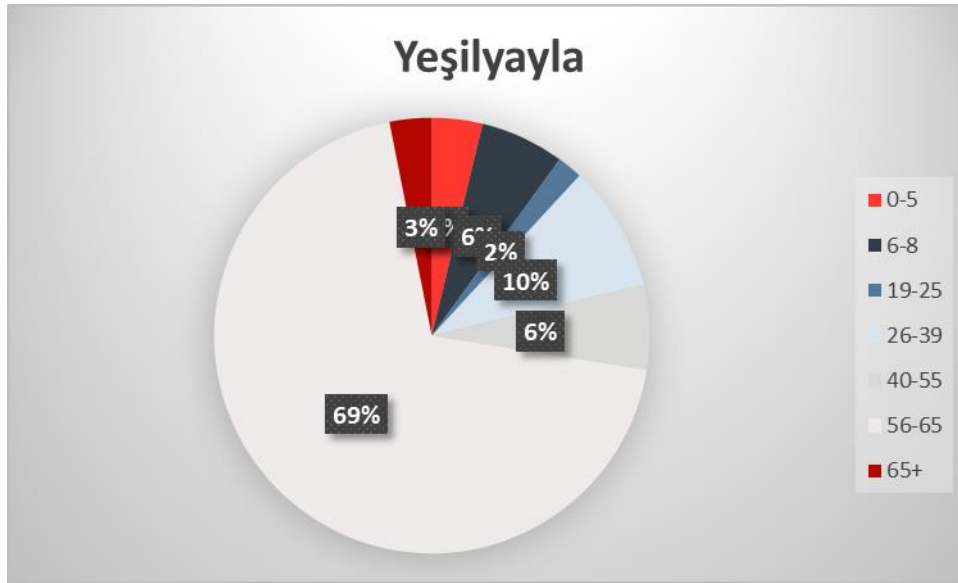


Figure 6-21: Age Distributing of Yeşilyayla

6.1.6.3 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 this population expressed themselves as Turkish and Sunni and they have homogeneous ethnic structure.

6.1.6.4 Migration pattern

Zonguldak is a province that sends a lot of immigrants due to the lack of livelihood due to unemployment. This is also valid for the villages within the area of influence. Migration and detailed population information are evaluated in the section above.

6.1.7 Land issues

6.1.7.1 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 Aol. The information provided in this chapter was gathered through the available secondary data, GIS studies, in-depth interviews with the Mukhtar and official correspondence from General Directorate of Land Registry and Cadastre.

Description	Land Use Patterns allows to understand what type of activities are performed on land and what forms of tenure are common in the Aol.
Study Area	RSA: the Province of Zonguldak Rationale: See Social Area of Influence Chapter

	Aol: The villages of Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören
	Rationale: See Social Area of Influence Chapter
Data sources	Primary sources: see Social Baseline Collection Methodology chapter
	Secondary sources: see Social Baseline Collection Methodology chapter

6.1.7.2 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.

6.1.7.3 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 the Ministry of Environment and Urbanization 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,

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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 of the Ministry of Environment and Urbanization 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 livable 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.

6.1.7.4 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.

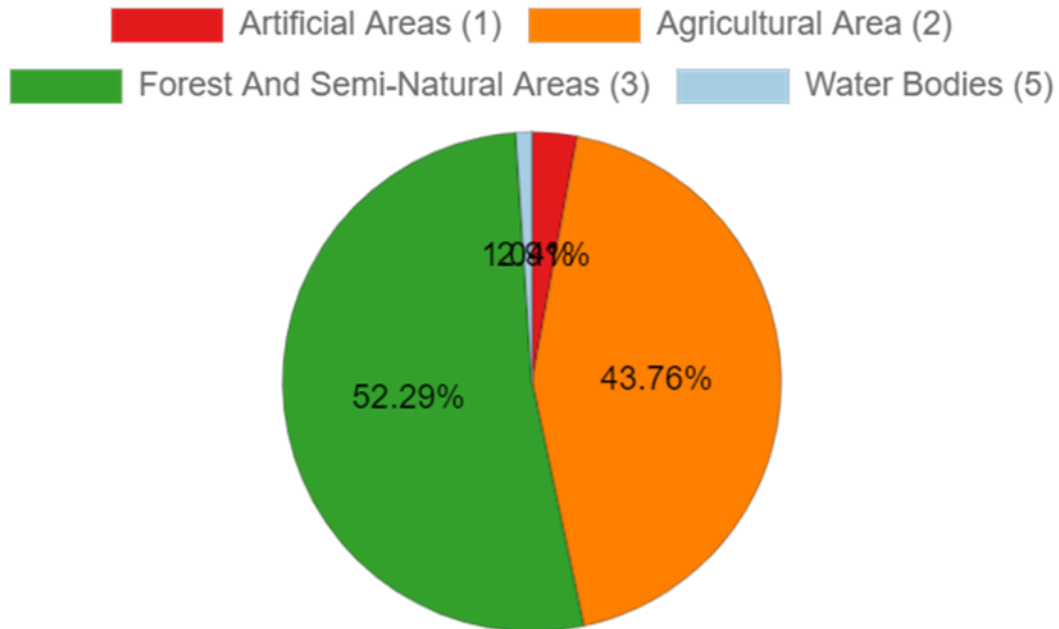


Figure 6-22: Land use of Zonguldak

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

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Table 6-13: Land Types of Zonguldak

Layer	Area (ha)	Percent (%)
Broad-Leaved Forest	104539.34	31.28
Non-Irrigated Mixed Farm Areas	48248.25	14.44
Mixed Forest	47560.73	14.23
Land Principally Occupied by Agriculture, With Significant Areas of Natural Vegetation	36477.39	10.91
Non-Irrigated Fruit Fields	20137.5	6.02
Non-Irrigated Arable Areas	17659.03	5.28
Irrigated Mixed Farm Areas	15405.17	4.61
Transitional Woodland/Shrub	11532.11	3.45
Coniferous Forest	5596.52	1.67
Residential Areas Without Continuity	5157.95	1.54
Natural Grassland	5095.53	1.52
Continuously Irrigated Areas	4394.33	1.31
Pastures, Meadows and Other Permanent Grasslands Under Agricultural Use	3428.09	1.03
Water Courses	2792.64	0.84
Rural Settlements Without Continuity	1378.85	0.41
Industrial or Commercial Units and Public Facilities	1069.24	0.32
Port Areas	541.7	0.16
Irrigated Fruit Fields	522.81	0.16
Continuous Urban Fabric	440.19	0.13
Mineral Extraction Sites	368.46	0.11
Sea and Ocean	367.97	0.11
Road and Rail Networks and Associated Land	337.72	0.1
Water Bodies	303.83	0.09
Beaches, Dunes and Sand Plains	275.92	0.08
Construction Sites	179.73	0.05
Sparsely Vegetated Areas	156.83	0.05
Sports and Leisure Facilities	120.88	0.04
Airports	115.05	0.03
Bare Rocky	28.87	0.01

A large part of Çaycuma district is composed of agricultural lands (64.37%), followed by forest lands, artificial lands and water structures.

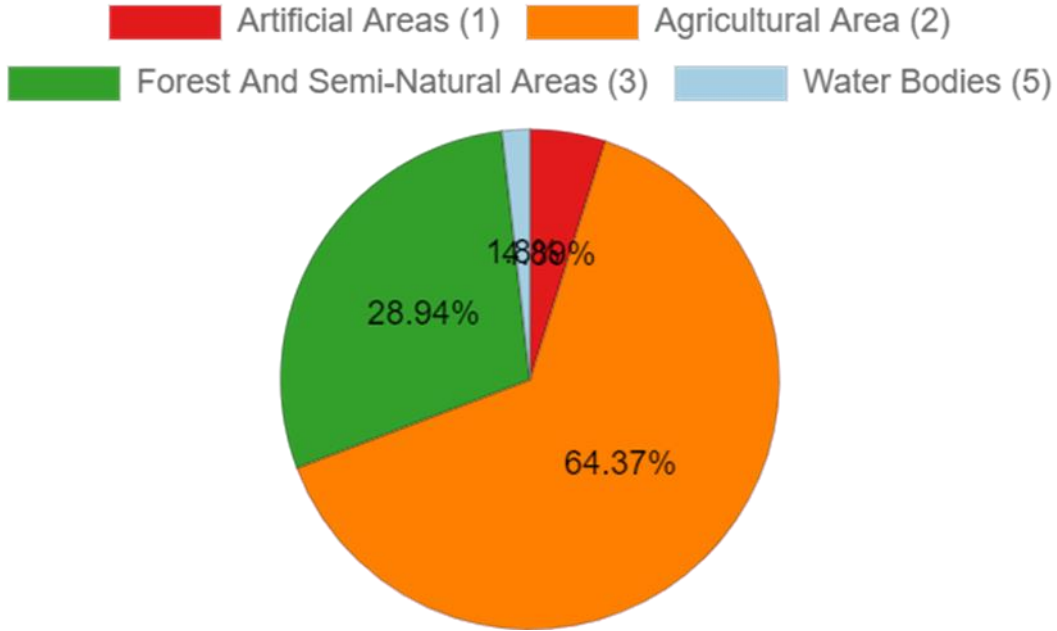


Figure 6-23 Land use od Çaycuma

Detailed land type of the district is given table below.

Table 6-14: Land Distribution of Çaycuma District

Layer	Area (ha)	Percent (%)
Broad-Leaved Forest	11231.62	22,8
Non-Irrigated Mixed Farm Areas	8463.29	17,18
Irrigated Mixed Farm Areas	7571	15,37
Non-Irrigated Arable Areas	6582.56	13,37
Land Principally Occupied by Agriculture, With Significant Areas of Natural Vegetation	5913.79	12,01
Continuously Irrigated Areas	2220.75	4,51
Residential Areas Without Continuity	1462.64	2,97
Natural Grassland	1202.54	2,44
Pastures, Meadows and Other Permanent Grasslands Under Agricultural Use	951.95	1,93
Transitional Woodland/Shrub	923.64	1,88
Water Courses	874.04	1,77
Mixed Forest	614.18	1,25

Layer	Area (ha)	Percent (%)
Rural Settlements Without Continuity	446.27	0,91
Beaches, Dunes and Sand Plains	222.98	0,45
Industrial or Commercial Units and Public Facilities	221.76	0,45
Airports	115.05	0,23
Mineral Extraction Sites	91.19	0,19
Coniferous Forest	29.32	0,06
Bare Rocky	28.87	0,06
Sports and Leisure Facilities	28.31	0,06
Construction Sites	26.74	0,05
Sea and Ocean	14.93	0,03
Port Areas	14.41	0,03

6.1.8 Economy and livelihoods

6.1.8.1 Introduction

This chapter of the report represents primary and secondary economic activities, ecosystem service usage baseline data gathered through 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 Rationale: See Social Area of Influence Chapter
	Aoi: The villages of Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören Rationale: See Social Area of Influence Chapter
Data sources	Primary sources: see Social Baseline Collection Methodology chapter
	Secondary sources: see Social Baseline Collection Methodology chapter

6.1.8.2 Economic activities (incl. other projects/developments)

6.1.8.3 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 The aim is to ensure the district economy can be improved through new investments. In Filyos town of Çaycuma district, the infrastructure construction of Filyos Port, which is one of the most important investments in the district, is underway. Filyos Port is expected to be one of the biggest ports in Turkey. Filyos Port is supposed to serve national and international trade.⁵

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 Yeşilyayla Village, the basic economic activities are agriculture and animal breeding. According to the household surveys, those who live in villages tend to engage in agriculture and animal breeding after retirement. Households indicated that they saw retirement income as their main means of livelihood while agriculture and animal breeding is a side income.

In the Derecikören, Sefercik, Gökçeler and Aşağıhsaniye villages, economic activities are regular wage earning and retirement. Agriculture and animal breeding are seen as a source of side income. In Sefercik Village, the vegetables such as pepper, bean, leek and spinach are mainly produced. Both irrigated and dry agriculture is carried out in the agricultural lands.

⁵ <http://www.caycuma.gov.tr/ilcemiz>

In Sazköy Village, economic activities are wage employment and retirement. Agriculture and animal breeding are seen as a source of side income. Only one of the households interviewed reported animal breeding as the main source of income. The main crops cultivated in the village include hazelnut, potato, onion, tomato and eggplant. 5 households from the village indicated that they earned income from sale of hazelnuts. In Sazköy Village, households undertake both dry and irrigated agricultural activities.

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

6.1.8.4 Ecosystem services

6.1.8.4.1 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), Filyos fishing has no history for many years.

Filyos Fishing Cooperative was established in 2007. The number of partners is 18. The president of the cooperative is Zeki ÇAKAR. Although the foundation of the Filyos fishing port was laid in 1996, it was completed in 2006. Before that, fishing boats were being pulled into the sand with the help of the capstans/woods. Before the 1980s, fishing in the Filyos settlement was almost non-existent. Low fish prices, small boats, and traditional and primitive fishing did not provide a suitable income and assurance for fishers. In addition, there were not enough number and quality fishers in the region. There was no significant increase in the number of fishers before the 2000s. The number of fishers did not exceed 5-6 in 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).

As of today, the situation has changed slightly. The number of professional fishermen has increased. However, it has been observed that those who fish depending on the Filyos fishing port maintain the local, small coastal fishing structure. Because in Filyos, there are no boats with large fishing characteristics such as drifters and seine fishing. The height distribution of professional fishing boats is 6-11 m and the engine power is in the range of 220-250 HP. 23 of these fishermen are engaged in coastal gill/draw fishing. 7 fishermen also fish for winkle (*Rapana venosa*). There are also approximately 125 amateur fishers at the Filyos fishing shelter. It has been reported by coastal fishermen that the most fished fish species depending on the fishing season are turbot (*Psetta maxima*) (7 fishermen), red mullet (*Mullus barbatus*), haddock (*Merlangus merlangus euxinus*),

Only 6 of these fishermen who fish depending on the Filyos fishing shelter continue their lives with the income they earn directly from fishing. It has been determined that these 6 fishermen did not have a secondary income source. However, the remaining 24 fishermen have additional income by working actively in the public or private sector other than fishing. However, more than 50% of the total earnings of those with additional earnings during the year come from fishing.

As of the period (April 30, 2021) in the coast of Filyos, Red mullet fishing is made intensively with bottom extension nets. In the observations made with the coastal fishermen returning to the port at the end of the red mullet fishing operation, it has been determined that 40-50 kg of red mullet has been fished per boat.

During this period, approximately 7-8 fishermen fish red mullets on a daily basis. The boat exit price of the red mullet fish varies between 20-30 TL/kg on average. The fishes out of water is mostly shipped to large cities, especially Istanbul, through intermediaries.

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Fishing has become increasingly important as an important professional activity in the coastal settlements of Filyos and its surroundings. Fish species with high economic value, especially bottom fish, such as red mullets, whiting, turbot, acorns, bluefish/young blue fish, are the indispensable food of the tables throughout the year in addition to the traditional nutritional culture (salting, brine, lacquer, etc.). However, it always continues to have an important place in daily social and cultural life.

Fishing in the region is mainly characterized by extension and drive in fishing. Extension and drive in nets established in the waters close to the shore are used in the fishing of seasonal migratory fish populations such as bluefish/young blue fish and acorn. It is the region between Akçakoca and Amasra along the western Black Sea coasts, where the two-way autumn-winter-spring migration of the bluefish and acorn is the most intense. The coast of Filyos is used by coastal fishers from other settlements in the region as well as their local fishers

From east to west, the main fishing settlements on the Amasya Zonguldak line and the number of fishermen actively fishing in these settlements are as follows: Amasra (35), Tarlağzı (17), İnkum (20), Güzelhisar (3), Mugada (4), Kızılkum (1), Filyos (30), Kilimli (28). Fishermen settlements between Amasra in the east and Kilimli in the west also cast a net on the coast of Filyos.

The region is a very rich region in terms of nutrition due to the discharge of rivers such as Bartın river and Filyos stream. This also increases the biodiversity of the benthic ecosystem. Among commercial fish species, close coastal waters are quite rich for fish populations with significant economic importance such as turbot and red mullets (Zengin et al, 2020). Filyos Stream or Yenice River is a stream that is collected and brought together by the streams coming from Koroğlu Mountains, Bolu Mountains and Ilgaz Mountains. This river system, which has a length of up to 228 kilometers, is poured into the Black Sea in Filyos town of Zonguldak. However, due to global warming, the water abundance in Filyos Stream has decreased to one third of the water abundance in the past. Filyos Stream suffers greatly due to environmental pollution and factory wastes. While the 'SEKA Paper Factory', which was established on the edge of the stream in 1970, caused great damage to the stream, the pollution problem of the factory was eliminated with the water treatment systems (Atlas, 2009; Atış and Çelikoğlu, 2019).

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Figure 6-24: Sorting activities from bottom extension nets by fishermen on the vessels returning to the fishing port of the Red mullet fish caught with bottom extension nets on April 30, 2021 on the coast of Filyos

The majority of the fishers in the Project Aol is from Filyos Port, however it was seen that fishers from Bartın creek and Amasra ports also caught fish in the region, and in this context, interviews were held with fishermen from the nearby fishers including Amasra-Tarlaağzı port and Bartın creek. Filyos port comprised 54%, Amasra 30%, and Bartın creek 16%. The distribution of the participants is presented below.

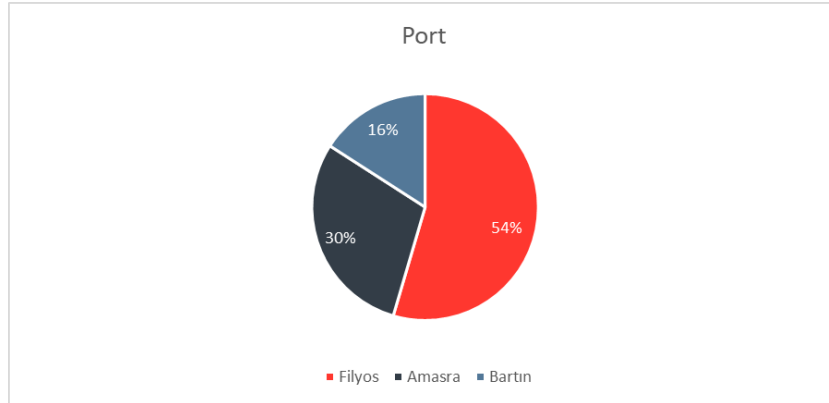


Figure 6-25: Distribution of the Participants in terms of Ports

It has been observed that majority of the fishers are 40 years of age or older. The primary reason of the density of the elderly population is in parallel with the retired fisheries. The table below summarizes the age distributions based on the connected ports.

Table 6-15: Age Distribution of the Fishers

Port	Age Groups	No of participants	%
Filyos	19-25	1	4,2
	26-39	6	25,0
	40-55	10	41,7
	56-65	7	29,2
	Total	24	100,0
Amasra	26-39	3	23,1
	40-55	6	46,2
	56-65	3	23,1
	65+	1	7,7
	Total	13	100,0
Bartın Creek	26-39	1	14,3
	40-55	4	57,1
	56-65	2	28,6
	Total	7	100,0

The education levels of the fishers differ in the provinces of Bartın and Zonguldak. It has been observed that the education levels of the fishers in Zonguldak is higher than the education levels of Bartın. 40% of the

fishermen are high school graduates, followed by primary school graduates and secondary school graduates, respectively. University graduates make up 9%.

Detailed education distribution of the participants is presented in the below table.

Table 6-16: Education Levels of the Fishers

Connected located port	Education Status	frequency	percent
Filyos	Primary school graduated	2	8.3
	Middle School graduate or primary education graduated	5	20.8
	high school or equivalent school graduated	14	58.3
	High school or university graduated	3	12.5
	Total	24	100.0
Amasra	Primary school graduated	5	38.5
	Middle School graduate or primary education graduated	5	38.5
	high school or equivalent school graduated	2	23.1
	total	13	100.0
Bartın	Primary school graduate	5	71.4
	high school or equivalent school graduate	2	28.6
	total	7	100.0

Although there are very few women who help their families in the fishermen's ports, it is seen that all fishers are men.

Project Information Level of Fisheries

It has been observed that, 83% of the fishers in Filyos, 69% of the fishers in Amasra and all the fishermen in Bartın have information on the Project.

Table 6-17: Information on the Project

Port	Information	frequency	percent
Filyos	Yes	20	83.3
	No	4	16.7
	total	24	100.0
Amasra	Yes	9	69.2
	No	4	30.8

Port	Information	frequency	percent
	total	13	100.0
Bartın	Yes	7	100.0

The available information on the project is limited with the natural gas extraction and the prohibition of the fishing areas where the subsea pipeline will be constructed. The information channels of the fishers about the Project are the meetings organized by the Corporate Communication team and the national media.

Especially the fishers in Filyos underlined that the level of knowledge about the project is not sufficient and more frequent meetings are recommended to increase the Project knowledge and the awareness of the Project impacts.

Income sources of the Fisheries

According to the results of the in-depth interviews, it was seen that the fishing is the side income for Filyos and Amasra ports and around 23-33% of the fishers livelihoods are based only fishing. However, it is seen that in Bartın creek the main livelihoods of the participants were fishing.

Table 6-18: First Income Source of the Fisheries

Port	First income source	frequency	percent
Filyos	Small business owner	1	4.2
	State officer	1	4.2
	Retired	6	25.0
	paid / salaried	7	29.2
	farming	1	4.2
	Fishery	8	33.3
	total	24	100.0
Amasra	Retired	5	38.5
	paid / salaried	5	38.5
	Fishery	3	23.1
	total	13	100.0
Bartın	Small business owner	1	14.3
	Fishery	6	85.7
	total	7	100.0

While fishing is the second source of income for the majority of the participants, the second source of income for those whose main livelihood is fishing is also their pensions.

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 at the minimum wage level (increased to 5500 TL in July 2022).

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Table 6-19: Average Incomes of the Fisheries

Port	Average Incomes	frequency	percent
Filyos	2000-4000 TL	3	12.5
	4000-6000 TL	7	29.2
	6000-8000 TL	4	16.7
	8000-1000 TL	2	8.3
	over 10000 TL	7	29.2
	No answer	1	4.2
	Total	24	100.0
Amasra	0-2000 TL	1	7.7
	2000-4000 TL	1	7.7
	4000-6000 TL	6	46.2
	6000-8000 TL	2	15.4
	8000-1000 TL	1	7.7
	over 10000 TL	2	15.4
	total	13	100.0
Bartın	2000-4000 TL	2	28.6
	4000-6000 TL	1	14.3
	over 10000 TL	4	57.1
	total	7	100.0

Fishing Areas

According to the results of the interviews it is seen that 3 miles from the coast of Zonguldak and Bartın provinces is being used for fishing. The following map represents the fishing areas.

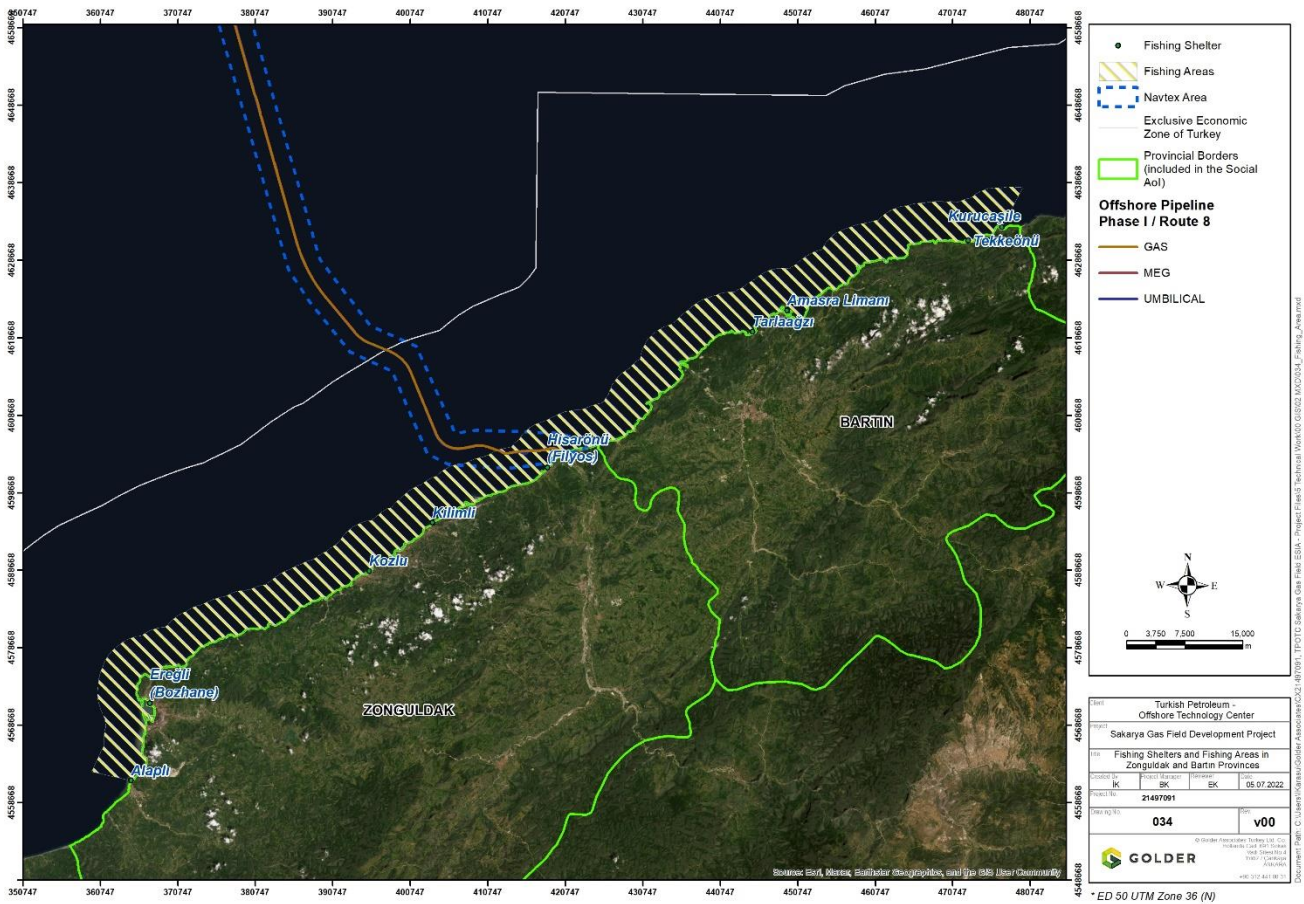


Figure 6-26: Fishing Areas

54% of the fishers in Filyos and 92% of the fishers in Amasra stated that the fishing areas are sufficient. On the other hand, more than 70% of the fishers in Bartın Creek think that the fishing areas are not sufficient.

Fishers connected to the ports of Filyos and Amasra stated that the fishing areas are safe, but the boats in the Bartın Creek find their conditions insufficient in terms of security, especially since they do not have a port or a port.

Although 50% of the fishermen in Filyos and Amasra stated that there are alternative fishing areas, the fishermen in Bartın stated that there are no alternative 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 20% of the fishers are employed as crew and 8% of the fishers are using their boats with their family members. Fishers in Filyos own a boat that shares 20% with their families. All of the boats in Amasra are used by their owners.

Table 6-20: Type of Fishing Activities

Location	Boat Ownership	Count	Percentage
Filyos	Owned by the fisher	17	70,8

	Shareholder with the family members	2	8,3
	Crew of the boat	5	20,8
	Total	24	100,0
Amasra	Owned by the fisher	13	100,0
Bartın	Owned by the fisher	6	85,7
	Shareholder with the family members	1	14,3
	Total	7	100,0

According to the site observations and the outputs of the interviews it has been observed that majority of the fishers uses small boats around 10 m length. Only 8% of the participants in Filyos port has boats over 10 m length.

It is seen that fishing is generally done seasonally. It has been observed that the rate of people fishing full time is 25% in Filyos, 7% in Amasra, and 28% in Bartın. Fishing seasons are presented in the table below.

Table 6-21: Fishing Type

	Fishing Type	Frequency	Percentage
Filyos	Full time	6	25.0
	Seasonal	12	50.0
	Half time / side job aspect	5	20.8
	Irregular	one	4.2
	total	24	100.0
Amasra	Full time	one	7.7
	Seasonal	9	69.2
	Half time / side job aspect	3	23.1
	total	13	100.0
Bartın	Full time	2	28.6
	Seasonal	4	57.1
	Half time / side job aspect	1	14.3
	total	7	100.0

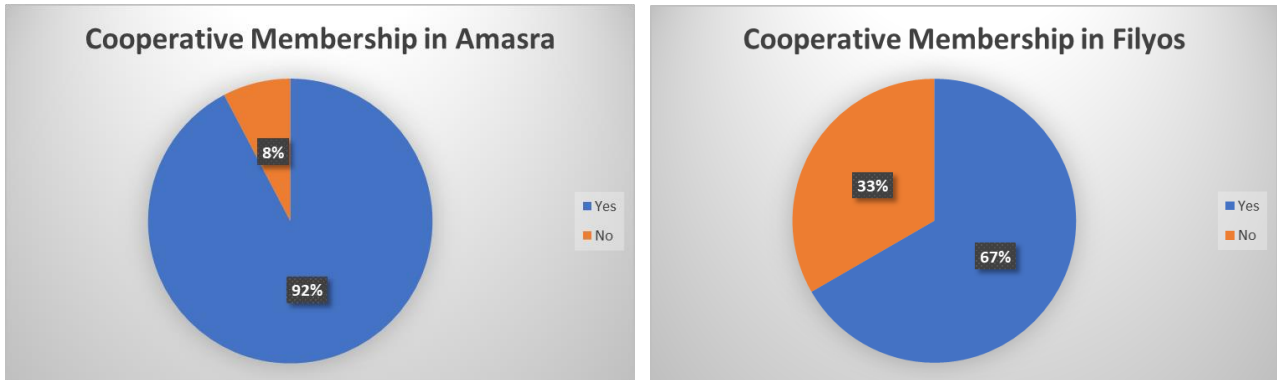


Figure 6-27: Cooperative Membership Status in Amasra and Filyos

All fishers located in Bartın Creek are member of cooperative.

Satisfaction Level from Income of Fishing

The satisfaction rate from the income level obtained from fishing varies according to the connected fishing port. The port that is most satisfied with the income is Amasra fishing port, followed by Filyos. It is seen that the level of satisfaction is quite low, especially in Bartın, where fishing is the only source of income. The main reason for this is the increasing fishing costs.

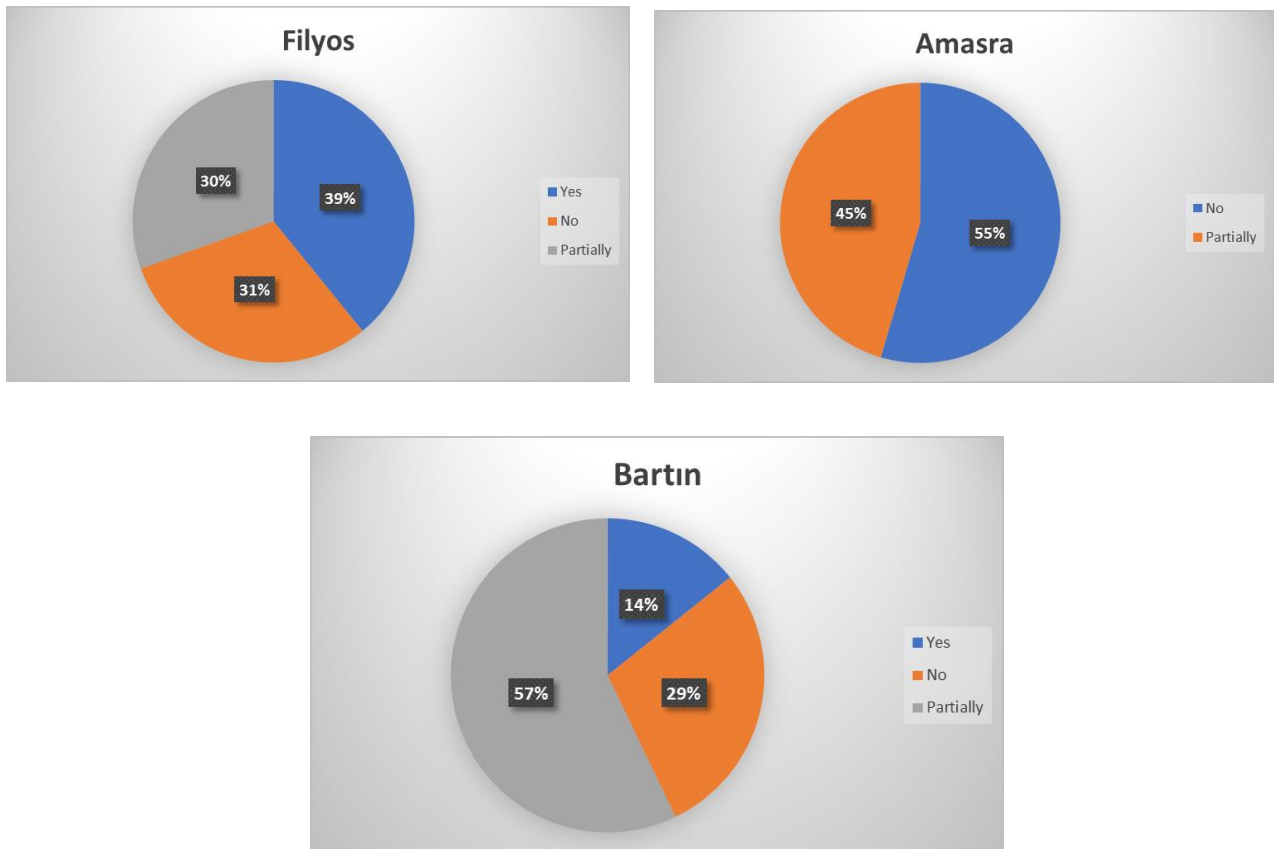


Figure 6-28: Satisfaction Level from Income of Fishing

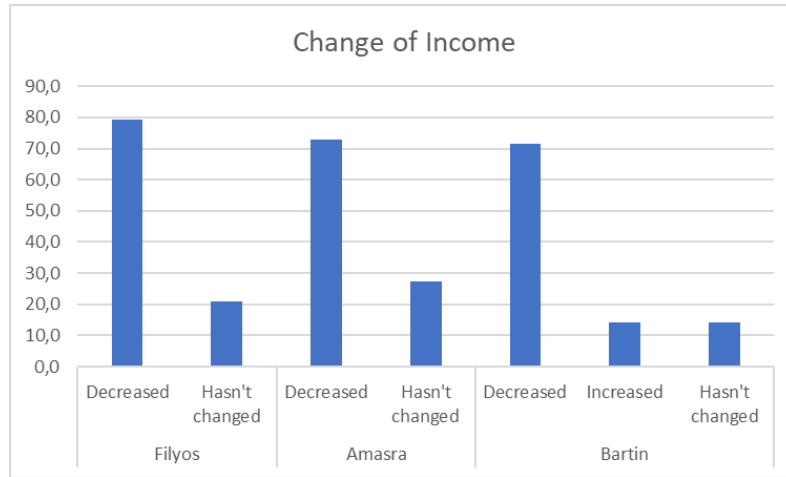


Figure 6-29: Change of Income

Reduction reasons according to the locations of the fishers as follows;

Filyos

- Fishing costs are increased (fuel etc)
- Weather conditions are not stable
- Fishing grounds decreased
- Industrial fishing
- Marine pollution
- Due to Seasonal changes because of migrations of the fishing changed

Amasra

- The fish types are decreased
- Industrial fishing
- Diesel of prices increased
- Restrictions in the fishing areas

Bartın

- Fishing costs are increased (fuel etc)
- Industrial fishing

It has been observed that 12.5% of the fishers in Filyos and 42.9% of the fishers in Bartın have loan debts due to fishing. This situation can be associated with the fact that the main income of the fishers in Bartın Creek depends solely on fishing.

The reasons why fishers started with this were questioned. According to the answers received from the participants, it was stated that the main reason for starting fishing was interest in the sea with approximately

40%, father's occupation with 20%, insufficient other job opportunities in the region with 20%, and hobby purposes with 20%.

65% of fishers in Filyos sell fish to restaurants, 16% to fish market, 12% to brokers, and the remaining fishers to cooperatives. The biggest fish buyers are brokers in Amasra, and cooperatives in Bartın.

The biggest problems related to marketing were stated to be low fish prices, increasing fishing costs and decreasing demand.

It has been stated that approximately 20% of the fishers are planning to quit fishing due to decreased income and increased expenses of fishing and the fishers who want to quit fishing is willing to be employed by the industrial facilities in the region.

6.1.8.4.2 Beekeeping

There are also beekeeping activities in the province. Zonguldak is ahead of many provinces in this area with its 52% forest cover, 60 thousand hives and 600 tons of honey production. 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 Turkey is the most valuable honey in terms of antibiotic and antioxidant properties.

According to the results of the CLS there are 3 beehives in the village of Sazköy, 100 in Sefercik, 700 in Aşağıhsaniye, 5 in Yeşilyayla and 5 in Derecikören.

6.1.8.4.3 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 Kozcağiz towns. Approximately 7906 tons of bay leaves are produced in a year.

Laurel collection is a side income in the villages of Sazköy, Aşağıhsaniye.

6.1.8.5 Employment and unemployment

The labour force participation rate of Zonguldak province is 49.1%. The rate of employment is 43.8%. In 2021, the unemployment rate in Zonguldak province was 10.9%⁶ against the country rate of 11.2%.⁷

Table 6-22: Zonguldak Labour Indicators

Zonguldak	%
Labour force participation rate	49.1
Rate of employment	43.8
Rate of unemployment	10.9

Source: TURKSTAT

⁶ <https://cip.tuik.gov.tr/#>

⁷ <https://data.tuik.gov.tr/Bulten/Index?p=Isgucu-Istatistikleri-Kasim-2021-45641>

Sazköy

- It has been stated that the main sources of income in the village are pensions, animal husbandry and job opportunities in projects in the region. The main product produced in the village is hazelnut, and annual production is around 10 tons.
- There are 40 cattle, 322 sheep and goats in the village.
- There are 25 salaried employees, 10 people who are engaged in farming, 4 people who own a business, and 40 retirees.
- In the last 5 years, employment opportunities have increased due to investment projects in the region. It has been stated that the average household income is around 2,500 TL.
- In the last 5 years, there has been an increase in average income in parallel with the increase in job opportunities.

Aşağıhsaniye

- In Aşağıhsaniye village, the main sources of income are agriculture, beekeeping, animal husbandry, harvesting laurels from the forest, job opportunities in the surrounding works and pensions.
- An annual average of 100 tons of hazelnuts, 2 tons of honey, 470 tons of laurel is produced,
- There are approximately 180 cattle, 150 sheep and goats, and 700 beehives in the village.
- There are 20 salaried employees, 50 farmers, 2 business owners, 22 casual workers, 50 retired and 2 unemployed in the village.
- It has been stated that job opportunities in the village have increased in the last five years. The biggest reason for this is the industrial areas developing in the region.
- Average household income is around 3,500 TL.
- An increase has been observed in the average household income in the last five years in parallel with the developing industrial areas.

Sefercik

- In Sefercik village, the main sources of income are industry, pensions, beekeeping and animal husbandry in the region.
- There are 40 cattle and 100 beehives in the village.
- There is 1 person who owns a business in the village and 50% of them are retired. It has been stated that 15% of the population is unemployed.
- It has been stated that there has been no change in the average income in the last five years.
- It is stated that the average income of the households is 3500 TL.
- Although there has been no change in income in the last five years, it has been stated that living standards have decreased due to a decrease in purchasing power due to inflation.

Gökçeler

- In Gökçeler village, the main sources of income are pensions and salaried people working in projects in the region,
- Agricultural activities are carried out only for subsistence economy.
- There is no animal husbandry in the village.
- There are 60 salaried employees, 2 people engaged in farming, 50 retired people, 10 casual workers and 10 unemployed.
- It is stated that the average household income has decreased in the last five years.
- Average household income is around 4,500 TL.
- Due to the increase in the costs related to animal husbandry, animal husbandry in the village was abandoned.

Derecikören

- The main source of income in Derecikören village is mining, factories in the vicinity and pensions.
- Agriculture stopped in the village due to expropriations for the port and the industrial area,
- There are 200 cattle in the village,
- There are 20 salaried employees, 10 casual employees, 150 retired people, and approximately 80 unemployed people.
- It has been stated that the average income and employment opportunities have decreased in the last five years, and the biggest reason for this is stated as the loss of private lands due to the development of the industrial area, and the fact that agriculture and animal husbandry cannot be done anymore.

Yeşilyayla

- In Yeşilyayla village, the main sources of income are pensions, agriculture and animal husbandry.
- The main agricultural products are beans and green lentils. The annual production amount of beans in the village is 1 ton, and green lentils are around 500 kg. In addition to these, 500 kg of corn and 1 ton of animal feed products are produced.
- The number of cattle in the village is 50, the number of sheep and goats is 100.
- There are 20 salaried employees, 20 farmers, 2 business owners, 70 retired people, 10 casual workers and 10 unemployed people in the village.
- In the last five years, there has been an increase in job opportunities due to industrial developments in the region.
- Average household income is around 3000 TL.

6.1.9 Vulnerable groups

6.1.9.1 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 6-23: 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
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>⁸

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

⁸ <http://www.zonguldak.gov.tr/zonguldak-sosyal-yardimlasma-ve-dayanisma-vakfi-yardimlari#gallery>

Table 6-24: Vulnerable Groups in Sazköy

Vulnerable Groups	Sazköy Village
Illiterate	3
Women household head	5
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	4
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	1
Over 70 years old and living alone	0
Physically disabled	3
Mentally disabled	3

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

Table 6-25 Vulnerable Groups in Aşağıhsaniye

Vulnerable Groups	Aşağıhsaniye Village
Illiterate	4
Women household head	12
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	5
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	1
Over 70 years old and living alone	5
Physically disabled	5
Mentally disabled	1

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

Table 6-26 Vulnerable Groups in Sefercik

Vulnerable Groups	Sefercik Village
Illiterate	3
Women household head	15
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	2
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	0
Over 70 years old and living alone	2
Physically disabled	1
Mentally disabled	2

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

Table 6-27 Vulnerable Groups in Gökçeler

Vulnerable Groups	Gökçeler Village
Illiterate	3
Women household head	5
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	2
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	0
Over 70 years old and living alone	5
Physically disabled	4
Mentally disabled	1

The number of individuals identified as vulnerable in the village through the CLSs is presented in below table.

Table 6-28 Vulnerable Groups in Derecikören Village

Vulnerable Groups	Derecikören Village
Illiterate	5
Women household head	10
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	5
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	2
Over 70 years old and living alone	0
Physically disabled	0
Mentally disabled	3

The number of individuals identified as vulnerable in the village through the CLSs is presented in below table.

Table 6-29 Vulnerable Groups in Yeşilyayla

Vulnerable Groups	Yeşilyayla Village
Illiterate	5
Women household head	5
Cannot speak Turkish	0
Refugee	0
Living with the assistance of government	0
Living with the assistance of an association	0
At school age but do not continue to school	0
Living with chronic diseases	1
Over 70 years old and living alone	0
Physically disabled	4
Mentally disabled	0

6.1.9.2 Gender issues

The patriarchal structure is predominant, and women of older generations do not have equal opportunity in education and employment. It has been seen that the older women in Zonguldak province are generally employed as unpaid family worker. For this reason, especially female household heads are included as a vulnerable group. It is observed, however, that contrary to older generations, new generations have equal opportunity in education and employment. Females of both new and older generations have equal rights in inheritance.

6.1.9.3 Youngsters

Due to low job opportunities the young generation of the communities are considered as vulnerable in terms of migration from the region.

6.1.9.4 Elderly and retired

It is observed that the majority of the population within the project impact area 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.

6.1.9.5 Unemployed

At the end of 2020, while the number of registered unemployed in Zonguldak was 25,412, the proportion of women among these people was 50.2 percent; The ratio of young people between the ages of 18-24 is 34.5 percent. When the number of registered unemployed in Zonguldak is examined according to occupations, the profession of Cleaning Attendant is at the top of the professions with the highest number of registered unemployed, and there are 5,459 unemployed registered with the Institution in Zonguldak province. The share of this profession in the total registered unemployed in our province is 21.5 percent. This profession was followed by Physical Worker (General) and Miner (General) professions, respectively.

6.1.9.6 Poverty rates

In Turkey, the poverty line for a family of four in 2022 was set at about 20.818 lira TL and about 10 million people are employed with a minimum wage of 5.879,70 TL. Turkey's poverty rate rose above 12% last year.

6.1.10 Education

6.1.10.1 Introduction

This Chapter provides baseline information on the Project impact area, including education facilities and personnel, quality of the education, literacy levels, 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.

6.1.10.2 Education facilities and personnel

According to 2018 data of the Ministry of National Education, there are 454 schools, 4912 classrooms, 99,958 students and 6008 teachers in Zonguldak province. The selected education indicators of the Province is presented in the below table.

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Table 6-30: Education Indicators of Zonguldak

2018 Academic Year	Formal	Special	Sum
Total Number of Students	95.722	4.236	99.958
Total Number of Teachers	6.381	527	6.908
Total Number of Schools	423	30	454
Total Number of Classrooms	4.600	312	4.912
Preschool			
Number of Students	6.591	518	7.109
Number of Teachers	341	35	376
Number of Schools (Independent)	19	9	28
Number of Classrooms (Kindergarten+Kindergarten)	311	39	350
Number of Students Falling to Teachers	19	15	19
Number of Students Falling on The Classroom	21	13	20
Primary school			
Number of Students	28.247	858	29.105
Number of Teachers	1.758	120	1.878
Number of Schools	205	6	211
Number of Classrooms	1.392	90	1.482
Number of Allocated Classrooms	285	13	298
Number of Students Falling to Teachers	16	7	15
Number of Students Falling on The Classroom	20	10	20
Number of Yachted Schools	0	0	0
Number of Schools by Teaching Style			
Normal	195	6	201
Binary	10	0	10
Secondary school			
Number of Students	31.730	1.077	32.807
Number of Teachers	2.073	137	2.210
Number of Schools	115	6	121
Number of Classrooms	1.525	39	1.564
Number of Allocated Classrooms	147	37	184
Number of Students Falling to Teachers	15	8	15
Number of Students Falling on The Classroom	21	27	21
Number of Yachted Schools	0	0	0
Number of Schools by Teaching Style			
Normal	105	6	111
Binary	10	0	10
Secondary Education (High School)			
Number of Students	15.942	1.783	17.725
Number of Teachers	1.101	235	1.336
Number of Schools	38	10	48
Number of Classrooms	847	144	991
Number of Allocated Classrooms	21	10	31
Number of Students Falling to Teachers	14	8	13
Number of Students Falling on The Classroom	19	12	18

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2018 Academic Year	Formal	Special	Sum
Number of Yachted Schools	14	0	13
Number of Schools by Teaching Style	19	12	19
Vocational Education (Vocational High School)			
Number of Students	12.429	0	12.429
Number of Teachers	1.042	0	1.042
Number of Schools	36	0	36
Number of Classrooms	468	0	468
Number of Allocated Classrooms	53	0	53
Number of Students Falling to Teachers	12	0	12
Number of Students Falling on The Classroom	27	0	27
Number of Yachted Schools	3	0	3
Special Education			
Number of Students	783	0	783
Number of Teachers	66	0	66
Number of Schools	10	0	10
Number of Classrooms	57	0	57
Number of Allocated Classrooms	26	0	26
Tasimali Education			
Number of Central Schools With Carrying Education	45	0	45
Number of Stoned Center Students	1.269	0	1.269
Total Number of Students Moved	13.735	0	13.735
Total Number of Schools Carrying Students	238	0	238

In Çaycuma District has 5 kindergarden, 34 primary schools, 22 secondary schools, 12 high schools. District also has 25 public education centres that provides vocational training to adults.

The nearest school to Sazköy village is located in Saltukova District which is located 10 km away from the village. Three student goes to Saltukova by the transportation provided by the Ministry of Education.

There are 8 students in the village of Serefçik and the existing school is not under usage. The students of the village, go to Filyos and Çaycuma.

The nearest school to Aşağıhsaniye village is located in Saltukova District which is located 5 km away from the village. Five student goes to Saltukova by the transportation provided by the Ministry of Education.

There are 10 students in the village of Gökçeler and the students of the village, go to Filyos and Çaycuma.

The nearest school to Derecikören village is located in Hisarönü District which is located 5 km away from the village and 25 students go to Hisarönü a by the transportation provided by the Ministry of Education.

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

6.1.10.3 Quality of education

No information is available on the quality of the education.

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6.1.10.4 Literacy levels

With regards to education levels in the province, according to TURKSTAT 2021 data, secondary school graduates are the largest group of students in the province, accounting for 32 percent. Secondary school graduates are followed by elementary school graduates, accounting for 24 percent, and high school graduates, accounting for 20 percent. 4% percent of the population is illiterate. Detailed education level of the province is presented in Figure 6-30.

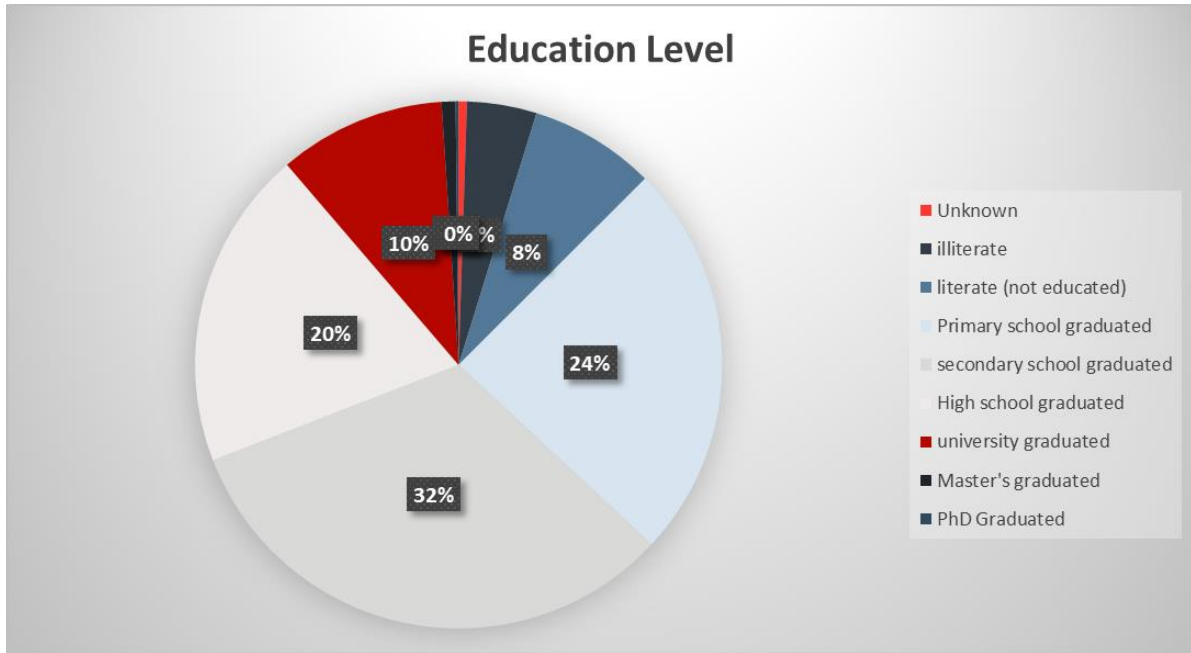


Figure 6-30: Education Level of Zonguldak Province

The population of Çaycuma district is primarily made up of primary and secondary school graduated people. 6 percent of the population is illiterate. The population distribution based on educational levels is shown below.

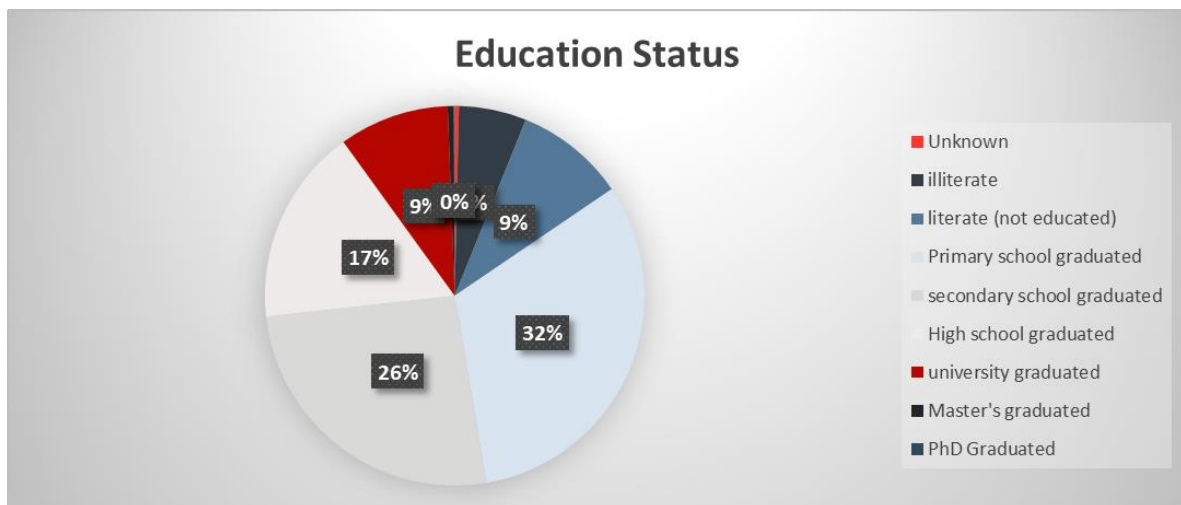


Figure 6-31: Education Level of Çaycuma District

According to the results of the community level surveys, it is seen that primary school graduated population constitutes the majority in all settlements. The main reason for this is that the educated population migrated from the region due to insufficient job opportunities. The literacy levels of the villagers according to survey results are given in the below charts.

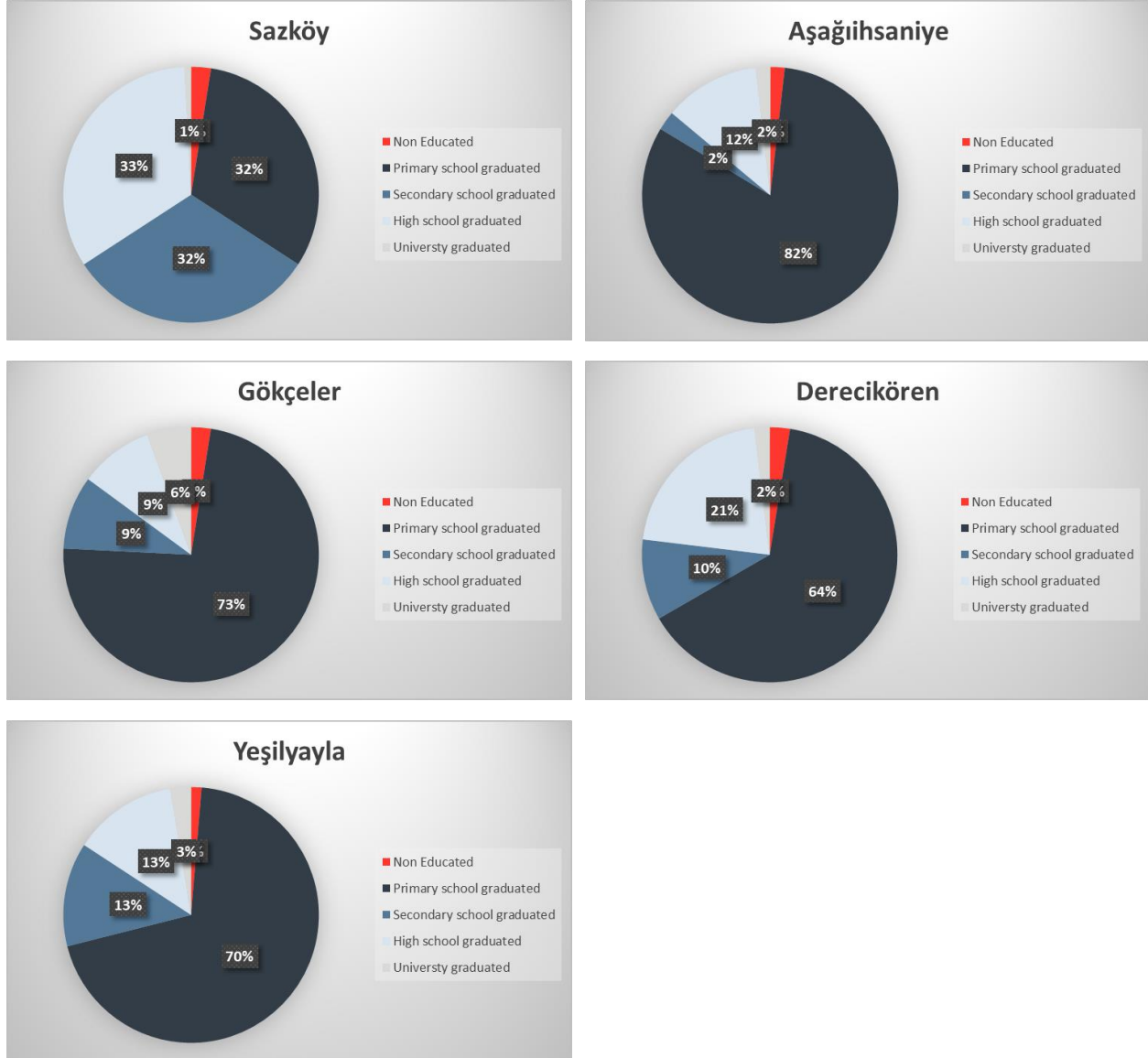


Figure 6-32: The Literacy Levels of the Villagers

6.1.10.5 Access to higher education (industry-related training opportunities)

In the Province of Zonguldak, there is Bulent Ecevit University consists of 14 Faculties, 3 Institutes, 4 Colleges, 1 State Conservatory, 9 Vocational Schools and 32 Research and Application Centres and 3 departments affiliated to the Rectorate. The academic staff of the university includes 1,225 people.

The number of students at Bulent Ecevit University 36,128 in the 2018-2019 academic year. University has the following faculties.

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

6.1.10.6 Local challenges

In Turkey, 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 Aol. 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.

6.1.11 Health

6.1.11.1 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
	Rationale: See Social Area of Influence Chapter
	AoI: The villages of Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören
Data sources	Rationale: See Social Area of Influence Chapter
	Primary sources: see Social Baseline Collection Methodology chapter
	Secondary sources: see Social Baseline Collection Methodology chapter

6.1.11.2 Healthcare facilities and personnel

According to the Provincial Health 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.

Some selected health-related statistics of Zonguldak Province is presented in the table below.

Table 6-31: Health Indicators of Zonguldak

Health Indicators	Quantity
Number of Hospitals	14
Number of Bed	1,152
Number of Hospital Bed per 10,000 Population	38.8
Number of Qualified Bed	1,015
Number of Intensive Care Unit Bed	305
Proportion of Qualified Bed (Intensive care unit beds are not included.)	52.1
Intensive Care Unit Bed per 10,000 Population	5.1
Number of Family Medicine Unit	195
Population per Family Medicine Unit	3,057

Source: General Directorate of Health Services, General Directorate of Public Health (2019)

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 131 bed capacity as a result of the merger with SSK Hospital after the Ministry of Health took over the hospitals.

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- The additional building, which is used for dialysis and administrative services, was completed in 2006 and started to serve in the hospital.
- Internal Intensive Care Unit with 4 beds was put into service on 07/05/2008 within the body of the hospital.
- While the Hospital Emergency Service was serving with 1 polyclinic and 6 observation capacity, it was expanded in 2009 to have 10-bed observation and 4 examination rooms.
- A 4-bed Surgical Intensive Care Unit was put into service on 23/07/2010 within our hospital.
- A 4-bed Coronary Intensive Care Unit was put into service on 30/06/2011 within the hospital.
- After the opening of all these units, the hospital has an actual bed capacity of 134. The hospital has 131 clinics, 11+1 dialysis beds, and 10 emergency observation beds. With this capacity, an average of 800 patients are provided with inpatient treatment per month.
- There are 24 polyclinics and 5 dental polyclinics for outpatients. A monthly average of 35,000 patients apply to our emergency services and polyclinics.
- Çaycuma State Hospital, by opening the polyclinic and inpatient services of its new annex building on April 10, 2017, provides service within the quality criteria. The new hospital, which has 92 beds, also has an intensive care unit with 16 beds and has a total bed capacity of 108.
- As of 2022, service is provided with a total of 200 beds.

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.

6.1.11.3 Quality of healthcare

During the social field survey, quality of the health care services was questioned at the local level and it was informed that there is primary health care units in Gökçeler, Derecikören and Yeşilyayla and the units are meeting the primary health needs of the communities and for the more complicated health problems, locals are using Çaycuma State Hospital. In 2021 TPAO constructed and emergency health care centre in the village of Aşağıhsaniye as a corporate social responsibility project.

- Sazköy: a new health centre - built by TPAO is being used by the villagers and the users are satisfied by the quality;
- Aşağıhsaniye: a new health centre is a new health centre - built by TPAO is being used by the villagers and the users are satisfied by the quality;
- Sefercik: the level of health services is considered insufficient according to the needs of the village; health centres in Filyos are used by the residents of the village;
- Gökçeler: the level of health services is considered sufficient according to the needs of the village;
- Derecikören: the nearest health centre used by the population of the village is located 4 km away in Saltukova;
- Yeşilyayla: the level of health services is considered sufficient according to the needs of the village.



Currently approximately 60 health personnel are employed including, doctors, Emergency Medical Physicians, Nurses, Midwives, Paramedics, Emergency Medical Technicians, Anaesthesia Technicians and First Aid Certified Drivers. Health care unit has capacity to serve up to 500 patients per day in a 400-500 m² clinic with 20 boxes and 3 rooms. In addition, its services have 300 rehabilitations capacity per day.

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 doctors of the centre doctors serve 5 days a week and all other service areas and our team provide service 6 days a week.

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)

6.1.11.4 Main health concerns (trends in illness, dust/noise)

During the household surveys, health related questions were asked to the participants including health services, noise, dust and odor and the source of the impact, phase of the project and their recommendations were also gathered through the surveys.

According to the results of the surveys, 45.1% of household members expect impact on the health services and 40.7% of the participants do not expect and impact on the health services. 84.6% of the participants in Aşağıhsaniye village answered as “yes” since the project already sponsored a health facility in the village of Aşağıhsaniye.

Participants expecting an impact on health opportunities were asked whether this impact would be "positive or negative". Accordingly, all 41 household representatives stated that they expected a “positive” impact on the health services.

Household representatives expecting an impact on health facilities were asked the phase of the Project. Accordingly, 46.3% of the household representatives answered that they expected an impact during both during the “construction and operation” phase, while 46.3% answered that they expected an impact only during the operation phase.

According to the results of the household surveys the expectations of the participants are provided in the table

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Table 6-32: Expected Impacts on Health Services

Expected impact status	Number	%
Health Center can be opened	23	60.5
Hospital can be opened	5	13.2
Existing facilities can be improved	3	7.9
Pharmacy can be opened	7	18.4
Total	38	100
Number of people who did not state the reason for the effect	3	
Number of people not expecting impact	37	
Number of people who have no idea about the impact	13	
The overall total	91	

Source: Socio-Economic Household Survey, 2022

In order to evaluate the project's outcomes, the participants were asked, "Do you expect an influence associated to noise?" Therefore, 73.6% of participants said "yes," whereas 18.7% said no. Just 7.7% of the participants gave a "I don't know" answer. In the distribution of participants by villages, 84.6 percent of those in Sazköy village and 81.8 percent in Derecikören village said they expected noise-related effects.

Table 6-33: Concerns on Noise

impact status	Number	%
Yes	67	73.6
No	17	18.7
I do not know	7	7.7
Total	91	100

Source: Socio-Economic Household Survey, 2022

Accordingly, 47.8% of the respondents expect an impact in the "construction/operation" phase, 49.3% only in the "construction" phase.

The source of the impacts was asked to household representatives who anticipate noise impacts and the details of their answers are summarized in the below table.

Table 6-34: Expected Impacts of Noise

Expected impact status	Number	%
Explosions.	9	21.4
Construction machinery	33	78.6
Total	42	100

Expected impact status	Number	%
Number of people who did not state the source of the impact	25	
Number of people not expecting impact	17	
Number of people who have no idea about the impact	7	
The overall total	91	

Source: Socio-Economic Household Survey, 2022

55.6% of the household representatives, who were asked about noise-related suggestions, suggested that "asphalt should be built". On the other hand, 44.4% of the respondents suggested that "a separate road should be used.

The participants were asked, "Do you predict the dust impact?". 71.4 percent of participants responded "yes," 22% said "no," and 6.6 percent responded "I don't know."

Table 6-35: Concerns on Dust

impact status	Number	%
Yes	65	71.4
No	20	22
I do not know	6	6.6
Total	91	100

43.1% of the household representatives answered that they expect an impact during the "construction and operation" phase. 53.8% of the household representatives expect dust impact only during the "construction" phase. According to the results of the surveys, 34.2% of the participants stated that "It can damage natural, animal, and human health." According to 23.7% of the respondents, "it may create air pollution." 10.5 percent of the respondents stated that that dust might cause a drop in the agricultural production.

47.8% of the household representatives, who were asked for their suggestions about dust, suggested that "roads should be made asphalt". 30.4% of the household representatives suggested that "more frequent irrigation should be done".

38.5% of the participants also expect impact related with the odor. Considering the distribution by villages, 46.2% participants from Sazköy village and 43.5% from Sefercik village expect odor impact especially during the operation phase of the Project during the processing of the natural gas.

Respondents were asked for their suggestions for the prevention of the odor impact and all respondents expect odor impact suggested usage of the filter.

6.1.12 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

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presented from the Zonguldak, Çaycuma and the villages located in the Aol 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 Aol, of the access for local communities and of the level of services provided.
Study Area	RSA: the Province of Zonguldak
	Rationale: See Social Area of Influence Chapter
	Aol: The villages of Aşağıhsaniye, Gökçeler, Yeşilyayla, Sazköy, Sefercik and Derecikören
Data sources	Rationale: See Social Area of Influence Chapter
	Primary sources: see Social Baseline Collection Methodology chapter
	Secondary sources: see Social Baseline Collection Methodology chapter

6.1.12.1 Housing

According to the Turkish Statistical Institute, the population of Zonguldak is 589,684 per capita in the year 2021. Also, population change over the years can be seen in the table below.

Table 6-36: Population of Zonguldak Province Over the Years

Year	Population
2021	589 684
2020	591 204
2019	596 053
2018	599 698
2017	596 892

Source: Turkish Statistical Institute

According to the Zonguldak Province 2020 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 6-37: 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
383	2722	654 901	277	2343	425 654

Source: Turkish Statistical Institute,2021

Other detailed data about the housing of the Zonguldak Province is also presented in the tables below.

Table: Number of Households by Ownership Status of Housing Unit

Province	Total Number of Households	Owner	Tenant	Lodgement	Not owner but not paying rent	Other	Unknown
Zonguldak	145 593	102 384	31 375	5385	5953	484	12

Source: Turkish Statistical Institute,2015

Table: Number of Households by Number of Rooms in the Housing Unit

Province	Total Number of Households	Number of Rooms					Unknown
		1	2	3	4	5+	
Zonguldak	145 593	894	9586	50 916	60 597	23 491	109

Source: Turkish Statistical Institute,2015

6.1.12.2 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 2020 Year Environmental Status Report, in Zonguldak province there are 9 streams connected to the Fiyos River, 5 streams connected to Güllüç 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 6-38: 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
Güllüç Stream	84	84	21,887	Filyos River

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Stream Name	Total Length (km)	Provincial Boundaries in Length (km)	Flowrate (m ³ /sec)	Tributary Stream
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,2020

According to the Zonguldak Province 2020 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 6-39: 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,2020

6.1.12.3 Wastewater and Sanitation

Zonguldak has wastewater treatment plants in the city center and in its districts. The treatment plant located in the city center is at the level of physical, biological and advanced treatment. The wastewater treatment plant located in the district of Çaycuma is at the level of physical, and biological treatment. (ZÇŞİM,2020)

In Zonguldak there are two Organized Industrial Zones. One of them is located at Çaycuma and the other one is located at Ereğli. In these Organized Industrial Zones, there are treatment plants for domestic wastewater. Also, in some businesses operating in these Organized Industrial Zones, there are industrial wastewater treatment plants. The treatment plant located in the Zonguldak Çaycuma Organized Industrial Zone has a 1450 ton/day capacity and it produces 0.071 ton/day sludge. It is at the biological treatment level and its discharge medium is Perşembe Creek. (ZÇŞİM,2020).

The infrastructure data for wastewater and sanitation of the Zonguldak Province is presented in the table below.

Table 6-40: The Infrastructure Data for Wastewater and Sanitation of Zonguldak Province

The ratio of Municipal Population Providing Wastewater Service to Total Municipal Population (%)	The ratio of the population provided with wastewater treatment services (%)	Daily wastewater amount per person (L/cap.day)	Rate of Population Provided with sewage service (%)	The ratio of Population with Drinking Water Network (%)	The ratio of Population Provided with Drinking Water Treatment Services (%)
100	66.1	121	91	99	56

Source: Turkish Statistical Institute, 2020

6.1.12.4 Electricity

Turkey Electricity Distribution Inc. (TEDAŞ) is the state economic enterprise responsible for the distribution and retail sale of electrical energy in Turkey. 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.

According to the Turkish Statistical Institute, total electricity consumption is 3,047,267 megawatt-hour (Mwh) and the total electricity consumption per capita is 5154 kilowatt-hour (Kwh) in Zonguldak Province.

6.1.12.5 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 (Sm³) in Turkey. In 2020, 595,502 million Sm³ of pipe gas, 4.693 million Sm³ of liquefied natural gas (LNG) and a total of 600,195 Million Sm³ of natural gas were consumed in Zonguldak.

6.1.12.6 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.

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Zonguldak Central Districts and surrounding municipalities formed a union by joining together and they established a “Single Waste Disposal Facility”. The facility is located in Central Sofular Village, Tombaklar area on a 15-hectare area. The facility has started regular storage as of November 2008. Solid waste was started to be stored in the area in November 2008. For this purpose, 3 hectares of the 15 hectares area (first lot) was used as a storage area. Considering the solid waste to be stored in the future and the topographic structure of the land in order to extend the life of the storage area 29,509.48 m² area addition is planned. In this context, capacity increase is approved by Zonguldak Governship Provincial Environment Board and the EIA process of the project was completed in 2011. Due to the increasing need in the solid waste landfill area which belongs to ZONÇEB, second lot construction works have been completed. The second lot is about 5.4 hectares in size and waste acceptance has started as of 2020.

Number of waste treatment facilities in Zonguldak Province as of 2020 is presented in the table below.

Table 6-41: Waste Management Facilities in Zonguldak

Facility Type	Number
Class II Landfill (Municipal Waste and Non-hazardous Waste)	1
Packaging Waste Collection, Separation and Recycling Facilities	5
Packaging Waste Recycling Facilities	3
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
Medical Waste Sterilisation Facility	1
Non-Hazardous Waste Recovery Facility	9
Waste Electrical and Electronic Equipment Processing Facility	1
Mine Waste Disposal Facility	0
Coastal Waste Reveal Facility*	3
Excavated Soil, Construction and Demolition Waste Storage/Recycling Facility	0

Source: Zonguldak Provincial Environmental Status Report for 2020, 2021

(https://webdosya.csb.gov.tr/db/ced/icerikler/2020_zonguldak_cdr-20210702095615.pdf).

*There are 3 coastal waste reveal 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.

6.1.12.7 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 2021 Year Activity Report, there are 2 guide vehicles, 1 irrigation tanker with a capacity of 13 tons and a total of 11 vehicles in the Zonguldak Fire Authority.

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6.1.12.8 Police

In Turkey, 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 Fiyos Gendarmerie Station Command
- Çaycuma İlçe Gendarmerie Command
- Çaycuma Karapınar Gendarmerie Station Command
- Çaycuma Merkez Gendarmerie Station Command
- Çaycuma Perşembe Gendarmerie Station Command
- Çaycuma Saltukova Gendarmerie Station Command

6.1.12.9 Telecommunications

Turkish Telecommunication Anonymous Company (Türk Telekom) is a company established by the state to provide telecommunication services to Turkey. It provides services in broadband internet, fixed telephone, mobile and digital TV broadcasts. Türk Telekom also provides the same services in Zonguldak Province.

6.1.12.10 Transport (incl. accidents) and road infrastructure (port and harbours, airport)

Highway

Zonguldak province is affiliated with the 15th Regional Directorate of Highways, which has a coverage area of 30,265 km² and includes Kastamonu, Bartın, Karabük and Çankırı provinces within its borders. According to the website of the 15th regional directorate of the General Directorate of Highways, 1438 km of state road, 1505 km and a total of 2943 km of road are within the region of responsibility of the 15th Regional Directorate of Highways. 98% of our road network is asphalt pavement. The population of the region is 1,593,369. There are 98 km² of road and 53 people per km². The number of registered vehicles within the borders of the region is 449,712. There is 1 vehicle for 4 people.

The total length of the 10 provincial roads in Zonguldak's General Directorate of Highways records is 234 km. The total number of vehicles passing through these roads per day is 46,848. The road with the highest number of vehicles is the 8 km long Zonguldak-Kilimli road, numbered 67-01, with 8,917 vehicles.

Table 6-42: 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

Road Network By Surface Type (km)								
Provincial Road	20	196	216	1	-	-	16	233
Total	147	259	406	1	-	-	16	423

Source: General Directorate of Highways, 15th Regional Directorate

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

Table: The accident statistics in Zonguldak Province

Number of traffic accidents	Number of Accident Deaths	Number of Accidents Injured
1139	19	1780

Source: Turkish Statistical Institute, 2021

Railway

Irmak-Karabük-Zonguldak railway line is 415 km long, single-track, without signalization and electrification railway line. Rehabilitation, signalization and telecommunication of this line were completed under a project financed by European Union between 2011-2017. This line is also connected to Ankara which is the capital city of Turkey. In addition, the Adapazarı-Karasu-Akçakoca-Ereğli-Zonguldak-Bartın railway line project, which is about 281 km, has been prepared.

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

Airway

Zonguldak-Çaycuma Airport is the only airport in the Zonguldak Province. It was put into service in 2007. The operator of the airport is Zonguldak Private Civil Aviation Industry and Trade Inc. It is located 55 km away from the city center. According to the Republic of Turkey Ministry of Transport and Infrastructure, it has an 1881x3 m runway, 2 taxiways, an apron with 2 aircraft capacity and a 1430 m² terminal building with a 500,000-passenger capacity. International flights are also available from Zonguldak-Çaycuma Airport.

Maritime Transport

According to the Coastal Structures Department of the Republic of Turkey Ministry of Transport and Infrastructure, there are 5 ports in Zonguldak. These are Filyos Turkish Petroleum Anonymous Company Port, Turkey Card Coal Institution Zonguldak Port, Erdemir Port, Karadeniz Ereğli Bozhane Port and Eren Port.

Erdemir Port is operated by Ereğli Demir ve Çelik Fabrikaları T.A.Ş. Bulk Cargo, general Cargo, oil/product tanker, ferry, chemical tanker, container, and Ro-Ro ship are handled. 13 million 750 thousand tons of bulk cargo and 6 million 250 thousand general cargo and liquid bulk cargo are handled annually in this port. The dock/pier length of the port is 1670 m.

Turkey Card Coal Institution Zonguldak Port has one Ro-Ro dock where three Ro-Ro ships can dock at the same time, two bulk cargo and general cargo docks and a train ferry dock. The train ferry pier is 200 meters

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long, the cargo pier is 215 meters long, the bulk dock is 360 meters long and the Ro-Ro dock is 125 meters long.

Zonguldak Eren Port has an annual discharge capacity of 10 million tons. This port can serve all kinds of bulk cargo and general cargo.

6.1.12.11 Public space and recreation

According to the Turkish Statistical Institute, there are:

- 7 public libraries
- 2 theatres with a total of 756 seats
- 22 cinema halls with a total of 2495 seats
- 7 Public libraries with a total of 166529 books inside
- 2 museums affiliated with the Ministry of Culture and Tourism with a total of 8867 artifacts
- 1 private museum with a total of 1815 artifacts
- 2 ruins

According to the Zonguldak Province 2020 Year Environmental Status Report, there are 19 beaches in Zonguldak. There is no beach in the city that has been awarded the Blue Flag. In addition, there are no fish farms on the seas in the Zonguldak Province. In Zonguldak Province, there are Danaağzı Nature Park, Göldağı Nature Park, Milli Egemenlik Nature Park, and İncüvez Pine Natural Park declared by the General Directorate of Nature Conservation and National Parks.

According to the Çaycuma Municipality, there are libraries, Culture and Art Center, municipal cinema, a municipal band, a theater community, parks and gardens, and sports fields in the Çaycuma district.

6.1.13 Marine infrastructure

6.1.13.1 Introduction

6.1.13.2 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.

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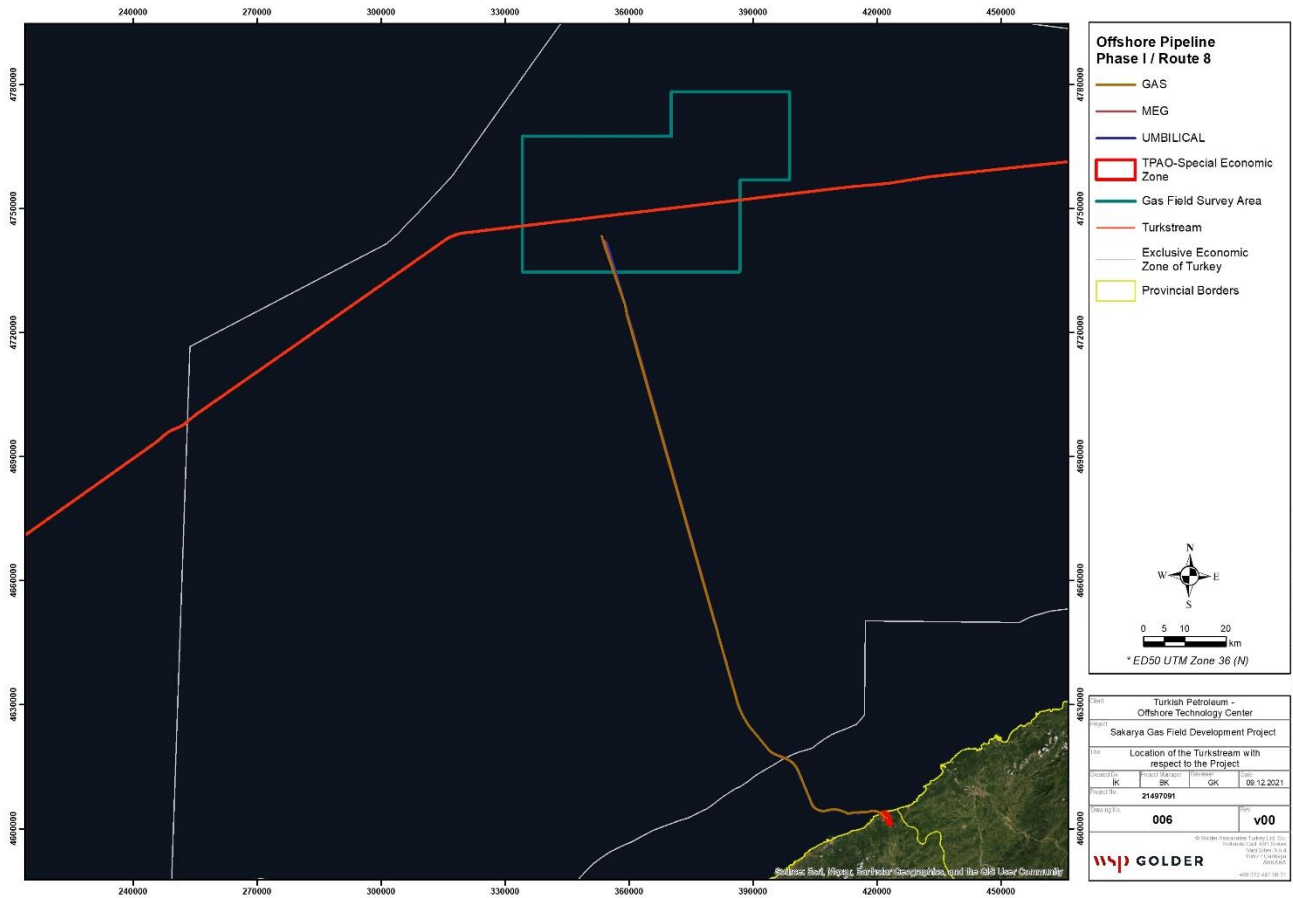


Figure 6-33 Map Showing Turkstream and Project Components

6.1.13.3 Shipping and navigation

The total number of ships in the project impact area is presented in the table below.

Table 6-43: Total Number of Vessels in Zonguldak Harbour

Harbour Master	Total Number of Calling Vessel					
	Turkish Flag		Foreign Flag		Total	
	Number of Ship	Gross Tonnage	Number of Ship	Gross Tonnage	Number of Ship	Gross Tonnage
Zonguldak	265	1.298.106	439	6.317.135	704	7.615.241
Total	15.120	123.686.234	36.079	705.931.868	51.199	829.618.101

(General Directorate of Maritime Affairs -Department of Maritime Trade Development)
1.02.2022 - 11:00:00

6.1.14 Cultural heritage

6.1.14.1 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	<p>RSA: Zonguldak Provincial borders (Regional Social Aol)</p> <p>Rationale: Provincial level RSA is selected to understand the historical distribution of archaeological assets in the region.</p> <p>Aol: Onshore Project footprint (including access roads) for tangible cultural heritage and Onshore Social Aol for intangible heritage</p> <p>Rationale: Impacts (if any) on tangible cultural heritage may only occur in the Project footprint (including access roads) 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 Aol because of the potential intangible forms of culture in the region.</p>
Data sources	<p>Primary sources:</p> <ul style="list-style-type: none"> ▪ Historical maps; ▪ Inventory Records of the Ministry of Culture and Tourism of the Republic of Turkey; ▪ Official opinion letter of Karabük Regional Board for the Protection of Cultural Heritage ▪ Detailed surface survey. <p>Secondary sources:</p> <ul style="list-style-type: none"> ▪ Academic publications on archaeological sites in the project site and its immediate vicinity; ▪ Reports on the results of previous cultural heritage studies and surface surveys.

Tangible Cultural Heritage

In Turkey, "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 amended⁹ by the Law No. 3386. Cultural and natural heritage protected by the relevant law is defined as follows.

⁹ <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2863.doc>

- Immovables built until the end of the 19th century with natural assets that need to be protected;
- 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 Turkey 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 Turkey on "Archaeological Sites, Conservation and Use Conditions" dated 5 November 1999 and¹⁰ 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

¹⁰ <https://kvmgmtktb.gov.tr/TR-44310/ilke-karari--karar-no-658--karar-tarihi-05111999.html>

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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 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 and¹¹ 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 Turkey 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 "¹².

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;

¹¹ <https://teftis.ktb.gov.tr/TR-50815/kultur-ve-tabiat-varliklariyla-ilgili-yapilacak-yuzey-a-.html>

Convention for the Protection of the Intangible Cultural Heritage, Paris, 17 October 2003¹²

- e) Handicraft tradition.

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

Methodological approach

The studies were carried out with the participation of expert archaeologists of HERMES Arkeoloji Çevre ve Sosyal Danışmanlık company (Hermes). The study methodology used by Hermes can generally be discussed in 3 stages. These are;

- Desktop Study,
- Detailed surface survey
- Reporting

The names of the archaeologists who conducted the study and contributed to the report are presented in Table 6-44. Desk studies were carried out between 21.02.2022 – 28.02.2022, and detailed archaeological surface research studies were carried out between 02.03.2022 – 04.03.2022.

Table 6-44: Expert Team Table Performing the Study

Name	Title	Duty
Engin ÇOŞAR	Senior Archaeologist	Site Supervisor, Land Inspection, Reporting
Erkan ATAY	Senior Archaeologist	Land Inspection, Reporting
Yeliz ATAY	Senior Archaeologist	Reporting

Desktop Study

The Western Black Sea Region, where the project will be carried out, has maintained its importance from ancient times to the present day. The region is one of the places where the risk of archaeology is high. In particular, climatic and land conditions make surface surveys in the region difficult and there has not been enough research in the region or many research is already underway. Today, land surveys and registration studies are carried out by the Ministry of Culture and Tourism and its related units.

Prior to the field investigation studies, the existing publications, information and documents related to the region and the archives of the Protection Boards and Museums of the Ministry of Culture of the Republic of Turkey were examined at this stage.

First of all, publications of archaeological studies previously carried out in the region where the Project site is located were collected on the province, district and village/neighborhood information of the region where the Project is located.

The resources used at this stage are as follows;

- Academic publications on archaeological sites in the project site and its immediate vicinity;
- Historical maps;

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- Reports on the results of previous cultural heritage studies and surface surveys;
- Records of the Ministry of Culture and Tourism of the Republic of Turkey.

Before the field study, surface scanning was performed using topographic maps and satellite images, and the risky areas were marked on the map and examined in detail on site.

The data can be accessed via Google Earth program (*kml/kmz*) or shared separately as shp or dxf for use as professional numerical data.

Detailed Surface Survey

The main element of these studies was the on-site examination of archaeological sites, including in known archaeological sites, and the principle of one-to-one walking of the entire project site by expert archaeologist(s).

Site walk has been the main method during the field studies carried out to determine the movable and immovable archaeological and cultural assets in and around the project site. At this stage, difficult or impossible areas (paddy areas, dense woodland and bush areas, unsuitable for settlement and high altitude or steep rocky areas) were scanned from satellite images and topographic maps. In addition, these areas have been studied from studies such as ancient sources and surface research and excavation projects previously conducted in the region.

The relationship between the archaeological sites discovered by the surface survey and the Project site has been determined and the possible spread of the archaeological sites has been determined. The aforementioned spreading areas were determined on the basis of the region where the archaeological materials are least, in proportion to the density of the cultural assets that can be seen on the surface.

In the examinations made on the project site, it should be stated that only archaeological assets visible on the surface are followed.

All field studies were conducted by an expert archaeologist who had previously worked in similar activities. During the examination, the Project site and its immediate vicinity were also studied.

All observed archaeological traces (ceramic fragments spread on the surface, architectural remains or traces, etc.) were processed on the maps shared in the report.

Reporting

As a result of the detailed surface studies, a general layout plan has been prepared for all archaeological/movable or immovable cultural assets in the Project site.

In addition, kmz/kml numerical data were generated for all explored sites.

The significance and sensitivity levels of the areas whose relationship with the construction activities has been examined, the effect of the construction on the areas and the possible mitigation methods to be used during the construction phase have been determined and reported.

In the studies conducted, identification forms related to archaeological areas and list of archaeological areas are provided with Annex E [TBD- will provided with impact assessment chapter].

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Regional Context (RSA)

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 region¹³.

Tieion/Filyos is the colony of Miletus. Tieion, which was¹⁴ 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 named Filyos/Billaos flows in the east of the city. The founder of the city is a priest named Tios from Miletus.

¹³ Karauğuz, G., AKIŞ, A., KUNT, İ.H., Zonguldak Bölgesi Arkeoloji, Eskiçağ Tarihi ve Coğrafya Araştırmaları, Konya: Çizgi kitapevi, 2010, sf. 137, 139, 140, 143.

¹⁴ Strabon, Geographika (The Geography of Strabon), (Antik Anadolu Coğrafyası: XII.III.8) çev. A. Pekman, İstanbul 1993.

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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/Mariandynd, Herakleia Pontike)

The first name of Ereğli, which came from the Phrygian lineage in the 6th century BC, was Mariandynd. 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 Ereğli¹⁵.

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 6-34: Map Showing Historical Geography of Bithynia Region and Tiejon/Tieum Ancient City¹⁶

¹⁵ <http://www.zonguldak.gov.tr/tarihsel-yapitlar>

¹⁶ *Bithynia. Asia citerior. Auctore Henrico Kiepert Berlinensi. Geographische Verlagshandlung Dietrich Reimer (Ernst Vohsen) Berlin, Wilhelmstr. 29. (1903)*

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In the source research conducted on the relevant website of the Ministry of Culture and Tourism¹⁷, the number of immovable cultural assets in Zonguldak province are summarized below.

Table 6-45: 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

Turkey is a multicultural country. The people of Turkey consisted of indigenous people and immigrants from the Balkans, Caucasus, Crimea and Inner Asia since the 19th century. The people who came to Turkey 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 Turkey, 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 Turkey is Muslim (98.8%). There are two main Muslim sects: Sunnis and Alawites. Sunni Turks and Kurds are dominant in Turkey, 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.

¹⁷ <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 Turkey 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 Turkey, 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 Hidrellez, Bairam and Friday prayers, harvest festivals.

General Information on Cultural Activity in Zonguldak Province¹⁸

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.

¹⁸ <https://www.kulturportali.gov.tr/turkiye/genel/kulturatlasi/?etiket=zonguldak>

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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 simple 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, Karabük (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.Eregli¹⁹.

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),

¹⁹ Nature Conservation and National Parks Directorate, Zonguldak Nature Tour Development Plan, 2013 Turkey 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.

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- Zonguldak/Karaelmas Black Sea International Culture and Art Festival (21-27 June)
- Great Plateau Festival (July)
- Kümür Day (November 8)²⁰

Local Context (Aol)

The Project Site is located in the immediate vicinity of some registered archaeological sites. In this context, during the national EIA study, the opinion of the institution was asked to the Karabük Regional Board for the Protection of Cultural Heritage. In the opinion of the institution dated 18.06.2021 and numbered E-75059364-611.02-1470277;

- *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 No. 2863, it is reported that it is necessary to act in accordance with Article 4 of the Law ".*

In the region, an ancient name Teion, also known as Filyos Ancient City, has been visited, whose scientific excavations are currently underway. 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. Some sites subject to archaeological and cultural heritage, which are registered and/or whose registration status is unknown around the Project Site, have been discovered and recorded during surface surveys.

In the research, a necropolis area and an archaeological site, which were reported with the opinion of the institution in EIA studies, were examined on site, and during the surface survey, one historical bridge and one modern / late Ottoman mixed cemetery area were recorded.

Registration status of identified archaeological assets and their distance to Project components are given below. Satellite image showing Project site and general archaeological assets in the vicinity is presented in Figure 6-35.

²⁰ a.g.e

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Table 6-46: Information on the Archaeological Assets Identified Around the Project Area

No	Site name	Archaeological Area Registration Status ²¹			Province	District/Village	Distance to Project Component (m)		
		Registered	Unregistered	Unknown			Lodgings	Kolin Camp	OPF
1	Filyos 1st Degree Archaeological Site	X			Zonguldak	Filyos	3 m	NA	1500
2	Sazköy 3rd Degree Archaeological Site	X			Zonguldak	Filyos / Sazköy	N/A	5	30
3	3rd Degree Archaeological Site	X			Zonguldak	Filyos / Sazköy	N/A	750	480
4	Sazköy Modern Cemetery		X		Zonguldak	Filyos / Sazköy	N/A	NA	15
5	Derecikören Ancient Bridge	X			Zonguldak	Filyos / Derecik ruin site	N/A	NA	1300

²¹ Project EIA Report and Archaeology Baseline Report

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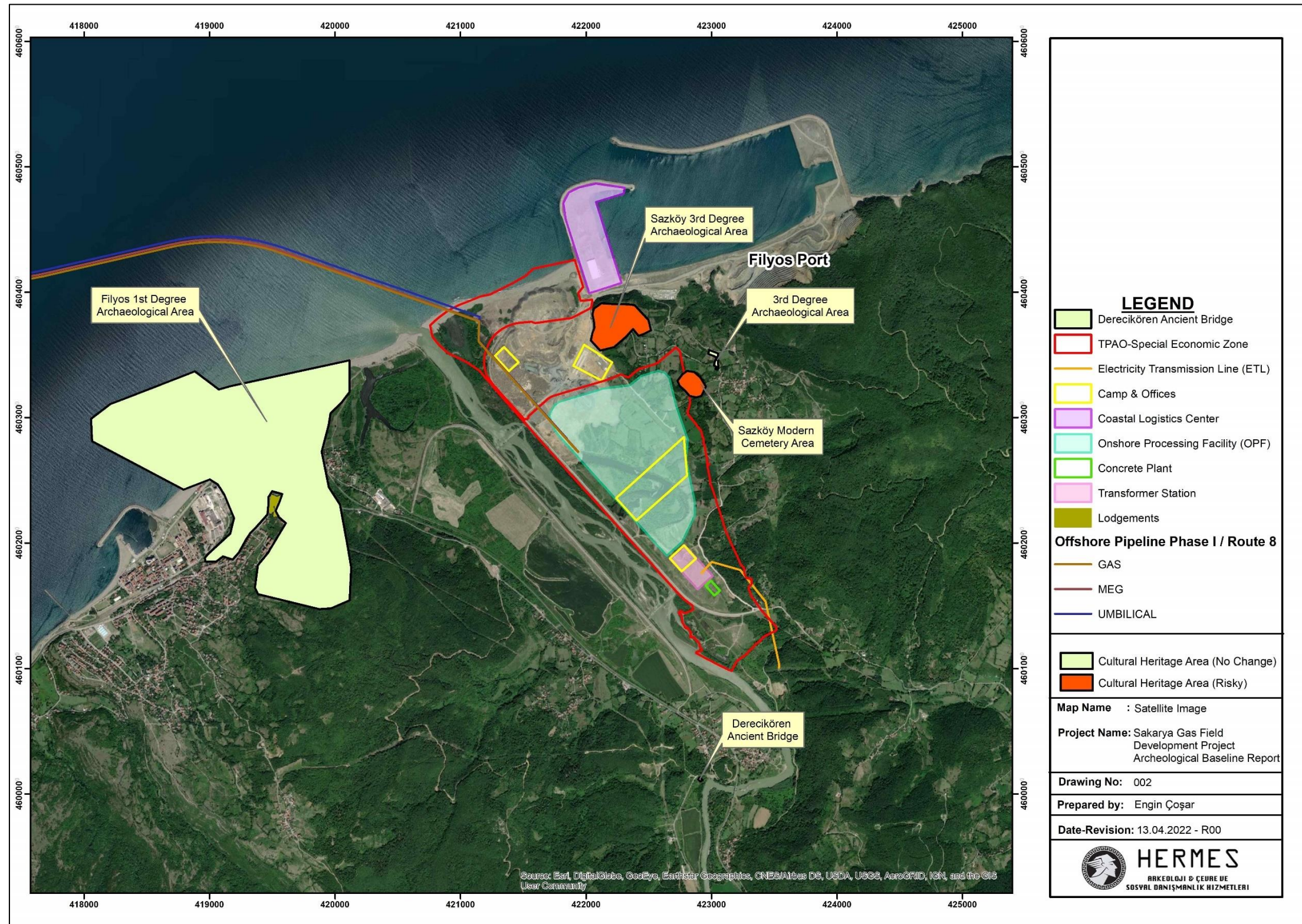


Figure 6-35: Satellite Image Showing Project Site and General Archaeological Status

(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 6-36: Teion Ancient City Map²²

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

²² 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 6-37: Remnant of Aqueduct Visible on the Surface to Ancient City of Teion²³



Figure 6-38: A Visual, Architectural Wall Remnant and Floor Slab from the Excavations of the Ancient City of Teion²⁴

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 Turkey. The information

²³ <https://www.kulturportali.gov.tr/turkiye/zonguldak/gezilecekyer/filyos-tios>

²⁴ <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 soil²⁵

Considering its relationship with the Project components, it is located at a distance of approximately 1.5 km to the boundaries of the OPF (see Figure 6-35). The lodgings to be constructed in the scope of the Project are approximately 3 m away from the borders of the ancient city of Teion but will be constructed in an area where there are already buildings and a settlement. The borders of the ancient city were determined according to natural elevation. Because 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 north of the OPF and on the slope (see Figure 6-35). Also, there is a camp site belonging to a contractor (Kolin) at a distance of 5 m from the archaeological site boundaries. Artificial filling materials and solidified concrete leachate were observed at the boundaries of the site, which are presumed to be related to previous construction activities in the area.



Figure 6-39: Sazköy 3rd Degree Archaeological Site, Overlooking the Slope

During the survey, it is understood that a 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

²⁵ <https://www.kulturportali.gov.tr/turkiye/zonguldak/gezilecekyer/filyos-tios>

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 6-40).



Figure 6-40: Ceramic and Human Bone Pieces at Sazköy 3rd Degree Archaeological Site

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The archaeological site is not affected by the structures built within the scope of the OPF. However, filling and concrete materials and Kolin campsite activities in the region are adjacent the site boundaries.



Figure 6-41: Artificial Materials around the Borders of Sazköy 3rd Degree Archaeological Site

3rd Degree Archaeological Site

Another protected area around the project site is located on the road leading to the Sazköy coast, 120 block 16 parcel, approximately 480 meters east of the OPF (see Figure 6-35). 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 6-42: 3rd Degree Archaeological Site and General View of Sazköy Village

Sazköy Cemetery

A reception center intended for an observation terrace is being constructed in the northeast corner of the OPF and in the west of Sazköy Village. 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 tombstones that we can date to the Late Ottoman period as well as today's tombs (see Figure 6-43, Figure 6-44).

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. It is recommended to determine the cemetery boundaries and to take precautions against possible expansions within the scope of the project since it is very close to the area determined for the reception center.



Figure 6-43: Overview of Tombs with Present and Late Ottoman Inscriptions



Figure 6-44: Late Ottoman Period, Ottoman Inscribed Gravestone

It can be said that Sözköy Village has seen uninterrupted settlement from ancient times to the present day due to the fact that there is a necropolis and residential area dating to the Roman/Byzantine period in the region and the elements reflecting the late Ottoman period are included in the modern cemetery.

Derecik Ören Village, Ancient Bridge Remnant

During the examinations in the Aol, 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 OPF.

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 6-45: 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 Project site 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 Hidrellez 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.

Sensitivity assessment

Sensitivity features	Supported by	Sensitivity value
Presence of archaeological sites close to the Project site Uncertainty of the boundaries of archaeological sites Presence of unregistered archaeological sites Other ongoing construction projects around archaeological sites	Primary and secondary data	High

6.1.14.2 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 Bartın 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.
	Aol: The marine portion of the pipeline/cable corridor 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: <ul style="list-style-type: none"> Side Scan Sonar data and ROV survey carried out within the pipeline corridor. 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 Aol consists in the following steps:

- Preliminary analysis of Side Scan Sonar geotiff files by experts and identification of the anomalies (potential archaeological targets) present within the Aol.
- 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 addition, 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 analysed focusing the attention on all the potential archaeological targets.

TARGET NAME	TARGET IMAGE	X	Y	LATITUDE	LONGITUDE	SIDE SCAN VIEW	DESCRIPTION
M-2		420957	4603023	41 34 55.7515 N	32 3 6 33.92 E		Near the object/chain
M-3		420947	4603810	41 34 55.4563 N	32 3 5.9116 E		Near the object/chain

Figure 6-46: 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 in Chapter 6.1.14.1.

Local context (Aol)

A wide area sector, ranging from shore to about 100 m water depth across the pipeline/cable landing approach, has been investigated by a combination of geophysical methods (MBES, SSS, SBP, MAG); thanks to these data, numerous anomalies were identified and analysed in the archaeological perspective. Despite the high number of geophysical anomalies, just one has 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 potential archaeological targets were recognized along the corridor, neither in the temporary storage area. Some very

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small, isolated anomalies, interpreted possibly as scrap or junk materials, have been localized near the corridor (T-11, T-119, T-38, T-39, T-41, T-40). None of these are 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.

According to the geophysical data analysis (especially SSS geotiff), the review of the targets catalogue and the results of the ROV visual inspection conducted in February 2022, the presence of archaeological targets along the pipeline/cable route can be excluded.

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.

Sensitivity assessment

Sensitivity features	Supported by	Sensitivity value
Absence of evident marine archaeological heritage in the AoI	Primary data	Low

6.1.15 Visual Aesthetics

Definition	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 areas	<p>RSA: Zonguldak Province and Bartın Province (Onshore) and the Black Sea area up to 155km from their shores (Offshore).</p> <p>Rationale: The area interested by the Project operations and the provinces where the Project onshore facilities will be located.</p> <p>AoI: A 1,000 m bufferzone from the industrial area and on a corridor of 1,000 m width along the Energy Transmission Lines (ETL).</p> <p>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.</p>
Data sources	<p>Primary sources: Primary data from field work conducted by Golder in February 2022.</p> <p>Secondary sources: Secondary data from scientific papers, grey literature and databases.</p>

Regional context (RSA)

Offshore

The Project offshore area consists of an open sea section of the Black Sea that will hold no visible structure above water (Figure 6-47). The pipeline and the associated extraction structures will be located on the seafloor at a depth ranging from 30 m to 2200 m and up to 155 km from the coast. Due to the nature of Project operational conditions, these will have no effect to the general visual aesthetics of the offshore area, with the only exception of the temporary presences of vessels during the pipeline laydown operations and the possible maintenance events. Zonguldak and Bartın 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 6-47: Example View from the Onshore Section of the Project Area, Looking at the North/Offshore RSA

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 6-48).



Figure 6-48: Example View of a Rural Urban, and Forest Area in the North-east of the RSA (Bartın Province)

Local context (Aol)

Within the Aol the following areas have been identified:

Coastal Dune Area

The coastal dune area (Figure 6-49) 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 6-50). 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 6-49: Section of the Coastal Dune Area Within the Aol



Figure 6-50: The Coastal Pond Located within the Aol

Industrial Area

The central part of the Project's onshore section consists of a highly modified area (Figure 6-51) where vegetation has been already removed and the ground has been prepared for construction. Existing service roads have been improved and new service roads have been built inside the Project area with the commencement of the Project.



Figure 6-51: Overview of Filyos industrial Area where the Project Onshore Facilities Will Be Located

River and Estuarine Area

The west boundary of the central Project's area consists of the terminal section of Filyos River (Figure 6-52). 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.



Figure 6-52: Filyos River Section Included in the Aol, View from South-west, Looking North-east Towards Filyos Industrial area

Forest Area Agricultural and Pasture Areas

The Project's Area of Influence also includes some forest areas and some agricultural and pasture areas that are located within the 1,000 m buffer along the Energy Transmission Line (Figure 6-53).

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Figure 6-53: Aerial View of the Areas Crossed by the ETL (red line)

Visual Receptors

Only one settlement is located within the Aol 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 Filyos industrial area and comprises 40 households and a population of 127 with an additional 15 to 20 located further away around the village (Figure 6-54). Derecikören is the next closest village upstream from the industrial area with 120 households and a population of approximately 300 people, the village is located within 1,000 m from the initial section of the ETL.



Figure 6-54: Sazköy Village Outskirt, East of Filyos Industrial Area

General State Considerations

The general aesthetic state of the AoI ranges from natural to highly modified, although even natural looking areas show evident signs of anthropic pressure. Debris are commonly found scattered along the beach/dune area, along the river sides and in the natural vegetation reducing the aesthetic value of these areas.

Sensitivity Assessment

The table below summarizes the analysis of sensitivity related to the Visual Aesthetics component.

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Sensitivity features	Supported by	Sensitivity value
<p>Presence of one settlement (127 people) within the visual zone of visual influence.</p> <p>Absence of areas of touristic interest within the visual zone of visual influence.</p> <p>Presence of roads and volume of traffic within the visual zone of visual influence.</p> <p>There are no natural parks protected and classified areas within the visual zone of visual influence.</p>	<p>Primary and Secondary data</p>	<p>Medium-Low</p>