TÜRKİYE PETROLLERİ ANONİM ORTAKLIĞI

OTC OFFSHORE TECHNOLOGY CENTER

SAKARYA GAS FIELD DEVELOPMENT PROJECT – ENHANCEMENT OF SUBSEA PRODUCTION CAPACITY & FLOATING PRODUCION UNIT

Chapter 10 - Cumulative Impact Assessment

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10.0 CUMULATIVE IMPACTS

The purpose of this chapter, for which the methodology is described in Chapter 5 is to identify cumulative impacts at two different levels:

i) **Within the Project itself**, by identifying the possible effects of the simultaneous presence of the residual impacts affecting the environmental and social components; and

ii) **With other projects in the same area** (and/or its vicinity, including this Project future developments – i.e., Phase 3), by considering the spatial, temporal and thematic concomitance with other projects currently operating and/or planned.

Based on the present knowledge, the reasonably foreseeable other projects within the Project AoI defined for each component and presented in Chapter 5 are evaluated for their cumulative impacts with the Project. These projects are listed in **Table 10-6** and depicted in Figure 10-1, Figure 10-2, Figure 10-3 and Figure 10-4

10.1 Cumulative Impacts within the Project Itself

As discussed in Chapter 5, cumulative impacts within the Project itself are generated by the build-up and interaction of different impact factors at a specific location or over a specific receptor. Relying on the assessment conducted in Chapter 5, the following tables briefly summarize the overall impact on each component arising from all the impact factors generated by the Project actions and the mitigation measures effectiveness (namely the ability to reduce or eliminate the negative impact or to maximize the positive one).

Offshore Components

Table 10-1: Offshore components' overall assessment for cumulative impacts within the Project itself

Environmental/Social component	Phase	Impact factors	Overall assessment
Seafloor morphology	Construction	Handling and resuspension of sediments	**Negligible**
		Presence of the cofferdams	**Low**
		Introduction of new offshore infrastructures	**Low**
	Operation	Presence of new offshore infrastructures	**Low**
Sediments	Construction	Handling and resuspension of sediments	**Negligible**
		Minor leakage of contaminants into water	**Negligible**
		Discharge of wastewater	**Negligible**
	Operation	Minor leakage of contaminants into water	**Negligible**
		Discharge of wastewater	**Negligible**
Seawater	Construction	Minor leakage of contaminants into water	**Low**

Environmental/Social component	Phase	Impact factors	Overall assessment
		Handling and resuspension of sediments	**Low**
		Emission of contaminants into marine water	**Negligible**
		Discharge of wastewater	**Low**
	Operation	Minor leakage of contaminants into water	**Medium**
		Discharge of wastewater	**Negligible**
		Discharge of produced waters	**Medium**
		Use of seawater	**Low**
Physical oceanography	Construction	Presence of cofferdams	**Negligible**
	Operation	No impacts	**-**
Underwater noise	Construction	Emission of underwater noise	**Low**
	Operation	Emission of underwater noise	**Low**
Plankton	Construction	Minor leakage of contaminants into water	**Low**
		Handling and resuspension of sediments	**Low**
		Emission of light	**Medium**
		Emission of underwater noise	**Medium**
		Emission of contaminants into marine water	**Low**
		Discharge of wastewater	**Low**
	Operation	Minor leakage of contaminants into water	**Low**
		Emission of underwater noise	**Low**
		Emission of light	**Medium**
		Emission of electromagnetic fields (EMF)	**Medium**
		Discharge of produced water	**Low**
		Use of seawater	**Negligible**
		Discharge of wastewater	**Low**

Environmental/Social component	Phase	Impact factors	Overall assessment
Benthic communities (*phyto- and zoobenthos*)	Construction	Minor leakage of contaminants into water	**Negligible**
		Handling and resuspension of sediments	**Negligible**
		Introduction of new offshore infrastructures	**Low**
	Operation	Presence of new offshore infrastructures	**Low positive**
Fishes	Construction	Minor leakage of contaminants into water	**Low**
		Handling of and resuspension of sediments	**Low**
		Emission of underwater noise	**Low**
		Emission of light	**Low**
		Emission of contaminants into marine water	**Low**
		Discharge of wastewater	**Low**
	Operation	Minor leakage of contaminants into water	**Medium**
		Emission of underwater noise	**Low**
		Emission of electromagnetic fields (EMF)	**Low**
		Discharge of produced water	**Low**
		Discharge of wastewater	**Low**
		Presence of new infrastructures offshore	**Low positive**
Marine mammals	Construction	Presence of working and moving vessels	**Negligible**
		Emission of underwater noise	**Low**
	Operation	Presence of working and moving vessels	**Negligible**
		Emission of underwater noise	**Low**
		Emissions of electromagnetic fields	**Low**

Table 10-2: Overall assessment for Marine habitats: the overall assessment derives from the average of the residual impact values of the impact factors identified as affecting biological components concurring in pelagic and benthic habitat (see table 7-36 and 7-37 in section 7.3.2.5, Chapter 7.3 of the present ESIA).

Habitats	Component	Phase	Impact factors	Overall assessment
Marine Habitats	*Benthic habitats*	Construction	Minor leakage of contaminants into water	**Negligible**

Habitats	Component	Phase	Impact factors	Overall assessment
			Handling and resuspension of sediments	**Negligible**
			Introduction of new offshore infrastructures	**Low**
		Operation	Presence of new offshore infrastructures	**Low positive**
	Pelagic habitats	Construction	Emission of light	**Low-medium**
			Emission of underwater noise	**Low**
			Presence of working and moving vessels	**Negligible**
			Minor leakage of contaminants into water	**Low**
			Emission of particulates and chemicals in water	**Low**
			Discharge of wastewater	**Low**
			Handling and resuspension of sediments	**Low**
		Operation	Emission of light	**Medium**
			Emission of underwater noise	**Low**
			Presence of working and moving vessels	**Negligible**
			Minor leakage of contaminants into water	**Low**
			Discharge of wastewater from the FPU	**Low**
			Discharge of produced water from the FPU	**Low**
			Emission of electromagnetic fields (EMFs)	**Low**
			Use of seawater	**Negligible**

For most offshore physical and biological components, the overall impact is assessed as Low.

As it can be noted, the 'physical oceanography' component is impacted only during the construction phase. Regarding this, the cumulative phenomenon is limited.

Other components are impacted during both phases (construction and operation). Some of these components, such as Benthic communities and Fishes, are expected to also have a positive impact. For these components the cumulative negative impact is partially compensated by the positive one.

Finally, for some of the components impacted during both phases, a more significant cumulative impact is expected for *Plankton* and *Pelagic habitats* considered in general due to:

- A medium/high impact value for *Plankton*, which is expected to be potentially impacted by 9 impact factors triggered by 4 Project actions during construction and operation phases, however the residual

impact value is assessed as low-medium, considered the effectiveness of the planned and suggested mitigation measures.

- Numerous impact factors that act simultaneously on pelagic components, such as *Plankton, Fishes and Marine mammals*.

Following this assessment, particular attention should be dedicated to mitigation measures for these components (such as the ones composing the Pelagic habitats), which present risks of negative cumulative impact phenomena within the Project itself. The mitigation measures identified for each of the abovementioned components, in fact, must be reinforced as much as possible, as explained in reference to Chapter 12 ESMP Framework (and in particular for the development of future management and action plans to be updated based on the monitoring to be implemented). In order to mitigate these cumulated impacts, a Biodiversity Management Plan will be prepared.

Social

Table 10-3: Overall Assessment for Social Components

Environmental/Social component	Phase	Impact factors	Overall assessment
Population and Demography	Construction	Population increases during construction	**Low**
	Operation	Benefit of the population during operation	**Low**
Economy and Employment	Construction	Demand for workforce	**High**
		Demand for goods, materials and services	
	Operation	Benefit to national economy	**Very High**
		Demand for workforce	**Low**
		Demand for goods, materials and services	**High**
Land Use patterns	Construction	Changes in land use	**Negligible**
Community Health and Safety	Construction	Dust emissions	**Negligible**
		Exhaust emission from vehicles and construction machinery	**Low**
		Emission of vessels	
		Increase and modification of traffic onshore	
		Emission of vibrations and noise	**Negligible**
		Immigration of workers and other people	
		Presence of security personnel	**Low**
	Operation	Exhaust emissions from vehicles	**Negligible**

Environmental/Social component	Phase	Impact factors	Overall assessment
		Exhaust emissions from vessels	
		Increase and modification of traffic onshore	
		Immigration of workers and other people	
		Presence of security personnel	**Low**
Ecosystem services-fishery	Construction	Minor leakage of contaminants into water	**Low**
		Handling of and resuspension of sediments	
		Emission of Underwater Noise	
		Emission of light	
		Presence of working and moving vessels	
		Emission of contaminants into marine water	
	Operation	Minor leakage of contaminants into water	**Low**
		Emission of underwater noise	
		Emission of electromagnetic fields (EMF)	
		Discharge of produced water	
		Discharge of wastewater	
		Presence of working and moving vessels	
Visual Aesthetics	Construction	Removal of soil	**Negligible**
		Emission of light	
	Operation	Presence of new offshore infrastructures	**Negligible**
		Emission of light	
Infrastructure, Utilities and Services	Construction	Increase of onshore traffic	**Low**
		Increase of offshore traffic	**Low**
		Demand for freshwater	**Medium**
		Demand for waste disposal services	**Negligible**

Environmental/Social component	Phase	Impact factors	Overall assessment
	Operation	Increase of onshore traffic	**Low**
		Increase of offshore traffic	
		Demand for freshwater	
		Demand for waste disposal services	**Negligible**
Gender, Vulnerable Groups, Human Rights	Construction	Impact on gender issues	**Low**
		Impact on the vulnerable groups	
		Human rights risks	
	Operation	Impact on gender issues	**Low**
		Impact on the vulnerable groups	
		Human rights risks	
Marine Archaeology	Construction	Handling and resuspension of sediments	**Negligible**
		Presence of the cofferdams	
		Introduction of new offshore infrastructures	

For most social components, the overall negative impact is assessed as Low to negligible.

As it can be noted, some components are only impacted during the construction or operation phase. Regarding these components, the cumulative phenomenon is limited. In case of benefit to national economy, impact is evaluated as very high positive. Other components are impacted during both phases (construction and operation). For these components the cumulative negative impact is partially compensated by the very high positive impact of benefit to national economy.

Finally, for some of the components impacted during both phases, a more significant cumulative positive impact is expected for economy and employment, and negative impact is expected for infrastructure and services. Other impact factors are in low or negligible level.

Particular attention should be dedicated to mitigation measures for these components which present risks of negative cumulative impact phenomena within the project itself. The mitigation measures identified for each of the abovementioned components, in fact, must be reinforced as much as possible, as explained in Chapter 12 Environmental and Social Management Framework (and in particular for the development of future management and action plans to be updated based on the monitoring to be implemented). Since management of cumulative impacts of the Project within itself requires addressing individual impact factors with a holistic approach, several management plans for these will be prepared, such as Livelihood Restoration Plan, Stakeholder Engagement Plan and several other management plans for social components.

Onshore Biological

Table 10-4: Overall assessment for onshore Biological Components

Environmental component	Phase	Impact factors	Overall assessment
Flora	Construction	Removal of soil	**Negligible**
		Emission of dust and particulate matter	
		Possible introduction of alien species	
	Operation	Emission of dust and particulate matter	**Negligible**
Freshwater fauna	Construction	Emission of dust and particulate matter	**Negligible**
		Emission of aerial noise and vibrations	
		Possible introduction of alien species	
		Discharge of wastewater	
		Changes in flow/circulation in natural water bodies	
		Minor leakage of contaminants into water	
		Emission of light	
		Increase and modification of traffic onshore	**Low**
	Operation	Discharge of wastewater	**Negligible**
		Emission of aerial noise and vibrations	
		Emission of light	

Environmental component	Phase	Impact factors	Overall assessment
		Increase and modification of traffic onshore	
Terrestrial and avian fauna	Construction	Removal of soil	**Negligible**
		Emission of aerial noise and vibrations	
		Emission of light	
		Minor leakage of contaminants into water	
		Possible introduction of alien species	
		Increase and modification of traffic onshore	**Low**
	Operation	Emission of aerial noise and vibrations	**Negligible**
		Emission of light	
		Discharge of wastewater	
		Increase and modification of traffic onshore	**Low**
		Presence of new infrastructures offshore	
		Emission of aerial heat (offshore)	
Habitats	Construction	Removal of soil	**Negligible**
		Emission of dust and particulate matter	
		Emission of aerial noise and vibrations	**Low**

Environmental component	Phase	Impact factors	Overall assessment
		Emission of light	**Negligible**
		Changes in flow/circulation in natural water bodies	
		Minor leakage of contaminants into water	
		Possible introduction of alien species	
	Operation	Discharge of wastewater	**Negligible**
		Increase and modification of traffic onshore	
		Emission of aerial noise and vibrations	**Low**
		Emission of light	
Legally protected areas and internationally protected areas	Construction	Emission of aerial noise and vibrations	**Low**
		Emission of dust and particulate matter	**Negligible**
		Possible introduction of alien species	
		Emission of light	
	Operation	Emission of aerial noise and vibrations	**Negligible**
		Emission of light	

For almost all of the onshore biological components the expected impacts are generally low to negligible.

The construction and operation phases are characterized by different project actions with mostly specific impact factors. In particular, the removal of soil is only impact factor related to the construction phase and together with

other impact factors such as, emission of aerial noise and vibration, and emission of dust and particulate matter could present a cumulative effect on different components. However, the generally medium to high efficiency of the mitigation measures reported in Chapter 7 are able to reduce the cumulative negative impacts.

Among the onshore biological components those in need of attention due to possible cumulative impacts within the project itself are:

- *Terrestrial and Avian Fauna*, which is expected to be potentially impacted by 6 impact factors triggered by 4 project actions during construction phase and only and 3 impact factors from 1 project action during operation phase;
- *Habitat*, which is expected to be potentially impacted by 4 impact factors triggered by 3 project actions during construction phase, and 2 impact factors from 1 project action during operation phase.

Following this assessment, particular attention should be dedicated to mitigation measures for these components which present risks of negative cumulative impact phenomena within the Project itself. The mitigation measures identified for each of the abovementioned components, in fact, must be reinforced as much as possible, as explained in reference to Chapter 12 ESMP Framework. In order to mitigate these cumulated impacts, a Biodiversity Management Plan will be prepared.

Onshore Physical

Table 10-5: Overall Assessment for Onshore Physical Components

Environmental/Social component	Phase	Impact factors	Overall assessment
Soil and subsoil	Overall Assessment for Onshore Physical Components Construction	Removal of soil	**Negligible**
		Minor leakage of contaminants into soil	
	Operation	Minor leakage of contaminants into soil	**Negligible**
Noise	Construction	Emission of noise	**Low**
Vibrations	Construction	Emission of vibrations	**Low**
Hydrology and surface water quality	Construction	Changes in flow/circulation in natural water bodies	**Negligible**
		Discharge of wastewater	
		Minor leakage of contaminants into water	
	Operation	Discharge of wastewater	**Negligible**
Hydrogeology and Groundwater Quality	Construction	Demand for freshwater	**Negligible**
		Discharge of wastewater	
		Minor leakage of contaminants into water	
	Operation	Demand for freshwater	**Negligible**

Environmental/Social component	Phase	Impact factors	Overall assessment
		Discharge of wastewater	
Air quality	Construction	Dust emissions	**Low**
		Exhaust emissions from vehicles and construction machinery	
	Operation	Emission of gaseous pollutants and/or greenhouse gases	**Negligible**

For all of the onshore physical components, the overall impact is assessed as Low to Negligible.

Particular attention should be dedicated to mitigation measures for onshore physical components especially mentioned in the SGFD phase-1 ESIA and this ESIA Report. The mitigation measures identified for each of the abovementioned components, in fact, must be reinforced as much as possible, as explained in respective chapters and in Chapter 11 Environmental and Social Management Framework (and in particular for the development of future management and action plans to be updated based on the monitoring to be implemented). Monitoring of the impacts, as described in respective chapters, followed by an adaptive management and monitoring approach is essential, i.e.:

a) mitigation measures and monitoring outcomes are evaluated after each monitoring campaign,

b) measures and monitoring approach is improved and revised as needed,

c) respective management plan(s) is (are) revised as required.

10.2 Cumulative Impacts with Other Projects in the Same Area

Cumulative impacts with other projects can result from the incremental impact generated by the sum of the impacts of the Project with those of other existing or planned projects on same areas or resources. The cumulative impacts (on onshore and offshore components) have been assessed taking into account spatial, temporal or thematic overlap with other projects or facilities in the AoI of the SGFD Phase 2. The **spatial** overlap has been defined as the overlap of a facility with the Area or Areas of Influence of the components of the Project. The **temporal** overlap has been defined as the concomitance between the facilities construction or operation phases with those of the Project. Lastly, the **thematic** overlap has been defined as the overlap due to the pressures exerted by different projects on the same components.

The projects that are at present under development, construction, operation and/or are currently planned for the near future in the region are listed in Table **10-6**.

Table 10-6: Projects potentially overlapping with SGFD Phase 2

Project name	Onshore/ Offshore	Commissioner	Short description	Planned for	Current status	Overlap[1]
IR:86017 Numbered II-A Group Limestone Quarry And Crushing-Screening Plant	Onshore	Kimtaş Kireç Sanayi ve Ticaret A.Ş.	The Limestone Quarry with a capacity of 950,000 tons/year and the Crushing-Screening Plant with a capacity of 902,500 tons/year will be operated by Kimtaş Limestone Industry and Trade Joint Stock Company. It is planned to conduct 2 core drillings before starting production activities.	Construction planned to start in 2017	Unknown condition	20 km away from the Project site – outside the AoI
ER 1054626 And ER 3251155 Numbered Limestone Quarry and Crushing and Screening Plant Capacity Increase	Onshore	Yilmaz Madencilik Tic. ve San. Ltd. Şti.	The Limestone Quarry and Crushing-Screening Facility are currently being operated in the region. Due to the increasing construction and infrastructure services in the region and export demands, it has been decided to increase the capacity of the Limestone Quarry and Crushing-Screening Facility.	Construction planned to start in 2022	Unknown condition	20 km away from the Project site – outside the AoI
Addition of ATY Facility (Fuel Derived from Waste Facility) to the Zonguldak Regular Landfill Area	Onshore	Zonguldak Special Administration and Municipalities Environment Infrastructure Basic Services	It is planned to establish a “Mechanical Separation Facility (including moisture removal and drying system)” in the facility. It is also planned to reduce the moisture content of the biodegradable wastes coming out of the mechanical separation facility and then evaluate them as fuel and offer them to the market. For this purpose, a “Waste	Planned to start in 2024	Planning	20 km away from the Project site -– outside the AoI

[1] AoI refer to AoI defined for SGFD Project Phase 2 in this ESIA.

Project name	Onshore/ Offshore	Commissioner	Short description	Planned for	Current status	Overlap[1]
		Union (ZONÇEB)	Derived Fuel (RDF) Facility" with a capacity of 117.04 tons/day has been planned.			
Non-Hazardous Waste Recovery Facility	Onshore	Beyza Çelik Recycling Industry and Trade Inc.	The facility processes and recycles non-hazardous waste to recover valuable resources and reduce environmental impact. It sorts and separates incoming waste materials, processes recyclables through techniques like shredding and grinding, and extracts reusable raw materials.	Planned to start in 2024	Planning	26 km away from the Project site – outside the AoI
TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells	Offshore	TP-OTC	Under Phase 3, the natural gas whose production will continue in Sakarya Gas Field will be connected to the subsea production system with up to 44 additional wells under Phase 3, reaching up to a total of 67 producing wells with Phase 1, Phase 2 and 3 combined.	Planned to start in 2026	Planning	This project is expected to overlap **spatially** with the Offshore Physical and Biological AoI and **temporally** with the SGFD Phase 2 operation phase.
TP-OTC SGFD Phase 3 – Offshore Pipeline	Offshore	TP-OTC	Phase 3 will have a total processing capacity of 22 million standard m^3 and new export pipeline will be constructed.	Construction planned to start in 2026	Planning	The Phase 3 – Offshore Pipeline is expected to overlap **spatially** with the Offshore Physical and Biological AoI (at least in the shallow coastal area), onshore physical and

Project name	Onshore/ Offshore	Commissioner	Short description	Planned for	Current status	Overlap[1]
						biological AoI and Social AoI and **temporally** with the SGFD Phase 2 operation phase.
TP-OTC SGFD Phase 3 – FPU	Offshore	TP-OTC	TP-OTC plans to continue natural gas production in the Sakarya Gas Field with new FPU in Phase 3.	Construction planned to start in 2026	Planning	A new FPU for Phase 3, is expected to overlap **spatially** with the offshore physical, and biological and social AoI and **temporally** with the operation phase of SGFD Phase 2.
Filyos Port / Industrial Zone Connections - Railroad	Onshore	Ministry of Transportation, General Directorate of Infrastructure Investments.	The proposed Railway and Logistic Improvement Project aimed at constructing new railway lines to contribute overall economy and industrial development in the Filyos region. The railway line under the proposed project, which is planned to be built as part of the overall regional economic development program, consists of four main components. These components will be Gökçeler – Sanayi Line, Dock Connection, Ferry Line, Port Link. Gökçeler – Sanayi Line will be the longest line to be constructed within the scope of the project. Dock, Ferry and Port Line will provide connection to Filyos Port, where construction activities are continuing.	Tentatively planned to start in 2023 as stated in the ESIA (Çınar, 2021)	Unknown condition	The Minister of Transport and Infrastructure of the Republic of Türkiye stated that the Railroad Project has been suspended due to the declaration of the SGFD site as a special security zone and the strategic significance of the area where operations are conducted. However, condition of the Project is still unknown. If Filyos Port / Industrial Zone Connections - Railroad Project is realized, it is expected to overlap **spatially** with the Offshore

Project name	Onshore/ Offshore	Commissioner	Short description	Planned for	Current status	Overlap[1]
			Two alternatives are evaluated for the Port Connection and the alternative land preparation and construction activities to be selected will be decided by GDII before it starts.			Physical and Biological AoI (at least in the shallow coastal area), onshore physical and biological AoI and Social AoI and **temporally** with the SGFD Phase 2 operation phase.
Filyos Port Master Plan	Onshore	TP-OTC	TP-OTC Filyos Port Management is developing a Master Plan that may include superstructure installations, potential new roads and infrastructure within the framework of the 2030 objectives.	Tentatively planned to start in 2025	Planning	Filyos Port Master Plan is expected to overlap **spatially** with the Offshore Physical and Biological AoI (at least in the shallow coastal area), onshore physical and biological AoI and Social AoI and **temporally** with the SGFD Phase 2 operation phase.
East Quay Operation Management Center (OMC)	Onshore	TP-OTC	TP-OTC Coastal Logistics Center Management plans to build a port back service area to provide storage, transportation, logistics and other services required for port operations.	Construction started in 2024	In construction period	East Quay Process Field is expected to overlap **spatially** with the Offshore Physical and Biological AoI (at least in the shallow coastal area), onshore physical and biological AoI and Social AoI and **temporally** with the SGFD Phase 2 construction phase.

Project name	Onshore/ Offshore	Commissioner	Short description	Planned for	Current status	Overlap[1]
Port Hinterland Area	Onshore	TP-OTC	TP-OTC Filyos Port Management plans to build a port back service area to accommodate the needs of passengers, including food and beverage services, power supply, communication facilities, and rest areas. Additionally, the area will feature offices dedicated to handling cargo operations and passenger-related processes within the port.	Construction started in 2024	In construction period	Port Hinterland Area is expected to overlap **spatially** with the Offshore Physical and Biological AoI (at least in the shallow coastal area), onshore physical and biological AoI and Social AoI and **temporally** with the SGFD Phase 2 operation phase.
Filyos Integrated Fertilizer Production Facility Project	Onshore	Tosyali Gübre Sanayİ A.Ş.	Filyos Integrated Fertilizer Production Facility is planned to be built in Zonguldak province, Çaycuma district, Filyos Industrial Zone by Tosyalı Fertilizer Production A.Ş. Within the scope of the project, ammonia production facility, urea production facility, calcium ammonium nitrate production facility, nitric acid production facility, sulfuric acid production facility, phosphoric acid production facility, ammonium sulphate production facility, potassium nitrate production facility and dap/npk (diammonium phosphate / nitrogen-phosphorus-potassium) composite production facility are planned to be established. The project is planned to produce a minimum of 1,855,000 tons/year and a maximum of 2,020,000 tons/year of fertilizer.	Commissioning is targeted for 2025 according to the National EIA (Armada, 2022)	Unknown condition	Project is expected to overlap **spatiall**y with the onshore physical, biological and social AoI as it will occupy almost the entire industrial area, west of the Project. Since a project with a "Positive Environmental Impact Assessment (EIA)" decision must begin within five years to remain valid, unless a valid force majeure applies, and there are no details about the project's starting date. It is expected to overlap with the operation phase of SGFD Phase 2.

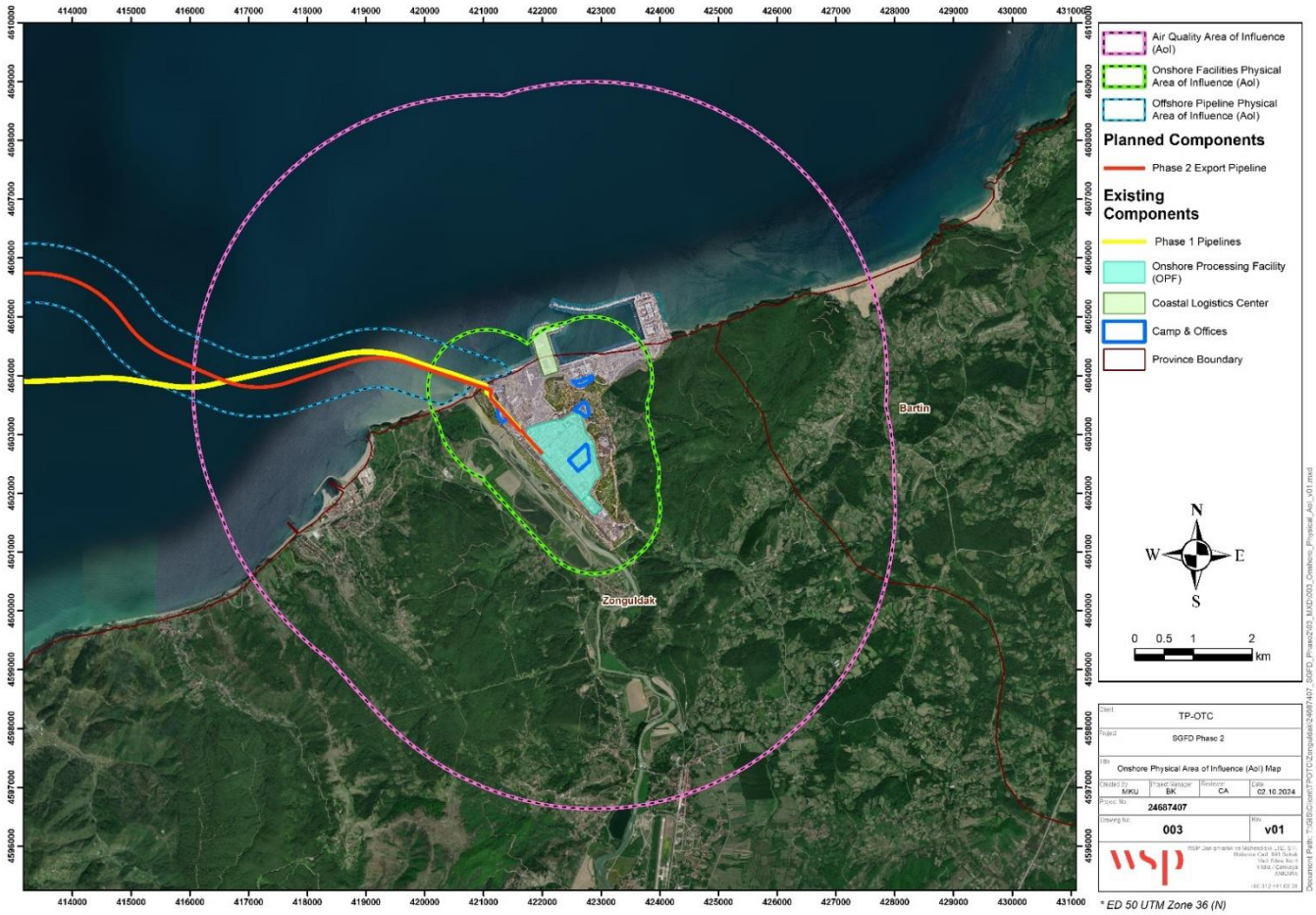

Figure 10-1: Physical AoI and facilities spatially overlapping with the Sakarya Gas Field Development Project.

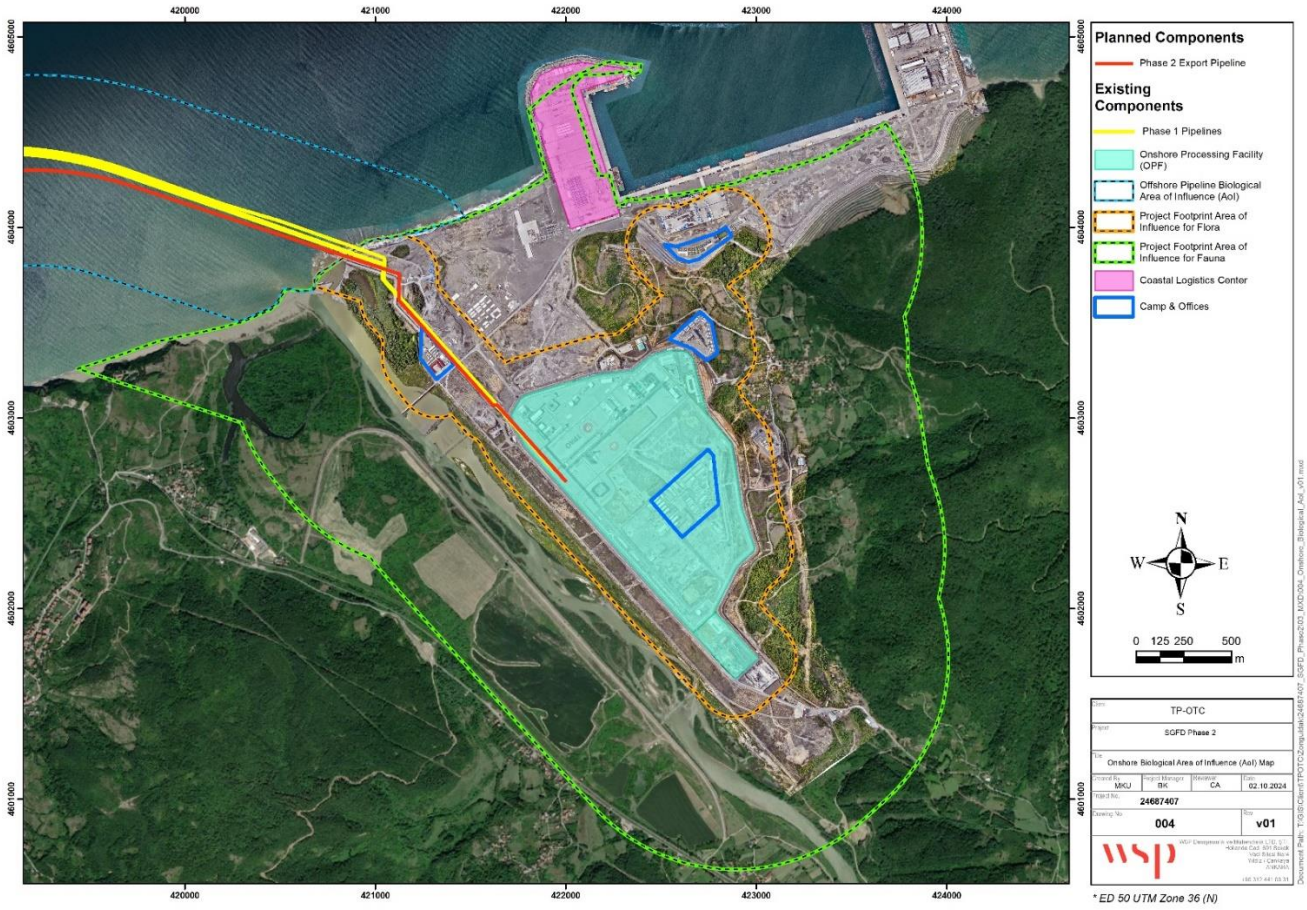

Figure 10-2: Biological AoI and facilities spatially overlapping with the Sakarya Gas Field Development Project

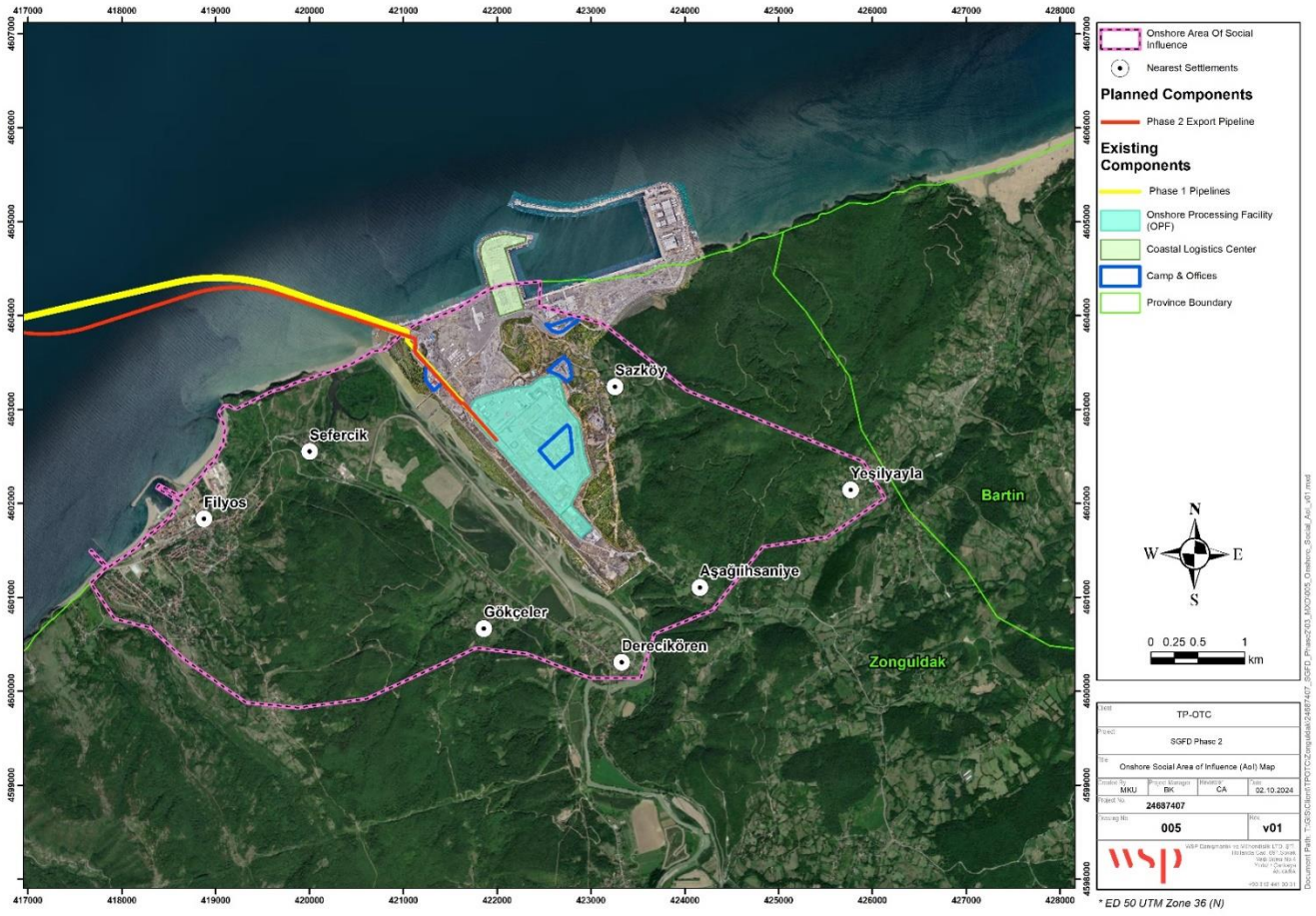

Figure 10-3: Social Onshore AoI and facilities spatially overlapping with the Sakarya Gas Field Development Project

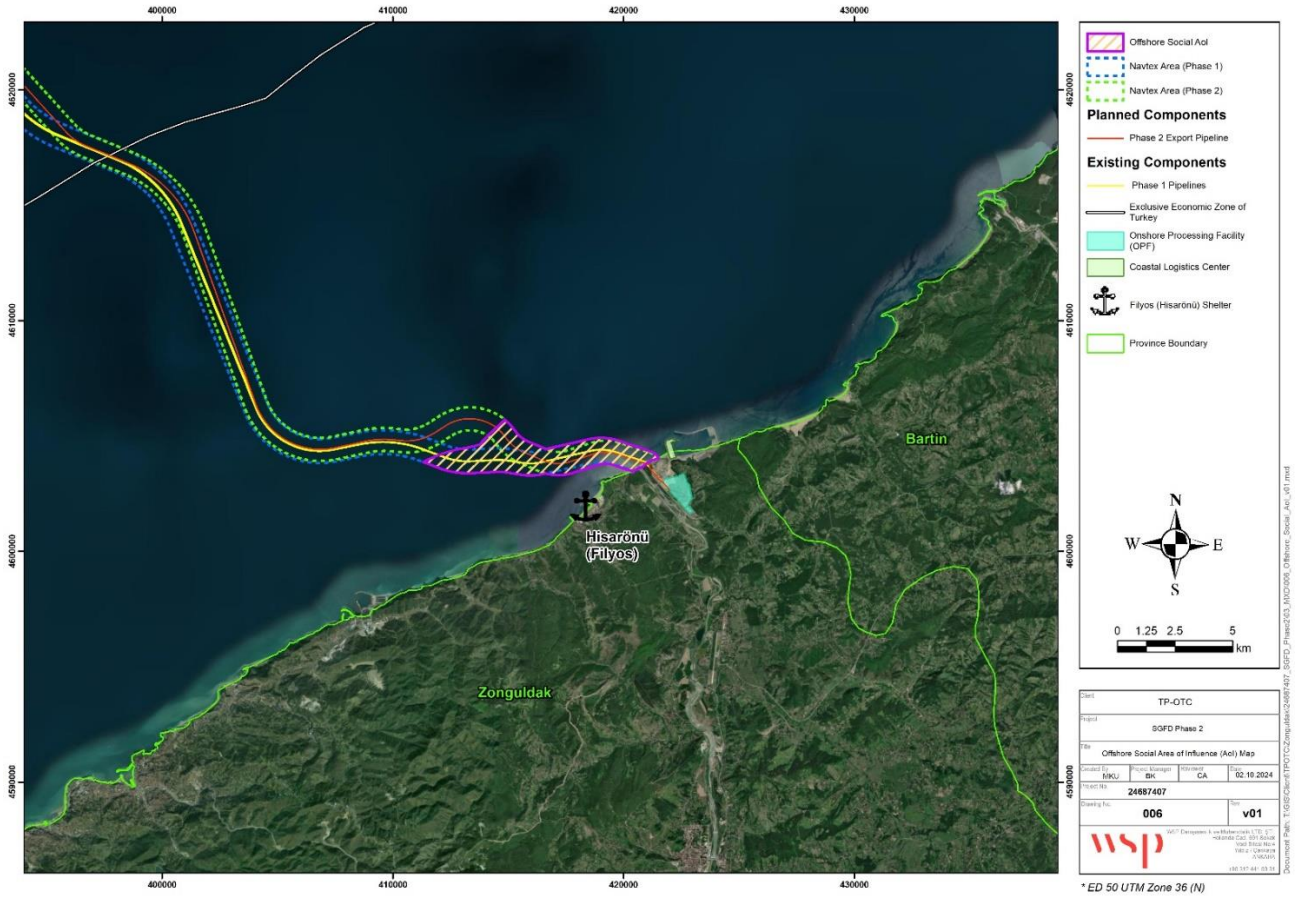

Figure 10-4: Social Offshore AoI and facilities spatially overlapping with the Sakarya Gas Field Development Project

The projects that overlap spatially and temporally with several SGFD Phase 2 components, cumulative impacts are expected for Onshore, Offshore and social components as described in Table **10-7**. As a precautionary measure, a temporal overlap has been hypothesized also for the projects whose start-up period is not exactly known.

10.3 Cumulative Impact Assessment

Considering the information available and the level of detail accessible for such information, the cumulative impact assessment is focused on the impact factors (or impact factor phenomena) on which is possible to elaborate considerations, namely:

a) Emissions to atmosphere (air, noise)

b) Water consumption with consequent intrusion of the saline wedge and discharges

c) Changes in flow/circulation in natural water bodies

d) Riverine and sea water contamination

e) Habitat fragmentation

f) Increase and modification of traffic onshore

g) Presence of new offshore infrastructures

h) Immigration of workers and other people

i) Demand for infrastructure services

Such elements are assessed here below.

Table 10-7: Cumulative Impacts with other Projects

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
• Air quality • Noise • Health issues and facilities • Flora • Freshwater fauna • Pelagic components	Emissions to atmosphere	A ***spatial*** and ***thematic*** overlap is expected between SGFD Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • TP-OTC SGFD Phase 3 – FPU – Additional Units. • the Filyos Integrated Fertilizer Production Facility Project • Port Hinterland Area • East Quay Operation Management Center (OMC) • Filyos Port Master Plan • Filyos Port / Industrial Zone Connections - Railroad A ***temporal*** overlap is also expected between the construction phase of the SGFD Phase 2 and: • Port Hinterland Area construction phase • East Quay Operation Management Center (OMC) construction phase • Filyos Port Master Plan construction phase AND A ***temporal*** overlap is also expected between the operation phase of the SGFD Phase 2 and:	The possible spatial and temporal overlap between the projects construction and operation phases may aggravate some of the impacts identified on the IA. During the construction phase of the Project, there are existing construction activities at the port area. An overlap of the construction activities and associated emissions (air and noise) is not anticipated to increase the intensity of impact regarding the distance between the operations but will broaden the area of influence (AoI) and extend the duration of impact. During the operation phase of the Project (SGFD Phase-2) no air emission other than the ones from connection equipment and increase movements in the SGFD site are not expected. Since the impact of these emissions is low in nature it is not anticipated an increase in the current impact of the Phase-1. The operation phase emissions will overlap with the emissions of other projects; hence the intensity and spatial coverage area of impact may increase. The cumulation in the emission of pollutants due to other Projects can overall worsen the air quality in the area which could be dominated by the emissions from the fertilizer production project in the onshore part, with consequences on the health conditions of local communities. As mentioned in the baseline, the Project's AoI is not densely populated, and the potential receptors are limited. Considering that these projects are realized, the Project's (i.e. Phase-2) additional impacts to these components in terms of cumulative perspective on onshore will be at negligible level. • Dust emissions can impact vegetation directly by covering leaf surface and indirectly through impacts on soil composition and structure • Dust deposition can also produce negative effects on vegetation, in case of freshwater environments this could cause a loss of riparian vegetation and important feeding and nesting habitats

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
		• the TP-OTC SGFD Phase 3 – FPU construction and operation phases • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • TP-OTC SGFD Phase 3 – offshore pipeline laying and maintenance • the Filyos Integrated Fertilizer Production Facility Project construction and operation phases • Port Hinterland Area operation phase • East Quay Operation Management Center (OMC) operation phase • Filyos Port Master Plan operation phase • Filyos Port / Industrial Zone Connections – Railroad construction and operation phases	• There could be effects to fauna species through inhalation or ingestion of soil particles, especially for amphibians due to their characteristic cutaneous respiration • The increase of air pollutants in the atmosphere may affect human health • Noise impacts may cause grievances which would need to be coordinated and addressed in coordination with other projects, utilizing use of temporary barriers and limiting work to daytime hours. • Underwater noise generated through drilling activities and operating vessels could also affect pelagic components, such as fishes and marine mammals. If emission of underwater noise persists for extended periods of time, it may change the acoustic environment to which a fish is adapted, with consequences in fish behaviour. This impact factor is however common to any vessels navigating in the AoI and its proximity, which are areas already characterized by an intense maritime traffic. The fish fauna of the area is therefore considered as possibly "habituated" to the noise of the vessel propellers. Regarding marine mammals, low-frequency noise originated by working vessel propellers could potentially interfere with acoustic signaling. However, such low frequency activities may potentially affect Low Frequency (LF) cetaceans (i.e., baleen whales) which are completely absent in the Black Sea. Although the emission of dust and particulate matter may influence flora and freshwater fauna, mitigation measures should enable negligible residual impacts to be achieved on these components. Air quality monitoring periodically during construction and operation phase will be required to ensure compliance with the applicable standards and to ensure a healthy environment for flora, fauna and human beings. Regarding underwater noise, the compliance of the mitigation measure with relevant standards (MARPOL) and the planning of activities when marine mammals are less active should be sufficient to ensure a low impact value.
• Hydrology and surface water quality	Discharge of wastewater, unintentional leakage of contaminants into the	A ***spatial*** and ***thematic*** overlap is expected between SGFD Phase 2 and:	Riverine and seawater contamination is expected to be mainly generated by the discharge of wastewater during the construction phase and unintentional leakage of contaminants into the freshwater body (and consequently on sea

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
• Freshwater aquatic biodiversity • Birds • Terrestrial fauna • Marine habitats (*benthic and pelagic communities*) • Seawater quality • Sediments	freshwater body (and consequently on sea waters through the mouth of the river) or directly in the marine environment (Riverine and sea water contamination) Use of seawater Discharge of produced water	• TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • the TP-OTC SGFD Phase 3 – FPU • the TP-OTC SGFD Phase 3 – Offshore Pipeline. • the Filyos Integrated Fertilizer Production Facility Project • Port Hinterland Area • East Quay Operation Management Center (OMC) • Filyos Port Master Plan • Filyos Port / Industrial Zone Connections - Railroad A **temporal** overlap is also expected between the construction phase of the SGFD Phase 2 and: • Port Hinterland Area construction phase • East Quay Operation Management Center (OMC) construction phase • Filyos Port Master Plan construction phase AND A ***temporal*** overlap is also expected between the operation phase of the Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • TP-OTC SGFD Phase 3 – FPU construction and operation phases	waters through the mouth of the river) or directly in the marine environment during FPU operations in operation phase, pipeline laying, and hydrotesting during the construction phase of the Project. The possible overlap between the projects construction and operation phases could worsen the potential impacts generated by riverine and seawater contamination on physical and biological components, including: • adverse effect on freshwater aquatic fauna due to chemical contamination depending on the contaminant and its concentration • negative effects on seawater quality due to nutrients contained in wastewaters (such as nitrogen and phosphorus derivates and other chemicals), which may cause eutrophication phenomena leading to uncontrolled vegetal blooms (phytoplankton), including possibly toxic species • seawater contamination, which could occur due to minor leakage of contaminants and emission of particulates and chemicals into water, subsequently impacting marine components such as plankton, fishes and marine mammals • a resuspension of the sediments due to the pipeline laying operations, which in turn can cause a reintroduction in the marine environment of the contaminants precipitated in the upper layers (when present) • changes in the plankton community composition that subsequently may be reflected on the whole marine biodiversity • benthic algal blooms, also triggered by eutrophication phenomena, that may alter the benthic community composition and potentially resulting in mucilage events • detrimental direct or indirect effects on birds that may use that habitat for feeding, drinking or resting • displacement of birds from the area due to the contamination and the consequent potential reduction of prey. The use of seawater for cooling in the FPU (both for Phase 2 and Phase 3) could cause issues with the intake of organisms in the water column (mostly

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
		• TP-OTC SGFD Phase 3 – Offshore Pipeline laying construction and operation phases • the Filyos Integrated Fertilizer Production Facility Project construction and operation • Port Hinterland Area operation phase • East Quay Operation Management Center (OMC) operation phase • Filyos Port Master Plan operation phase • Filyos Port / Industrial Zone Connections – Railroad construction and operation phases	plankton but also fish) and the discharge of water at 35C° into the Black Sea. The proposed intake and discharge of cooling seawater at a depth well below the limit of distribution of plankton, and other living organisms, in the water column (over 200 m) would theoretically reduce any impact (including the cumulative) to a negligible level. The mitigation measures identified, such as the compliance of wastewater effluents to national and international standards, the reduced need and careful selection of chemicals requested for pre-commissioning activities (such as pipeline hydrotesting) and the effluent dispersion modelling to be performed to design the discharge point (e.g., location, need for diffusers etc.) should make the impacts manageable. In , the numerous marine and freshwater monitoring activities proposed in the ESIA should help to control and manage the cumulative impact and, if necessary, intervene with appropriate additional measures.
• Freshwater fauna • Terrestrial fauna • Birds • Air quality • Infrastructure and services • Health issues and facilities	Increase and modification of traffic Onshore	A ***spatial*** and ***thematic*** overlap is expected between SGFD Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • the TP-OTC SGFD Phase 3 – FPU • the TP-OTC SGFD Phase 3 – Offshore Pipeline. • the Filyos Integrated Fertilizer Production Facility Project • Port Hinterland Area • East Quay Operation Management Center (OMC) • Filyos Port Master Plan	An increase in traffic during the construction phase of the Project is expected due to transfer of the personnel and potential resources (equipment, chemical, etc.) to the site. A minor increase in vehicular traffic during the Project's operation phase regarding the number of personnel in onshore part and offshore part who will temporarily accommodate in FPU is expected along the road network. The possible overlap between construction and operation phases may increase some of the impacts identified on the biological and social components in the Onshore IA, for instance: • the increase of traffic could cause a higher risk of accidental collisions with wildlife, especially in areas crossing or in proximity of natural habitats • stagnant water that forms at roadside or within the construction area might attract Amphibians, increasing the risk of collisions with traffic

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
		• Filyos Port / Industrial Zone Connections- Railroad A **temporal** overlap is also expected between the construction phase of the SGFD Phase 2 and: • Port Hinterland Area construction phase • East Quay Operation Management Center (OMC) construction phase • Filyos Port Master Plan construction phase AND A ***temporal*** overlap is also expected between the operation phase of the Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • TP-OTC SGFD Phase 3 – FPU construction and operation phases • TP-OTC SGFD Phase 3 – Offshore Pipeline laying construction and operation phases • the Filyos Integrated Fertilizer Production Facility Project construction and operation • Port Hinterland Area operation phase • East Quay Operation Management Center (OMC) operation phase • Filyos Port Master Plan operation phase Filyos Port / Industrial Zone Connections – Railroad construction and operation phases	• local wildlife population could modify their behaviour and distribution due to the increase in human activity • the increase of traffic can lead to congestions on the existing roads, increased noise and pollutions and damages to the road conditions, especially if there is a significant increase of heavy vehicles. Additional traffic can also lead to an increase of accidents, with effects on the health and safety of local communities living in proximity to the roads or using them in their day to day life. The measures defined to minimize the biological and social impacts, such as setting speed limits and the design of elements aimed at modifying the behaviour of animals (e.g., crossing structures, dry ledges, fencing, right-of way jump outs, etc.), the introduction of road safety measures should be sufficient to minimize the impacts. In case of fauna, for example, despite medium to high impacts, residual values are Low given the high effectiveness of mitigation measures. Also, from a human health and safety perspective mitigation measures can be highly effective in reducing impacts.

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
• Population and demography • Economy and employment	Immigration of workers and other people	A ***spatial*** and ***thematic*** overlap is expected between SGFD Phase 2 and: • the TP-OTC SGFD Phase 3 • Port Hinterland Area • East Quay Operation Management Center (OMC) • Filyos Port Master Plan • Filyos Port / Industrial Zone Connections A **temporal** overlap is also expected between the construction phase of the SGFD Phase 2 and: • Port Hinterland Area construction phase • East Quay Operation Management Center (OMC) construction phase • Filyos Port Master Plan construction phase AND A ***temporal*** overlap is also expected between the operation phase of the Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells • TP-OTC SGFD Phase 3 – FPU construction and operation phases • TP-OTC SGFD Phase 3 – Offshore Pipeline laying construction and operation phases • the Filyos Integrated Fertilizer Production Facility Project construction and operation	The presence of other projects in the Project Area, overlapping spatially and temporally with the TP-OTC Project can lead to an increase in the demand of workers, both temporary for construction activities, and permanent for the operation phase. The increase of workers can result in an overall increase of the population in the AoI, which is currently scarcely populated and consists mainly of small villages. The arrival in the area of workers can lead to tensions and conflicts with the local population, potential increase of communicable diseases and additional pressure on the local infrastructure networks. Specific measures have to be implemented, particularly regarding the accommodation of workers, and they can be considered generally effective to reduce the overall impacts towards the local communities. The temporal overlap between projects and hence arrival in the area of workers has to be carefully managed through agreements between project proponents and engagement of local authorities. The employment opportunities generated by the different projects, especially of permanent type during the operation phase, can lead to overall benefits to the local economy, especially considering that the area has seen a decrease of the population, due to emigration of persons in search of better employment opportunities. Measures have been defined to maximize positive impacts and ensure that local communities can benefits of the opportunities generated by the projects. It will be particularly important that the local population is provided through training with the skills required by the projects, to maximize the use of local workforce and reduce the need to employ skilled workers from other areas. The development of the TP-OTC Project and of other projects in the area can therefore represent an important opportunity for economic development in the Project Area.

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
		• Port Hinterland Area operation phase • East Quay Operation Management Center (OMC) operation phase • Filyos Port Master Plan operation phase • Filyos Port / Industrial Zone Connections – Railroad construction and operation phases	
• Infrastructure and services	Demand for infrastructure services	A ***spatial*** and ***thematic*** overlap is expected between SGFD Phase 2 and: • the TP-OTC SGFD Phase 3 • Port Hinterland Area • East Quay Operation Management Center (OMC) • Filyos Port Master Plan Filyos Port / Industrial Zone Connections A **temporal** overlap is also expected between the construction phase of the SGFD Phase 2 and: • Port Hinterland Area construction phase • East Quay Operation Management Center (OMC) construction phase • Filyos Port Master Plan construction phase AND A ***temporal*** overlap is also expected between the operation phase of the Phase 2 and: • TP-OTC SGFD Phase 3 – Drilling – testing – development of Offshore wells	The Projects that are expected to be developed in the Project Area will all require infrastructure services such as water and waste disposal services. This cumulation in the need of these services can generate increased pressure and difficulties in being able to provide them from the Municipalities or utility companies. The current level of these services has been identified in the baseline to be adequate, but in some cases some critical issues have been highlighted by representatives of local communities. The scale of the projects planned in the area means that the current infrastructures may not be able to fully respond for example to the demand of water. It is therefore important that the projects plan in advance their infrastructure needs and identify appropriate sources for their procurement, in agreement with local authorities and local utility companies. If this process is well managed it is expected that the impacts generated by the projects should be manageable. In addition, it is possible that due to the needs of the projects, some of the infrastructure networks are improved (e.g. the water distribution network) and this can become of benefit in general for the local communities.

Environmental/ Social component	Impact factors	Cumulative type (temporal, spatial, thematic)	Impact definition and mitigation measures
		• TP-OTC SGFD Phase 3 – FPU construction and operation phases • TP-OTC SGFD Phase 3 – Offshore Pipeline laying construction and operation phases • the Filyos Integrated Fertilizer Production Facility Project construction and operation • Port Hinterland Area operation phase • East Quay Operation Management Center (OMC) operation phase • Filyos Port Master Plan operation phase Filyos Port / Industrial Zone Connections – Railroad construction and operation phases	

The spatial and/or temporal overlap between different Projects is likely to generate an accumulation of impacts on the different physical, biological and social components. Although the Projects specifics are not always known, some considerations can be made:

j) **Emissions** are expected to be mainly generated by the emission of pollutants together with dust and particulate matter, and noise emissions impacting mainly social, physical and biological onshore components. Regarding the biological components, such as *Flora* and *Freshwater fauna*, the mitigation measures should allow the achievement of Negligible residual impacts. Cumulative impacts are anyway expected given the spatial and temporal overlap of the Project with other facilities. For all the projects overlapping, specifically the fertilizer production project emissions in atmosphere via the release of dust and particulate matter is hypothesized during construction phase. It is conceivable that pollutants will be mostly emitted during the projects construction phase and operation of the fertilizer production facility regarding the Phase-3 production will be at the FPU-offshore. Regarding the TP-OTC SGFD Phase 3, since the nature of the operations to be carried out is likely to be similar to the current Project, it is possible to hypothesized that emissions in atmosphere are likely to be proportional to the expansions that will be implemented for Phase 3 construction. It should, however, be considered that after Phase 3, the emissions must be within the standard limits. Regarding underwater noise, a potential overlapping could be hypothesized between TP-OTC SGFD Phase 3 construction stage, due to the drilling, testing and development of the 44 additional offshore wells and the monitoring and maintenance of the offshore infrastructures for the operations of Project Phase 2. These activities are expected to generate contained impacts due to the discontinuous and temporary nature of these operations. Concerning the noise generated by drilling activities, although a greater impact on physical and biological components could be hypothesized, the depth at which the works will be carried out (2200 m) and the fact that in the Black Sea most organisms are mainly found in the first 100 meters of the water column, it is conceivable that impacts will be negligible.

k) **Water consumption** is expected to affect several physical and biological components. The cumulative impact will possibly depend partially on the usage of groundwater resource and partially on the concomitance with which such a drawdown in groundwater will be performed at the construction phase of the Phase-2. Regarding the Project, water will be discharged from wells, therefore potentially impacting groundwater in terms of quality and quantity as elaborated in the Hydrogeology and Groundwater Quality and section. The Resource Efficiency Management Plan would consider this cumulative impact on water resources. If needed, the hydrogeological groundwater flow model would be revised, followed by developing additional mitigation measures or even water reuse options. Specifically, in the case of the SGFD Phase 2 the mitigation measures implemented ensure low residual impact and a Negligible one for the freshwater fauna.

l) **Riverine and seawater contamination** generated by the discharge of wastewater and unintentional leakage of contaminants into water bodies is, among all the impact factors, the one that can act on more components. Although wastewater will be treated to satisfy national and international limits before being poured back into the river, high volumes of treated wastewater could in time still contribute to the eutrophication of the freshwater environment, causing a general avoidance of the area from aquatic species and a potential loss of biodiversity. Moreover, leakages of contaminants that could occur due to accidental spills of hazardous materials or wastewaters from areas in proximity of freshwater bodies could reach the water through leaching, potentially aggravating the expected impacts. Regarding the Project, this impact factor is predicted to be infrequent and of a low intensity, as there are no construction activities directly in freshwater habitats. Considering the pressures applied on the river by the different projects,

additional mitigation measures may be taken to ensure a high level of protection of the components involved, including marine waters. Depending on the chemical typologies and quantities, a reduction of the photosynthetic ability of the phytoplankton may also be observed, as well as phenomena of acute toxicity and/or in the zooplankton with cascading effects on the whole marine biodiversity. Natural resources that are linked to plankton (fishes, cetaceans and seabirds) may in fact reduce their presence in the area because their food disappearance. Furthermore, the presence of the Filyos Integrated Fertilizer Production Facility Project could, in time, increase the levels of nutrients in the river and coastal waters that could eventually lead to occasional seasonal algal blooms and on the long period even eutrophication. The river, estuarine and coastal environments could suffer from accidental or chronic releases of even small amounts of organic and chemical substances form the projects located along Filyos River and, therefore, particular care should be taken in the detection of such events. To a small extent, seawater contamination can also be caused by the pipeline laying operations, considering that there is a partial overlapping of AoIs between the two pipelines (i.e., Phase 1, Phase 2, and Phase 3), especially in their last sections leading to the landfall area. Here the cofferdams installation of Phase 2 could have an impact on the shallow marine coastal area although sediment analysis did not report any abnormal concentration of contaminants and therefore a resuspension of contaminated sediments is unlikely to have an impact. The same can be said about the leakage of small amounts of contaminants caused by the movement of vessels during construction operations. Given the effects generated by riverine and seawater contamination and the possibility that these accumulate, it may be needed to implement additional measures. **Wells installed before Phase 2** may be subject to some minor accidental leakages during operation which are expected to be immediately detected by the monitoring system. The installation of the additional wells in Phase 3 could also produce releases of sediments and groundwater from wells drilling activities. Furthermore, a field investigation for a detailed baseline study (including pelagic and benthic environments) will be carried out as part of the Phase 3 ESIA, providing information on possible impacts and receptors in the area, and informing on possible cumulative impacts requiring additional mitigation measures.

m) **Habitat loss and fragmentation** is expected to be predominantly generated through vegetation clearing and the presence of new Onshore pipeline and to essentially impact the Onshore biological components, such as *Birds, Terrestrial fauna* and *Freshwater fauna.* In the Sakarya Gas Field Development Project the residual impact is expected to be Negligible, since the removal of vegetation will interest a minor part of the Project Area and the mitigation measures proposed are expected to offer a substantial recovery. It is important to note that since there is no plant soil, a loss is not expected under Phase 2. Particular attention must be paid to this impact factor, possibly carrying out additional measures in the event of a particularly significant concomitance of the projects and so as to preserve, where possible, habitats integrity. it should be noted that, while Phase 2 is not expected to directly cause habitat loss or fragmentation the landfall area, shared with Phase 1, is supposed to be undergoing restoration and its success should be included in the scope of this assessment. In case of reduced or slowed restoration of the landfall area (especially grey dune areas) further mitigation measures should be included in the adaptive management process of this ESIA to allow for reduction of cumulative impacts on natural habitats.

n) Increase and modification of traffic offshore is expected along the offshore. FPU and PSVs will generate traffic offshore; this will negatively impact fishermen.

o) **Increase and modification of traffic onshore** is expected along the road network during the Project construction phase, posing a threat to wildlife fauna (namely freshwater fauna, terrestrial fauna and birds) due to a high risk of accidental collisions, to health issues and facilities, due to the emission of noise and pollutants, and the increased risk of traffic accidents and also to air quality. For the biological components,

although the impact value is between medium and high, the mitigation measures implemented ensure the residual impact to be overall low. An increase in road traffic is expected also for other projects, both during the construction and operation phase. It is hypothesized that risks of collisions with wildlife fauna will increase proportionally to the higher traffic volume involved in the construction phase of the Project, however, no information is currently available on the number of vehicles that are going to be used for such operations. The increase of traffic can potentially create interferences with current traffic conditions, including congestions and increased time necessary to travel along the road. This can be particularly relevant in villages or in crossroads where traffic is already significant. The additional traffic can also worsen the conditions of the roads, especially if they are already not in a very good state. A Traffic Management Plan was prepared and in force, to ensure the application of measures that can reduce impacts generated by the additional traffic due to the Project. Measures will include liaising with local authorities to identify and agree on specific solutions, that can include avoiding traffic at certain hours or using alternative routes for specific vehicles.

p) **Immigration of workers and other people** will occur due to the SGFD and other projects planned in the area. The increase of workers can result in an overall increase of the population in the AoI, which is currently scarcely populated and consists mainly of small villages. The arrival in the area of workers can lead to tensions and conflicts with the local population, potential increase of communicable diseases and additional pressure on the local infrastructure networks. Specific measures have to be implemented, particularly regarding the accommodation of workers, and they can be considered generally effective to reduce the overall impacts towards the local communities.

q) **Demand for infrastructure services** will also be generated by other projects to be developed in the Project Area. The cumulative need for these services may increase pressure on the Municipalities or utility companies, potentially leading to difficulties in their provision. While the current level of these services has been identified in the baseline as adequate, representatives of local communities have highlighted some critical issues. However, the current resources are sufficiently capable of meeting the changing demands within the scope of Phase 2, and careful planning will be implemented to minimize disruptions as much as possible.

The expected contributing facilities to any cumulative impact on physical and biological components within the Project's AoI are limited to those from the TP-OTC SGFD Phase 2 – FPU – Export pipeline. The overall evaluation of such impacts showed a low to negligible contribution (residual impact) of the Project for all the identified components. In the eventuality of additional residual or direct impacts from the before mentioned projects the only elements requiring particular attention have been indicated as those regarding atmospheric emissions, riverine and seawater contamination, and the increase and modifications of traffic. The presence of such potentially criticalities, also affecting sensible components (i.e., habitats, birds, freshwater fauna, etc.), highlights the necessity to properly implement the monitoring measures proposed in this document and to promptly intervene to assess and, when needed, further mitigate in case any contamination or negative interaction with traffic is detected.