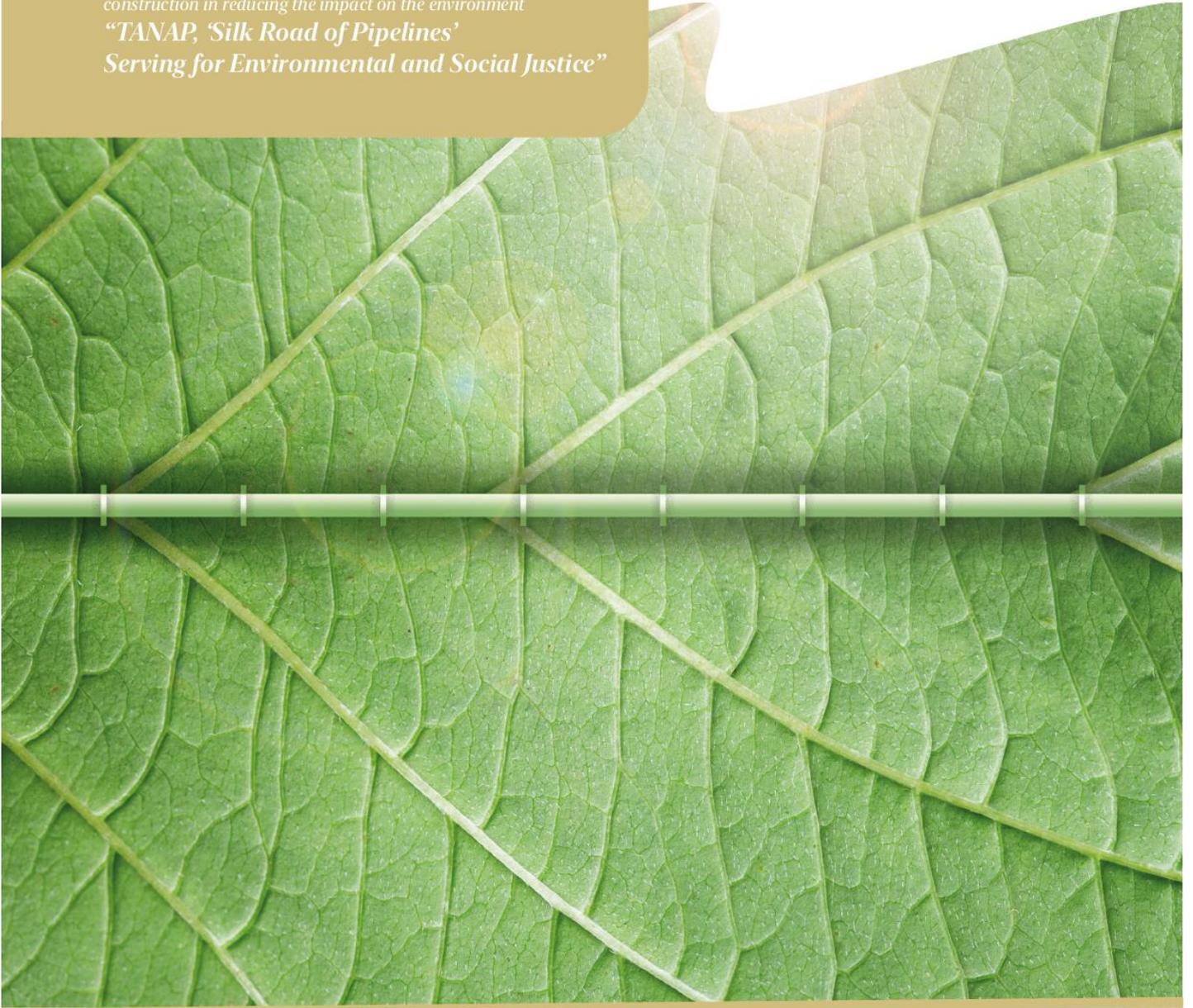




IPLOCA Environmental Award

*Recognizing an exemplary achievement in pipeline construction in reducing the impact on the environment
"TANAP, 'Silk Road of Pipelines'
Serving for Environmental and Social Justice"*



This article on “**TANAP, ‘Silk Road of Pipelines’ Serving for Environmental and Social Justice**” has been prepared and submitted as a joint application by TANAP and its IPLOCA member reputable Contractors, **Fernas, Kalyon, Limak, Punj Lloyd, Sicim and Tekfen** on the following categories:

- i. Impact assessment and public consultation,
- ii. Waste management and reduction,
- iii. Energy use and efficiency.

The Trans Anatolian Natural Gas Pipeline (TANAP) Project

The Trans Anatolian Natural Gas Pipeline (TANAP) Project is a joint-venture of **BP** (BP plc, British multinational oil and gas company), **SOCAR** (the State Oil Company of the Azerbaijan Republic) and **BOTAŞ** (Petroleum Pipeline Company is a state-owned crude oil and natural gas pipelines and trading company in Turkey operating in natural gas transportation and trade activities with the aim of meeting the increasing energy demand of Turkey.).

The aim of TANAP Project is to supply natural gas produced from Azerbaijan’s Shah Deniz-2 gas field, and other areas of the Caspian Sea, to Turkey and to Europe as one of the biggest pipeline projects with a length of **1,850 km**. TANAP runs from the Turkish border with Georgia, beginning in the Turkish village of Türkgözü in the Posof district of Ardahan, will run through **20 provinces in Turkey** until it ends at the Greek border in the İpsala district of Edirne. From this point, the TAP Pipeline will connect to convey natural gas to European nations. The TANAP Project, along with the South Caucasus Pipeline (SCP) and the Trans Adriatic Pipeline (TAP) form the elements of the Southern Gas Corridor.

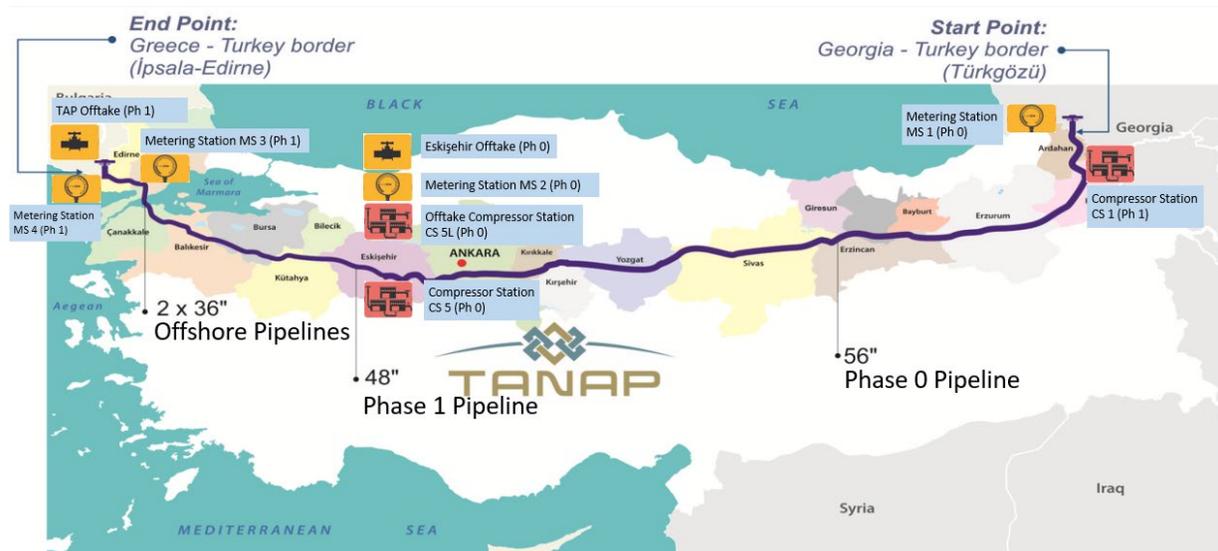


Figure-1 Project Location

Environmental Sensitivity

TANAP is committed to environmentally and socially responsible, safe and high-quality design, as part of the construction and operation of a natural gas transmission pipeline system which will support the economic development of the country while protecting the sustainability of natural resources. TANAP will provide the necessary resources and strives for establishment and maintenance of an effective

environmental management system to prevent pollution in line with this overall objective. TANAP achieves these commitments as follows:

- Throughout the planning phase, TANAP has assessed the environmental aspects and key impacts related to the Project activities with national and international consultants. Subsequently, TANAP prepared a comprehensive **Environmental and Social Impact Assessment Report (ESIA)**, which were consulted with the stakeholders and approved by the authorities.
- Due consideration was given to all applicable requirements specified in Turkish Environmental Legislation, as well as international standards and best practices prevailing in the Natural Gas Pipeline industry.
- All environmentally sensitive constraints along the pipeline route, including ecology, archaeology, soil and water resources, have been identified by detailed surveys and investigations. Through these studies, 9 fauna species, 1 flora species and 48 archaeological sites have been discovered which were previously unknown to the world of science.
- Special protective measures have been integrated into pipeline route selection process and design activities so that potential environmental impacts to environmentally sensitive areas are proactively avoided or mitigated properly.
- Effective environmental management plans and procedures for construction and operation phases have been developed to mitigate unfavorable changes and also improve positive impacts of the project.
- An effective and constructive engagement strategy has been established to achieve mutual understanding between project stakeholders and TANAP, where they can participate and be consulted in decision making process of the project.
- TANAP will monitor and measure its Environmental Management System which was established by considering all these studies and objectives, and set new objectives and targets to ensure that environmental performance is continually improved at all levels of the project.
- TANAP will continually demonstrate in all occasions its fulfilment to these commitments to improve TANAP's vision and enhance Environmental Culture.

Mainly our mission is **adhering to high environmental & social and health & safety standards** and to build and operate a **secure and reliable** gas transmission pipeline system with the **highest quality**.

Impact Assessment and Public Consultation

Starting from Environmental and Social Impact Assessment (ESIA) baseline studies in 2012-2014, route selection had **8 revisions to identify** a technically feasible pipeline centerline, with a reasonably low impact on environment and land use.

A three-stage consultancy configuration was used during the preparation of ESIA Report as 1 Global ESIA Advisor, 1 Local ESIA Advisor and 1 Lender Advisor. Throughout ESIA report preparation phase, approximately, **USD 7,000,000.00** was spent.

The general methodology used by Golder for Environmental and Social Impact Assessment Studies is based on the Drivers-Pressures-State-Impact-Response (DPSIR) Framework developed by European Environmental Agency (EEA) which has been designed to be a highly transparent and a semi-quantitative

analysis of the impacts on the various environmental and social components through the life cycle of the project.

Overall the methodology is based on the identification of the following elements:

- **Project components:** units with specific physical, technological and location that are part of the project,
- **Project actions:** individual actions that are necessary for the construction, operation or decommissioning of the various project components,
- **Impact factors:** forms of direct or indirect interference produced by the project actions on the environment and society, able to influence the environmental and social state or quality,
- **Sensitivity:** sum of the conditions which characterize the present quality and/or trends of specific environmental and social components and/or of their resources,
- **Impacts:** changes undergone by the environmental and social state or quality because of the different impact factors generated by the project actions,
- **Mitigation measures:** actions adopted in order to avoid or minimize potential adverse impacts, or to enhance positive impacts.

The overall ESIA methodology is summarized in the Figure below.

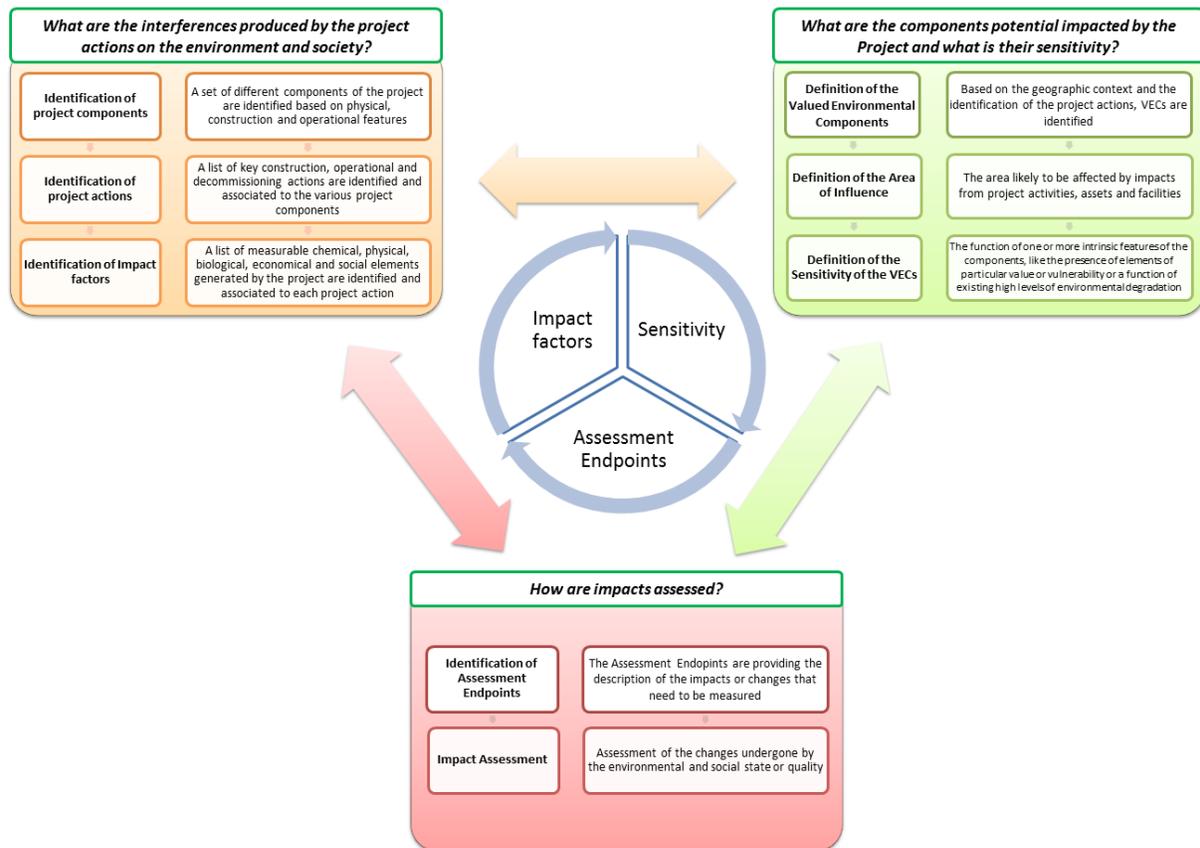


Figure 2- ESIA Methodology

Highlights from ESIA phase are given below;

Physical baseline data collection highlights mostly in 2013-2014 :

- ✓ PM-10 and PM-2.5 sampling, at a total of 162 points,
- ✓ SO₂, NO_x, and O₃ sampling, at a total 40 points,
- ✓ Noise and vibration measurements, at a total 69 points,
- ✓ Baseline soil contamination field studies at 105 sampling stations,
- ✓ For the wet season (spring/May 2013) and dry season (summer/July 2013) 327 and 218 sampling points were determined respectively for surface water quality measurements,
- ✓ Groundwater sampling was conducted at 37 locations.

Biological baseline data collection highlights:

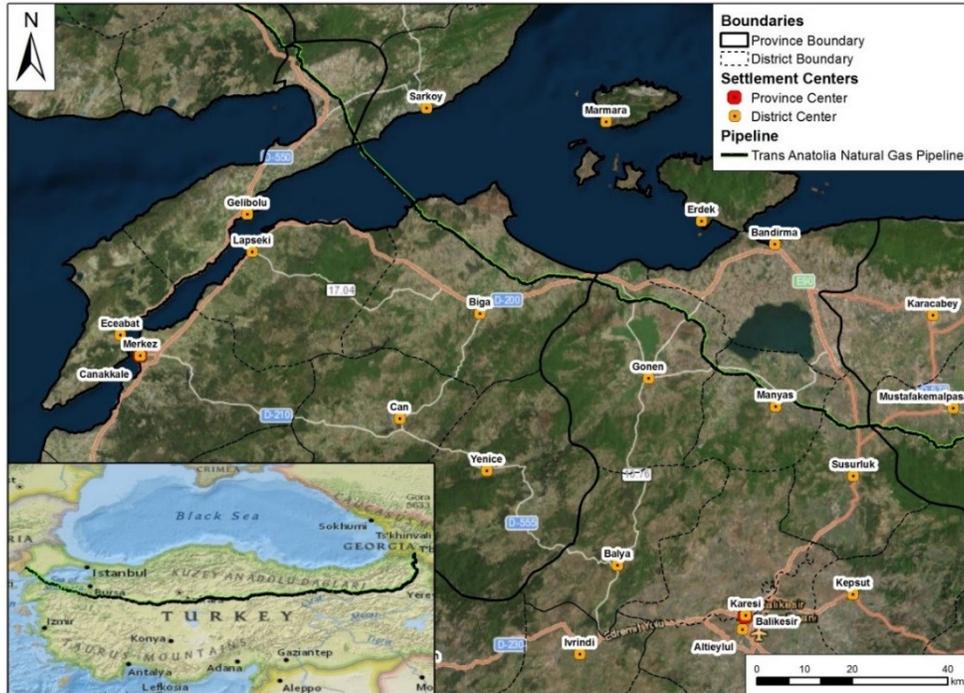
TERRESTRIAL & FRESHWATER:

- ✓ A total of **246** sampling stations, chosen for terrestrial flora studies, **87 SCC**,
- ✓ A total of **43** sampling stations, chosen for aquatic flora studies, **no SCC**,
- ✓ A total of **133** sampling stations for mammals, **five SCC**,
- ✓ A total of **152** sampling stations for birds, **two SCC** and **five potential SCC**,
- ✓ A total of **133** sampling stations for reptiles, **four SCC** and **seven potential SCC**,
- ✓ A total of **133** sampling stations for amphibian species, **one potential SCC**,
- ✓ A total of **243** stations for terrestrial invertebrates, **34 SCC**,
- ✓ A total of **12** high sensitivity habitats, which are defined in accordance with National Biological Diversity Strategy and Action Plan,
- ✓ A total of **189** sampling stations for freshwater fish and macroinvertebrates, **13 SCC fish** species and **one potential SCC macroinvertebrate** were identified.

MARINE:

- ✓ A total of 45 fishermen surveys for marine mammals and turtles' studies, four potential SCC, no breeding area,
- ✓ A total of 6 sampling stations for marine fish studies, no SCC or their breeding area,
- ✓ A total of 17 sampling stations for marine soft bottom macrobenthos and marine flora studies, 11 sampling stations for marine hard bottom macrobenthos, no SCC were identified.

After approval of ESIA Report on 24.07.2014 by the Ministry of Environment and Urbanization, Offshore Construction Technique was subjected to an alteration. Sediment plume modelling, sediment quality studies, surface sediment metal level, benthic habitat and physical environment assessment studies were conducted so as to determine possible effects of the new construction technique. Additional environmental assessment report was prepared and approved. As requested by the Ministry, pre-construction, during construction and post-construction monitoring studies were performed. Some of the studies performed as part of this assessment are given in below photos;



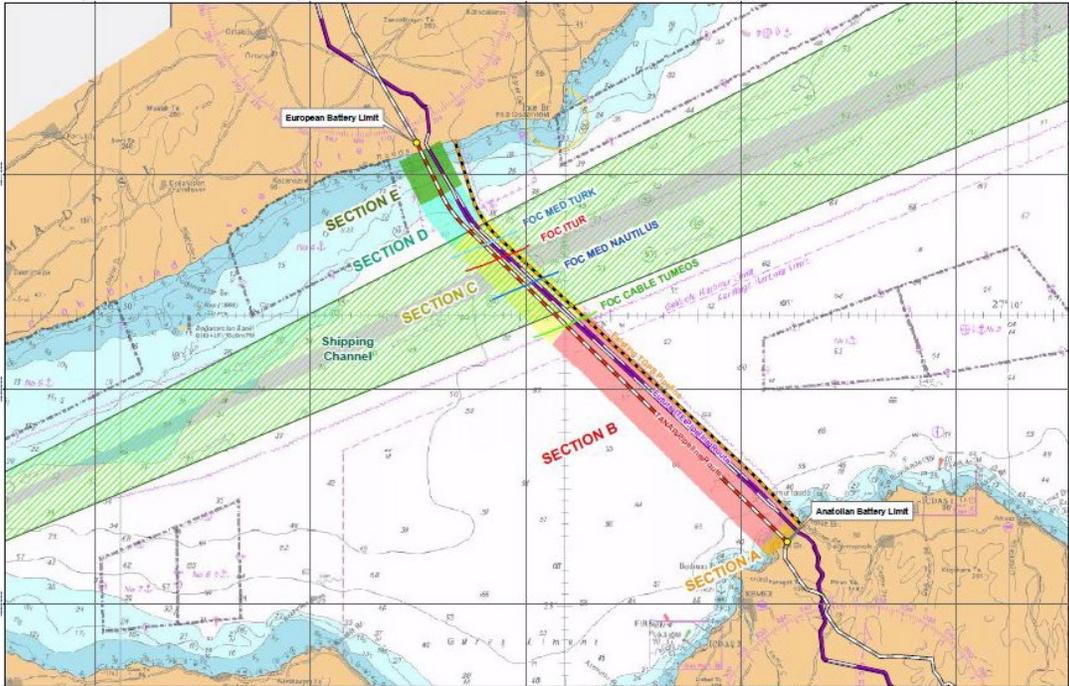


Figure 3- TANAP Pipeline Route and Sea of Marmara Crossing Pipeline and Cable Routes

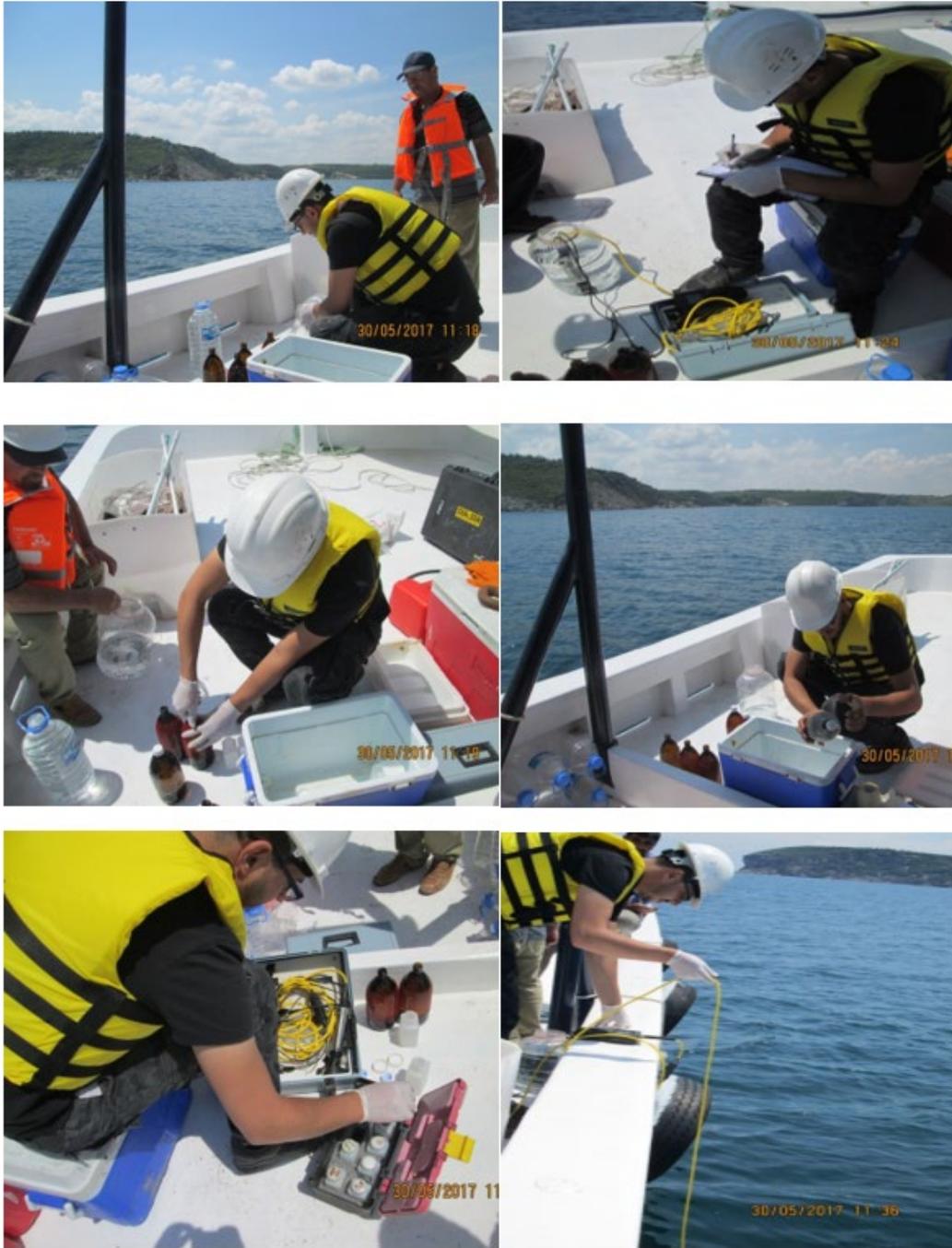


Figure 4- Sea Water Sampling and Measurements, Before Construction



Figure 5- Seabed photo of offshore pipeline after construction (natural life recovered)

Social Baseline Studies were also conducted to obtain updated and sound socio-economic data about potential Project-affected settlements as well as to identify any possible concerns and feedbacks of the local communities regarding the Project. These activities represented an important opportunity to collect baseline information from stakeholders as well as to inform them on the Project, allowing them to express opinions and comments. Surveys were conducted in five main forms:

- Key informant interviews - A total of **151** interviews
- Focus groups meetings - A total of **307** meetings
- Questionnaires to settlement heads - A total of **396** questionnaires
- Questionnaires to households - A total of **2253** questionnaires
- Phone surveys - A total of **117** calls



Figure 6- Focus Group Meeting with Young People



Figure 7- Focus Group Meeting with Women

A total of **63** public participation meetings (Official & Additional) have been held during ESIA process to inform the Project-affected communities about TANAP Project and to gather any concerns, feedbacks and suggestions to be considered in ESIA studies. The meetings were held in each district affected by TANAP Project and a total of **1250** participants attended all the meetings. Land acquisition and Project details were the mostly discussed topics in the meetings. The details of public participation meetings are compiled in a separate report (“Report for Public Participation Meetings”).

Three consultation meetings with local and international NGOs were held, as part of Turkish legislation requirements, where in about **1250** people participated. A project brochure was distributed in these meetings and a power point presentation was made, and question and answer sessions were conducted.

In addition, **88** focus group meetings (with women, youngsters and fishermen) and **151** key informant interviews (with representatives of governmental and civil organizations) were carried out as part of ESIA. Additionally, **17** focus group meetings with women and **135** village head meetings were also held as part of Resettlement Action Plan (RAP) preparation.

After the approval of ESIA, a total of **83** ESIA disclosure meetings have been held to disclose outcomes of ESIA to Project-affected settlements inform them about the Project and gather any concerns. Directly affected **572** settlements were invited to the meetings and a total of **1288** participants attended all the meetings. Land acquisition and Project details were the mostly discussed topics in the meetings.

The Final ESIA is disclosed at TANAP web page (pls refer www.tanap.com/reference-documents/).

In order to disseminate TANAP Project experience outside the Project, 2 papers and 2 posters were presented in IAIA 2018 Durban, South Africa, 38th Annual Conference of the International Association for Impact Assessment, Environmental Justice in Societies in Transition, so that others can adopt similar systems to their own benefits. The papers presented in IAIA 2018 can be reached by following links:

http://www.tanap-seip.com/environment/TANAP_Silk_Road_of_Pipelines.pdf
http://www.tanap-seip.com/environment/List_of_the_Projects_DG_PI_PC_IPLOCA_v2.pdf
<http://www.tanap-seip.com/environment/Turkey%E2%80%99s%20Rich%20Biodiversity%20through%20TANAP.pdf>
http://www.tanap-seip.com/environment/Tanap_bio_poster_IAIA2018%20Conference%20Poster2.pdf

The Community Liaison Officers from TANAP and Contractors were in place in work sites during construction phase as per Community Relation Plans. These officers engaged with the villagers on ongoing basis to explain and inform them about risks and safety measures. The grievances and complaints from the villagers were also reported by these officers to TANAP and seek resolutions.

Since the start of the construction, as TANAP, we have been operating with great sensitivity about environmental and social areas. Beyond doubt, TANAP is contributing to Turkey's economic development in terms of energy security and supply of consistent and sustainable gas. However, economic development can only uplifts societies if it brings in human development. With this aim, we implement Social and Environmental Investment Programme (SEIP) as a separate department within our organization. In terms of volume of fund (**USD 84 Million**), we are implementing one of the greatest investment programmes in Turkey and maybe worldwide.

Designed and kicked off in 2015, TANAP SEIP, under its environmental component (http://www.tanap-seip.com/environment/List_of_the_Projects_DG_PI_PC_IPLOCA_v2.pdf), supports the **sustainable management** of natural resources, soil and water; **efficient use** and development of renewable energy resources; management of environmental infrastructure and reinforcing **environmental awareness**; promotion of cultivation and economic use of medicinal and aromatic plants and **protection and development of bio-diversity and ecosystems**. **Project Affected People (PAP)** living along the pipeline route as well as the disadvantaged groups such as persons with **disabilities, women, children, people in need** were **prioritized**. All settlers were defined as eligible applicants and grant announcements were conducted accordingly (**26 information meetings with the participation of 3,070 in total**) in order to increase the socio-economic welfare of the region.

TANAP SEIP contributed in maintaining the economic and social development along the pipeline in **20 provinces, 67 districts** and **600 villages** by providing grant to around **1,000 projects**. **On-site visits** to project locations primarily have monitoring purposes in addition to providing technical assistance to the beneficiaries for the implementation of the projects. A monitoring report, which includes identified risks if any, is prepared during the on-site visits and signed by both parties. Each project has received at least one monitoring visit by grant expert(s). A total of **1,127 monitoring visits** were held and **176,825 kms** travelled which means we have travelled around the world more than 4 times. SEIP also utilizes an MIS for online monitoring, help desk purposes, data collection, reporting which enables extraction of various type of reports about the projects, beneficiaries and the Programme. SEIP has also internal monitoring mechanisms and reporting requirements to international creditors, shareholders, stakeholders etc.

An **investment impact assessment study** (http://www.tanap-seip.com/environment/TNP-REP-SEP-GEN-001_P6-0-EN.pdf) was conducted to measure the return and the impact of the support program for the investment and development projects implemented along TANAP route using the **Social Return on Investment (SROI) methodology** and to make comments and suggestions about the social impact of the program in the light of the findings of the study. Eight different investment sub-areas have been identified

as the priority areas for the TANAP Investment Programme, which were also evaluated within the scope of the SROI study, are as follows:

- i. tourism,
- ii. schools, libraries, sports areas and common social areas,
- iii. health services,
- iv. vocational training,
- v. social capital,
- vi. diversity in agriculture,
- vii. local and traditional production and
- viii. environmental priority areas.

Considering the total investment of TANAP Investment Programme in different focal areas that amounts to nearly USD 34.2 Million within the scope of SROI methodology, it was revealed that **every 1 unit of investment produced a value of 4.9 units** in term of relevant country's currency.

Just to give an idea to reader on how effective this Programme has been across the country, investment made by the World Bank in developing countries was examined with the SROI methodology and it was stated that **1 unit of investment created a social value between 1 and 1.06 units**.

Waste Management and Reduction

TANAP always prevented pollution and protected environment and communities by implementing a mitigation hierarchy aiming at avoiding, reducing, restoring, and, as appropriate, off-setting adverse impacts of the activities. Waste disposal strategy developed for the project through the Project followed the following handling hierarchy:

1. waste avoidance is the most preferable option,
2. minimization of quantities and hazards of waste generated is the second preferred option,
3. reuse, recovery and recycling shall be preferred over treatment of waste,
4. disposal shall be considered as a last resort.

Following Basic Principles for Waste Management was applied;

1. Follow-up of wastes with cradle to grave approach,
2. Segregation of wastes at source and waste categorization,
3. Reuse, recovery and recycling have the priority,
4. All wastes should be handled throughout the route and will not be left at site,
5. Dumping and burning of wastes are strictly forbidden,
6. Waste transportation and disposal should be done via licensed facilities,
7. Mixing different waste types is strictly forbidden,

8. Waste transportation to the nearest licensed facility to a possible extent.

Contractors developed their own waste management plans in line with these principles. Comprehensive environmental data, which were gathered throughout construction, such as environmental analyses on air, water, noise etc., biodiversity monitoring, follow-up and registry of wastes, trees-cut, etc. were collected and reported. Below, some highlights from construction phase are outlined:

Total number of water quality samples taken are **1,616**, total number of air quality samples taken are **290**, total number of noise quality samples taken are **410**.

Total amount of hazardous waste generated is **1,822,074 kg**,

Total amount of hazardous waste recycled at licensed facilities is **1,150,936 kg (63.2% recycled)**,

Total amount of non-hazardous waste generated is **24,490,424 kg**,

Total amount of non-hazardous waste reused/recycled is **11,208,885 kg (45.8% reused/recycled)**,

Total amount of waste generated is **26,312,498 kg**,

Total amount of waste that were reused/recycled is **12,359,821 kg (47.0% reused/recycled)**,

16,008 of fauna individuals (including fishes) were relocated and registered during construction,

Total water abstraction (groundwater, surface water, municipality) during construction was **2,424,037 m³**.

Thanks to the careful implementations which demonstrated best industry standards in waste management practices, it was possible to minimize the generation of wastes and reuse/recycle almost half of the wastes generated during the construction phase.

In order to prevent the disposal of domestic solid waste through wild storage, **Solid Waste Landfill and Disposal Facility** was constructed in Ardahan to dispose solid waste in line with regulations and to ensure the **protection of natural resources**. The rehabilitation of existing wild waste storage site and the recycled materials in the new facility will have a positive impact on natural resources and regional economy respectively. Last but not least, within the scope of TANAP SEIP, among the environmental projects implemented, a total of **USD 2,143,547.00** was allocated for waste storage and treatment.

Energy Use and Efficiency

TANAP is committed to continually improve the effectiveness as well as the efficiency of its integrated management systems in every aspect of its business activities. Within this perspective, during the design and construction of Main Control Centre (MCC) of TANAP Project, sustainable design and construction were aimed and realized. As a result of this approach, TANAP Main Control Center Building was awarded with **LEED® Gold Certificate** under the LEED® 2009 New Construction and Major Renovations category through green and sustainable actions taken during both design and construction.



Figure 8. LEED Gold Certificate of TANAP Main Control Center (MCC)

Highlights from the works to gain credits for TANAP MCC Building are given as follows;

Low-Emitting and Fuel-Efficient Vehicles

5% of the total parking areas was provided for low-emitting and fuel-efficient vehicles. Parking spaces for low-emitting and fuel-efficient vehicles for 11.11% of total parking capacity were provided. Besides, an electrical charge station was installed at the parking area.



Figure 9. Low Emitting Parking

Minimizing Heat Island Effect

50% of the site hardscape (including roads, sidewalks, courtyards and parking lots) provides such as; PV shading, open-grid pavement system, shading with a canopy, structures or hardscape material with an SRI (Solar Reflectance Index) of 29 min. The project complies with 100% of the building roof surface that has a Solar Reflectance Index and structure on the top of parking lot is covered by white coating.

Water Use Reduction and Water Efficient Landscaping

The plant types were chosen among the ones that use less amount of water and harvested rainwater will be used for landscape irrigation. According to the rainfall data of Ankara, calculations were done for landscape irrigation and 100% of the water demand can be met by rainwater collected.

Landscaping and irrigation systems have been designed to reduce potable water consumption for irrigation by 100% and reduce the total water used for irrigation by 67.69%. Installed irrigation systems use captured rainwater.



Figure 10. Landscaping with Site Specific Plant Types

Minimum / Optimum Energy Performance

Initial investigation of the systems was undertaken and several solutions were studied to utilize on the design for achieving LEED Gold level. It was concluded that there should be on-site renewable energy systems to offset building energy costs such as (PV, Solar Hot Water Systems, Wind Turbines etc.) therefore, PV system was installed to the roof area of MCC building.

The project has achieved an energy cost savings of 19.5%. The total predicted annual energy consumption for the project is 448,612 kWh/year of electricity and the total predicted energy generated from on-site renewable systems is 46,490 kWh/year of electricity.

On-Site Renewable Energy

Studies on Whole Building Energy Simulation (WBES) has been submitted and the project has offset 10.4% of the total energy costs through renewable energy generated on-site. This result also contributes the cumulative energy saving in line with the objectives of the TANAP project.



Figure 11. Photovoltaic System – MCC Roof Area

Last but not least, in addition to renewable energy generated on-site, we have also supported our community along the pipeline route for the efficient use of energy. Licensed Warehouses System was established in hazelnut sector to provide solutions for the problems encountered in this sector such as falling prices due to excess supply in years of excessive production, shortage of high-quality products etc. Thus, Giresun Commodity Exchange established a licensed hazelnut depot, a product analysis laboratory, and a spot exchange. To complement the Licensed Warehouses System, the project for **Solar Power Based Electricity Generation at the Licensed Depot** was implemented with the funding provided by TANAP Project. The aim of the project was to use solar power to supply the electricity required at the licensed storage and spot exchange areas. 600 kW installed power generated with the Solar Power Plant set up on the roof of the Depot significantly reduces the cost of electricity by meeting %45 of the energy demand of the facility. Even with this single Project, energy worth of approximately **USD 65,000.00** will be saved annually where the energy costs of the facility will decrease by **more than 30%** and around **963.6 tonnes of CO2 emissions** per year will be saved.

Additionally, a total of **USD 2,267,637.00** was allocated for the implementation of solar energy projects.



Figure 12. Solar Power Based Electricity Generation at the Licensed Depot

Innovation in Design – No Mercury Lighting

Exemplary performance was achieved compared to the level determined by LEED in respect to innovative approaches. It has been implemented a lighting purchasing plan that specifies an overall building average of 35 picograms of mercury per lumen hour or less for all mercury-containing lamps to be purchased for the building and associated grounds within the project boundary. The project has installed only LED lamps, which do not contain mercury.

Long-term Planning

During operation phase, TANAP will also continue its environmental management and monitoring programme with utmost care. As committed in ESIA Report, monitoring of all critical habitats, percentage progress of vegetation and sensitive species growth on the critical habitats, reinstatement of the pipeline including the biodiversity offset projects implementation and monitoring activities will continue. Waste management and wastewater management at all relevant above ground stations will be followed and standards will be complied with. In order to manage all these issues, **approximately USD 7,780,000.00** budget was allocated for the next three years and it will continue in the same manner in the following years.

In addition to these, a total of **USD 50,547,663.82** has been utilized for environmental and social investment projects having positive impact on environment and human life. In order to continue contributing to the communities along the Pipeline, TANAP SEIP will continue to support the projects prioritizing **sustainable management** of natural resources, soil and water; **efficient use** and development of renewable energy resources; management of environmental infrastructure and reinforcing **environmental awareness**; promotion of cultivation and economic use of medicinal and aromatic plants and **protection and development of bio-diversity and ecosystems**. For the smooth management of TANAP SEIP during the operation phase, an estimated **annual budget** of **approximately USD 500,000.00** is allocated.

All in all, TANAP Project is committed to sustain and even further improve its current processes by managing as well as reducing waste, and by increasing energy efficiency to keep serving environmental and social justice.

TANAP Received 10 Awards From Reputable and International Organisations Within 2019 & 2020 By Its Environmental and Social Initiatives

The Communitas Award in the category of “Leadership in Community Service and Corporate Social Responsibility”



USA – April 2019

The Communitas Awards was given to a total of 15 companies, 11 in the USA and 4 in the rest of the World.

The International CSR Excellence Award

1st Award Category: “Sustainability”

2nd Award Category: “CSR World Leader”

UK, London – July and November 2019

Saudi Aramco, Shell, Warner Bros and Coca-Cola have been also awarded.



The Green World Awards 2019 by The Green Organisation

1st Award Category: “Best Environmental Practice”

2nd Award Category: “Green World Ambassador”



London and Vietnam – September 2019

TANAP has been invited to the Houses of Parliament, Palace of Westminster, and presented with a trophy and certificate honouring our achievement.

The Stevie® Awards in the category of “Corporate Social Responsibility Program of the Year - in Europe”.



Vienna – August 2019

Stevie Award judges include many of the world's most respected executives, entrepreneurs, innovators, and business educators.

PR Daily's Corporate Social Responsibility Awards in the category of "Community Affairs".



USA – August 2019

USA based PR Daily's Corporate Social Responsibility Awards aim to reward communicators, teams and agencies who create and cultivate best practices and know how to deliver powerful messages about how their organizations are doing their part to make the world a better place.

European Excellence Awards in the category of "Turkey"



Lisbon – November 2019

Under the category TANAP received the award, Castrol Turkey, NN Group, Novo Nordisk Turkey and South Stream Transport were also shortlisted.

The Peer Awards

1st Award Category: "Corporate Responsibility"



UK, London – February 2020

2nd Award Category: "Corporate Responsibility - Practical Community Projects".

The Peer Awards recognize those who have delivered great business value and transformational impact through their innovations and implementations by providing a powerful platform to showcase interesting projects, to share great practice with peers, and be hugely inspired by learning from one another.