Integrated ESIA Greece
Section 10 - Conclusions
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10  CONCLUSIONS

10.1  Introduction

The Trans Adriatic Pipeline (TAP) Project represents the result of feasibility studies performed since 2006. The process has included a detailed assessment of alternatives including the pipeline route itself, site selection and technical solutions for associated permanent facilities such as compressor stations and block valve stations.

The TAP Project was developed in two overlapping phases, ‘Greece West’ and ‘Greece East’. Greece West had an original spatial scope from Nea Mesimvria (close to Thessaloniki) westwards to the Greek/Albanian border. In 2012, due to capacity requirements the pipeline was extended eastwards from Nea Mesimvria to the Greek/Turkish border. This report is therefore an integrated Environmental and Social Impact Assessment (ESIA) covering the entire 543 km TAP route in Greece; from the Greek/Turkish border to the Greek/Albanian border.

The process of pipeline route selection was undertaken in several iterative stages which included stakeholder engagement from 2008. Main routing corridors were determined by consideration of general topography, technical / logistical aspects, key constraints such as environmentally sensitive and protected areas, cultural heritage or socioeconomic aspects and the possibility to bundle the TAP Project with existing infrastructure. For each corridor a number of routes and sub-alternatives were developed aiming at avoiding or minimizing interaction with the main natural, social and cultural heritage constraints present in the surrounding environment. An iterative route refinement process followed, with the aim to optimise the route, particularly through those sections which presented greater technical, environmental, socioeconomic and cultural heritage challenges.

10.2  The ESIA Process and Applicable Standards

An Environmental Social Impact Assessment (ESIA) has been undertaken for the TAP Project. Since 2010 TAP AG has conducted an evolving program of environmental and social studies for the Project. These have included desktop studies, wide-ranging field surveys to collect baseline data on physical, natural, social and cultural heritage conditions in the Project’s area of influence,
inputs to site selection of associated facilities and design of Project components, plus an extensive stakeholder engagement programme with government and local communities.

The ESIA has been prepared to comply with Greek legislation, international environmental and socioeconomic requirements, with specific regard to those of the European Union Legislative Framework and in alignment with performance requirements of the European Bank for Reconstruction and Development (EBRD). In addition, the importance of the Espoo Convention on Environmental Impact Assessment in a Transboundary Context is acknowledged for the TAP Project.

The aim of the ESIA process is to ensure that adverse impacts and risks to people, their rights, livelihoods, culture and environment are avoided or, where avoidance is not possible, minimised, mitigated, offset and/or compensated and to identify and adopt opportunities to enhance the environmental and social performance of the project.

Impact predictions have been made based on the current Project design and baseline knowledge from desktop studies and field surveys supplemented with the most current data, methods and scientific knowledge publicly available at this time to minimize the extent of uncertainty in the assessment.

In line with best practice, this ESIA has adopted a precautionary approach to the identification and assessment of impacts. Where it has not been possible to make direct predictions of the likely level of impact, limits on the maximum likely impact have been reported and taken into account for the design and planned implementation of the Project (including the use of appropriate mitigation measures). Where the magnitude of impacts could not be predicted with certainty, the ESIA team has used its professional experience and available scientific research from the region to make a judgement on whether a significant impact is likely to occur or not. Throughout the assessment this conservative approach has been adopted.

Further details on key stages and activities completed through the adopted ESIA process are given below:

- Extensive baseline data collection through desktop investigation and a programme of field surveys (refer to Section 6 and supporting Annexes for detailed information), resulting in the production of a Project specific GIS data base of environmental and social information for use in Project design.

- The pipeline route refinement phase has continued in parallel to the ESIA study, taking into consideration the key environmental, socioeconomic and cultural heritage findings identified. The route refinement process has in turn fed the ESIA process, so the ESIA Report has been updated based on the refined route.
Impact identification and scoping was undertaken early in the ESIA process in a systematic way by the interdisciplinary ESIA team. As the Project evolved and more design data were available this was revisited and baseline data reinterpreted as necessary.

ESIA Scoping Reports were prepared by TAP AG for both Greece East and Greece West. These described the process of route alternatives investigation and route selection, main components and key features of the Project, the potential environmental and social issues involved with Project implementation, potential mitigation, and the proposed ESIA study programme. The reports were provided for information to the Ministry of Environment, Energy and Climate Change (MEECC) as a voluntary best practice measure, and subsequently published on the TAP AG’s website.

In line with the Greek EIA regulations in place at the time when TAP AG started the ESIA process for Greece West, a Preliminary Environmental Impact Assessment (PEIA) was prepared and submitted to the MEECC in September 2011. At the same time the PEIA was disclosed on TAP AG’s website. Approval of Greece West PEIA was received in April 2013.

Stakeholder engagement is a key element of the ESIA process. The purpose of stakeholder engagement is to allow stakeholders to interact with the decision making process, express their views and influence mitigation and technical solutions to concerns voiced during the process. TAP AG has been engaging with stakeholders in Greece since 2008, following the local Greek EIA requirements which include public consultation and disclosure, and in addition the EBRD PR10 requirements on stakeholder engagement.

The impact assessment has been informed by close interaction with the Project design team on such matters as working methods, Best Available Technology Studies and workshops to agree the mitigation measures that will be integrated into Project design. Where appropriate the impact assessment has included quantitative modelling techniques (e.g. for air and noise emissions associated with the compressor station facilities). In all instances the impacts have been assessed against rigorous ‘significance criteria’ that in turn were informed by standards and international good practice.

Through the ESIA, TAP AG has identified and committed itself to numerous measures designed to avoid, mitigate or offset adverse impacts, to minimise and manage risks on the environment, workforce and local population. Where possible, enhancing positive effects of Project implementation has been identified. The framework for the implementation of these
measures is the *Environmental and Social Management and Monitoring Plan (ESMMP)*, which is described in Section 9.

- The ESMMP will be maintained as a live document to allow environmental and social performance to be monitored, audits to be conducted, and corrective actions / continuous improvements to be made throughout the Project phases as part of TAP AG’s overall management system.

Through these key stages and activities the ESIA has systematically and comprehensively examined all identified aspects of the proposed Project, which have the potential to give rise to adverse, as well as positive environmental, socioeconomic and cultural heritage impacts.

### 10.3 Main Findings

The TAP is a large scale linear project aiming to construct and operate a high capacity, long distance gas pipeline system.

The main impacts of this Project will arise from the construction activities. However, pipeline construction is a well understood activity using standard techniques and equipment enabling all of the potentially significant impacts to be identified and assessed. Furthermore, construction will proceed in a sequential manner so that each construction spread will experience construction related impacts for a much shorter period of time (i.e. 2 – 3 months) than the overall construction time of approximately 3.5 years.

Impacts associated with the operation of the pipeline system will be largely limited to the compressor stations and the regular maintenance and inspection schedule.

An overview of the main findings of the ESIA is given below.

#### 10.3.1 Findings regarding the Physical Environment

Impacts related to the physical environment have been identified and assessed and include emissions to air and noise, impacts to watercourses, water resources, soils and landscape.

There will be air and noise emissions during the construction and operation phase. In the operation phase this is largely related to the compressor stations.

The pipeline will cross a number of watercourses along the route. Environmentally sensitive rivers will be crossed using trenchless techniques to avoid impacts on riverine and riparian...
Habitats. Water consumption is largely related to the hydrotesting of the pipeline after construction but abstraction and discharge impacts will be minimised by suitable mitigation.

A significant temporary impact is related to the modification of soils along the route and at the compressor station sites. This includes surface sealing for the permanent installations but only temporary impacts for the construction working strip and temporary facilities. Reinstatement will be undertaken to re-establish the soil productivity.

The entire pipeline will be buried at least 1 m below the ground and will therefore not be visible after construction. During operation, only a narrow Pipeline Protection Strip (8 m width) will be maintained for inspection and maintenance purposes.

During construction there will be significant temporary disturbance to the landscape, however, during operation visual impacts will be limited to the above ground installations (compressor stations, etc.) and the Pipeline Protection Strip.

10.3.2 Findings regarding the Biological Environment

Impacts related to the biological environment include effects upon vegetation and wildlife, disturbance of habitats and protected areas.

The pipeline working strip will require a total of roughly 2,000 ha of land along its 543 km length; 80% of which is highly modified and fragmented agricultural lands. After re-instatement and re-vegetation only deep rooting vegetation will be prevented from becoming re-established along the Pipeline Protection Strip during operation.

Certain key areas have been identified along the route in which areas of high ecological value are present. The total loss of Greek and EU listed habitats from the working strip footprint is temporary and amounts to about 376 ha (i.e. 18 % of the working strip) and a number of protected areas are crossed by the pipeline route (i.e. Natura 2000 sites, National Parks and Wildlife Refuges). However, the impacts are largely related to the construction phase.

Impacts to habitats and wildlife are also predominantly limited to the construction phase but mitigation includes avoiding sensitive times (e.g. breeding periods), reducing the working strip and the implementation of a Biodiversity Action Plan.

For the crossing of sensitive watercourses trenchless techniques have been established, where feasible, to avoid impacts to riverine and riparian ecology.

In addition, TAP AG will require from the EPC contractor that the implementation of ecological mitigation measures will be supervised by a team of Ecological Clerk of Works (ECoW).
During the operations phase impacts to the biological environment are limited and mainly related to the maintenance of the Pipeline Protection Strip (i.e. periodic clearing of deep-rooting vegetation). This will lead to a certain degree of habitat fragmentation, however, effects will be limited by measures implemented through the *Biodiversity Action Plan* (BAP).

10.3.3 Findings regarding the Socioeconomic Environment

TAP AG acknowledges that a key issue for stakeholders is the possible loss of livelihoods and that stakeholders have had some negative experiences from previous infrastructure projects. There will be no physical displacement of people by the Project, but it is recognised that there will be temporary economic displacement during the construction period (3.5 years) as well as permanent economic displacement during the operation phase. Permanent displacement will be limited to the safety zones up to 200 m from either side of the pipeline.

The general principles of fair compensation to all project affected people will be detailed in a *Livelihood Restoration Framework* (LRF) which will be followed by the *Livelihood Restoration Plan* (LRP). These documents will define the compensation needed to assure that livelihoods and standards of living of all affected people are restored to levels they will have achieved in a non-TAP scenario and that the living conditions and livelihoods of vulnerable groups are improved. Present landowners and users will be compensated at replacement value (market value plus any transaction cost) prior to construction. All entitlements will be defined in accordance with EBRD’s Performance Requirements. The documents will be made publicly available, in their entirety or as a summary, to ensure a fair, transparent and open process.

A general economic benefit for Greece will be taxes during project operation. The IOBE\(^1\) has estimated as part of their study that over the lifetime of the Project the Greek Treasury will benefit from €1.2 billion in taxes. Furthermore, there will be employment opportunities, both during construction and operation.

10.3.4 Findings regarding Cultural Heritage

The extensive process for route selection and optimisation of the pipeline route, and the site selection for the compressor stations, BVSs and other Project components, has avoided known cultural heritage as far as possible. However, a number of cultural heritage resources are located

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\(^1\) The Foundation for Economic and Industrial Research (IOBE) – *Economic Benefit Study* (2013).
in the vicinity of the Project footprint. In addition to the sites identified within the Project footprint, some identified archaeological sites may extend into the Project footprint and could produce archaeological finds during ground-disturbing activities such as trenching.

A pre-construction programme of work will therefore be undertaken to understand more thoroughly the nature of features that may be affected. During construction the Project will implement a Chance Finds Procedure that details the process to be followed in case an archaeological find is made. These management measures will be developed in consultation with the Ministry of Culture and local representatives, and in accordance with Greek law and international standards for the preservation of cultural heritage.

10.3.5 Findings related to Neighbouring Countries

Transboundary impacts are related to the areas close to Greek-Turkish and Greek-Albanian border and include potential effects deriving from air and noise emissions and non-routine events. Modelling has shown that the air and noise emissions are unlikely to affect the neighbouring countries. Due to the design and management of the pipeline system a major accidental event has a very low probability. In the unlikely event of an accident the implemented emergency response measures will avoid escalation.

10.4 Implementation of Mitigation Measures during Construction and Operation

Following the Performance Requirements of EBRD and international best practice, TAP AG is committed to avoid, mitigate or offset adverse impacts and to minimize and manage negative impacts on the environment, the population and cultural heritage through a number of defined mitigation measures. Already during the design stage mitigation has been implemented through route and site selection and choice of technical solutions. Furthermore, a single commitment register will contain all commitments made by TAP AG throughout the ESIA process. All commitments made by TAP AG as part of the ESIA or other, will be compiled within an Environment and Social Management and Monitoring Plan (ESMMP) which will ensure that all commitments made will be implemented in practice as the Project progresses. The ESMMP will be a publicly available document allowing scrutiny by stakeholders. As part of the ESMMP, individual topic specific management plans will be prepared to detail the methodology and requirements to be met to minimize specific impacts and be in accordance with TAP AG’s
commitments. These management plans and are listed in Section 9. The ESMMP will be used as a management system including monitoring of the commitment implementation and its success, auditing and potential corrective actions. Where possible, this plan will propose measures to enhance positive effects of Project.

The issue of livelihoods (Section 8.11) will be further detailed in the Livelihood Restoration Plan (LRP) and implemented through the ESMMP. All these documents should be seen as part of the continuing ESIA process, which ensures that TAP AG’s principles are carried out in practice.

Overall, the risk of an accidental event during operation is very low due to the technical design and management of the pipeline system. The installed pipeline protection systems together with regular inspection and maintenance will furthermore minimise the risk during operation. An Emergency Response Plan (ERP) will limit the consequences in the unlikely event of an accident.

### 10.5 Final ESIA Statement

In consideration of the above, it is stated that this Environmental and Social Impact Assessment of the TAP Project in Greece:

- Was conducted in line with the relevant Greek and European legislation as set out in Section 3;
- Has been undertaken in accordance with EBRD Performance Requirements and TAP AG’s Environmental and Social Policy;
- Has been performed according to high technical and scientific standards applied in Projects of international interest;
- Has comprehensively assessed the environmental and social impacts (positive and negative) predicted for the proposed Project;
- Respects and embodies stakeholder views and concerns associated with the proposed Project;
- Offers, together with its associated documents (ESMMP, LRP), an integrated framework to manage, mitigate, restore and monitor any adverse environmental and social impact caused by the construction and operation of the proposed Project; and
- Offers an integrated framework to manage and enhance any positive environmental and social effects of the proposed Project.
The ESIA content presented in this report is considered as material adequate for public and international acceptance and therefore, is deemed in accordance with the provisions of the Environmental Law 4014/11 (published Gov. Gaz. 209/A/21.09.11).