TAP – bringing Shah Deniz gas to European markets

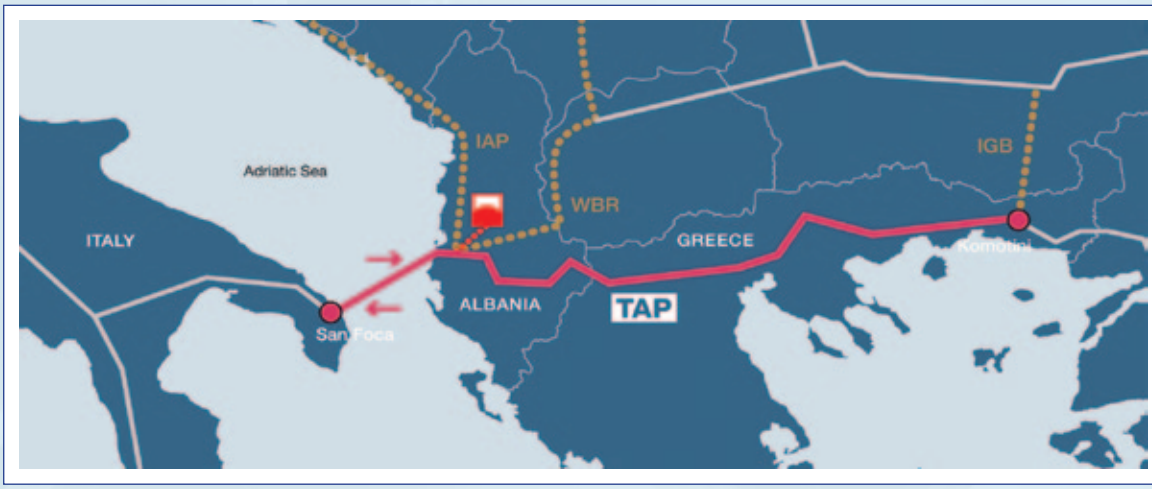
An Executive Summary of the proposal to the Shah Deniz Consortium from the Trans Adriatic Pipeline

1st October 2011

Trans Adriatic Pipeline

TAP in short:

- Provides a direct route to a high paying European market with the shortest, shallowest and least technically challenging offshore crossing
- Follows a carefully selected onshore route designed to minimise project risks
- Can easily double capacity when new gas becomes available
- Has strong shareholders supporting the development of the project
- Improves Europe's security of gas supply by opening up the Southern Gas Corridor
- Has the possibility to connect and develop the potential of South East European markets
- Generates sizeable direct private investments in Greece and Albania
- Does not require subsidies and grants
- Is recognised as an EU Project of Common Interest



1. Introduction

On October 1, 2011 the Trans Adriatic Pipeline (TAP) presented its offer for bringing natural gas from the Shah Deniz field in Azerbaijan to the European market. This document provides an overview of the main characteristics of the TAP project, and summarises the key points from the response to the Request for Information from the Shah Deniz Consortium (SDC).

TAP is owned and actively supported by three leading European energy companies – EGL of Switzerland with 42.5%, Statoil of Norway also with 42.5% and E.ON Ruhrgas of Germany with 15%.

TAP's business concept has been to focus on the technical and commercial viability of the pipeline to provide a reliable and tailor made outlet for Shah Deniz phase 2 gas by completing the chain from the Caspian region to core European markets. TAP has focused on developing the optimal technical solution for bridging the infrastructure gap between Greece and Italy, and thus finding the most favourable crossing of the Adriatic Sea. As a result, TAP's route will take Shah Deniz gas from the delivery point at the Turkish/Greek border across Greece and Albania before the offshore crossing to Italy.

Having identified the best route from a technical standpoint, TAP's aim is to provide as much assurance as possible in terms of deliverability. To this end we have engaged early with external stakeholders along the route. We work to the highest environmental and social standards set by the European Bank of Reconstruction and Development (EBRD). As a result of these processes, TAP's route has been refined to avoid protected habitats in Greece, Albania and Italy, thus ensuring that TAP will be built safely, reliably and at the right time.

2. A solid technical design

TAP is designed to provide the missing link for gas transportation from Greece to Italy.
The initial challenge was to find the technically most appropriate crossing of the Adriatic Sea. Following surveys, TAP identified the shortest and shallowest route, with a slope reducing the risk of landslides. TAP then analysed alternatives from Thessaloniki through Greece and Albania, and selected a route where the pipeline can be constructed reliably and safely.

Figure 1: The route - including extended scope from Thessaloniki to Komotini

Recently, TAP extended the scope of the pipeline from Thessaloniki to Komotini on the Greek end point of the existing Interconnector Turkey-Greece (ITG). This will serve to simplify commercial interfaces and ensure project control. It will also make it possible to place a compressor station at the start of the pipeline in Komotini, and a second one at the Albanian side of the offshore crossing. This will improve both the technical and commercial features of the project.

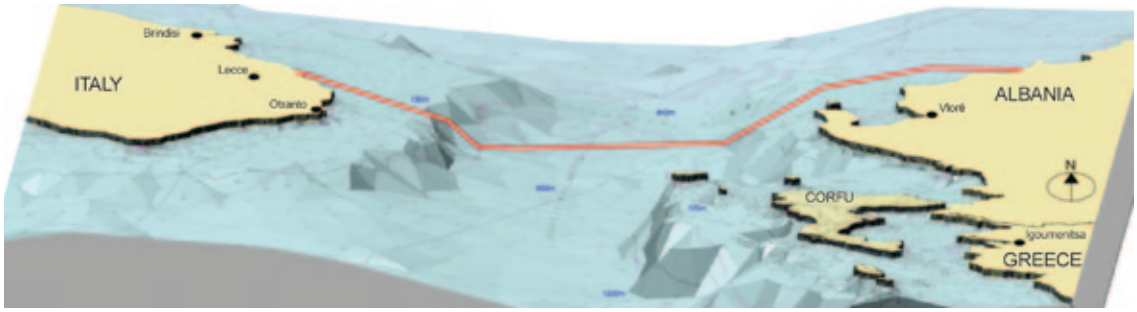
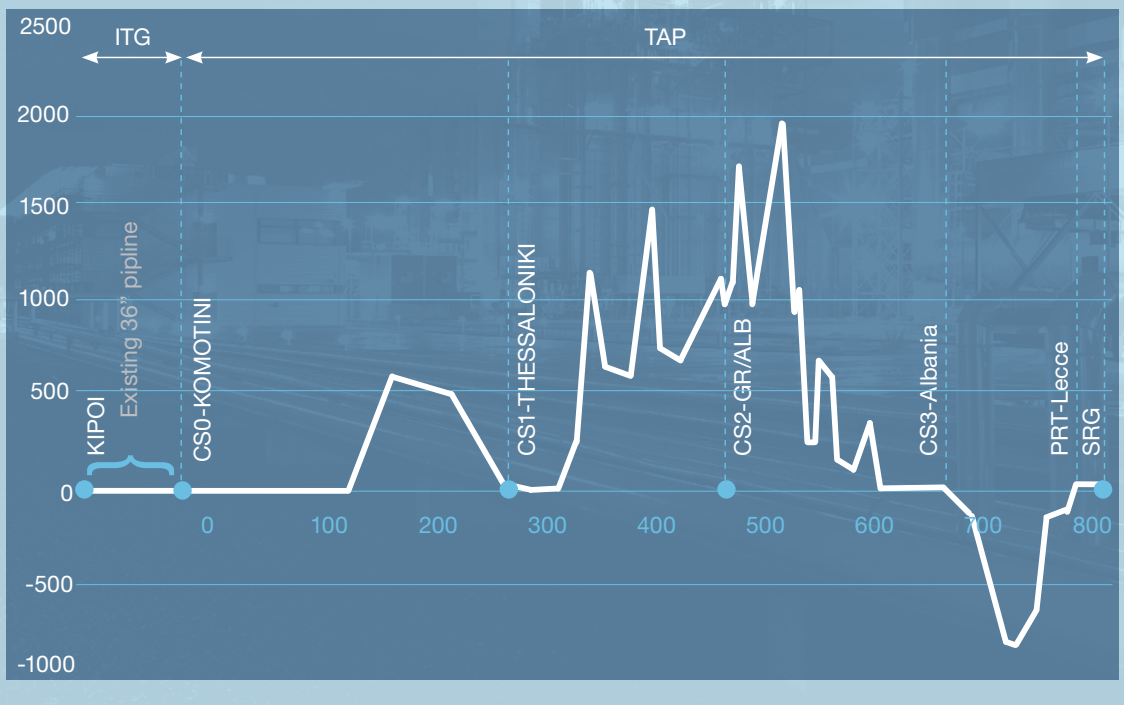


Figure 2: TAP offshore route – limited depth and favorable slope

Technical Specifications

- The TAP route will be approximately 800 kilometres in length
- Deepest part offshore will be at 810 meters below sea level
- The onshore part of the pipeline will have a diameter of 48 inches (1,200 millimetres), designed for a gas-flow pressure of 95 bar, while the diameter of its offshore segment will be 36 inches (914 millimetres) designed for 145 bar
- The thickness of the steel pipe wall will typically be 18 millimetres for the onshore part and 25-36 millimetres for the offshore part
- The pipeline's total weight will be approximately 400,000 metric tons, or 500 kilo per meter pipe in average

TAP Elevation Profile (m)



The optimal routing identified will avoid densely populated and environmentally sensitive areas, such as the National Hotova Park in Albania and Natura 2000 Posidonia Seagrass habitat in Italy.

Next steps will include further fine-tuning of the route and preparation of the detailed environmental and social impact assessments. These will meet the requirements set out by the EU and by the EBRD, and be fully in accordance with international best practice.

3. TAP is scalable

TAP is scalable, and can be expanded to 20 bcm/yr. While TAP's initial design capacity is 10 bcm/yr, several design choices lead to the possibility of doubling the pipeline capacity with limited further investment. As the crossing of the Adriatic will not be deeper than 810 metres below sea level, TAP can use a large diameter pipeline also for the subsea section. With this choice of pipeline dimensions, all that is needed for a future expansion of capacity is to add more compression.

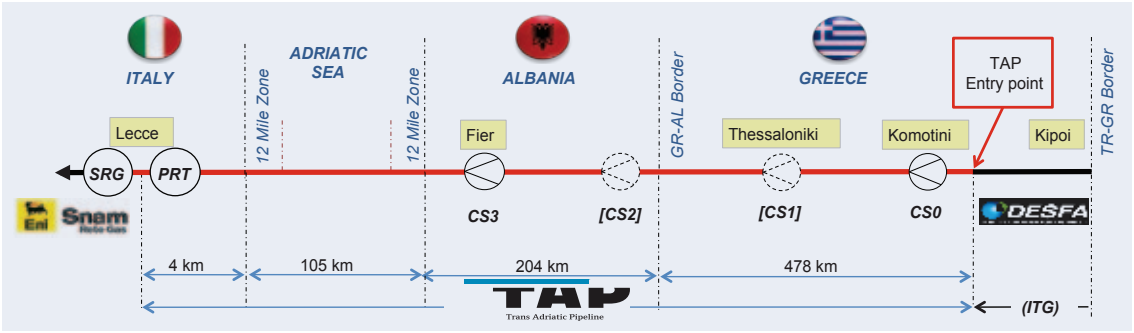
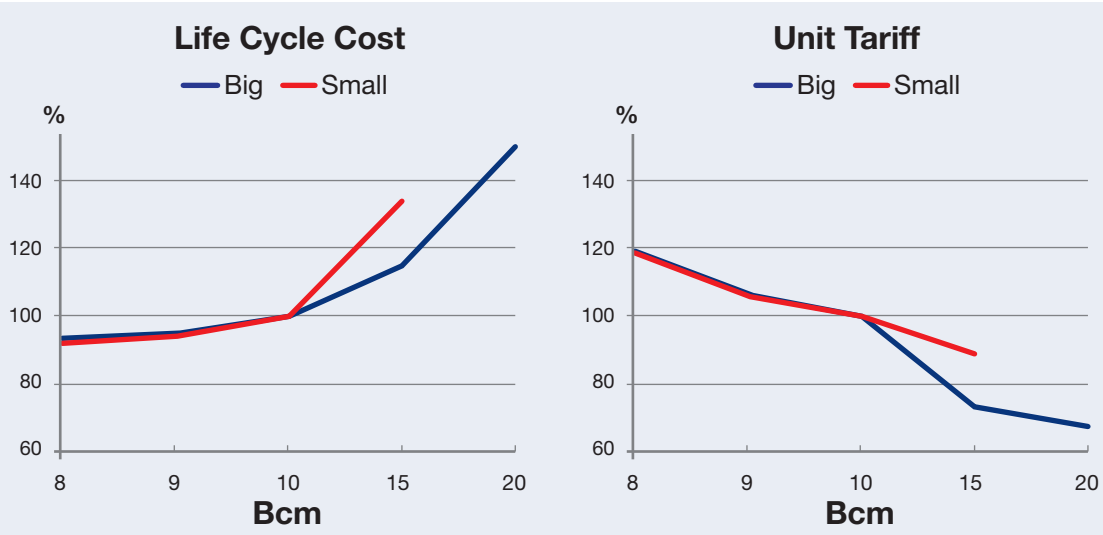


Figure 3: Principle sketch pipeline sections

Space is set aside for more compressor units at the stations in Komotini (CS0) and near Fier in Albania (CS3). It is also possible to add compression at the metering and pigging station near the Greek-Albanian border (CS2), and at a new compressor station in Thessaloniki (CS1).

Figure 3 also shows the Pipeline Receiving Terminal (PRT), a combined pressure reduction, metering and pigging station, located near Melendugno in the province of Lecce, with tie-in to the Italian grid at the boundary of the terminal. The Central Control Centre for the entire TAP system will also be located at PRT, with a backup in Albania (at CS3).

The Shah Deniz Consortium has requested a range of volume scenarios. Accordingly, TAP has studied several design concepts for the pipeline. Our analysis shows that the cost savings of using a smaller diameter pipeline is largely balanced by higher fuel costs even at the lower end of the capacity scenarios requested by SDC. Given a small diameter pipeline, any expansion beyond 10bcm/yr would lead to much higher life cycle costs. Hence, by choosing the bigger pipeline diameter, TAP enables a cost effective expansion with no extra cost in the base case scenario. A phased development is foreseen, with any capacity expansion backed by long-term ship-or-pay commitments leading to reduced tariffs for all shippers in the pipeline. Current estimates indicate that an expansion from 10 to 20 bcm/yr capacity after five years of operation would lead to a 40% reduction in the tariff.



Life cycle cost = CAPEX + development costs + financing cost + interest during construction + NPV of OPEX + NPV of fuel gas costs

Big diameter pipeline = 48” onshore and 36” offshore
Small diameter pipeline = 42” onshore and 32” offshore

Figure 4: Scalability comes without extra cost for the initial capacity

4. TAP will deliver

TAP relies on its shareholders for financial backing and governance, as well as providing technical and managerial resources to the project organisation. TAP's shareholders have world class capabilities and experience in developing gas infrastructure both onshore and offshore. This experience is brought to bear both through the project organisation and by engaging Statoil and E.ON as Technical Service Providers (TSPs) for the offshore and onshore sections respectively.

The TSPs are responsible for the design and construction of the various elements of the project, with the shareholder companies using their own governing documents, systems and procedures in the performance of the work. In this way, the project also has access to framework contracts ensuring quality of deliveries in terms of compliance with technical specifications, cost and timing.

The extensive experience of the shareholders in successfully operating both onshore and offshore gas pipelines will ensure safe and reliable operations of TAP.

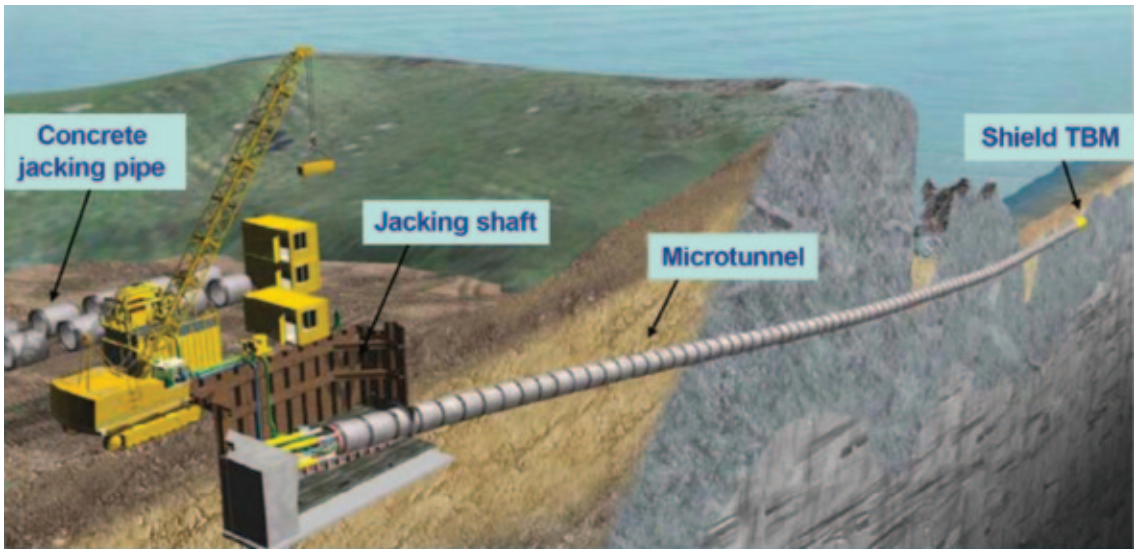


Figure 5: Microtunnel solution for Italian landfall

5. Commercial and financial strength

TAP provides a competitive and transparent tariff for shippers, while covering costs and ensuring debt service and an acceptable rate of return to shareholders. TAP offers a “one stop shop” from SDC’s delivery point to the entry to the Italian grid. Other exit points along the route can also be implemented if necessary. The tariff methodology and resulting tariffs are detailed in the response to the Request for Proposal to SDC along with the draft Gas Transportation Agreement for transit from the Greek-Turkish border to the tie-in point in Italy.

TAP targets a 70/30 split between external financing and equity contributions from shareholders. The TAP project is bankable through complying with the performance requirements of the EBRD, having long-term commitments from future shippers of gas and with the current shareholders providing the necessary financial backbone for securing project financing.

TAP does not rely on public sector financial support or subsidies. Through the chosen route, TAP will be one of the largest foreign direct investments into Greece, and as such will generate significant benefits and prospects for Greek industry and local communities. Similarly, Albania will benefit from the project.

6. Well under way on regulatory issues

TAP is also committed to fulfilling all regulatory requirements at the right time.

- TAP has submitted applications in all three host countries for exemption from the Third Party Access (TPA) rules of the EU.
- The project has also gotten well under way on the Environmental and Social Impact Assessments (ESIAs), having submitted scoping or preliminary applications in all three countries. The final documents will be submitted over the next few months.
- In Italy, TAP has applied for the Single Authorisation, the umbrella permit required for all pipeline development and operation activities.
- In Greece, TAP has applied for both approval to construct an Independent Natural Gas System, and for access to capacity in the National Natural Gas System.
- In Albania, TAP has commenced the process of obtaining a Special Permit to own and construct a pipeline.

7. Transparency and highest standards

TAP will be sustainable (balancing economic, environmental and social considerations) and conducted in line with international best practice (using the BTC and SCP pipeline developments as benchmarks). This overall commitment has been outlined publicly in TAP's Policy on Corporate Social Responsibility (CSR). TAP has committed to conduct an Environmental and Social Impact Assessment (ESIA) in each country. It is already implementing CSR activities in Greece, Albania and Italy under the close scrutiny of national, regional and international authorities, civil society and the public at large. It has submitted its Scoping documents in all three countries this year and is preparing to submit its full ESIA in 2012. A preliminary Environmental Impact Assessment was submitted in Greece in September 2011.

Figure 6: Reinstating the environment – minimal visual impact of pipeline (Source E.ON)

After establishing the technical feasibility of the project, TAP has engaged extensively with stakeholders as part of the permitting processes. In order to provide as much comfort as possible to its stakeholders, numerous studies on alternative routing, landfall locations and construction methods have been completed. In total, 18 routes were scrutinised from a technical, environmental and social impact point of view, with TAP working in close collaboration with local authorities in Italy, Greece and Albania. Through comprehensive route refinement processes in all three countries and extensive consultation with all stakeholders affected – involving more than 400 public meetings and close to 3000 people to date – the project has now identified the key social, environmental and cultural heritage risks and is working towards mitigating measures that will ensure the safe transportation of gas.

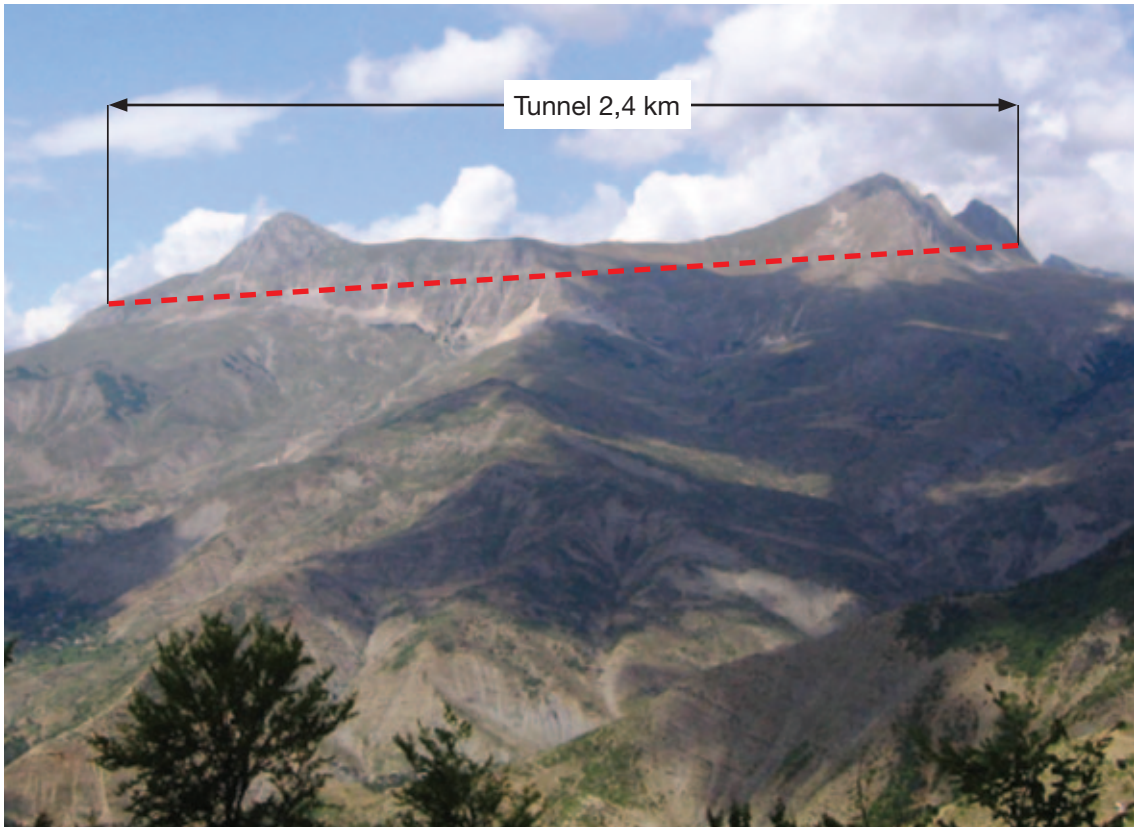


Figure 7: Tunnel solution for difficult terrain - Mali i Ostrovices - Albania

8. Public policy considerations

TAP will contribute to improving Europe's security of gas supply in several ways. By being the pipeline that opens up the Southern Gas Corridor it will provide additional diversity of gas sources and transport routes. It will also help meet other EU energy policy goals and new requirements for gas infrastructure through:

Physical Reverse Flow in case of emergency:
TAP has designed its system to accommodate physical reverse flow that can be activated in the event of any emergency. This ensures that in the case of supply interruptions further upstream (as seen for example in the Ukraine in 2009), a share of the gas from North Africa flowing north through Italy can be easily redirected towards Greece and South Eastern Europe. Through the Regulation of Security of Gas Supply, which has been in force since December 2010, the EU has also made reverse-flow a mandatory feature of any new gas interconnector.

Gas deliveries to South East Europe:
Through further delivery points, TAP can be an important contributor to the development of the gas markets of Albania and South East Europe. TAP is capable of delivering substantial benefits to the transit countries, but also has the potential to play a major role in developing the currently immature gas markets of South Eastern Europe and meeting their economic and environmental goals.

The TAP pipeline provides a base for the gasification and thereby the economic development of these countries. This creates opportunities also for companies entering this region, and for the relationship between consumer countries and Azerbaijan. To this end, TAP has entered into Memoranda of Understanding and Cooperation with Croatia (Plinacro), Bosnia-Herzegovina (BH-Gas), Montenegro, Slovenia (Geoplin Plinovodi), and Albania for the aligned development of TAP and the Ionian Adriatic Pipeline (IAP).

New gas storage capacity:
TAP has explored the option to develop gas storage in the Dumre region in central Albania, using large underground salt formations. Such storage would enhance security of supply and provide increased flexibility to deal with unexpected supply disruptions and normal variations in consumption.

9. Conclusion

With its proposal, TAP presents a transportation solution for Shah Deniz phase 2 gas that is commercially strong, technologically state-of-the-art and environmentally sound. By providing a cost-efficient and reliable pipeline that completes the connection between the Azerbaijani field and a European market with attractive gas prices, TAP will play a key part in helping the Shah Deniz Consortium companies realise the values these gas volumes represent.

TAP has two of Europe's leading gas pipeline operators as owners and main service providers. This enables TAP to provide a strong assurance for a timely, cost-efficient and safe construction project. The pipeline will be ready for reliable and safe operations in time to receive the first gas from Shah Deniz phase 2. TAP's built-in flexibility makes it ideally suited to handle up to 20 bcm/yr should additional gas volumes become available.

TAP proposes competitive commercial terms to the Shah Deniz Consortium. The project will obtain project financing at market terms and will not require any public sector financial support. It will deliver value for the buyers, the host countries and the sellers.

By being the project that effectively opens up the Southern Gas Corridor, TAP will also be an important contributor to improved security of gas supply for the EU by providing increased diversity of energy sources and transportation routes. It will meet the EU's requirements for reverse flow and may add new gas storage capacity in Albania. When additional volumes become available it can be a key catalyst for developing the gas markets in the Western Balkans.

TAP and its owners are ready to go ahead with the project and look forward to serving the Shah Deniz Consortium by bringing Azeri gas to European buyers.

TAP shareholders

- EGL initiated the TAP concept
- EGL is an energy trading company based in Switzerland
- EGL is part of the Axpo group, Switzerland's leading energy utility, wholly owned by the cantons of north-eastern Switzerland
- It trades energy across borders, different markets and commodities such as electricity, natural gas and energy-related financial products
- It has its own assets (electricity production, transport infrastructure, long-term procurement contracts)
- It has a presence in 21 European markets, including Turkey, Italy, Greece, Albania and a new office in Azerbaijan
- Operates gas fired power plants in Italy

www.egl.eu
www.axpo.ch

- Joined TAP in 2008
- Integrated energy company based in Norway (Market capitalisation = €51 Billion in Oct 2011)
- 20,000 employees operating in 34 countries
- Second largest supplier of gas to Europe
- The world's largest deepwater operator with more than 8,000 km of subsea pipelines
- International gas operations worldwide
- Partner in Shah Deniz Consortium and Chairman of the Gas Commercial Committee
- Rating agencies: Moody's: AA2 / S&P: AA-

www.statoil.com

- Joined TAP on 20th May 2010
- E.ON Ruhrgas, unit of E.ON Group, is a leading European gas company based in Essen, Germany
- E.ON is the 2nd largest European utility (Market capitalisation = €44 Billion at year end 2010)
- Workforce of over 85,000 employees
- In 2009, E.ON Ruhrgas supplied a total of nearly 53 billion m^3 of gas to its customers
- Open Grid Europe, a subsidiary of E.ON Ruhrgas, owns more than 11,600 km of gas pipelines
- Rating agencies: Moody's: A2 / S&P: A

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Learn more
If you would like to know more about the proposed pipeline, its benefits or any aspect of the TAP project, please contact a member of our team on the details below.

Trans Adriatic Pipeline

Trans Adriatic Pipeline AG
Lindenstrasse 2
6340 Baar
Switzerland

Phone: +41 41 747 3400
Fax: +41 41 747 3401
Email: enquiries@tap-ag.com

http://twitter.com/tap_pipeline
www.trans-adriatic-pipeline.com