White Stream™

A Priority Project of the EU and integral component of the Southern Gas Corridor

Roberto Pirani – Chairman of the Board

OSCE – Ashgabat  May 2010

Project development by the White Stream Consortium
GUEU - White Stream Pipeline Company Ltd – London, UK
www.gueu-whitestream.com
A factor important for Caspian region governments and for potential upstream investors is the security and continuity of demand.

The concurrent development of White Stream with Nabucco and other Turkish loop projects offers producers and exporters such security of demand.

The important result is not only 60 Bcm+ of capacity, but also dramatic reduction of perceived transportation risks.

Therefore the projects included in EU’s Southern Corridor plan are mutually reinforcing and all needed for their individual and indispensable role.
The EU Energy Commissioner Günther Oettinger told the energy forum in Ashgabat on the 14th of April 2010:

“The Commission will continue to strongly support the development of the Southern Corridor”

“Several projects make up the southern corridor, including Nabucco, the ITGI and White Stream.

The importance of the southern corridor was explicitly recognized by all 27 Head of States of the European Union at the European Council in March 2009”
The White Stream project has been approved as a Project of Common Interest and a Priority Project...
White Stream is feasible

Our work up to date co-funded by the European Commission demonstrates:

- **Market** feasibility
  - **Demand** for gas
  - **Supply** of gas
- **Economic** and **commercial** feasibility
- **Technical** feasibility
  - proven ultra-deep water pipeline technology
- **Legal** feasibility
  - UN Law of the Sea Convention
The project is commercially viable and provides valuable flexibility in capacity build-up

- The pipeline will be developed in stages
- The volume of gas will build from 2 to 32 Bcm/y [for comparison large power station needs ~ 1 Bcm/y]
- Capacity can be increased to meet need by adding strings
- The build schedule is flexible
- Revenue is assumed to follow volume ramp-up

Importantly, the first 8 Bcm/y stage is viable by itself
White Stream 1 – Georgia to Constanta will not be sufficient to match current rapid development plans in the Caspian region.
Active developments in Caspian determined the need for accelerating White Stream 2

Our decision to work on White Stream 2 (Sangachal-Constanta) earlier than its original schedule is a significant development for the Southern Corridor.
Feasibility: Proven technology
Initial routings have been assessed

Marine life zone: dissolved O₂, no H₂S, salinity 17 ‰
Dead zone: H₂S, no dissolved O₂, salinity 20 to 30 ‰

^ Elevation m

offshore: 1 105 km
Constanța
Black Sea

onshore: 658 km
Sangachal

East >

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Phased development of the White Stream pipeline project

Deep-water proven technology dictates the phased development of the White Stream pipeline project: capacity of each separate string equals to 8bcm/year.

The high uncertainty with gas availability magnifies the value of the flexibility and optionality inherent in White Stream.

Alternate option for the Black Sea crossing using LNG tankers was also examined but pipeline was found to have commercial advantage, particularly for large volumes over this relatively short distance and more importantly, pipeline option serves much better for providing adequate confidence in security of demand, as required for success of the Southern Corridor plan.

There was numerous suggestions for White Stream to use LNG option for sea crossing. e.g. Hudson Centre article - AZERBAIJAN- REALIZING THE VISION, Zeyno Baran, January 2009, published in ‘Azerbaijan Focus’, but the developments in relation to BIG GAS strategy further strengthens the advantage of the pipeline option.
White Stream 2
Sangachal to Supsa Pipeline Configuration

- **8Bcm/y (supply from SCP)**
  Use 46in pipeline (SCP tie-in to Supsa)

- **16bcm/y (direct supply from Sangachal)**
  New 46in from Sangachal to SCP point & with 46in SCP to Supsa, with compressor station at Sangachal (max. delivery pressure 90barg) and one intermediate. Disconnect from SCP and tie-in with new pipeline.

- **32bcm/y (direct supply from Sangachal)**
  Second pipeline of 46 in from Sangachal to SCP point & with 46in SCP to Supsa, with expanded compressor stations at Sangachal and intermediate.

![Diagram of pipeline configuration](image-url)

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Typical pipeline inner support composed of two 1.3m diameter x 30m long HDPE pipes held together in a framework.

Typical pipeline outer support composed of two 0.6m diameter x 30m long HDPE pipes held together in a framework.
Crossing of Blue Stream Slide 2/2

Plan View

Typical Inner Support (5 Required)

Typical Outer Support (2 Required)

500mm Minimum Clearance (Typical)

26” Whitestream Pipeline

24” Bluestream Pipeline

Elevation

Typical pipeline outer support composed of two 0.6m diameter x 30m long HDPE pipes held together in a framework.

Typical pipeline inner support composed of two 1.3m diameter x 30m long HDPE pipes held together in a framework.

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There are no legal barriers to White Stream

- International and National laws define the rights and obligations
- Precedent: Blue Stream pipeline has already crossed the Black Sea

**Key legal issues:**
- Coastal states do not have the legal means to prevent construction and operation of White Stream
- White Stream will enter 12 nautical mile territorial waters only at the landing points at either end of the route
- International Law guarantees freedom to lay pipelines on the continental shelf and in the Exclusive Economic Zone
- The existence of Blue Stream is not a legal obstacle to White Stream – there are many examples of submarine pipelines that cross other pipelines and cables
- White Stream will implement international standard EIA requirements
White Stream’s political support is broad and growing

European Union
Romania
Baltic states
Poland
Ukraine
Georgia
Azerbaijan
Turkmenistan
US and UK
Four more development phases to operation
Phases correspond to a milestones

Activities
- Concept development, studies proving feasibility, EU status of Priority Project and inclusion in EU’s “Southern Corridor plan”, political support, development funding
- Environmental scoping study, Route reconnaissance survey, mid stage funding
- Environmental and social impact assessment, Permitting and route approvals, Gas supply
- Gas contracts, Structured financing, Engineering design, EPC planning, procurement
- Construct subsea pipelines, onshore pipelines, terminals, commissioning

Phases & Milestones
- Proof-of-concept: 2007
- ESIA scoped: 2010
- Permits and approvals: 2012
- Detailed design: 2014
- Construction: 2016
- Operation: 2016 >
How White Stream helps
The EU needs to replace declining production and meet new demand growth.

The future gas import gap is highly uncertain, but certainly very large.

⇒ There is a growing need for additional gas from new supply routes to the EU.
Reserves and resources to supply EU’s Southern Corridor are huge

Change of PARADIGM:
Caspian basin – the third ‘major league’ gas supply centre.
Gaffney Cline REPORT confirms many companies’ long-held view –
the gas is there

Main data: BP Statistical Review of World Energy, 2009 (Tcm)
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And what is the scale of gas import EU seeks from the Caspian Region?

EU targets strategic magnitudes in developing gas trade with the Caspian Region. After Russia-Ukraine gas crisis and Russia-Georgia war EU’s interest in securing a large amounts from the Southern Corridor started to take shape faster:

‘CDC’s aim will be ultimately to bring 60bn-120bn cubic metres of gas per year to the EU – equivalent to 12-25 per cent of European consumption today’

FT on EU’s ‘strategic energy review’ and ‘Caspian Development Corporation’ (CDC) - 2008, November 13

‘The European Union's overall goal is to obtain some 10 percent of the gas it burns, or roughly 60 billion cubic meters per year, from the Middle East and Central Asia by 2020’

Deutsche Welle on Prague ‘Southern Corridor’ Summit – 2009. May 8

‘A variety of gas supplies could feed into these pipelines... however a key initiative would be the making of a large offer (30-40 bcm for many years) to buy gas from Turkmenistan, to be sent across the Caspian Sea’

EU-Central Asia Monitoring (EUCAM) final report – 2010, February 22
Is EU’s gas market a desirable destination for Caspian Countries? Are other markets equally attractive/potent?

This includes total Russian and Caspian/ Central Asian gas in 2030: to WEST 239 & 55 EAST

Net inter-regional natural gas trade flows between major regions (Bcm per year)

IEA, World Energy Outlook 2009, Figure 12.5, p435, © OECD/IEA 2009

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What kind of pull is needed?

- There is a genuine interest in the Region to trade with the EU and huge potential for such trade.

- There is a growing demand in Europe and acknowledged desire to establish such trade.

**but the axiom is that ... gas needs to be pulled**

An integrated approach embedded in the EU’s Southern Corridor plan is designed to provide the needed pull through implementation of both specifically elaborated strategies: **BIG GAS** and **Effective CORRIDOR**.
Two key strategies break this deadlock

The **Southern Corridor plan** includes both key strategies that needed to open up Caspian gas to western investments and westward export directly to the European gas market

1. **BIG GAS strategy** - by stressing its aim to buy large import volume from Caspian (90 Bcm/y or more) EU reduces barriers hindering the development.

2. **Effective CORRIDOR strategy** - by stressing its aim to develop all key projects of the Southern Corridor EU reduces the perceived transportation risks for the Caspian producers and enables decisions on trans-Caspian crossing and new PSAs with western companies.

Upstream investments are huge and risky. Caspian producers will want to export through both Nabucco and White Stream. The EU’s Southern Corridor plan includes support for both Nabucco and White Stream.
‘As you know, several projects make up the Southern Corridor, including Nabucco, the interconnector between Turkey, Greece, Italy and White Stream.’

— Fabrizio Barbaso
Deputy Director General DG TREN
European Commission

Bucharest 1st October 2009
www.acus.org
A successful Caspian gas strategy:
BIG GAS offer

If Caspian countries are expected to decide on allowing western companies for E&P and support westbound projects, they will need to see that potential exports to Europe are sufficiently high and capable of providing a significant part of their future revenues.

... otherwise it will be difficult for them to get engaged in the complex process not favored by some of the established partners

CDC – conceived by Commission as a component of the Southern Gas Corridor would be able to suggest such expanded offer
Nabucco, the flagship of the Southern Corridor, if taken separately, is not enough, to either make a real difference to EU energy security or to enable large upstream investments, particularly in Turkmen onshore fields.

Security and continuity of demand is an important factor for Caspian region governments and for potential upstream investors.

The **concurrent** development of White Stream with Nabucco offers producers and exporters such **security of demand** Therefore the projects are **mutually reinforcing**
European co-ordinator: components of the Southern Corridor are mutually reinforcing

• “White Stream, Nabucco, TAP and ITGI … are mutually reinforcing if combined with the integration of isolated networks …”

• “I therefore welcome the … [TEN-E funded] study on White Stream. I am especially intrigued by the prospect of developing a direct sub-sea route from Georgia to Romania and then overland to Italy (along the Pan-European Oil Pipeline Route).”
  — Jozias Van Aartsen, Activity Report Feb 2009

‘Turkey had earlier bargained toughly (some said destructively). The EU’s quiet expression of interest earlier this year in White Stream… may have changed Turkish minds.’
  ‘The Economist‘ on signing of Nabucco IGA, Jul 16th 2009
White Stream will facilitate a beneficial balance between major gas market players

- The Nabucco Inter-Governmental Agreement (IGA) was recently ratified by parliaments of signatory countries. This is a very important step forward for Nabucco and the whole Southern Corridor plan: this achievement is expected to **accelerate the progress** with other essential components of the Southern Corridor - necessary for meeting requirements on the level of gas **import volumes** and **transportation risks**

- No producer wants to depend on only one, large, transit country - Central Asian players will not feel secure to be dependent on Turkey any more than Russia likes to depend on Ukraine
A decade ago a chance to develop an export route to Europe for large volumes of Caspian gas failed: alignment of interests among key players could not be achieved.

- November 1999: Framework declaration signed between Turkmenistan, Azerbaijan, Georgia and Turkey for supply of Caspian gas to Turkey and Europe
- September 2001: Construction of Blue Stream started for supply of Russian gas to Turkey
- October 2002: Blue Stream offshore pipe laying completed
- The TransCaspian gas pipeline was never built.

Caspian producers will gain significantly greater confidence in security of exports with White Stream providing a direct and additional pipeline route to Europe. And alignment of interests is intrinsic for the Southern Corridor plan.
The routes to EU market have not yet been constructed:

- A pipeline through Turkey, Bulgaria, Romania, Hungary and Austria was first proposed in 1996 (later became Nabucco)
- TCGP failed despite expectations

Caspian producer countries would always prefer to export directly to EU markets \textit{...if possible...}

- but without \textit{guarantees of large volumes} of sales and the security of \textit{diverse export routes} the Caspian producers:
  - may not afford to turn away from their traditional markets
  - may not support investments in upstream production for Europe
- \textit{... and without assured upstream investment routes to market will not be built}
Creating a virtuous circle

The Southern Corridor as an integrated whole provides the solution

The synergy of White Stream and the CDC with the Turkish transportation loop is targeted to overcome the dilemma by stimulating upstream investments in the Caspian region, as well as pipelines across the Caspian Sea.

Concurrent success with all key components is breaking the cause and-consequence cycle that was hindering progress on the commercially and strategically important EU-Caspian Basin gas trade.
There are two main scenarios for future Eurasia – EU gas trade flows

The EU Southern Corridor vision

- A mutually reinforcing set of pipelines in the Southern Corridor diversifies gas sources and routes
- This helps balance the dominant supplier’s commercial position, particularly in Central and Eastern Europe
- Along with North African and North Sea gas plus LNG, the security of supply is bolstered and EU gas market competitiveness is enhanced

Eurasia Without Southern Corridor

- The dominant supplier controls all sources and pipeline routes to Europe from the east
- Monopoly transit from the south-east severely limits the flows from the Caspian via Turkey
- Central and Eastern Europe 100% dependent on the dominant supplier for gas imports
- Fully independent sources become limited to declining indigenous and North Sea gas plus LNG, which are least effective in providing diversity for Central and Eastern Europe
The EU Southern Corridor vision will STRENGTHEN Europe’s single gas market.
The three success stories from the East-west corridor prove:

that market-transforming pipelines can be built
Europe’s gas supplies from Russia and the Caspian will supplement each other

Source: European Commission, DG TREN
White Stream will facilitate a beneficial balance between major gas market players.

**Market**
- European Union

**Major transit**
- Ukraine
- Black Sea
- Turkey

**Major sources**
- Russia
- Caspian and Central Asian states

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