Can Turkey Emerge As Gas Trading Hub in SEE Region?

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About PETFORM

Established in 2000, PETFORM has played a crucial role in the transfer of private sector views to the public authorities regarding to Turkish energy legislation amendments. Member companies mainly have activities in 2 sectors:

- Exploration & Production Sector
- Natural Gas Market

Member Companies

- AKENERJİ
- AKMERCAN ENERJİ
- AKFEL
- AKSA
- ALADDIN MIDDLE EAST
- ANGORAGAZ
- ATTİLA DOĞAN İNŞAAT
- AVRASYA GAZ
- AYGAZ
- BATI HATTI GAZ
- BM HOLDİNG
- BORDRILL
- BOSPHORUSGAZ
- BP
- CENGİZ ENERJİ
- CHEVRON
- ÇALIK ENERJİ
- DEMİRÖREN EGL
- DOĞAL ENERJİ
- DOĞAN ENERJİ
- EDISON
- EGEGAZ
- ENERCO ENERJİ
- ENERJİSA
- ENERYA
- ENGIE
- ERDGAZ
- EWE ENERJİ
- EXXONMOBIL
- GENEL ENERGY
- GLOBAL MADEN
- GÜNEY YILDIZI PETROL
- HATTUŞA ENERJİ
- IBS RESEARCH
- KİBAR ENERJİ
- LİMAK ENERJİ
- MARSA ENERGY
- MET ENERJİ
- NATURGAZ
- NATURELGAZ
- OMV
- PALMET ENERJİ
- PERENCO
- POZİTİF DOĞALGAZ
- RWE
- SCHLUMBERGER
- SHELL ENERJİ
- SOCAR
- TBS PETROL
- TEKFEN İNŞAAT
- THRACE BASIN
- TOTAL
- TRANSATLANTIC PETROLEUM
- TURCAS
- VALEURA ENERGY
- VOLT ENERJİ
- ZORLU ENERJİ

Development Process of Turkish Natural Gas Market

PETFORM

IGA USSR – Turkey Contract (18.09.1984)

Contract № 1 → 14.02.1986 (6 bcm)

Contract № 2 → 10.12.1996 (Turusgaz)

Russia - Turkey (29.08.1997 & 15.12.1997 – Blue Stream)

Contract № 3 → February 1998

LNG Supply from Algeria (1994)

Natural Gas Market Law (03.03.2001)

Gas Supply from Iran (2002)

Blue Stream Project (February 2003)

1987

1998

2003

2005

2013

2016

Preparation Process

Market Development Based on Russian Gas

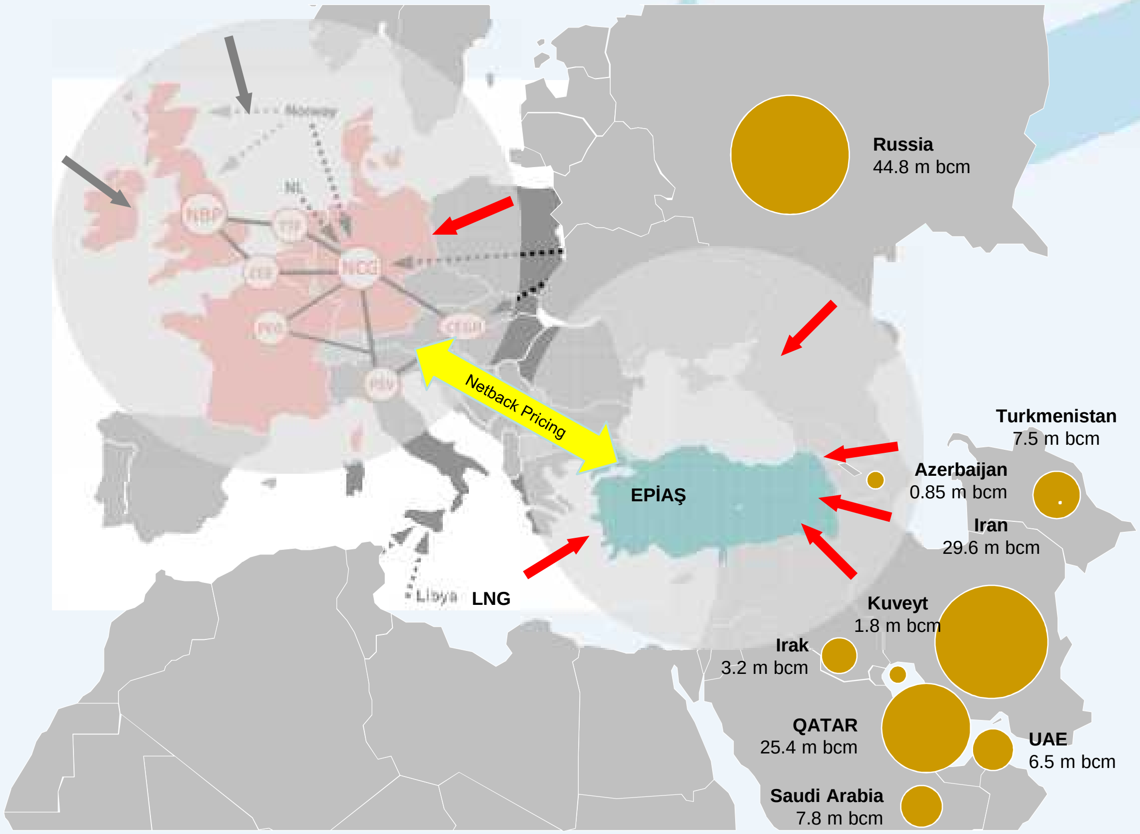
Increase in Gas Supply Sources

First Steps in Liberalization Process

Market Development in Liberalization Process

TANAP, New FSRU Projects, Tuz Gölü Gas Storage, Silivri Gas Storage Capcity Extension, LNG Terminals Capacity Extension, FSRU Projects, Gas Trading Platform Development Studies Under EPIAS, Turkish Stream IGA, IBT

Integration of Turkey with European Gas Hubs



Bubble size is indicative of the size of reserves

- 8 Major European Trading Hub
- Trading on OTC's via Brokers
- Trading on Energy Exchanges

If Turkey can make necessary structural reforms, Turkish natural gas market will be integrated with European trading hubs and generate reference price for natural gas trade in the region.

What Should Be Done?

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Physical Infrastructure

- Very well developed and maintained physical infrastructure
- No rectrictions and congestions to meet peak demand
- Cross border capacity development with minimum congestion
- New storage and LNG facilities for supporting supply security to seasonal and peak demands

Regulatory Framework

-Policy drafting regulatory body should understand the real Dynamics of the Energy, TPA, Network Code, Independent TSO etc.

- Implementation of policies via EU directives.

- Monitoring of wholesale market integrity, competition (antitrust) and effective consumer interest protection is needed for competition

-Unbundling of transmission and counteraction of incumbets' vertical dominance

Independence of Transmission System Operator

-Appropriate capacity-booking model (entry/exit model, use it or loose it principle)

- Effective balancing mechanism

- Effective nomination processes

- Publicizied imbalance charging structures (not overly punitive)

-Very well integrated storage injection and withdrawal processes to the transmission system

-Transparent tariffs for system entry and exit

Commercial and Market Conditions

-Formation and active promotion of common pricing reference

- Free day ahead and intraday price assessment mechanism
- Standart and commonly expected physical contracts
- No barrier for new entries

- No destination clauses

- Transparent price-discovery mechanisms / platforms ,functioning forward market

-Good synchronization between balancing, nearby and forward markets

-Stable financial and credit envrironment and mechanisms

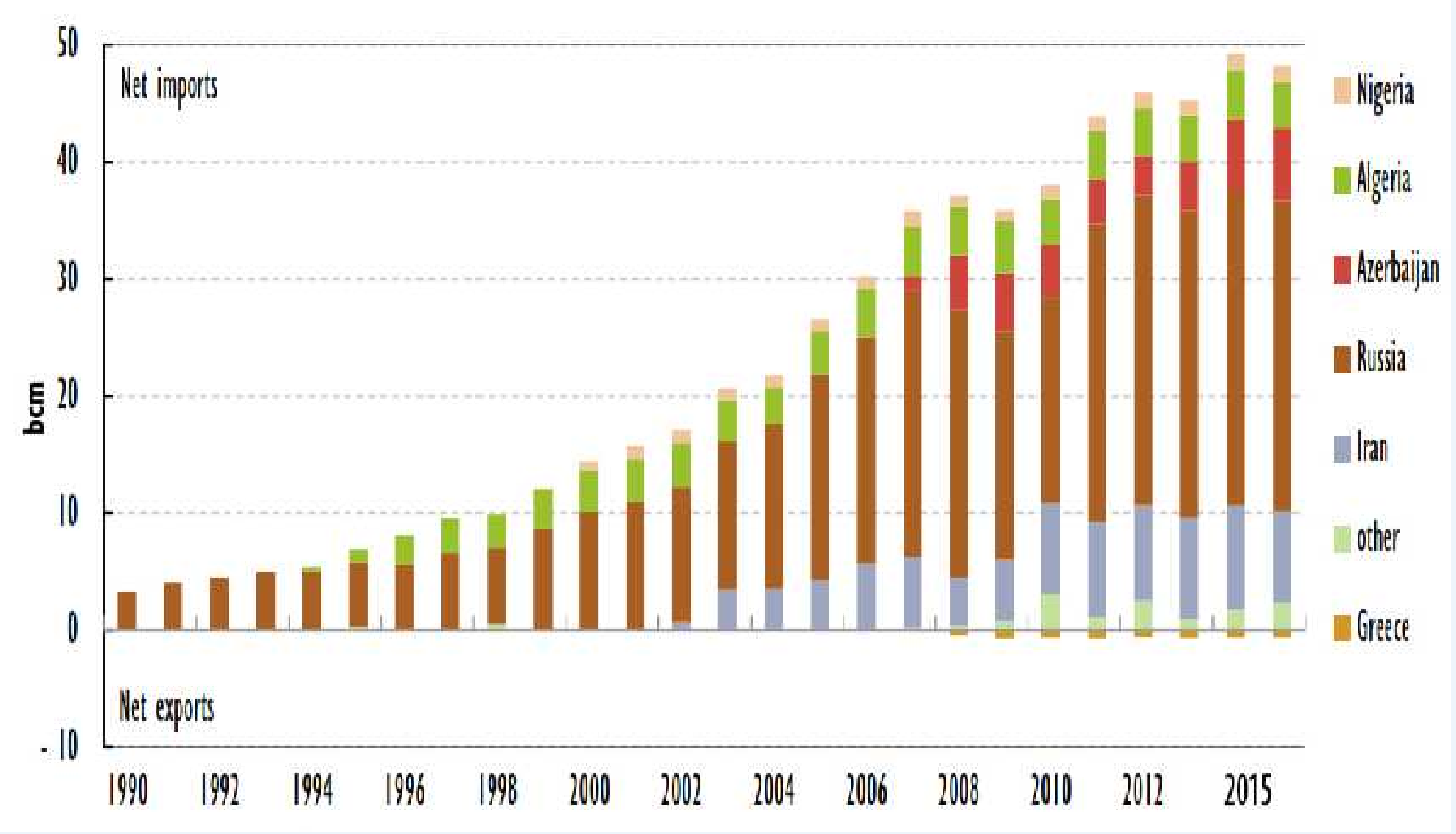
Supply & Demand and Gas Trading?

Turkey's Overall Energy Balance (1990 – 2015)

	1990	2015	Change
Total Energy Demand (million toe)	52.9	125.2	↑ 118% ↑
Total Domestic Production (million toe)	25.6	32.9	↑ 26% ↑
Total Energy Imports (million toe)	30.9	92.3	↑ 192% ↑
Coverage of Domestic Production to Total Consumption	48%	28%	↓ - 42% ↓

Source: MENR

Turkey's Natural Gas Trade By Country (1990 – 2015)



Source: IEA

Gas Import Agreements

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Contract	Date of Signature	Date of Operation	Duration (Years)	Volume (Plateau bcma)	Date of Expiration
Algeria (LNG)	Apr 1988	Aug 1994	20	4	2024 (extended)
Nigeria (LNG)	Nov 1995	Nov 1999	22	1.2	2021
Iran	Aug 1996	Dec 2001	25	10	2026
Russia (B.Stream)	Dec 1997	Feb 2003	25	16	2028
Russia (West)	Feb 1998	Mar 1998	23	4	2021
Azerbaijan	Mar 2001	Jul 2007	15	6.6	2022

Source: Energy Market Regulatory Authority

Private Players' Entrance into the Market

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Contract Release (2007)

Enerco Enerji	2.50
BosphorusGaz	0.75
AvrasyaGaz	0.50
Shell Enerji	0.25 +
	4 bcm

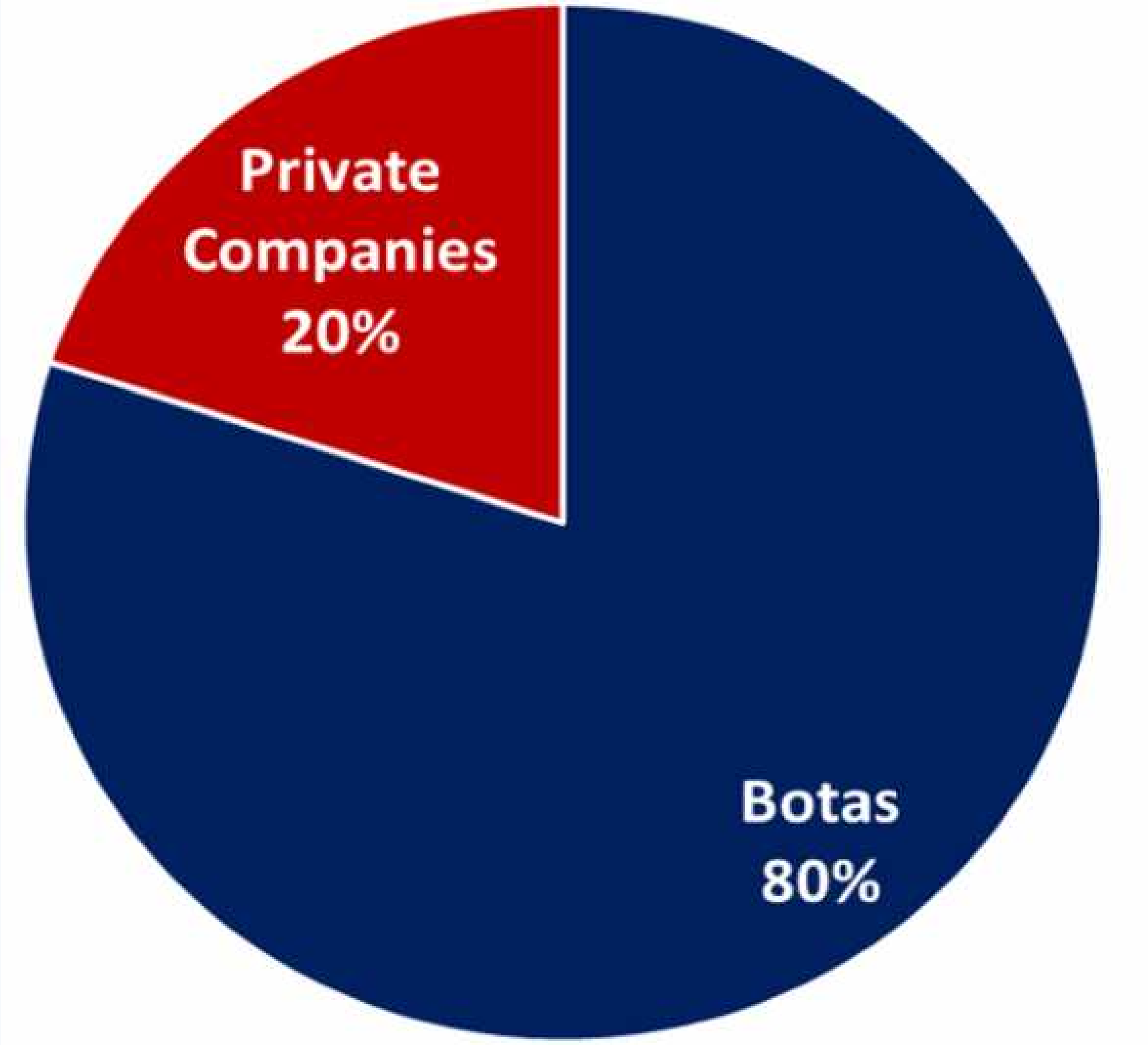
Contract Renewal (2013)

Akfel Gaz	2.25
BosphorusGaz	1.75
Kibar Enerji	1.00
Batı Hattı	1.00 +
	6 bcm

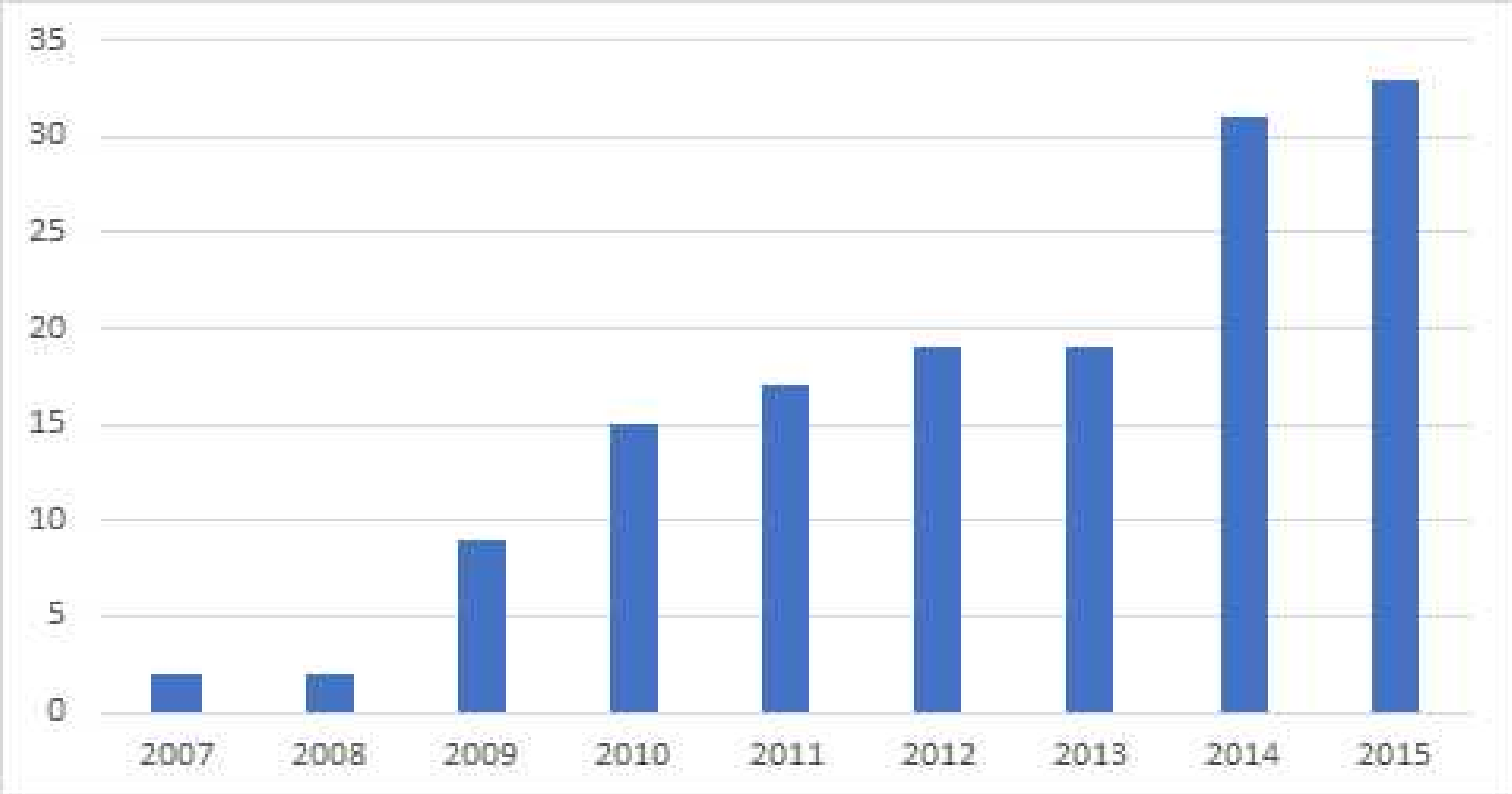
TR – AZ Agreement (2013)

SOCAR	1.20

Market Shares

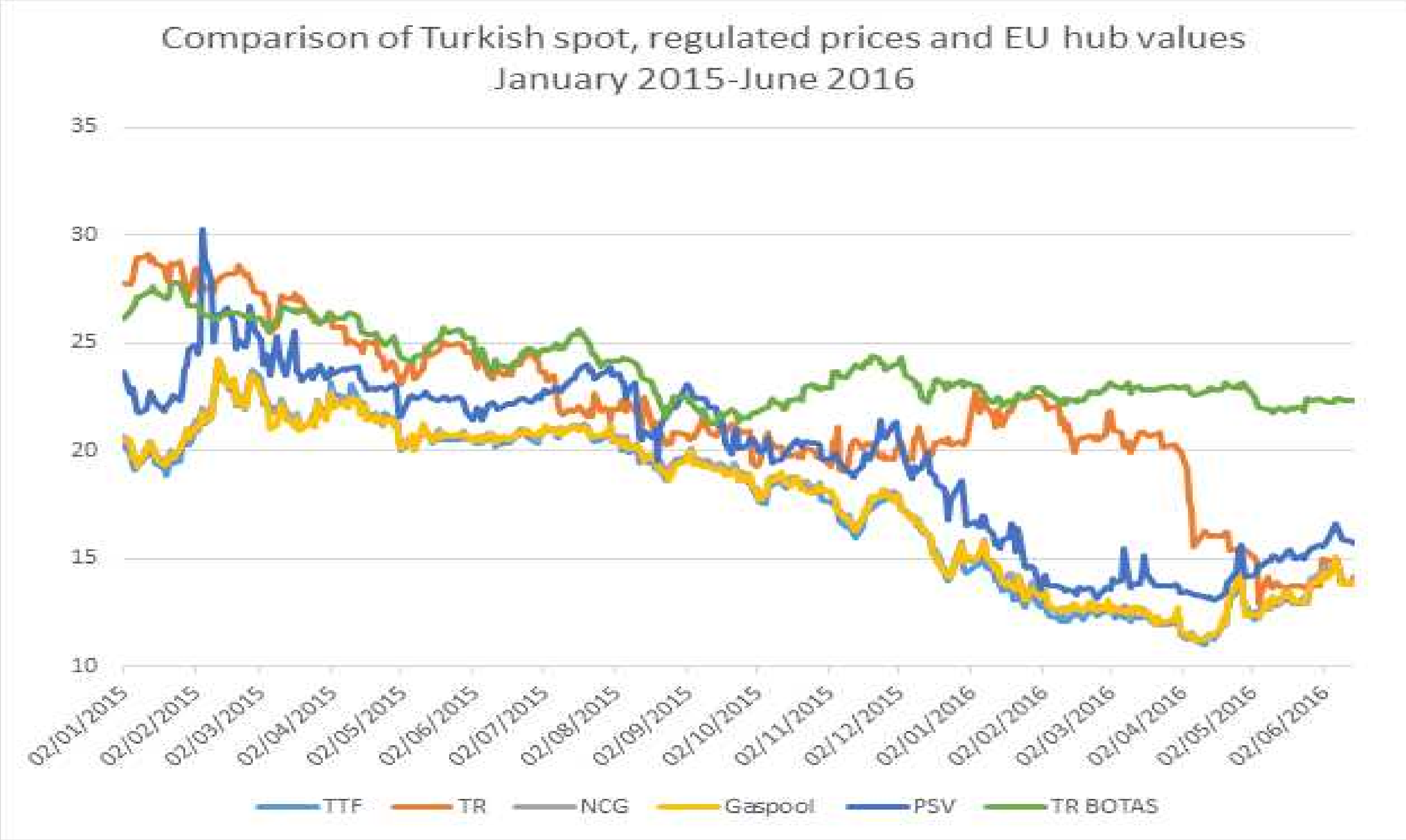


Number of Private Wholesalers in the Market



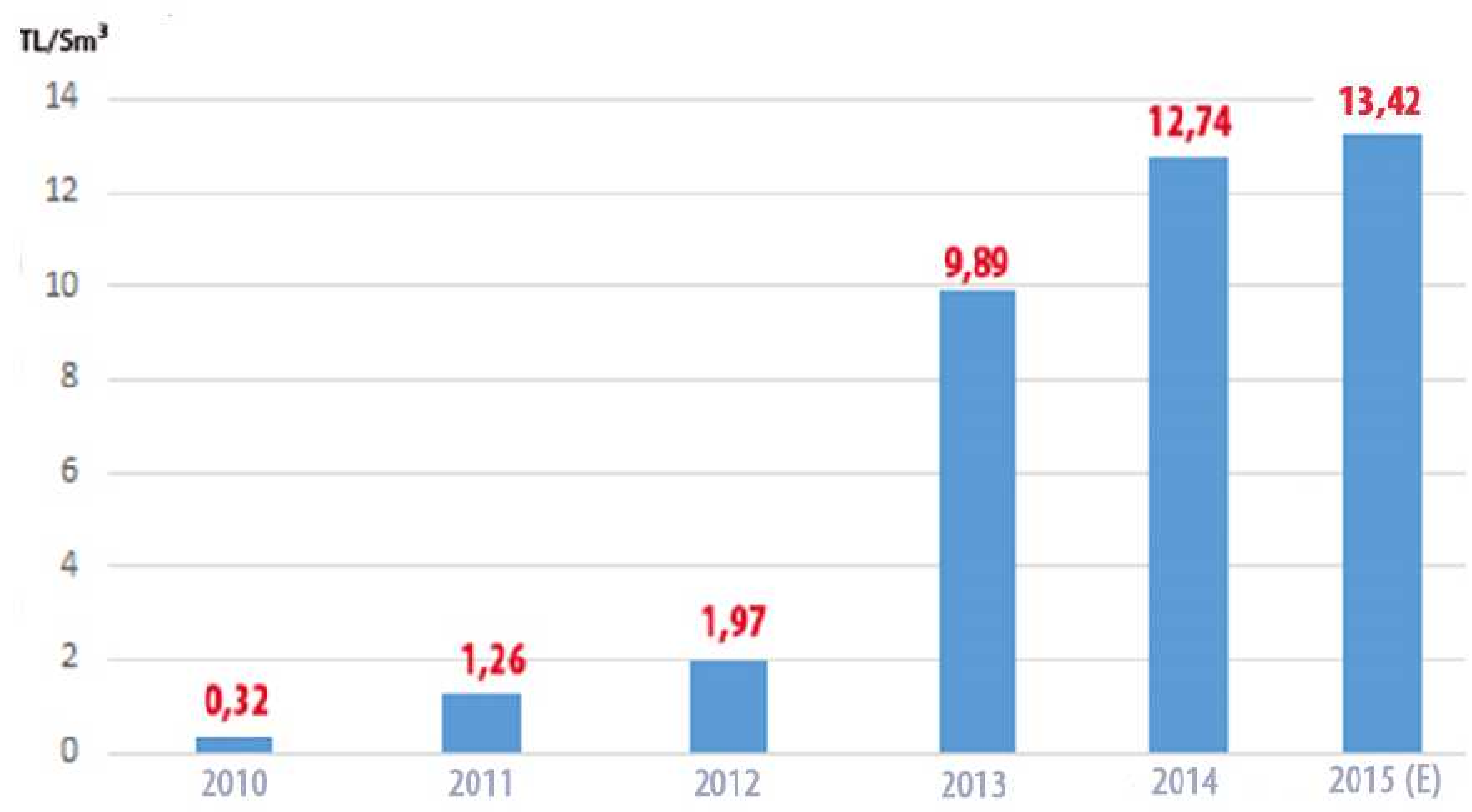
Source: BOTAS Transmission

Pricing of Gas



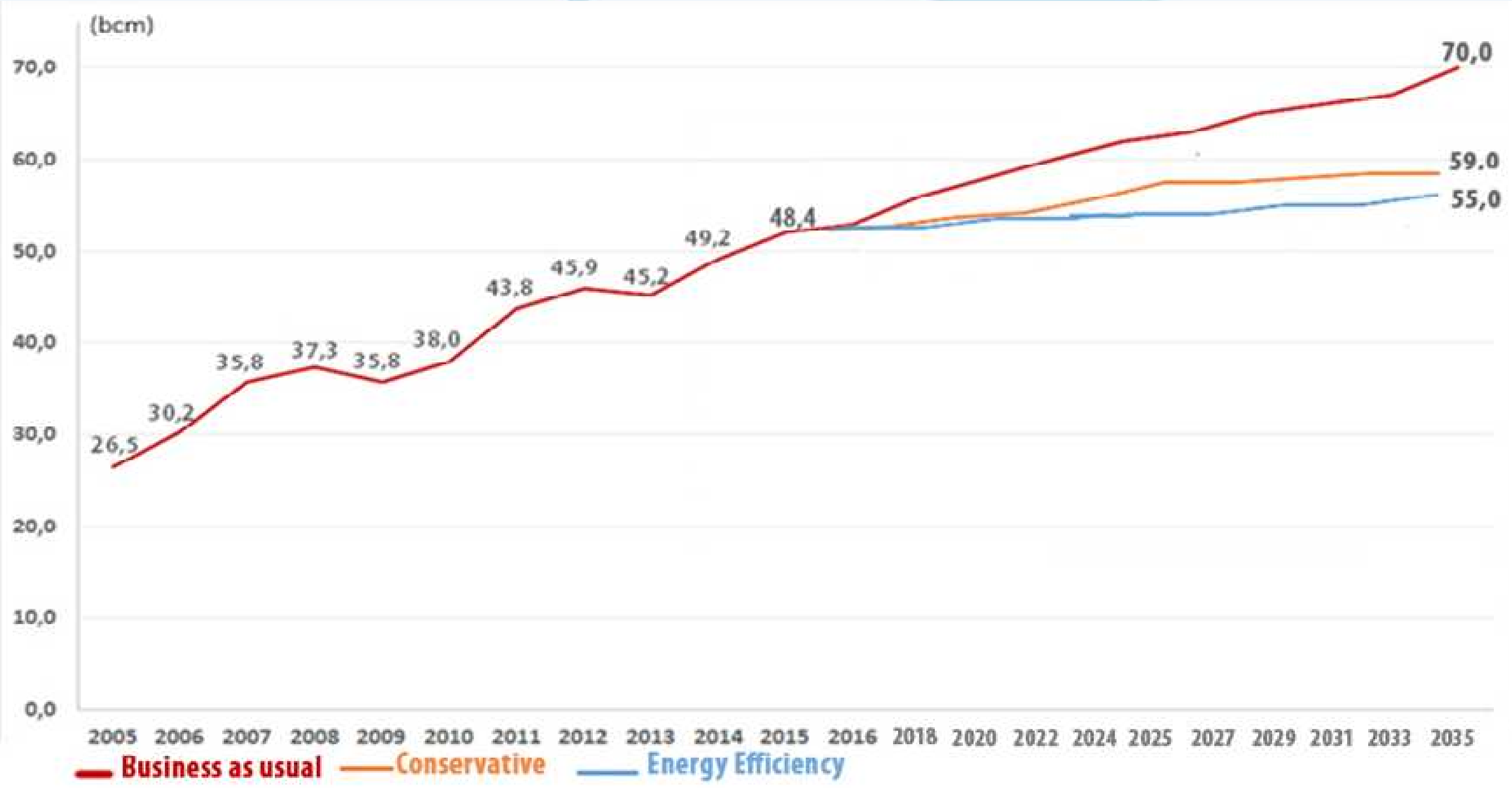
Source: ICIS

Turkey Virtual Trading Point (UDN) Volumes

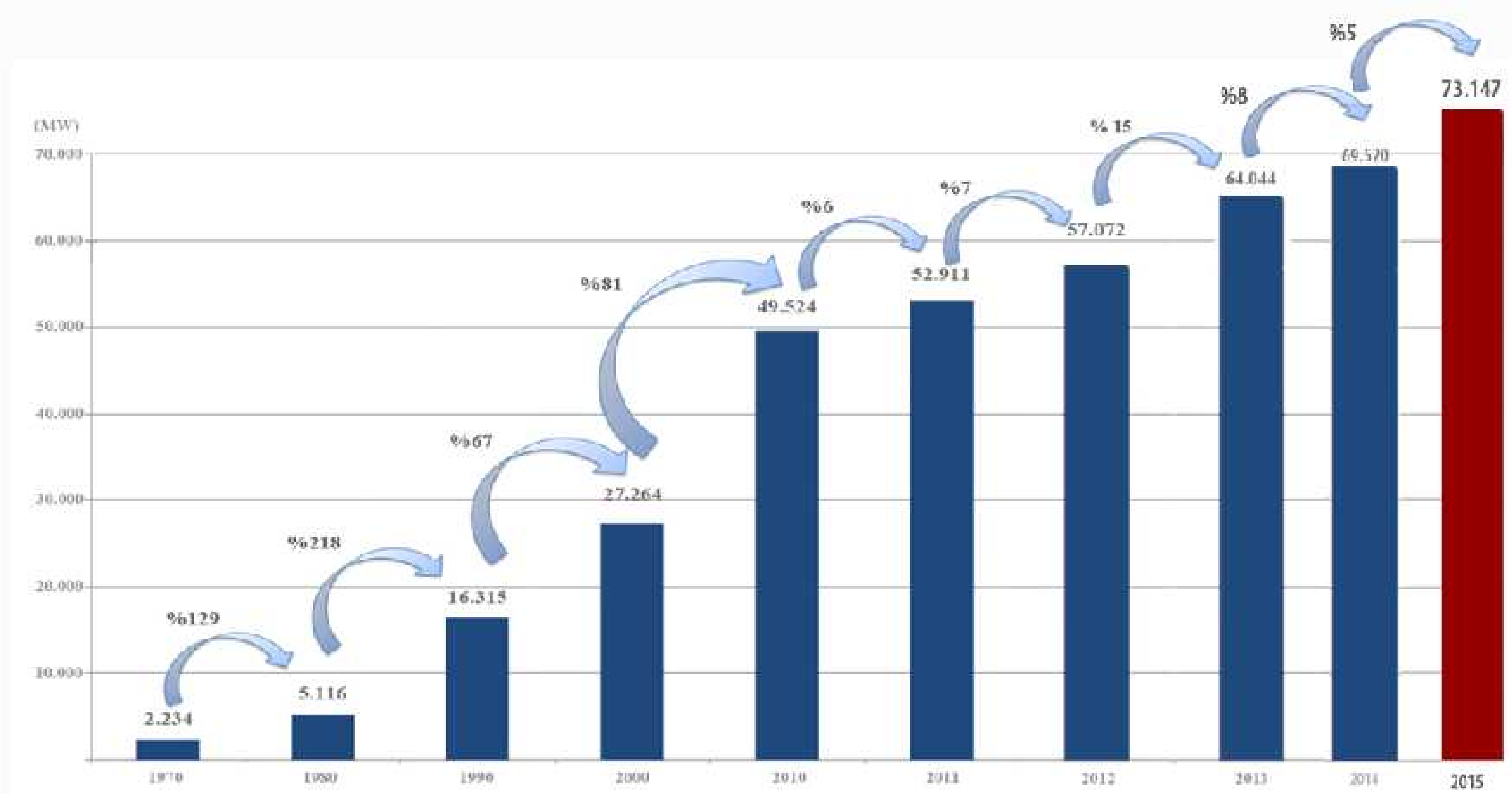


Source: BOTAS & PETFORM

Natural Gas Demand Projection

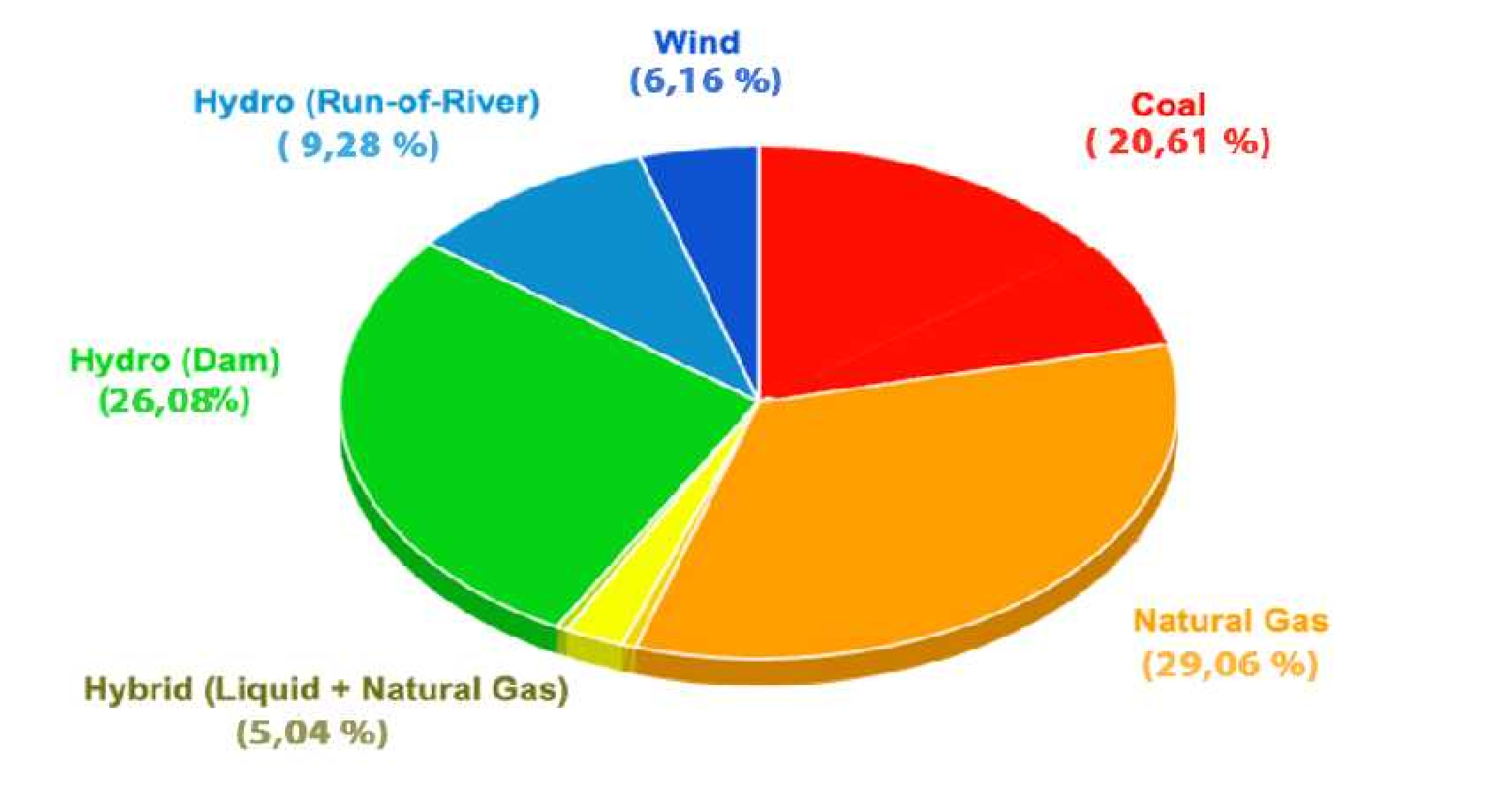


Installed Capacity (1970 – 2015)



Source: TEİAŞ

Installed Capacity by Source (2015)



Source: Energy Market Regulatory Authority

Decreasing Demand of Gas CCGT's (2007 – 2016 3rd. quarter)

Source: Ministry of Energy and Natural Resources

Infrastructure

BOTAS Transmission System

New Supply Opportunities

Potential New Gas Suppliers

- Shah Deniz II & New Fields in Azerbaijan
- Northern Iraq / Iraq
- Iran
- Eastern Mediterranean Offshore
- Turk Stream
- Black Sea Offshore
- Shale Gas / Oil

Shah Deniz II & New Fields in Azerbaijan via TANAP

Northern Iraq / Iraq
Current & Potential Reserves

Ranking by Proven Reserves :

1.Saudi Arabia	265.9 bbl
2.Iran	157.0 bbl
3.Iraq	150.0 bbl

Potential Reserves :

Iraq → 250 bbl oil & 3.2 - 5 tcm gas

N.Iraq → 40 - 45 bbl oil & 1 - 2 tcm gas

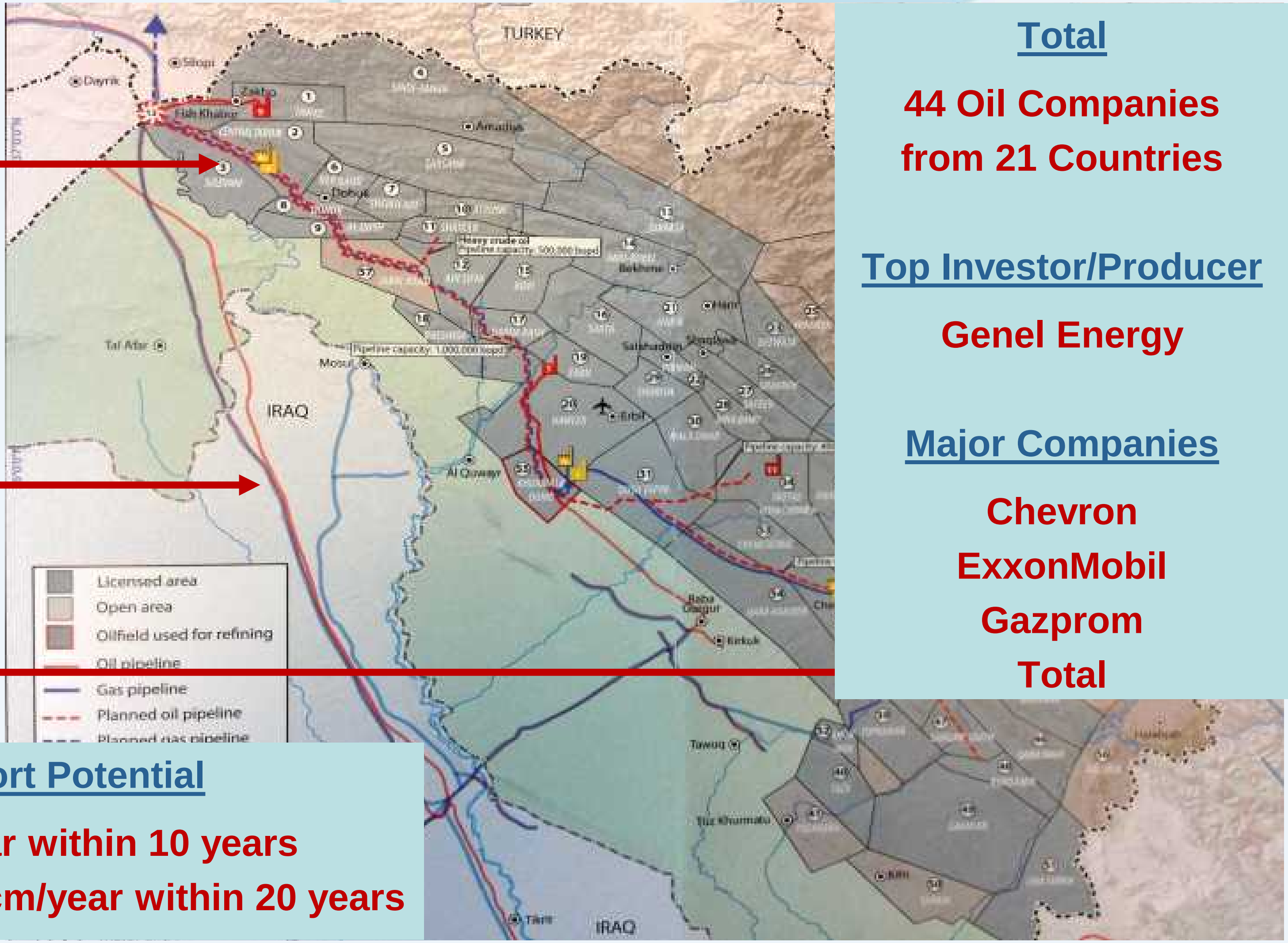
Source: BP & USGS

Northern Iraq
Current & Projected Pipelines

New oil & gas pipelines

Kirkuk – Yumurtalik Oil Pipeline

Khor Mor Gas Pipeline



Total

44 Oil Companies
from 21 Countries

Top Investor/Producer

Genel Energy

Major Companies

Chevron
ExxonMobil
Gazprom
Total

Export Potential

10 – 15 bcm/year within 10 years
Up to 20 – 25 bcm/year within 20 years

Source: Genel Energy

Eastern Mediterranean Israel & G.Cyprus Offshore

Leviathan	18 tcf
Tamar	10 tcf
Cyprus Aphrodite	5 tcf
Noa + Mari-B	1.1 tcf
Dalit	0.5 tcf

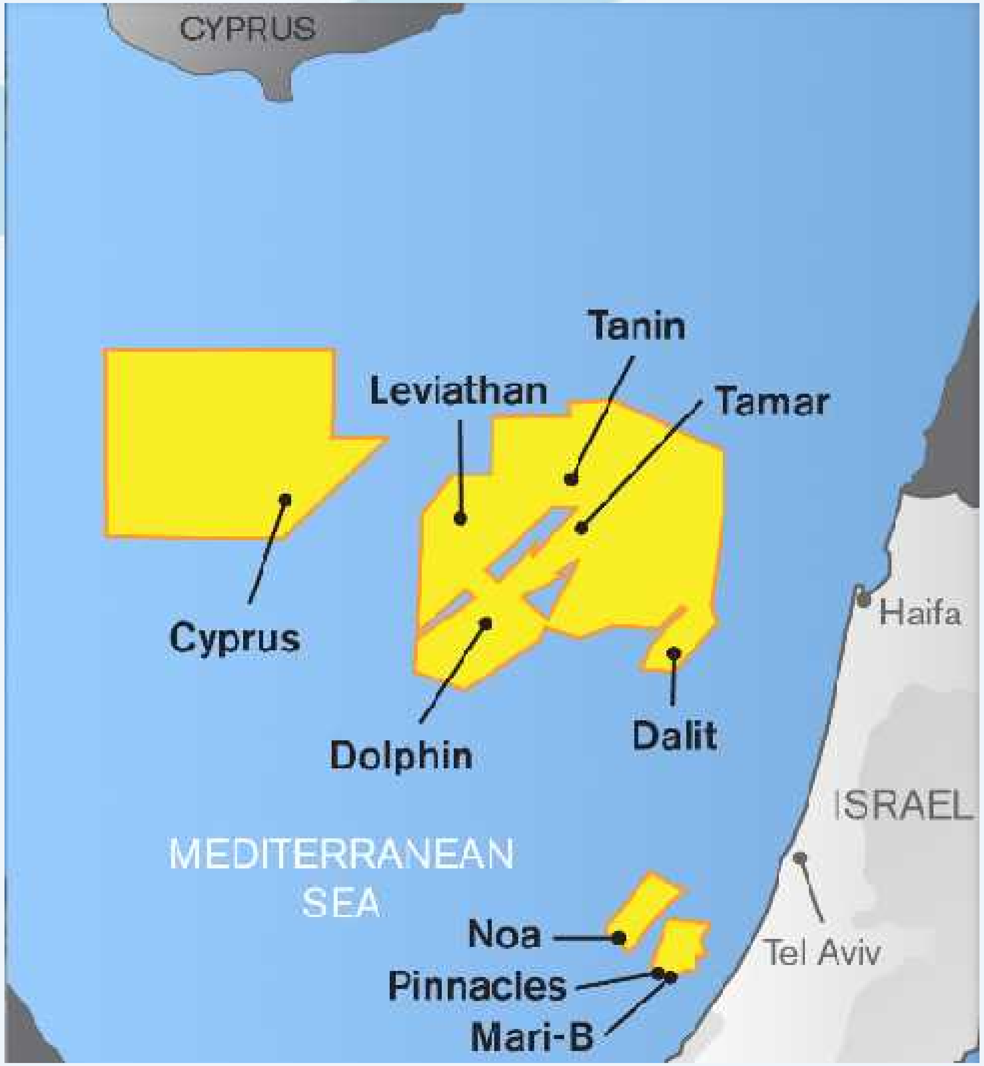
	34.6 tcf

- **Export Capacity**

10 - 12 bcma in 10 years

- **Most Feasible Route**

Israel - Turkey Pipeline



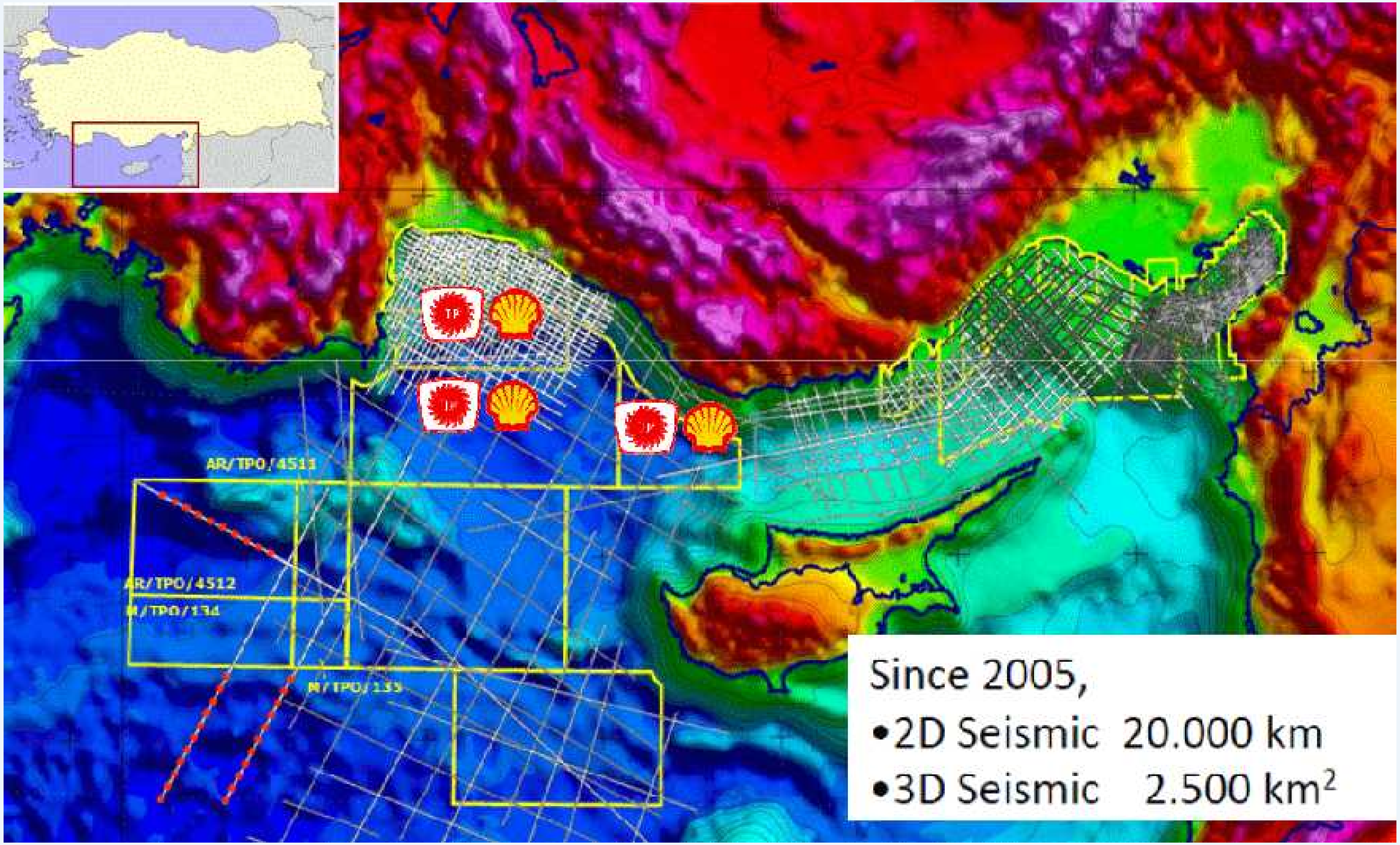
Source: Noble Energy

Turkish Stream

Two Strings, 31,5 bcma capacity

Source: EuroActiv

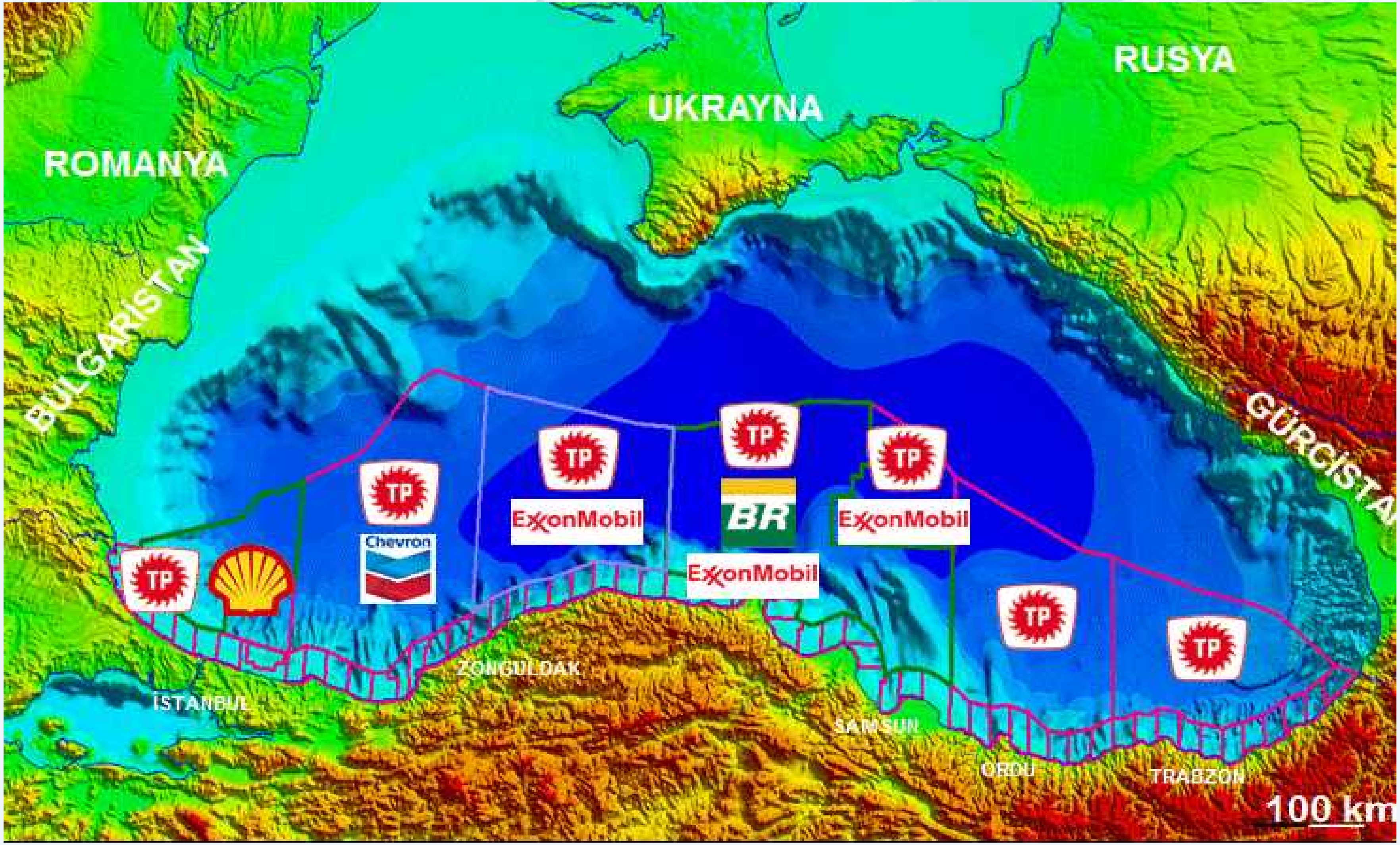
Eastern Mediterranean Turkey & TRNC Offshore



Since 2005,
- 2D Seismic 20.000 km
- 3D Seismic 2.500 km^2

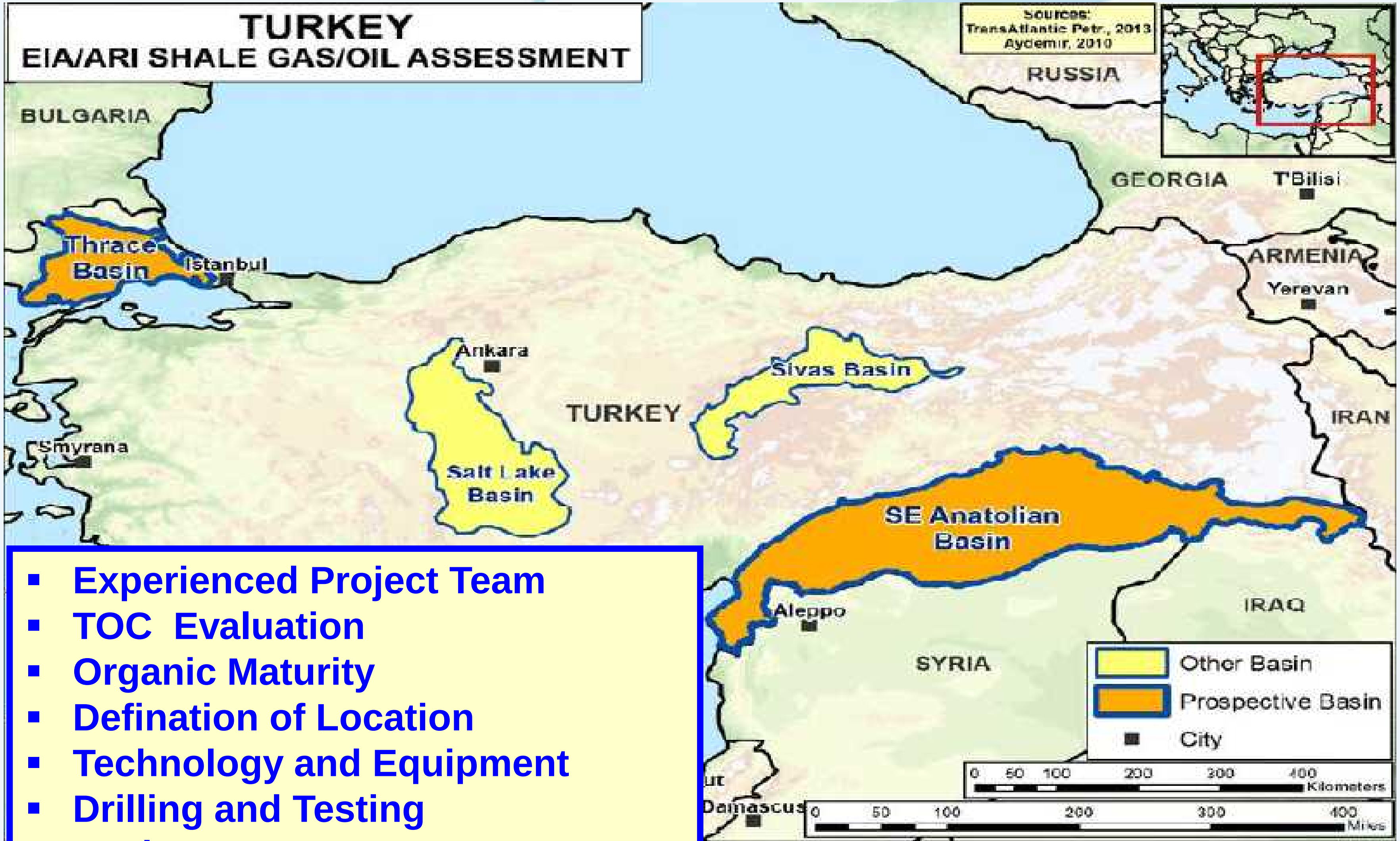
Source: TPAO

Black Sea Offshore



Source: TPAO

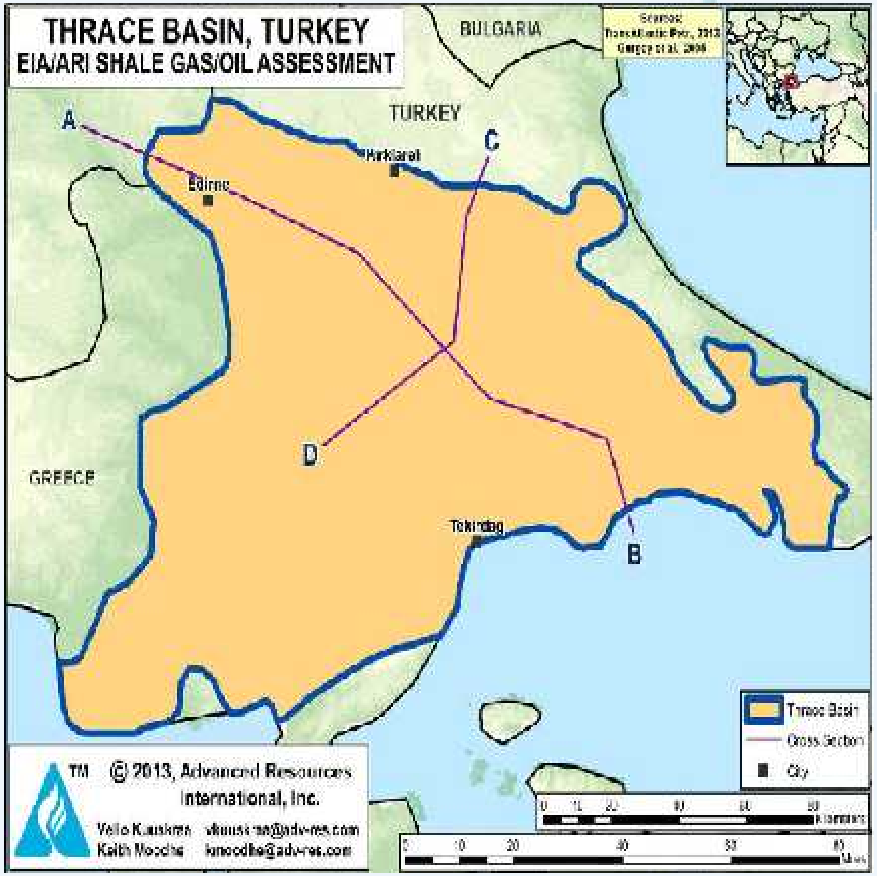
Shale Gas / Oil in Turkey Potential Basins

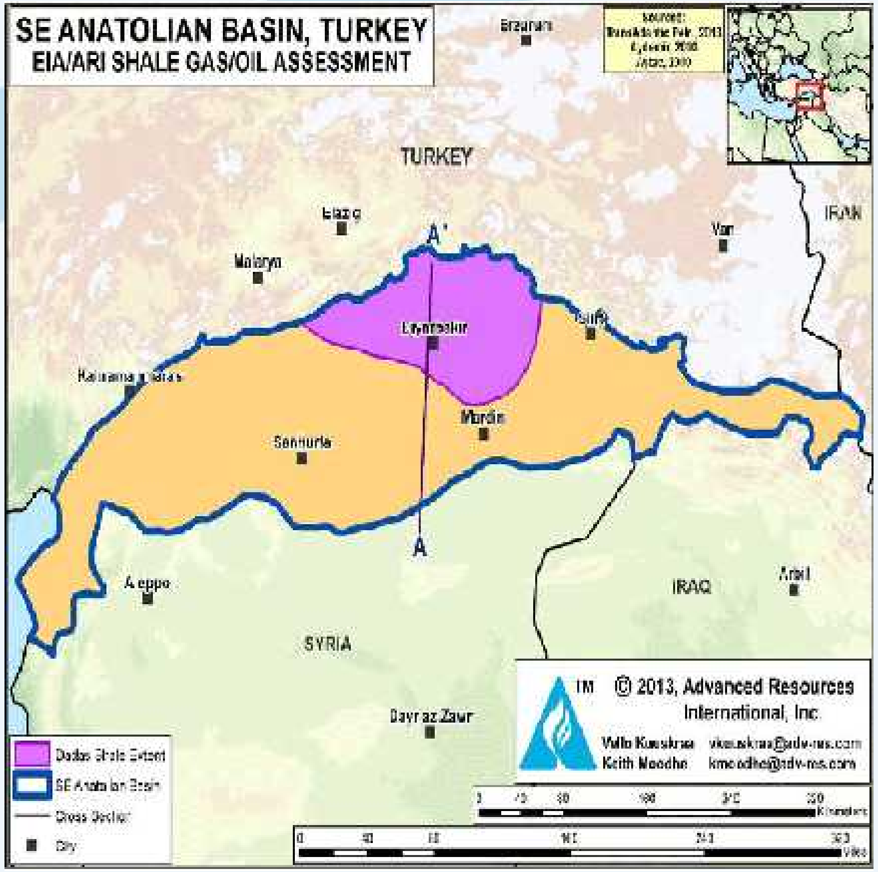


- Experienced Project Team
- TOC Evaluation
- Organic Maturity
- Defination of Location
- Technology and Equipment
- Drilling and Testing
- Environmet

Source: US Energy Information Administration

Shale Gas / Oil in Turkey Potential Reserves





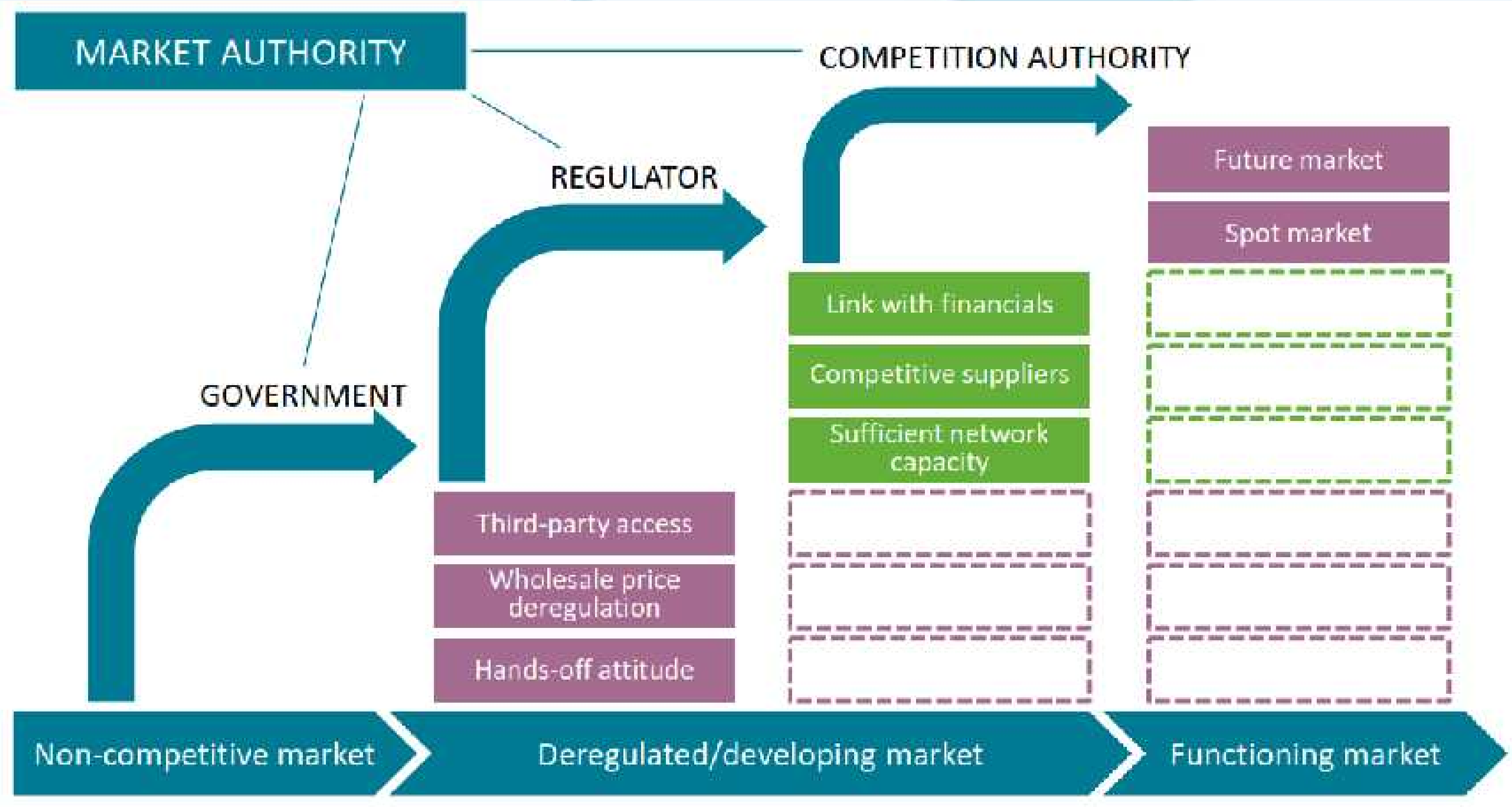
Hamitabat
6 tcf gas + 0.1 Bbbl oil

Dadaş
17 tcf gas + 4.6 Bbbl oil

<u>Source:</u> US Energy Information Administration

Legislation

Creating a Competitive Wholesale Natural Gas Market



Source: IEA

Steps Should be Taken

- Harmonisation of EU & Turkish legislation
- Avtice role for Regulatory Authorities
- More detailed Network Code
- Unbundling of BOTAS
- No barrier to new imports
- Easing licensing regime
- More transparency
- Open balancing regime and easing trading procedures
- Implementation of volume release programme
- Full opening of market

THANK YOU…

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