



# **Turkish Natural Gas Market Outlook & Policy Recommendations in Light of US Shale Gas Revolution**

**Gas to Power Turkey  
November 6, 2013 – Ankara**

*Orhan Duran  
Chairman of the Board*

# 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



- AKENERJ
- AKFEL
- AKSA
- ALADDIN MIDDLE EAST
- ANATOLIA ENERGY
- ANGORAGAZ
- ATT LA DO AN N AAT
- AVRASYA GAZ
- AYGAZ
- BATI HATTI GAZ
- BM HOLD NG
- BOSPHORUSGAZ
- BP
- ÇALIK ENERJ
- DEM RÖREN EGL
- DO AL ENERJ
- DO AN HOLD NG
- EDISON
- EGEGAZ
- ENEL
- ENERCO ENERJ
- ENERJ SA
- ENI
- ERDGAZ
- EWE ENERJ
- EXXONMOBIL
- GDF SUEZ
- GENEL ENERGY
- GÜNEY YILDIZI PETROL
- HATTU A ENERJ
- H POT ENERJ
- IBS RESEARCH
- K BAR ENERJ
- MARSА ENERGY
- MEDGAZ
- NATURGAZ
- OMV
- PALMET ENERJ
- PERENCO
- PETRAKO
- POLMAK
- POZ T F DO ALGAZ
- SHELL ENERJ
- SOCAR
- STATOIL
- TBS PETROL
- TEKFEN N AAT
- THRACE BASIN
- TIWAY
- TOTAL
- TRANSATLANTIC PETROLEUM
- TURCAS
- VALEURA ENERGY
- VALVITALIA
- ZMB GAZ DEPO
- ZORLU ENERJ



# Turkish Natural Gas Market

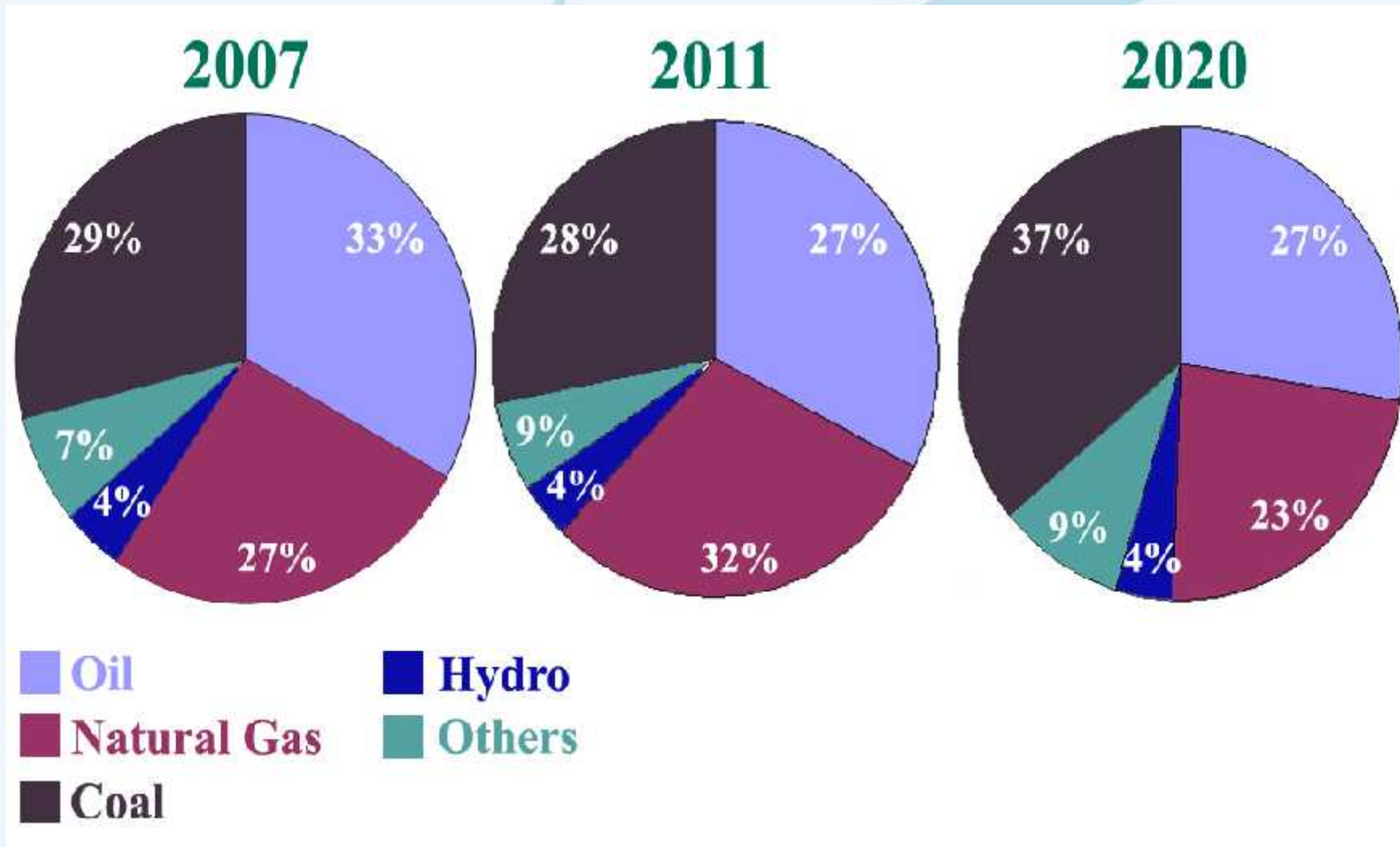
# Turkey's Overall Energy Balance (1990 – 2011)



	1990	2011	Change
Total Energy Demand (million toe)	52.9	114.4	116%
Total Domestic Production (million toe)	25.6	32.2	26%
Total Energy Imports (million toe)	30.9	90.2	192%
Coverage of Domestic Production to Total Consumption	48%	28%	- 42%

Source: MENR

# Energy Consumption by Source (2007 – 2011 – 2020)



Source: Ministry of Energy and Natural Resources

# Share of Energy in Turkey's Total Imports (2009 – 2012)



(billion USD)	2009	2010	2011	2012
Crude Oil & Petroleum Products	14,9	20,6	29,2	31,5
Natural Gas	11,6	14,1	20,2	23,2
Coal	3,1	3,3	4,1	4,6
Total Energy Imports	29,9	38,5	54,1	60,1
Turkey's Total Imports	140,9	185,5	240,8	236,5
Share of Oil & Gas in Turkey's Total Imports	<b>%18,8</b>	<b>%18,7</b>	<b>%20,5</b>	<b>%23,1</b>

Source: Ministry of Economy

# Gas Purchase Agreements



Contract	Date of Signature	Date of Operation	Duration (Years)	Volume (Plateau bcma)	Date of Expiration
Russia (West)	Feb 1986	Jun 1987	25	6	2012
Algeria (LNG)	Apr 1988	Aug 1994	20	4	2014
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	8	2021
Azerbaijan	Mar 2001	Jul 2007	15	6.6	2022

Source: Energy Market Regulatory Authority



# Gas Imports by Source Country (2010 – 2011 – 2012)



(bcm)	2010 (EMRA)	2011 (EMRA)	2012 (BOTA )	Share in Total (2012)
Russia	17.576	25.406	26.550	59.2%
Iran	7.765	8.190	8.347	18.6%
Azerbaijan	4.521	3.806	3.228	7.2%
Algeria (LNG)	3.906	4.156	6.719	15.0%
Nigeria (LNG)	1.189	1.248		
Spot LNG	3.079	1.069		
<b>Total</b>	<b>38.036</b>	<b>43.874</b>	<b>44.844</b>	

Source: Energy Market Regulatory Authority & BOTAŞ

# Private Players' Entrance into the Market



## Contract Release (2007)

Enerco Enerji	2.50
BosphorusGaz	0.75
AvrasyaGaz	0.50
Shell Enerji	0.25
	+

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4 bcm

## Contract Renewal (2013)

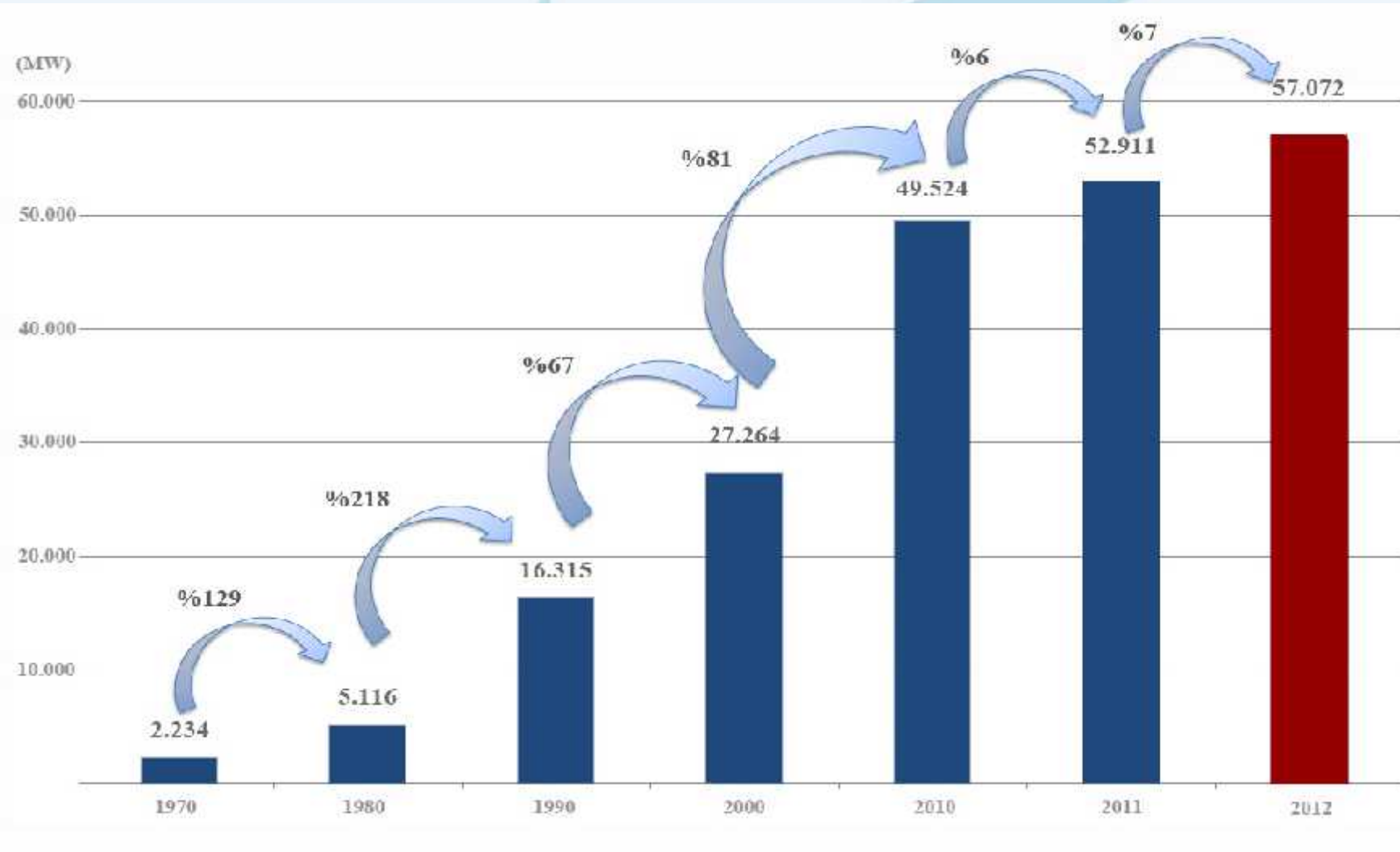
Akfel Gaz	2.25
BosphorusGaz	1.75
Kibar Enerji	1.00
Batı Hattı	1.00
	+

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6 bcm

## TR – AZ Agreement (2013)

SOCAR	1.20
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# Installed Capacity (1970 – 2012)

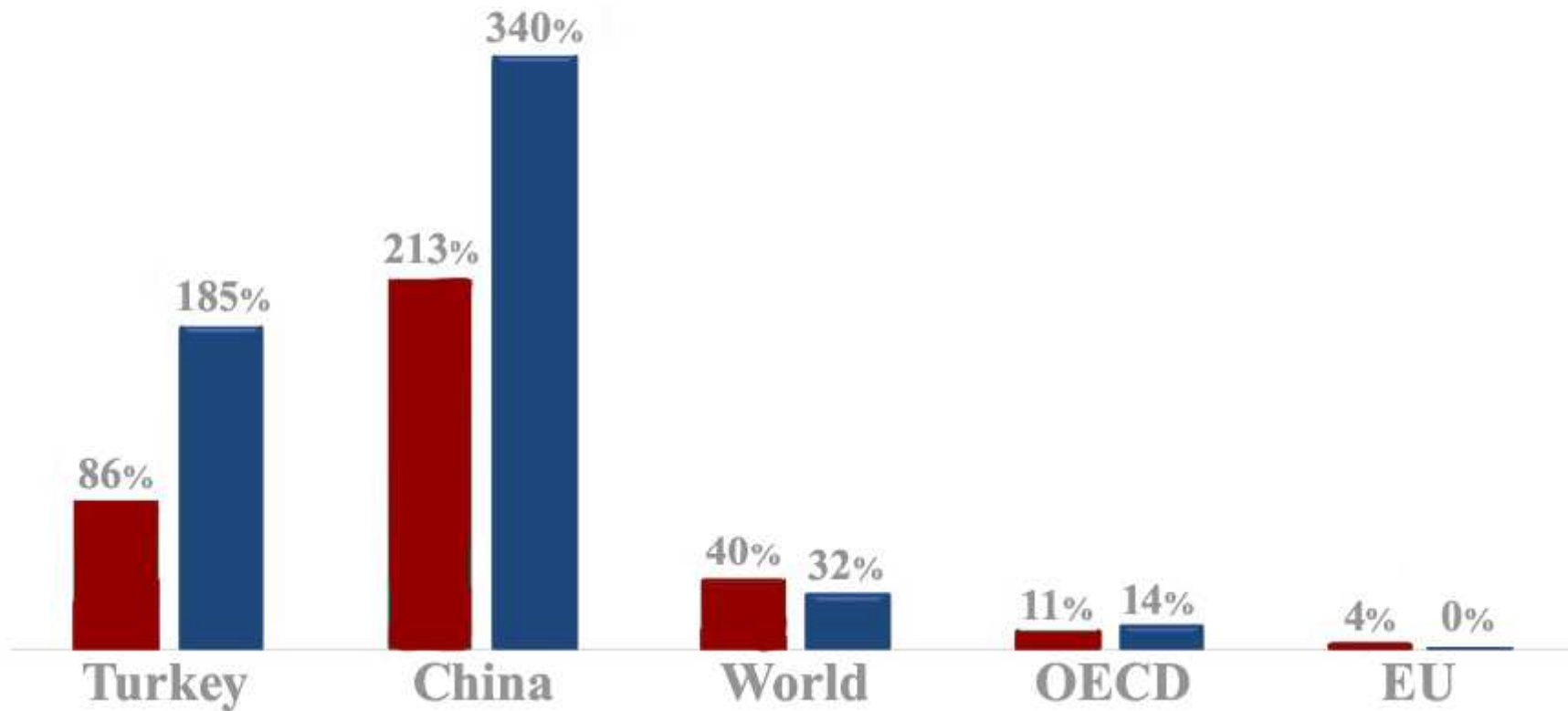


Source: TEİAŞ

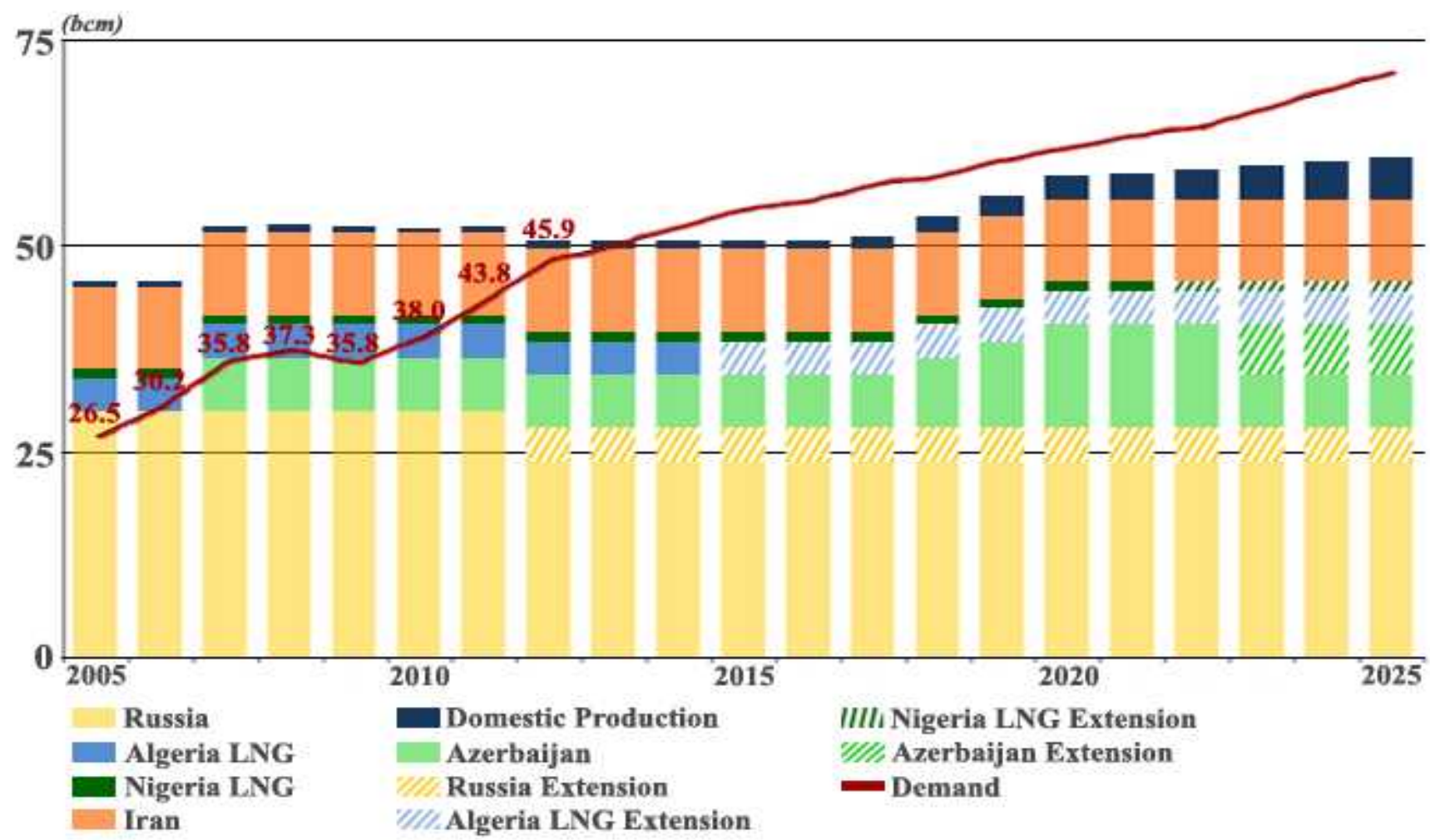
# Gas & Power Demand Growth (2001 – 2011)



■ Gas Demand Growth  
■ Power Demand Growth



# Natural Gas Demand vs Supply (2005 – 2025)



Source: BP



# Potential New Gas Suppliers

# Potential New Gas Suppliers



- **Shah Deniz II & New Fields in Azerbaijan**
- **Northern Iraq / Iraq**
- **Eastern Mediterranean Offshore**
- **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

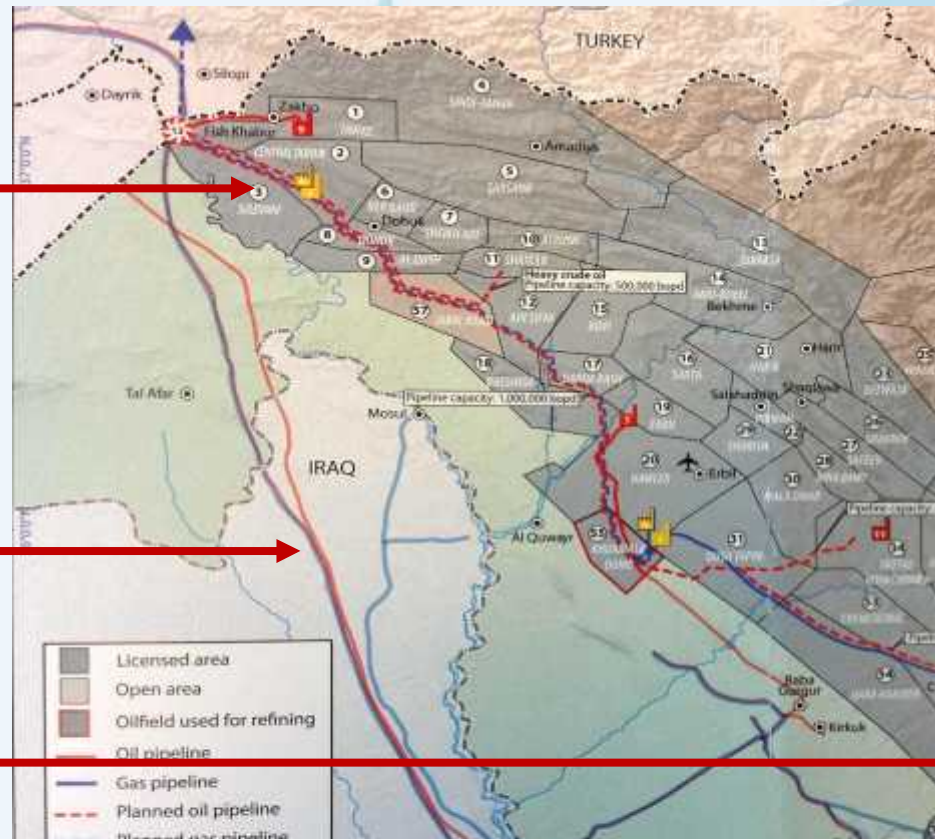
# Northern Iraq Current & Projected Pipelines



New oil & gas pipelines

Kirkuk – Yumurtalik Oil Pipeline

Khor Mor Gas Pipeline



## Export Potential

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

## Total

44 Oil Companies  
from 21 Countries

## Top Investor/Producer

Genel Energy

## Major Companies

Chevron  
ExxonMobil  
Gazprom  
Total

# Eastern Mediterranean Israel & G.Cyprus Offshore



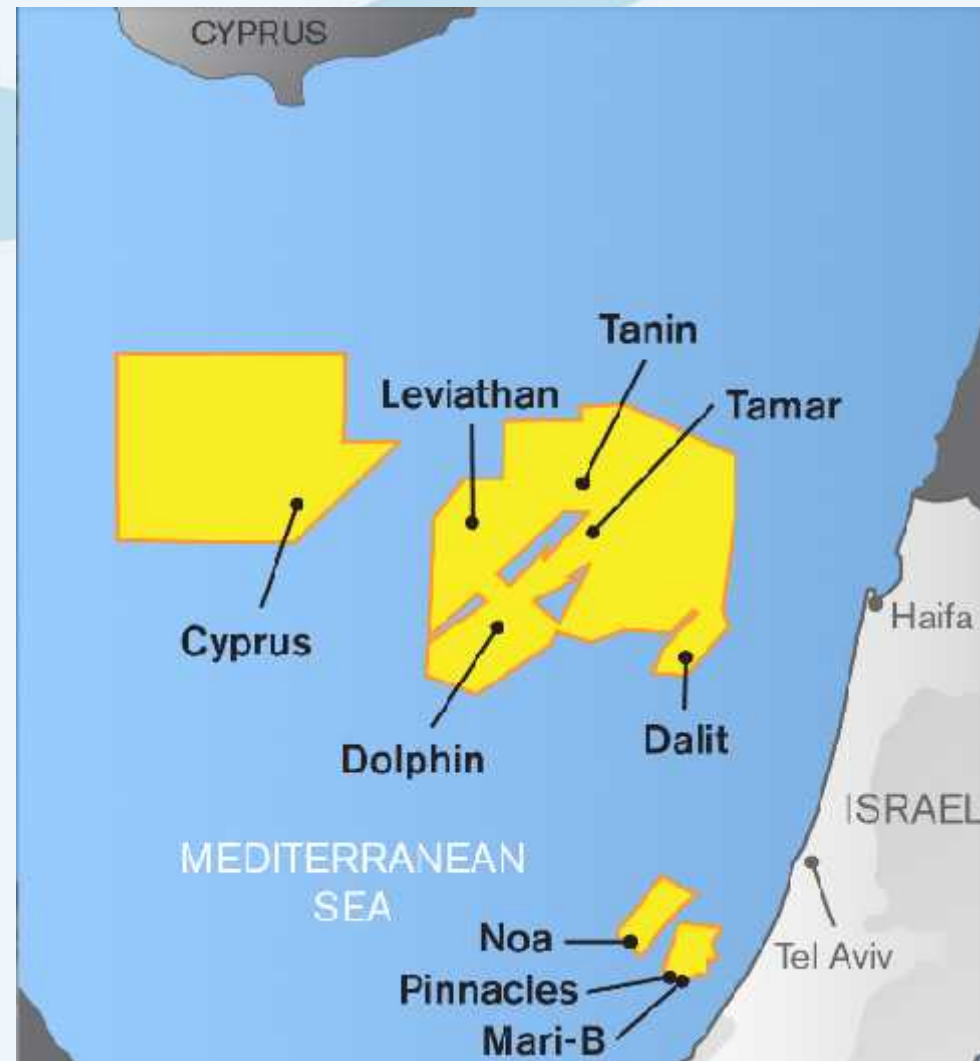
Leviathan	18 tcf
Tamar	10 tcf
Cyprus Aphrodite	5 tcf
Noa + Mari-B	1.1 tcf
Dalit	0.5 tcf
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	34.6 tcf

## ➤ Export Capacity

10-12 bcma in 10 years

## ➤ Most Feasible Route

Israel-Turkey Pipeline



Source: Noble Energy



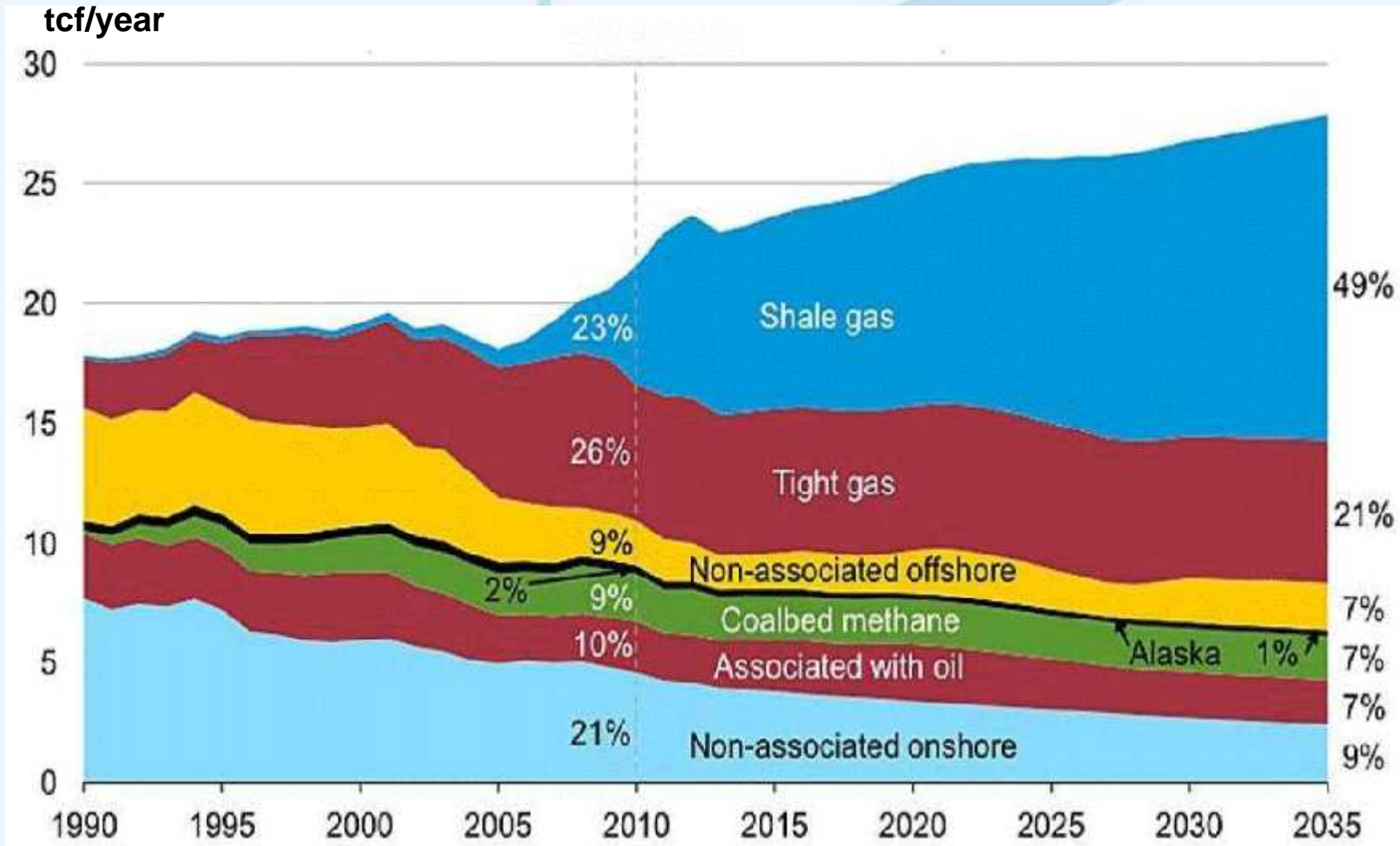
# US Shale Gas Revolution

# Regional Gas Price Trends (1995 – 2012)



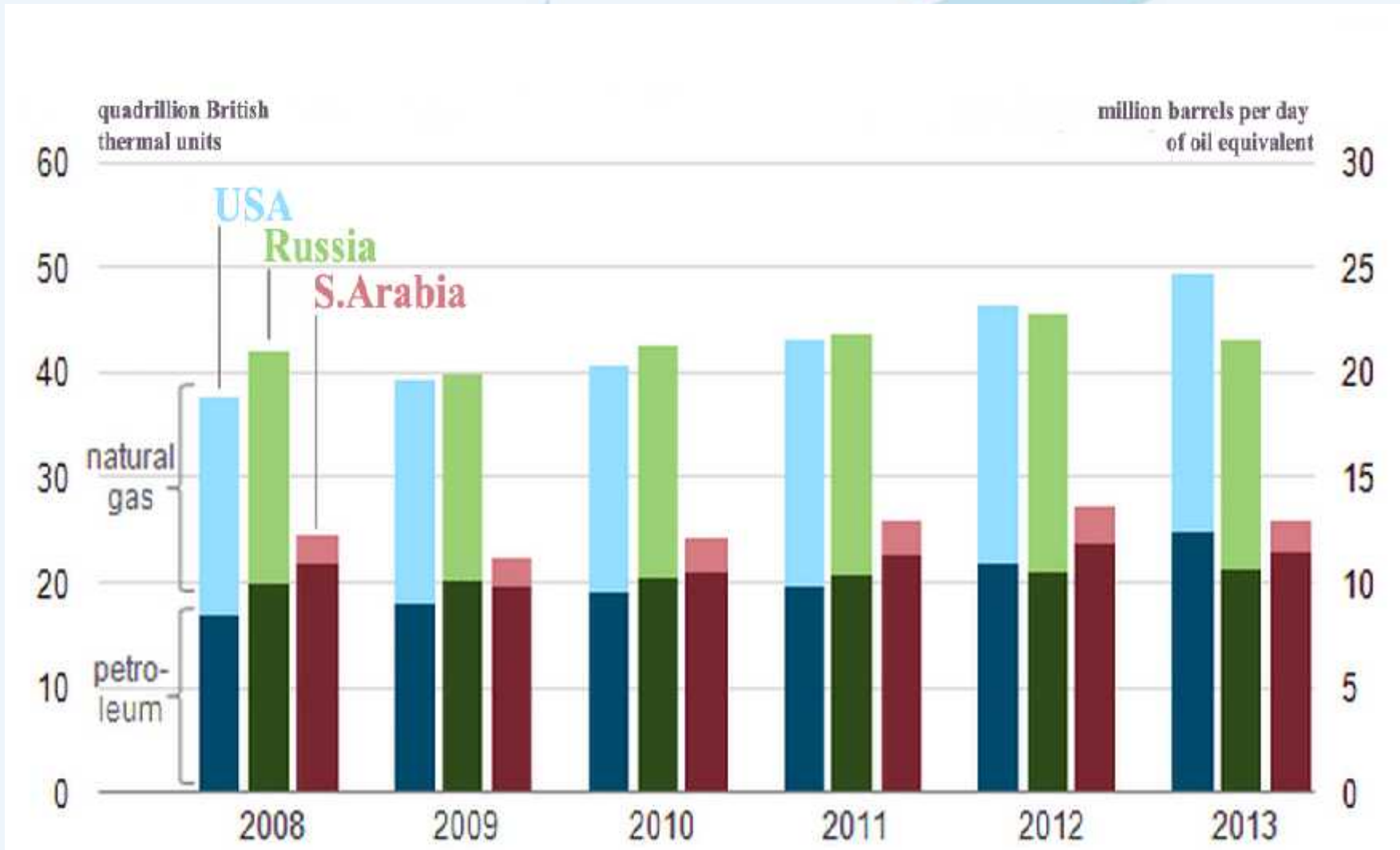
Source: BP

# US Unconventional Gas Production (1990 – 2035)



Source: EIA

# Result: Saudi America



Source: EIA

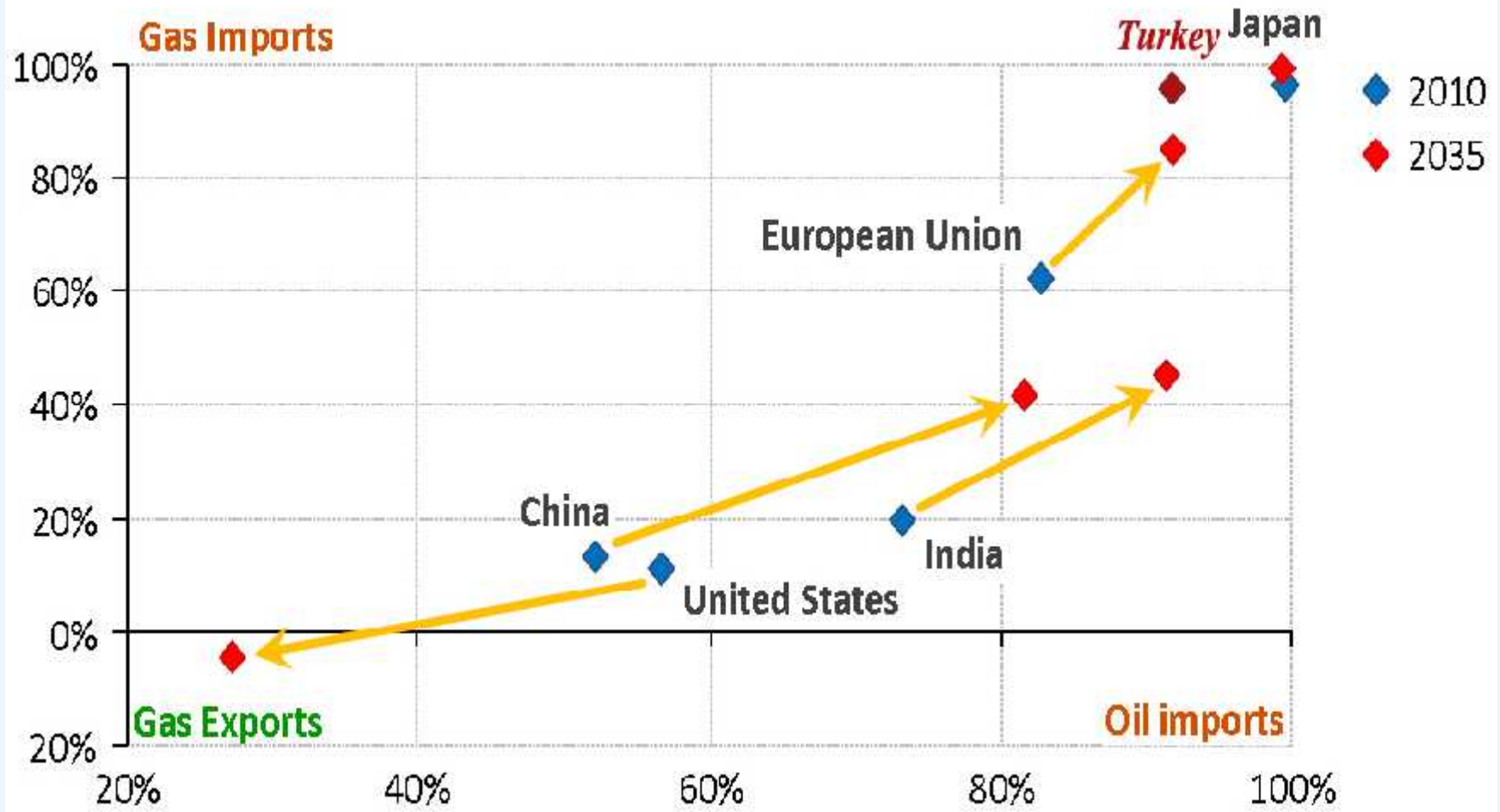
# **Main Drivers of the US Shale Gas Revolution**



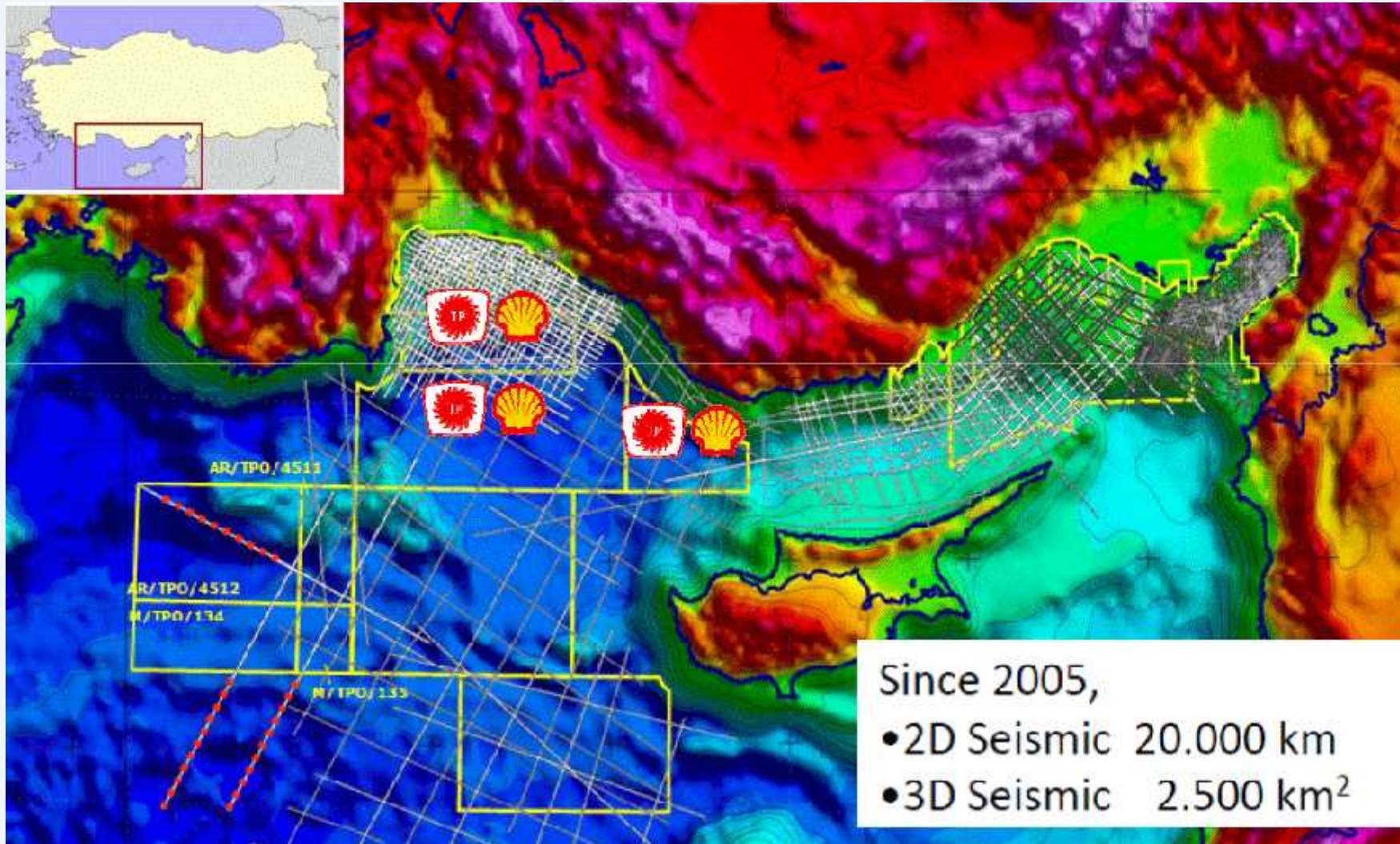
- **Capital accumulation**
- **Sectoral know-how**
- **Long term R&D investments**
- **Transparent, rational, predictable legal background**
- **Fully liberal, liquid, deepened market mechanism**



# Oil & Gas Import Dependency (2010 – 2035)

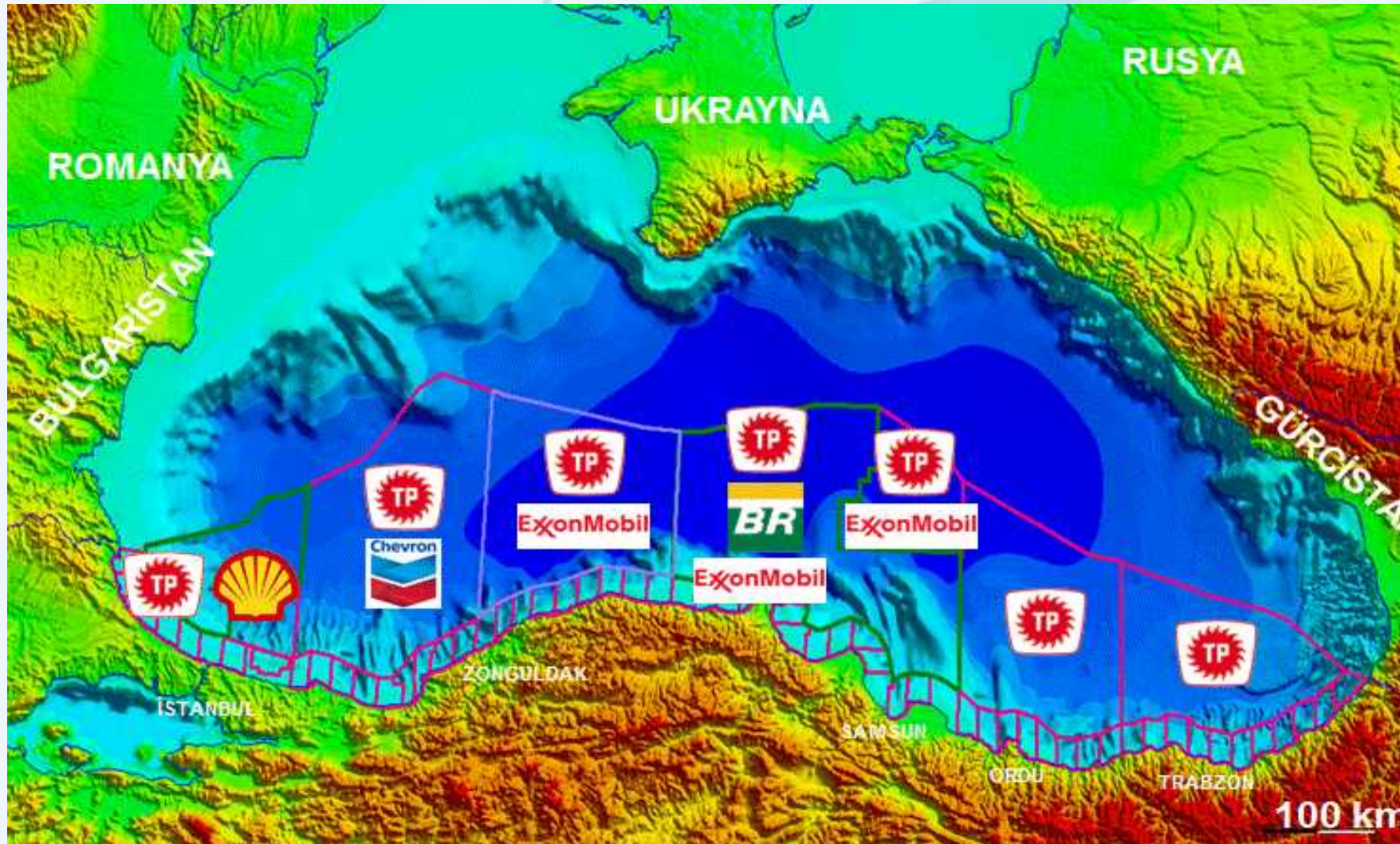


# Eastern Mediterranean Turkey & TRNC Offshore



Source: TPAO

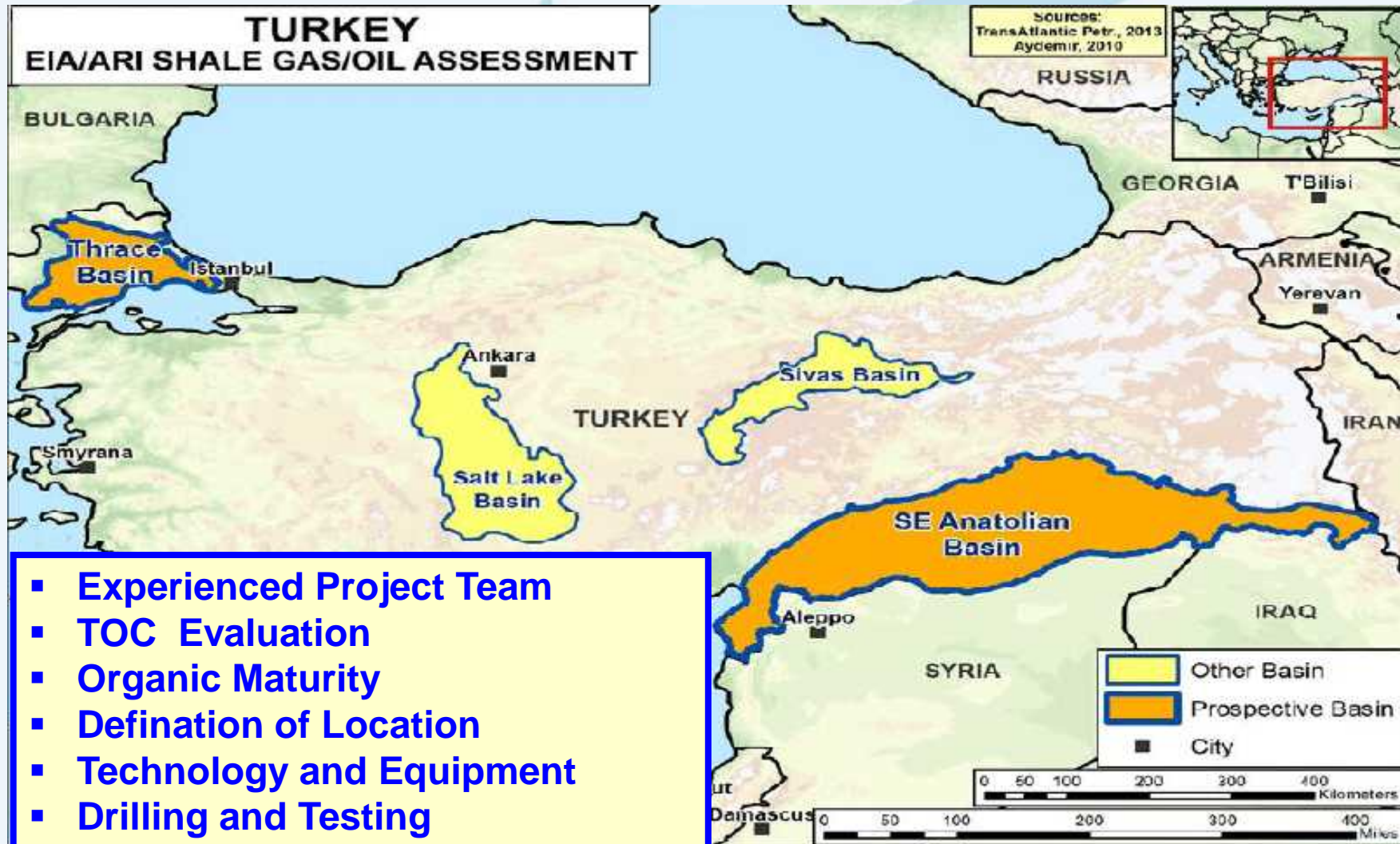
# Black Sea Offshore



Source: TPAO

# Shale Gas / Oil in Turkey

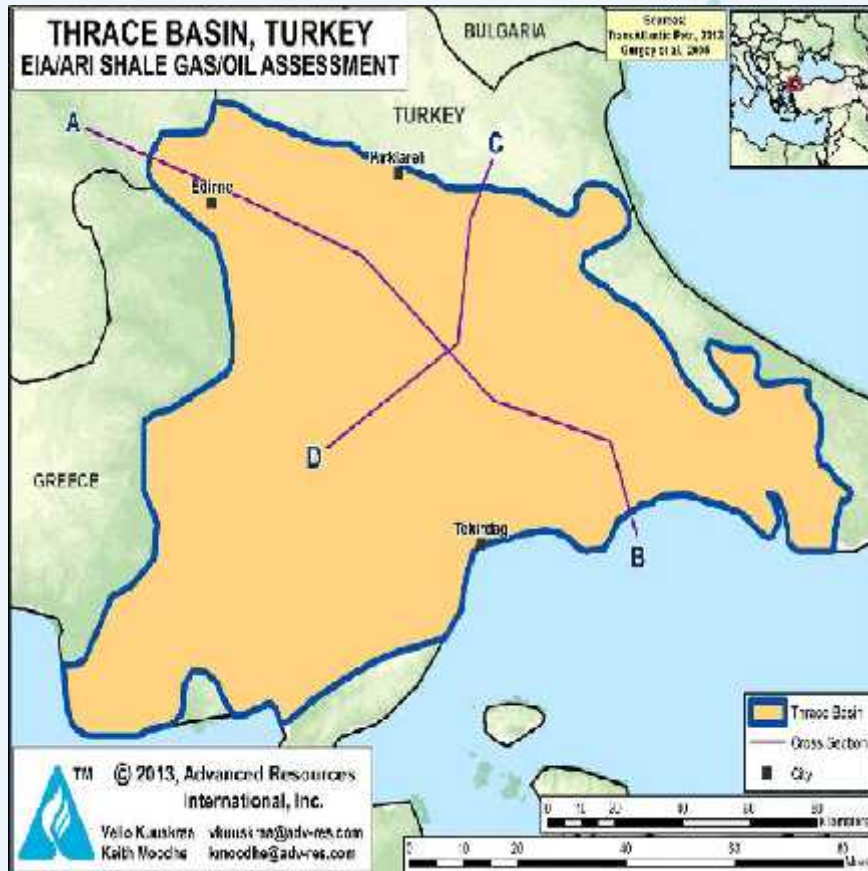
## Potential Basins



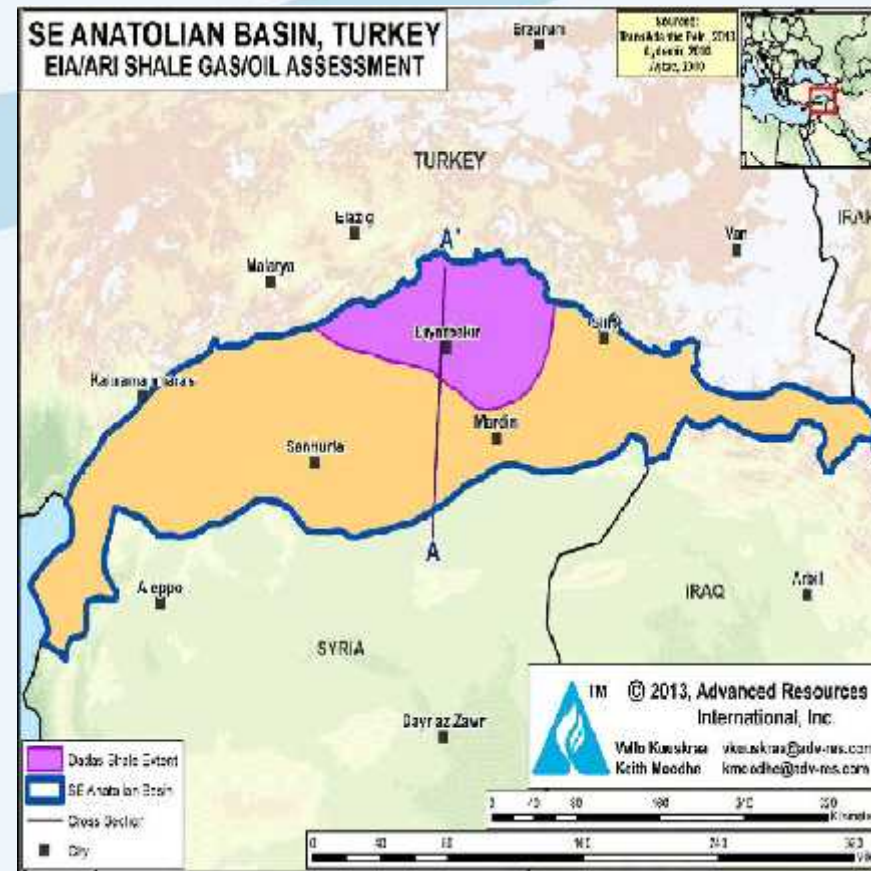
- Experienced Project Team
- TOC Evaluation
- Organic Maturity
- Definition of Location
- Technology and Equipment
- Drilling and Testing
- Environmet

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

Source: US Energy Information Administration



# **PETFORM**

## **Policy Recommendations**

# Policy Recommendations (I)

## Natural Gas Market



1. Removal of subsidies and cross-subsidies
2. Application of based-price mechanism
3. Removal of restrictions for private sector's imports
4. Legal unbundling of BOTTA
5. Completion of IT (EBB & Scada) and infrastructure investments
6. Legal and commercial ground for Gas Hub

**OBJECTIVE**      **FORMATION OF A TRANSPARENT,  
LIBERAL AND COMPETITIVE GAS MARKET**

# Policy Recommendations (II)

## E&P Sector



1. Classification and digitalization of all technical data for all sedimentary basins, increase exploration activities and investment, particularly SE Anatolia and Trace Basin,
2. Promotion of new drilling investments through effective implementation of the new Turkish Petroleum Law
3. Political and economical support for Turkish oil companies investing particularly in Iraq and help solving oil sharing and all other political problems between Baghdad and Arbil
4. Full support to TPAO's offshore exploration projects with major oil companies

**OBJECTIVE**    **REDUCTION OF OIL AND GAS IMPORT DEPENDENCY**



# Policy Recommendations (III)

## Energy Sector in General



1. Implementation of new policies in order to increase the share of domestic resources in total energy consumption and to promote energy efficiency
2. Preparation of a comprehensive plan and projects in order to examine the shale oil/shale gas potential of Turkey
3. Promotion of alternative energy resources,
4. Construction of nuclear energy plants
5. Sensibility on implementation of environment-friendly energy strategies

**OBJECTIVE** REDUCTION OF ENERGY IMPORT BILL AND CURRENT ACCOUNT DEFICIT, EFFICIENT USAGE OF ENERGY AND DIVERSIFICATION OF ENERGY RESOURCES



***THANK YOU...***