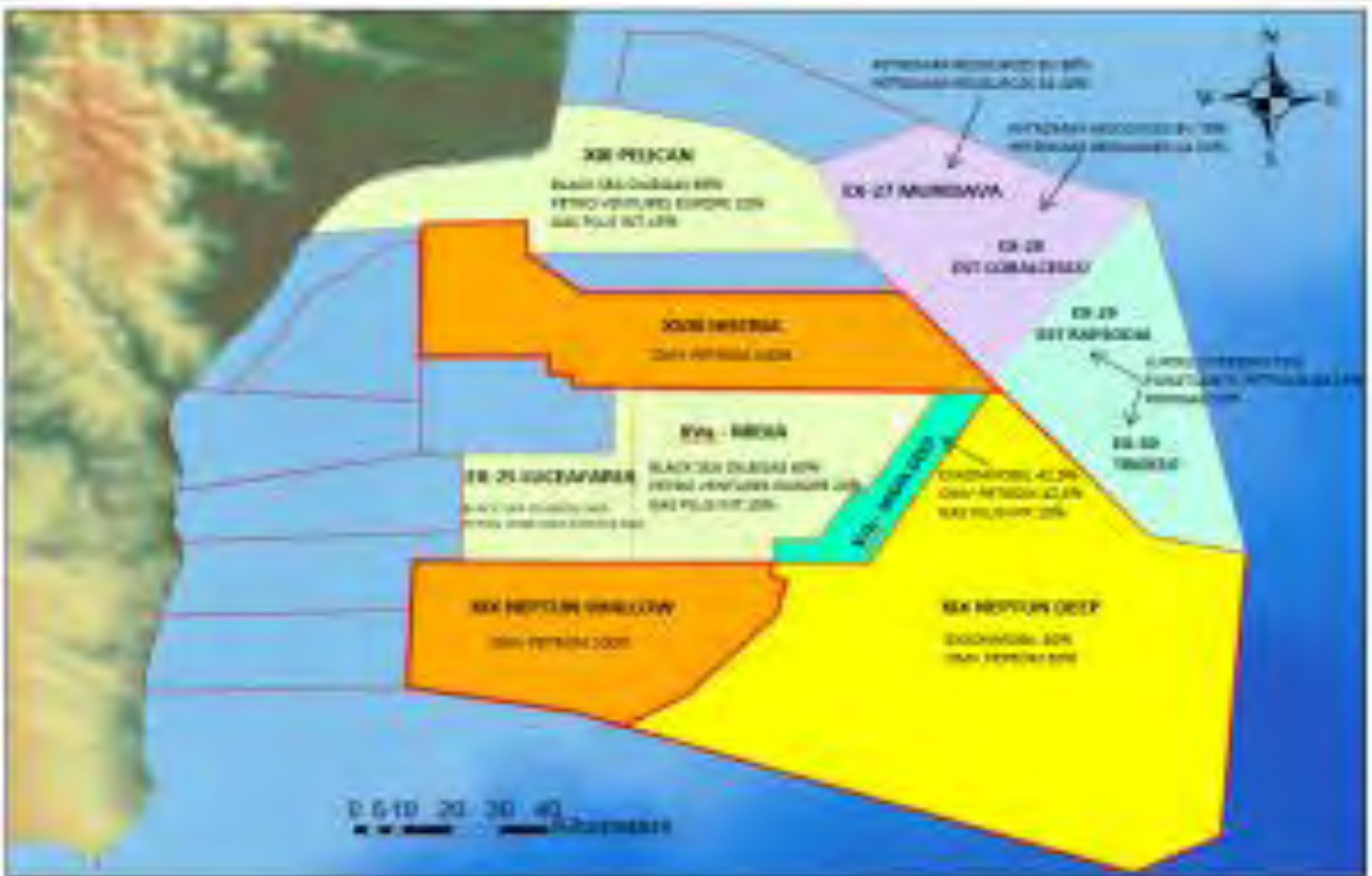


# Romanian Black Sea Gas Reaching the European Markets

November 2015

# Romanian Black Sea – A game changer



Map of concessions offshore by Romanian Black Sea Titleholders Association (RBSTA)

# Romanian Deepwater : More discoveries



## NEPTUNE BLOCK (DEEP)

### Domino 1

Discovered 2012

Capacity Est.: 1,5-3 Tcf (42-84 Bcm)

Production: 2020

Partners : OMV Petrom 50% and  
Exxon Mobil 50%.

### Domino 2

Discovered 2014

## TRIDENT BLOCK (DEEP)

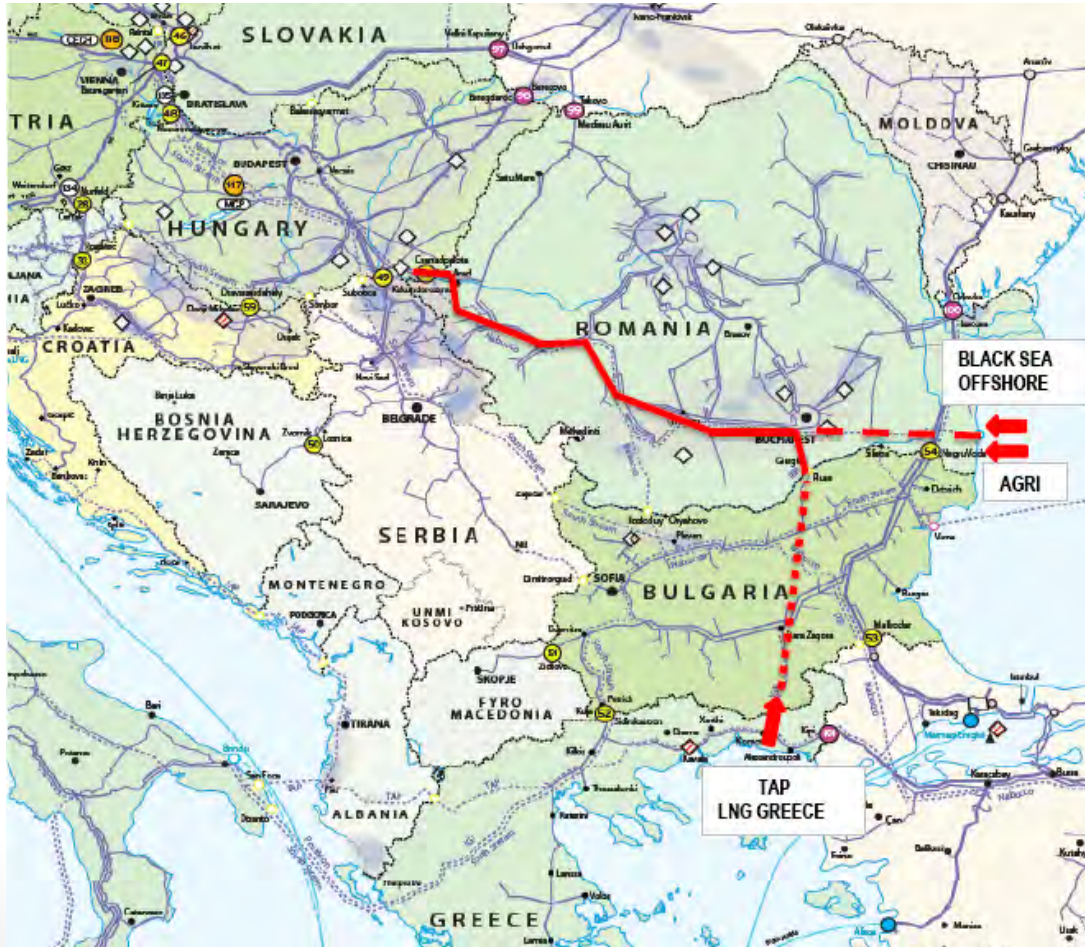
### Lira 1X – EX 30 Trident

Discovered Oct 2015

Capacity Est.: Oct 2015

Romgaz 10%, Lukoil owns 72% and PanAtlantic Petroleum Ltd. 18%.

# On crossroads with focus on two sources of supply



Plans consider two major sources of supply

- Black Sea Gas
- Azeri Gas

Romania becomes the link with Central Europe (Hungary and Austria), Southern Europe (Bulgaria and Greece) and Eastern Europe (Ukraine , Moldavia)



# Getting Ready for the Future - Challenges

The Romanian TSO Transgaz faces two main challenges:  
Interconnectivity and modernization

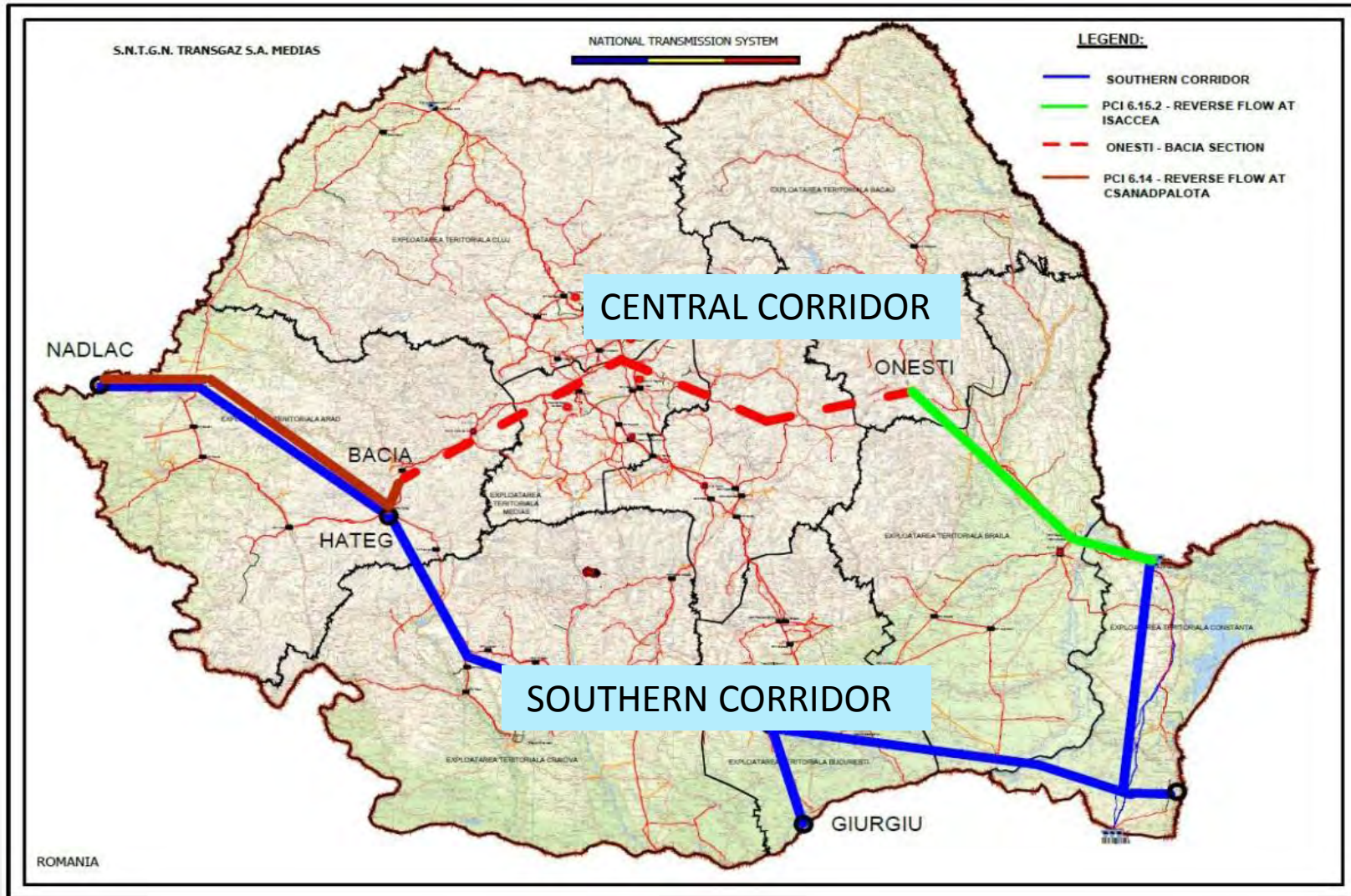
Transgaz operates a National Transmission system of 13,112 km of pipelines of which 553 km are international transmission systems.

- Modernization is a big requirement , 71% of the pipelines are in need of rehabilitation.
- Reverse Capabilities are required.

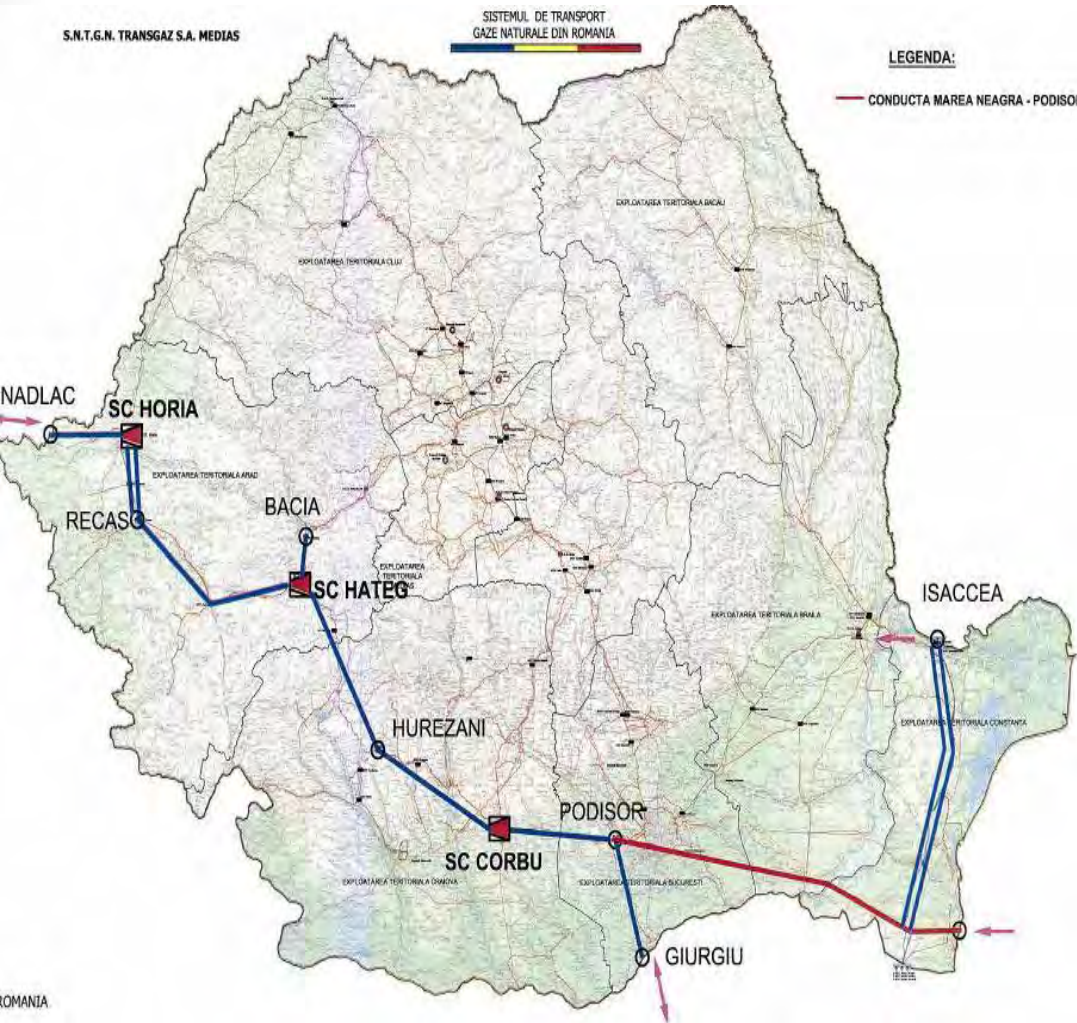
Interconnectivity becomes key to enable regional trade.

TRANSGAZ implementation of 10 year development plan 2014-2023 reaching 1,5 billion Euros of total investment , around 35% will be own resources

# Connecting the Black Sea : Two main transmission routes



# Danubian Southern Corridor (BRUA): A core project for 2 sources



Complementing the transmission corridor between Bulgaria and Hungary the pipeline Tuzla – Podisor will connect the Black Sea shore.

a) Transmission corridor BU-HU

Total Length 550km .

Investment: Euro 560mln.

Exp. Completion : 2019

a) Transmission corridor Tuzla – Podisor

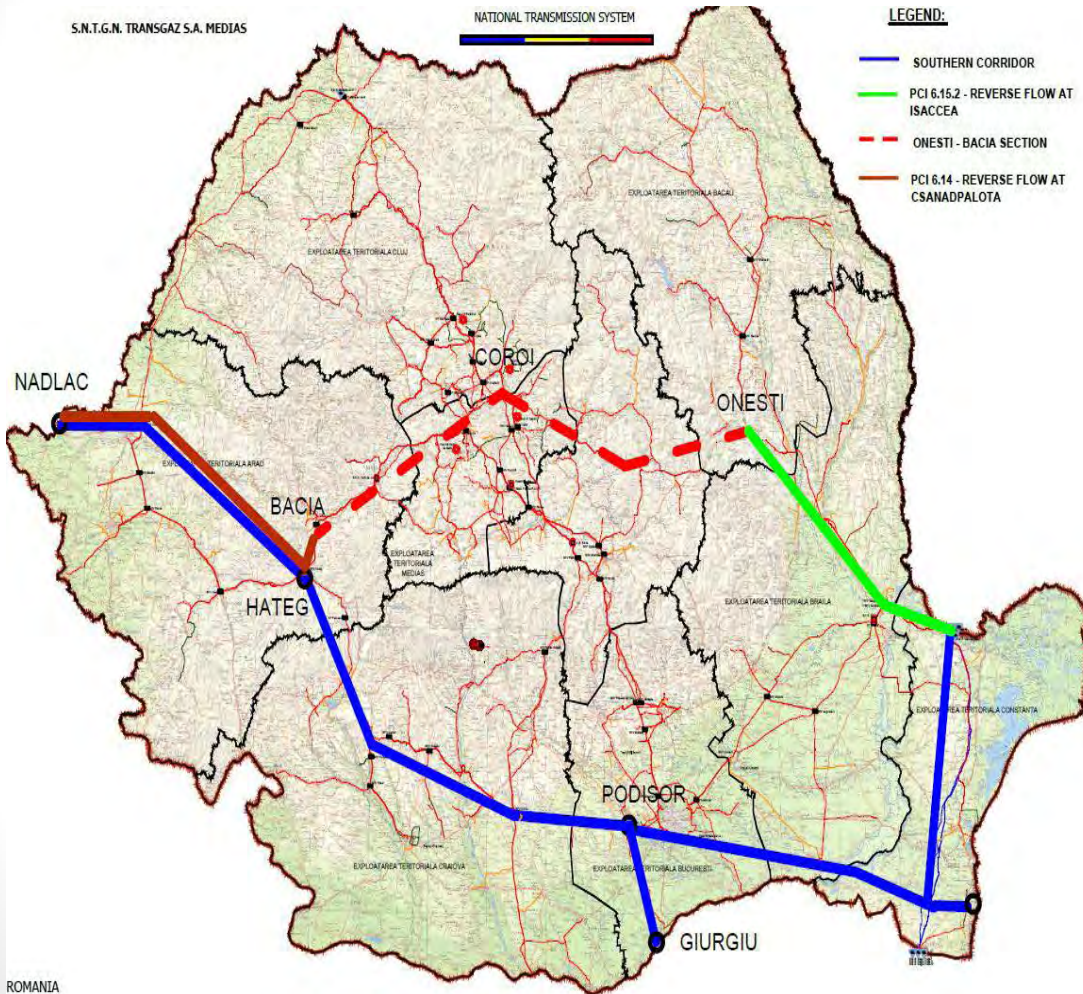
Pipeline length: 250 km

Investment : Euro 262,4mln

Exp. Completion : 2019



# The Central Corridor : Combining new and old routes



Rehabilitation of around 400 km of existing pipeline sections

-430 km of new pipelines

-4 new compressor stations with an installed capacity of 66 MW

-Investment Euro 544mln

Competition: 2023

Three component projects :

- Reverse Flow RO-HU
- Integration of Transmission, Transit System and Reverse Flow at Isaccea .
- Section Onesti Bacia (new pipeline)

Also connections to Moldova planned ( Euro110mln)



BACK-UP

# Context

## Global

Gas currently 23,7% of global primary energy consumption and growing steadily.

International Gas Trade is 29,4% of total consumption

LNG continues to grow , now being 33,4% of total trade.

## Europe

EU gas consumption declined -11,6%

EU gas production declined -9,8%

EU imports : 414,1 bcm of which by pipeline 361,9bcm and by LNG 52,1 bcm

## Regional :

EU Energy Union with objectives of security, sustainability and competitiveness

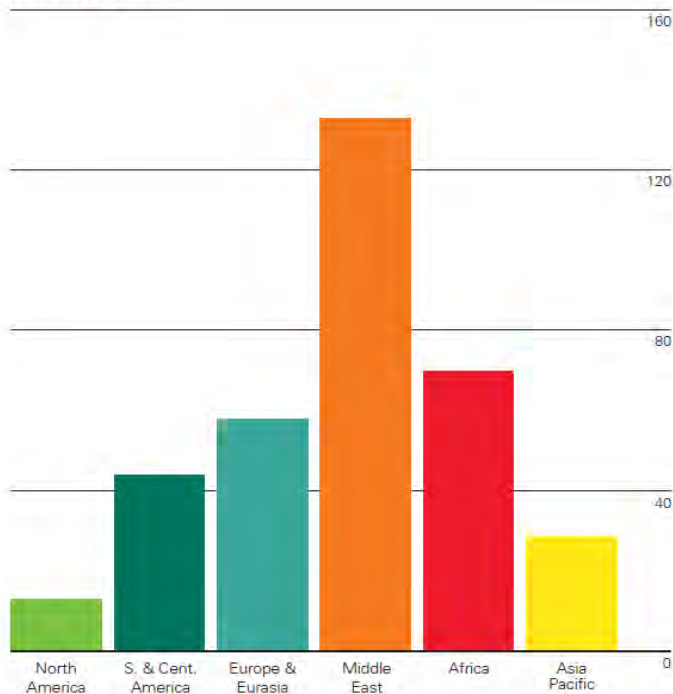
Central and South Eastern European Gas Connectivity Initiative (CESEC)

Jul 2015: MoU between 15 countries (Members and Energy Community Contracting Parties)

### Reserves-to-production (R/P) ratios

Years

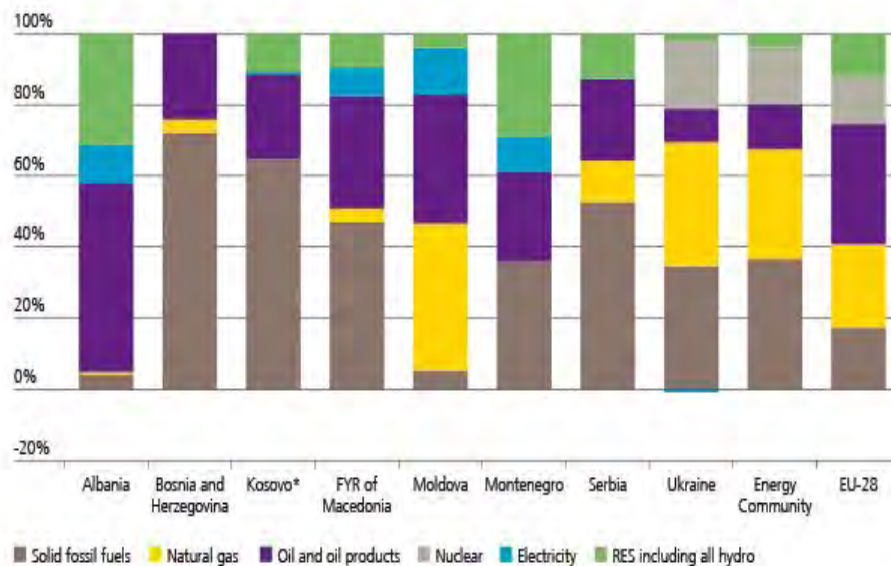
2014 by region



# Regional Cooperation Strengthens

- EU Energy Union with objectives of security, sustainability and competitiveness.
- Aspires to create an interconnected European gas grid with alternative sources of supply and a spine of gas hubs fostering gas market liquidity.
- In July 2015 Central and South Eastern European Gas Connectivity Initiative (CESEC) emerged , bringing 15 countries in the region EU members and Energy Community Contracting Parties \* into close cooperation under an integrated action plan of infrastructure projects. Promising potential for future growth exists in the region.

\* Albania, Bosnia and Herzegovina, Kosovo, FYROM, Moldova, Montenegro and Ukraine.



Source :



Energy – European Commission



# Romanian Transmission System

- 13,112 km of transmission pipelines and supply fittings for natural gas supply, of which 553 km - international transmission pipelines for natural gas;
- 1,119 gas regulation and metering stations;
- Six gas metering stations for international transmission
- Three metering stations for natural gas imports (Isaccea, Mediesu Aurit, Csanadpalota);
- 1,007 cathodic protection stations
- 48 valve control stations and/or connection points.