

# Energy Market Transition and Energy Security in SE Europe

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INSTITUTE OF ENERGY  
FOR SOUTH EAST EUROPE



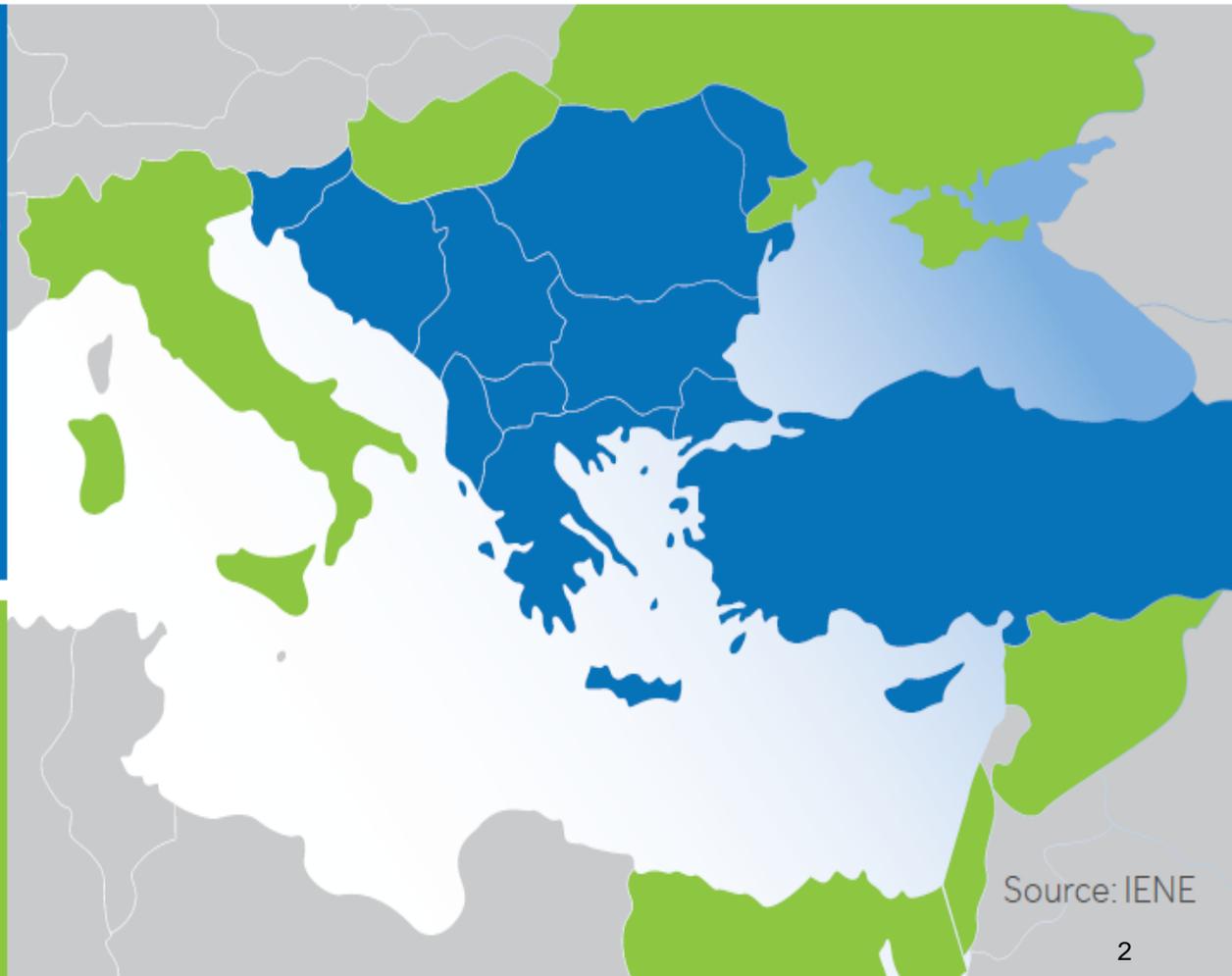
# The SE European Region Defined

## Core Countries

- Albania
- BiH
- Bulgaria
- Croatia
- Cyprus
- FYROM
- Greece
- Kosovo
- Montenegro
- Romania
- Serbia
- Slovenia
- Turkey

## Peripheral Countries

- Egypt
- Hungary
- Israel
- Italy
- Lebanon
- Moldova
- Syria
- Ukraine



Source: IENE

## Energy Market Integration and Transition in SE Europe (I)

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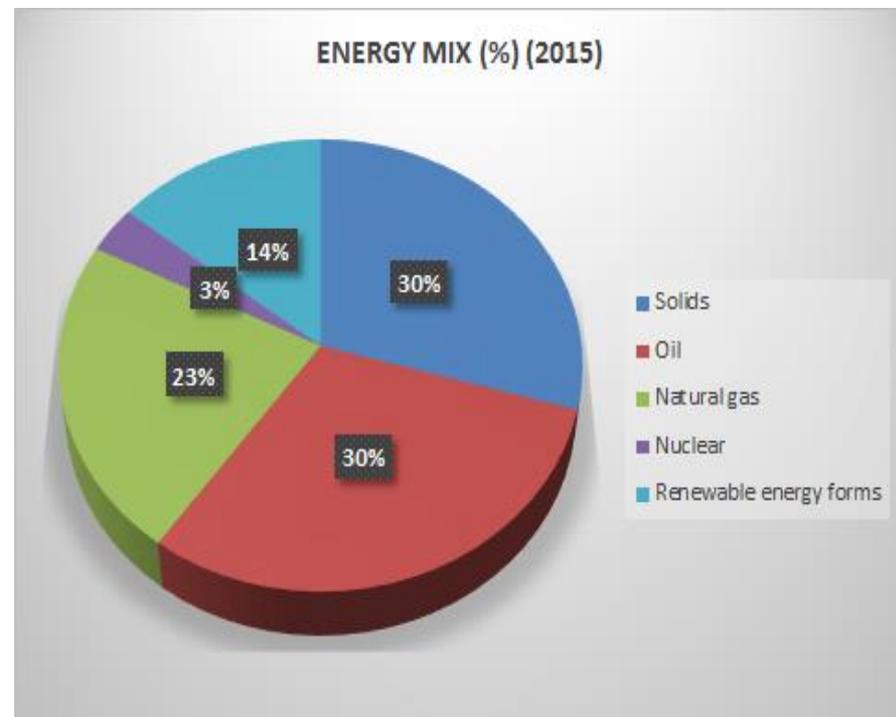
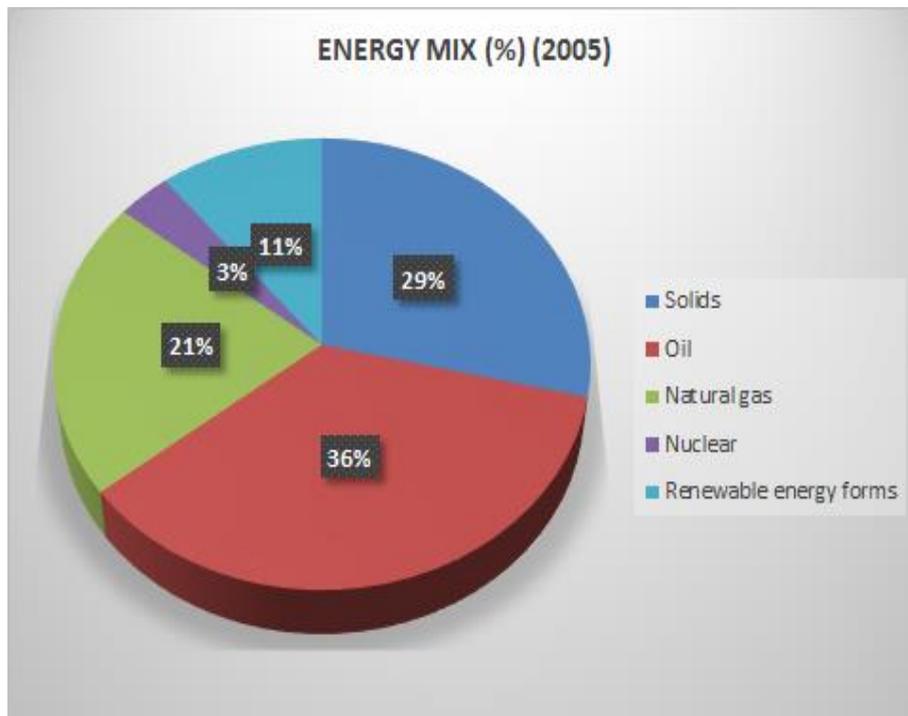
- ❑ As the economies of SEE countries are catching up with those of the rest of Europe, energy plays an **important role** both from financial/investment perspective but also because of market development (i.e. liberalization, competition, etc.)
- ❑ Although **considerable progress** has been achieved in recent years on energy market integration, the region faces today serious challenges when it comes to adapting its energy systems and energy markets to meet EU basic targets (i.e. decarbonization, RES penetration, energy efficiency)
- ❑ Today, we observe **great divergence** in the degree of adaptation between the different country groups of the region. EU member states having achieved market integration to a large extent with further progress ahead, while West Balkan countries, with the help of Energy Community, trailing behind but on a firm footing as their regulatory authorities and other institutions are now taking the lead.
- ❑ In today's exposition, we are greatly assisted from the work undertaken by IENE in its latest **"SEE Energy Outlook 2016/2017"**, published late June 2017. A tremendous amount of data and analysis is contained in this publication which helps us understand the economic and energy dynamics of the region.

## Energy Market Integration and Transition in SE Europe (II)

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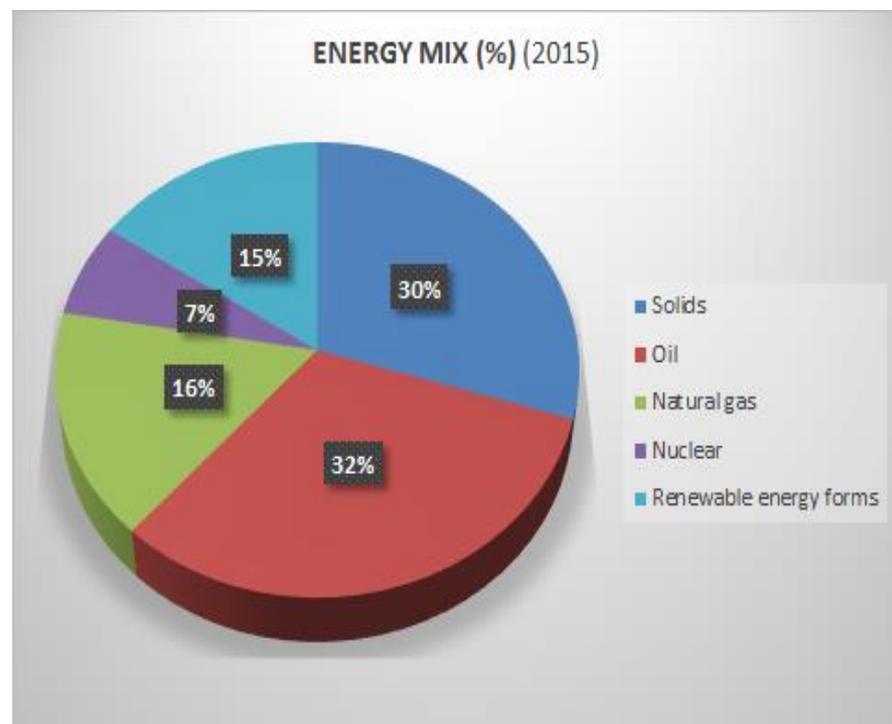
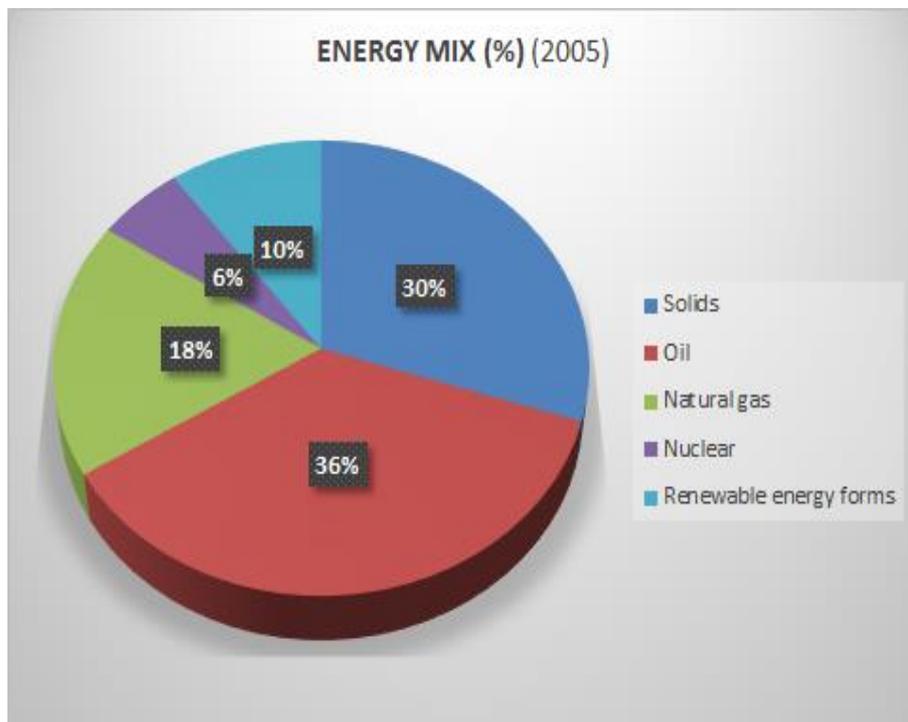
- If we look at the region as a whole, we observe the following:
  1. Energy market liberalization (electricity and gas) and market integration are moving ahead, but in widely diverging directions.
  2. RES are definitely entering into the country and regional energy mix, but at a slow pace (i.e. **less than 1 GW of installed capacity in 2017, excluding Turkey**)
  3. Energy efficiency is also moving ahead, but cannot be quantified yet, with hundreds of projects under development in all countries. It is not at all sure that EU's goal for 32.5% energy efficiency by 2030 will be met.
  4. Electricity grid infrastructure is expanding and upgraded across the region.
  5. However, carbon-based power generation is also moving ahead, adding substantial capacity from now until 2025 (**1.5 GW per year for SEE and 2.5 GW for Turkey, i.e. total 4 GW per year over the next 7-8 years**).
  6. Carbon-free new nuclear capacity in SEE over last few years is **zero**.

# SE Europe: Gross Inland Consumption by Source, Including Turkey (2005 and 2015)



Source: IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

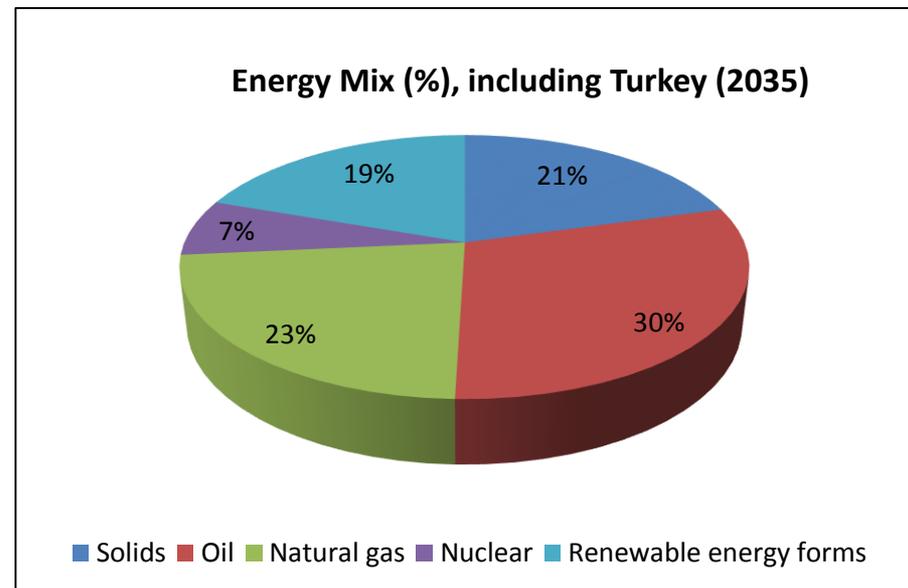
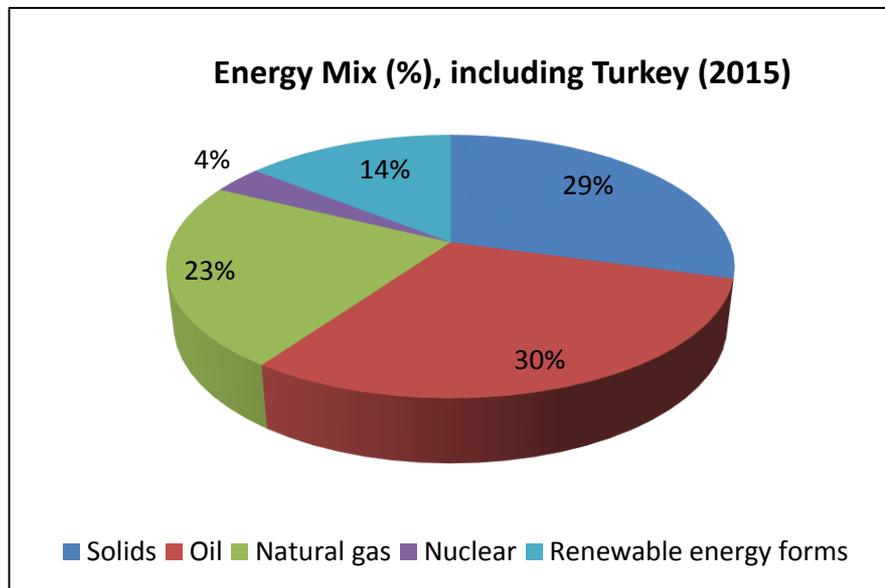
# SE Europe: Gross Inland Consumption by Source, Without Turkey (2005 and 2015)



Source: IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

## Regional Energy Mix: What Lies Ahead?

- The region's changing energy mix (Comparison between 2015 and 2035)
  - Substantial changes are foreseen over next 20 years with lower use of coal (lignite), stable contribution of gas and oil, more RES penetration and higher use of nuclear power.



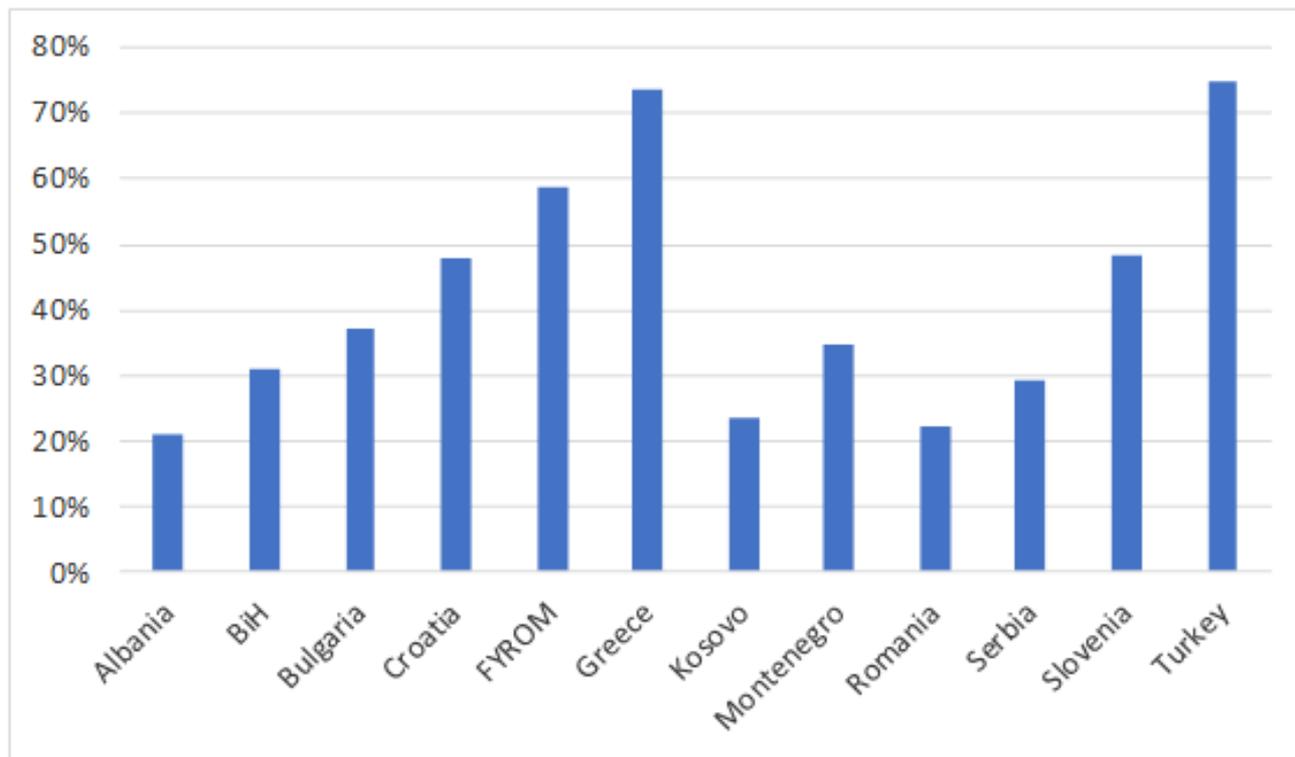
## Key Regional Energy Issues

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- ❑ Marked divergence between EU and SEE energy strategies
- ❑ SEE is more energy security vulnerable than the rest of Europe
- ❑ Energy supply diversification in SE Europe is less important than security of energy transportation and transmission (oil, gas and electricity)
- ❑ SEE's high hydrocarbon dependence
- ❑ Electricity's newcomer gas alters supply balance
- ❑ Lack of adequate electricity and gas interconnections
- ❑ Coal is and will continue for sometime to be relevant
- ❑ SEE's path towards decarbonisation is difficult and uncertain
- ❑ Nuclear remains a viable option for SEE power generation
- ❑ RES growth impeded due to repeated policy failures and electricity grid constraints
- ❑ Energy poverty is emerging as a regional concern mainly related to deteriorating social conditions

# Key Regional Energy Issues – Energy Import Dependency

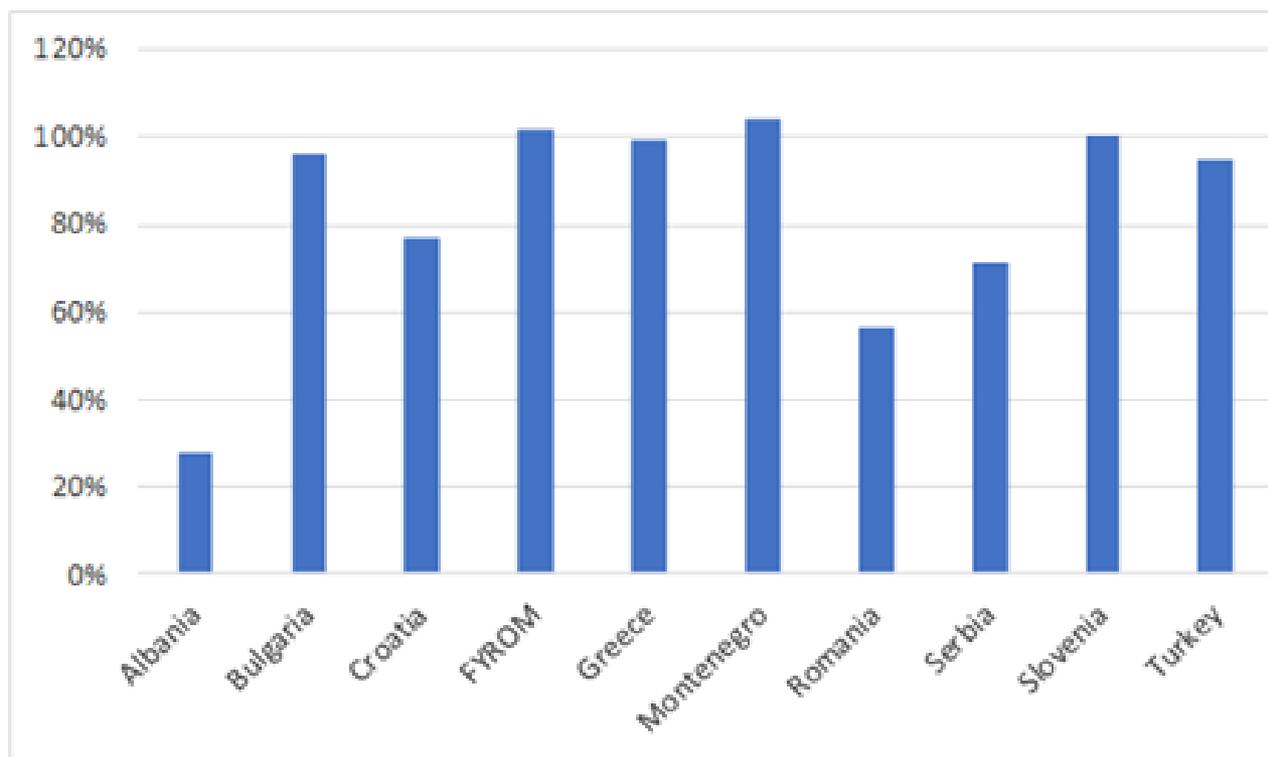
Energy Import Dependency (%) in SE Europe (2016)



Sources: Eurostat, IENE

# Key Regional Energy Issues – Oil Import Dependency

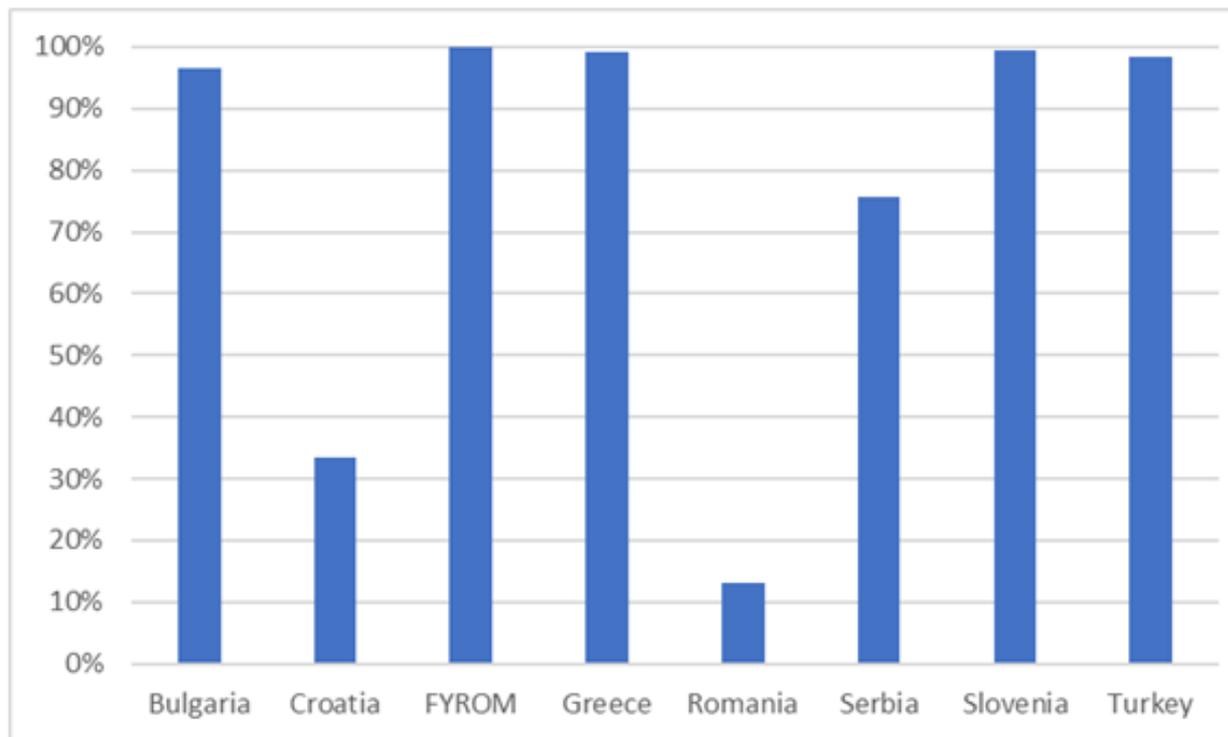
Oil Import Dependency (%) in SE Europe (2016)



**Note:** A dependency rate in excess of 100% relates to the build-up of stocks. Eurostat provides no data for Bosnia and Herzegovina and Kosovo.

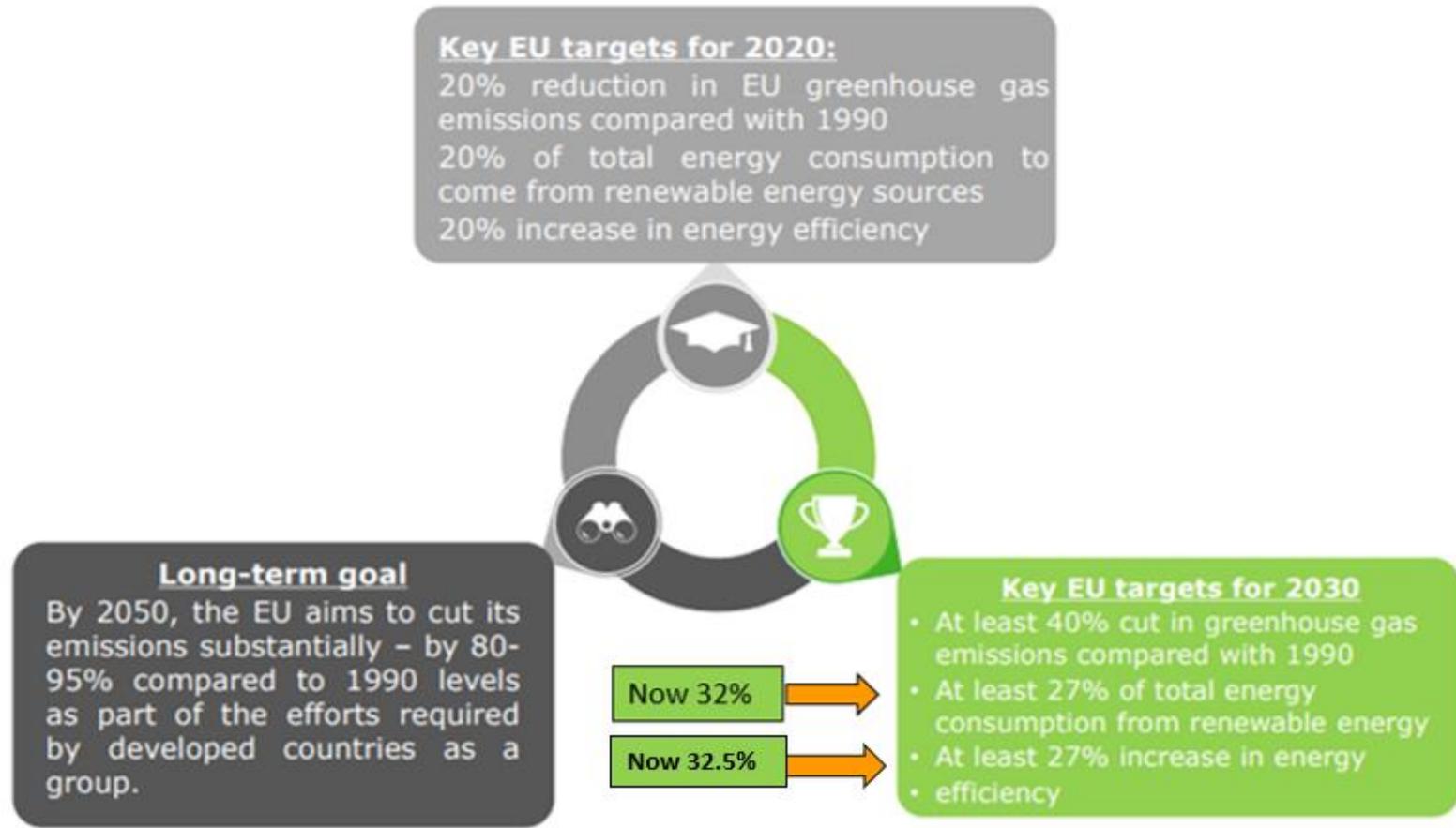
# Key Regional Energy Issues – Gas Import Dependency

Gas Import Dependency (%) in SE Europe (2016)



**Note:** Albania, Cyprus, Montenegro and Kosovo do not import natural gas.

# EU Energy Policy Framework (by 2020, 2030 and 2050)



# EU Energy Policy Framework: How Does This Stand for SE Europe?

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- It seems that an **inverted pyramid arrangement** has been developed in SE Europe, compared to pursued official Energy Union policies and stated targets as economic development at all costs remains number one priority for most countries.
  
- The energy policy priorities in broad terms for SEE would appear as follows:
  - Further large scale development of **coal and lignite resources** without any real recourse CCS/CSU provisions and plans
  - Further development of **electricity and gas interconnections in order to maximise cross border trade**
  - Promotion of **oil and gas exploration activities (onshore and offshore)** aiming towards maximizing production in the mid- and long-term
  - Further development of **renewables** in all application areas (i.e. solar, wind, biomass, hydro and geothermal) without necessarily aiming to adhere to specific targets (set by the EU)
  - Promotion of **energy efficiency**, focusing primarily on the building sector, incentivized by EU and green fund financing facilities
  - **Diversification** of supply routes and suppliers in order to secure future gas supplies
  - Reduction of CO<sub>2</sub> emission levels (least of priorities)

# Key Regional Energy Issues – Decarbonisation in SE Europe

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## Challenges and Trends Towards SE Europe's Decarbonisation:

- The **coal predicament** of SE Europe – the region's great dependence on coal-fired power generation vs GHG reduction targets
  - According to IENE estimates, the **share of solid fuels to power generation** is anticipated to **increase steadily** in several countries of the region (most notably in Serbia, Kosovo, Croatia, Bosnia and Herzegovina, Montenegro and Turkey) over the next 10-15 years, as they will struggle to meet increased demand.
  - **FYROM and Serbia are the second most coal dependent countries after Kosovo at regional level**, while future proposed lignite-based coal-fired power plants in Bosnia and Herzegovina and Serbia would not be in line with EU climate targets, and would downgrade the solar PV, wind, hydropower, and biomass opportunities in the region.
  - **Effective climate change policies in SE Europe have not been implemented so far**, but there is still room for change in order to avoid becoming further “locked in” to the use of fossil fuels.
  - In SE Europe, **economic development**, largely based on the utilization of indigenous lignite/coal resources, **will have to be reconciled with COP 21 commitments**. Therefore, the planning of clean-cut and compatible long-term energy and economic strategies becomes a real challenge.
    - A lot more analytical and assessment work (e.g. examine CCS/CCU options) needs to be undertaken before introducing realistic policies for decarbonisation.

## Coal Plants in SEE Countries (as of January 2018) (MW)

Country	Announced New Plants	Pre-permit	Permitted	Announced + Pre-permit + Permitted	Under Construction	Shelved	Operating	Cancelled (2010-2017)
Turkey	15.410	19.001	7.349	41.760	1.130	29.589	18.469	29.204
Bosnia and Herzegovina	2.380	0	1.700	4.080	0	0	2.073	1.020
Serbia	2.500	350	0	2.850	0	0	4.405	320
Romania	0	600	0	600	0	0	5.115	5.105
Kosovo	0	500	0	500	0	0	1.290	330
Greece	450	0	0	450	660	0	4.375	800
FYROM	300	129	0	429	0	0	800	300
Montenegro	0	254	0	254	0	0	225	1.410
Bulgaria	0	0	0	0	0	0	5.059	2.660
Slovenia	0	0	0	0	0	0	1.469	0
Croatia	0	0	0	0	0	0	335	1.300
Albania	0	0	0	0	0	0	0	800

Note: Includes units of 30 MW and larger

Sources: Endcoal, IENE

## Decarbonisation and Related Technologies

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- The road to decarbonisation can be approached at two levels:
  - through **policy**, which incorporates the aforementioned energy mix issue and economic assessment through which the rate of decarbonization is determined.
    - The main question arising therefore is **how the rate of decarbonization can be related to economic development and what the investment implications are** and
  - through **technology**, whose degree of deployment depends on the policies to be implemented and could contribute significantly towards decarbonisation through, for instance, the use of CCS/CCU or dual-fuel power plants.
  
- More information about energy technologies used in SE Europe is available at: [www.iene.eu/microsites/technologies](http://www.iene.eu/microsites/technologies)

## Key Regional Energy Issues - RES growth in SE Europe is Hindered (I)

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- ❑ **Greece** and **Bulgaria** introduced exceptionally high FiTs without a proper financial analysis and cash flow projections showing the impact that RES would have on the national accounts and electricity market operation over a long time period.
- ❑ This rapid and unplanned buildup of RES based on high FiTs had a dramatic impact on the electric system leading to large financial deficits for the market operator with big payments delays to producers.
- ❑ **Bulgaria** currently has an overcapacity problem and is exporting electricity to Turkey, Greece and the rest of the Balkans, meaning there is little motivation for investment in yet more RES generation capacity.
- ❑ **Romania** decided to slash incentives for renewable electricity generation following a dramatic boom in the sector between 2010 and 2013. Bucharest's generous "green certificate" incentive scheme attracted numerous international investors from Europe and Asia, in addition to local companies.
- ❑ **Greece** has two main support mechanisms for renewable energy: a feed-in premium and investment subsidies. Latest legislation addresses the shortcomings of the above mechanisms in order to improve market development.

## Key Regional Energy Issues - RES growth in SE Europe is Hindered (II)

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- The slowing of RES applications over the last 3-4 years has raised questions about whether countries in the region will meet medium- and long-term renewables targets. The abrupt changes to incentive schemes have discouraged many investors and it is uncertain whether they can be lured back.
  
- A strong RES growth is expected in **Turkey**. According to Turkey's NREAP, the **target for RES generation capacity was set to 61 GW by 2023**; mostly in the forms of hydro, wind and solar generation.
  - 34 GW of hydro generation capacity
  - 20 GW of wind
  - 5 GW of solar and
  - 1 GW in both geothermal and biomass generating capacity by 2023. Geothermal energy will play a small part too, increasing to 600 MW within a decade.

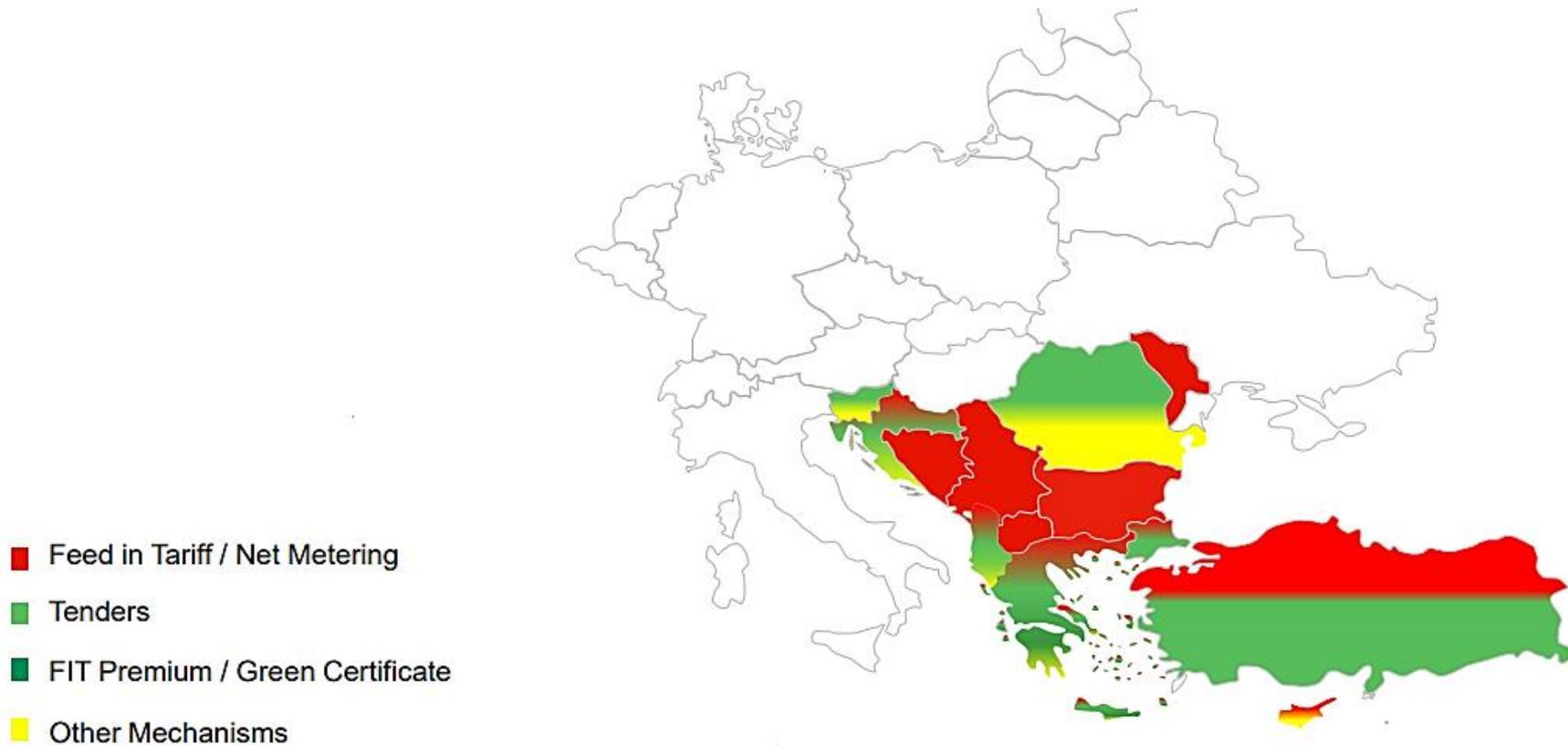
## Installed RES Capacity (MW) in SE Europe (2016)

Countries	Wind	Solar	Hydro	Deep Geothermal	Bioenergy	Total RES Installed Capacity
<b>Albania</b>	0	1	2,033	0	0	<b>2,034</b>
<b>BiH</b>	0	13	2,140	0	0	<b>2,153</b>
<b>Bulgaria</b>	700	1,032	3,219	0	64	<b>5,015</b>
<b>Croatia</b>	422.7	49	2,209	0	63	<b>2,743.7</b>
<b>Cyprus</b>	157.5	85.7	0	0	9.7	<b>252.9</b>
<b>FYROM</b>	37	17	658	0	4	<b>716</b>
<b>Greece</b>	2,374	2,611	3,392	0	58	<b>8,435</b>
<b>Montenegro</b>	0	3	671	0	0	<b>674</b>
<b>Romania</b>	3,130	1,372	6,730	0.05	124	<b>11,356.05</b>
<b>Serbia and Kosovo</b>	11	13	3,074	0	11	<b>3,109</b>
<b>Slovenia</b>	5	257	1,295	0	64	<b>1,621</b>
<b>Turkey</b>	5,376	827	26,710	775	395	<b>34,083</b>
<b>Total</b>	<b>12,213.2</b>	<b>6,280.7</b>	<b>52,131</b>	<b>775.05</b>	<b>792.7</b>	<b>72,192.65</b>

Sources: IRENA (2017), IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

# RES Support Schemes in SE Europe

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# Key Regional Energy Issues

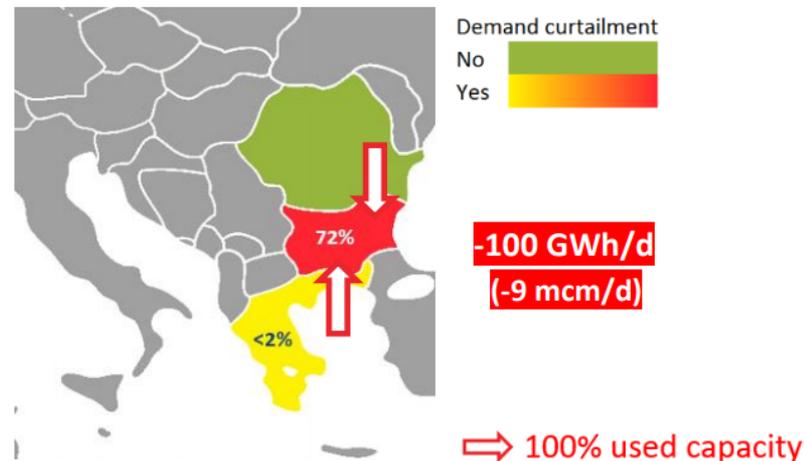
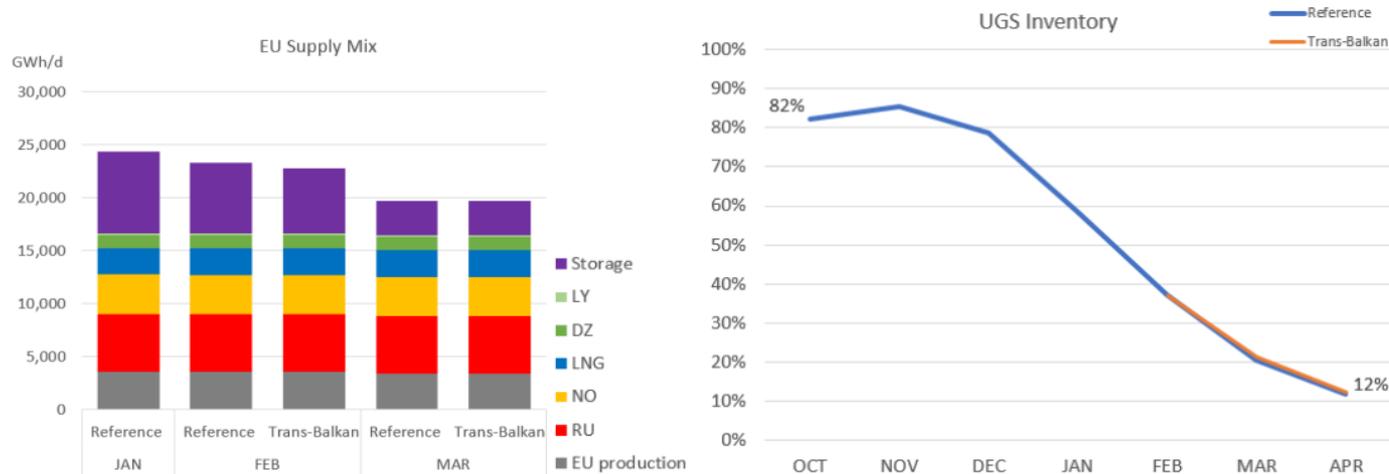
## - Energy Security in SE Europe (I)

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- **Energy security is a complex issue** and as such cannot be considered in isolation.
  - SE Europe because of its geography, its proximity to high risk conflict zones (i.e. Syria, Iraq, Ukraine), a growing and uncontrolled refugee flow from the Middle East and North Africa and the location of some of its countries (i.e. Turkey, Greece, Romania) at vital energy supply entry points, faces **higher energy security threats** than the rest of Europe.
- There is a need to strengthen available mechanisms
  - The **strengthening of Emergency and Solidarity Mechanisms** and the **maintenance of adequate oil, coal and gas stocks**, constitute a short- to medium-term relief solution.
  - The achievement of a **balanced energy mix** provides the best long-term option in enhancing energy security both at country and regional level.
- Security of **supply/demand** and **differentiation of supply sources**
  - In the case of gas, it is becoming more important and pressing compared to other fuel sources, such as electricity, oil, coal and possibly uranium.
  - Gas is a primary area of concern largely because of its rather inflexible transmission method, mainly by means of pipelines.

# Disruption of the Largest Infrastructure to the Balkan Region (Romania-Bulgaria-Greece) (I)

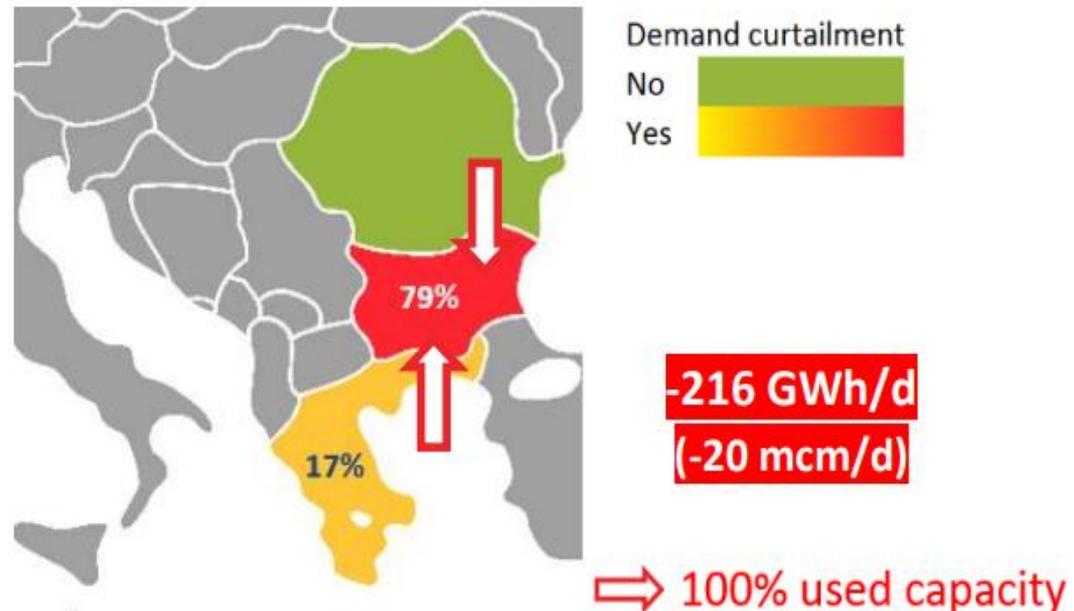
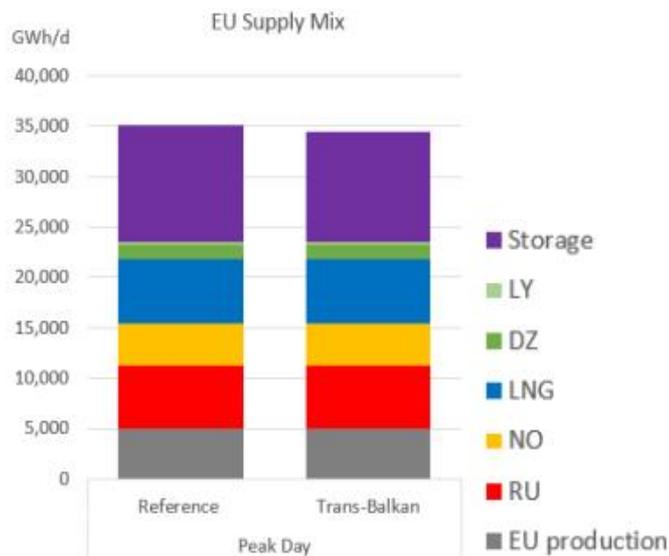
- ❑ ENTSOG's gas supply and infrastructure disruption **scenario #6 (February 15 – February 28)** out of 17 scenarios
- ❑ In case of a 2-month disruption of all gas imports to the EU via Ukraine, infrastructure limitations would result in the need to curtail gas demand in **Romania by 9%**, in **Greece by around 2%** and in **Bulgaria by 72%** of gas demand



# Disruption of the Largest Infrastructure to the Balkan Region (Romania-Bulgaria-Greece) (II)

- ❑ These figures look **even worse** when modelled for a disruption via the same route during a **peak day** of exceptionally high gas demand, arising with a statistical probability of once in 20 years
- ❑ Figures for **Bulgaria** are looking **similarly bleak**

## Peak day / 20 years – simulated on 15 February



## Energy Security in SE Europe (II)

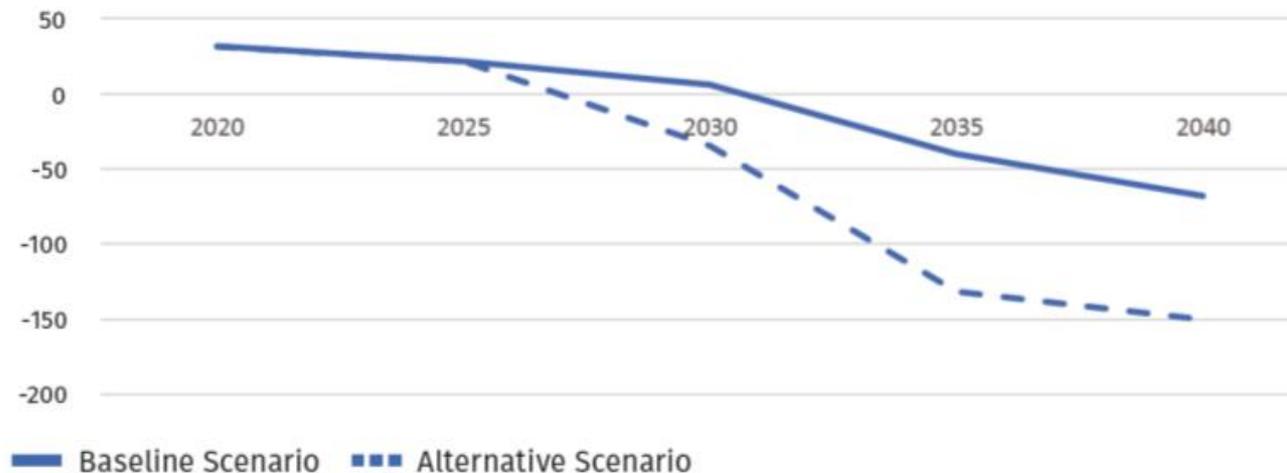
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- Security of **transportation**, shipment of **oil and gas**
  - Gas deliveries were twice disrupted (i.e. 2006 and 2009) with the shipment of Russian gas, through Ukraine, to Europe but also from Turkey and Greece (i.e. 2011 and 2016).
  
- **Smooth supply of electricity** and urgent need to connect various island groups to the mainland grid
  - Mitigation of possible power supply failures and shortfalls and minimization of environmental impact through the retirement of fuel oil or diesel powered electricity generators on several islands.

# Electricity Market Balance in SE Europe

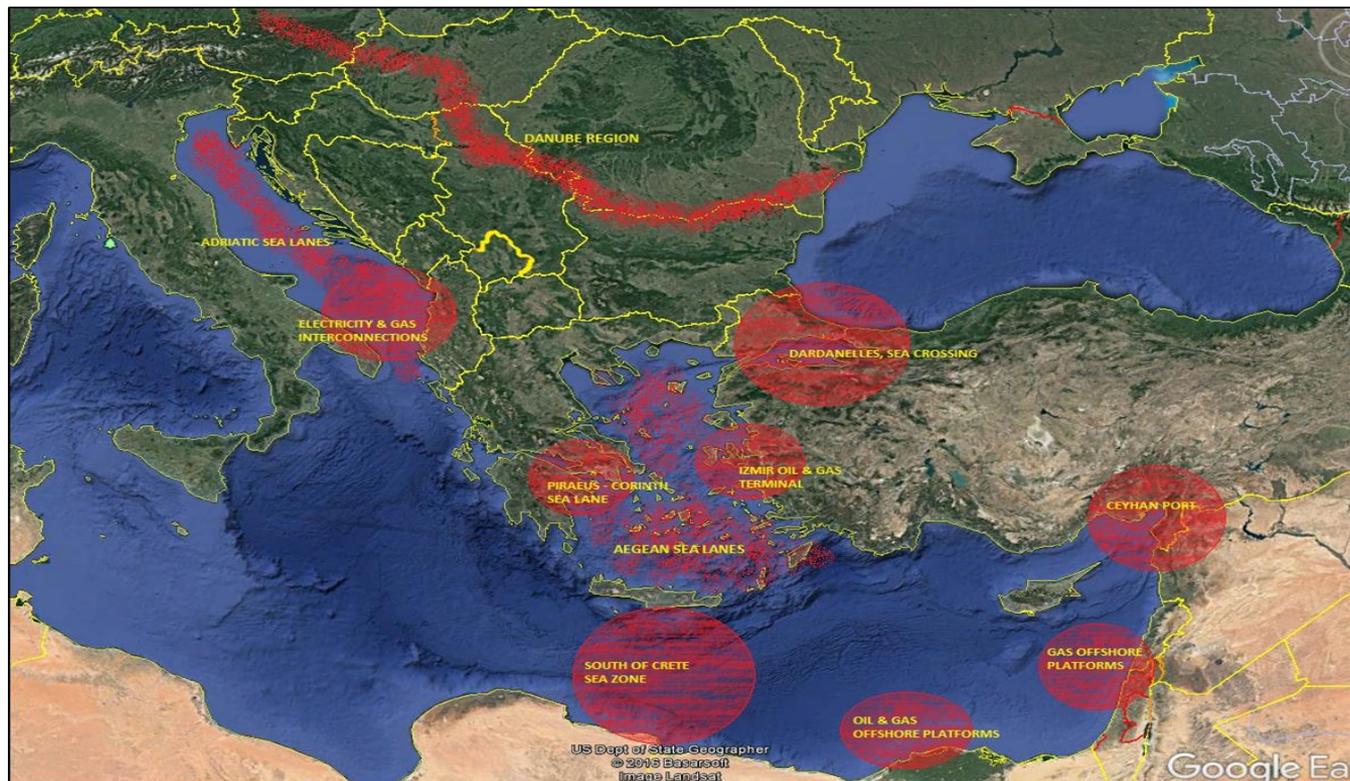
As the New Nuclear Watch Institute’s “The Electricity Market of SE Europe: The Impact of New Trends and Policies” report says “The conclusion of our alternative – ‘New Trends and Policies’– scenario is that SE Europe will experience annual electricity generation deficits from 2027 onwards; the onset of annual deficits is delayed until 2031 in the baseline analysis. The market balance of the alternative forecast worsens over the duration of the forecast period. After falling into deficit in 2027, the shortfall then reaches 35 TWh in 2030, 132 TWh in 2035, and 150 TWh in 2040. As shown in Figure 8 the projected deficit at the end of the forecast is marked, 150 TWh is only slightly less than half of the actual generation forecast for 2020 (310 TWh)”.

**Market Balance (TWh) — Scenario Comparison**



## Energy Security in SE Europe (III)

- **Effective protection of energy infrastructure**
  - Mitigation of terrorist threats and advanced level of safety against of physical hazards (e.g. hurricanes, floods, earthquakes) and cyber threats.
- The various vulnerable key energy infrastructure locations in SE Europe constitute **potential energy security hot spots** and as such should be properly identified (*see following Map*), while also crisis management plans must be prepared in order to meet any emergencies (e.g. physical hazards, large scale industrial accidents or terrorist actions).

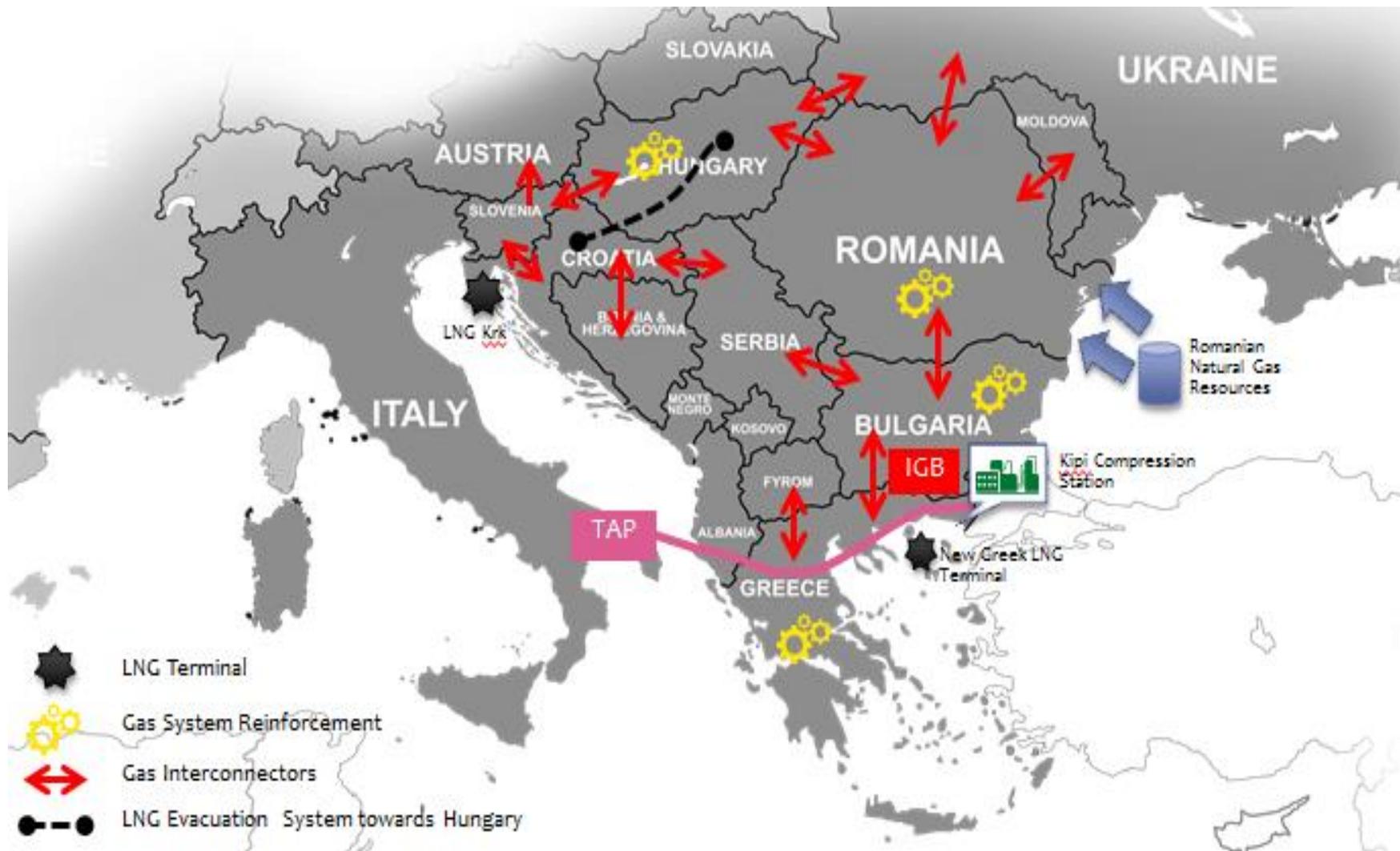


## EU Initiated CESEC to Strengthen Energy Security

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- The **Central and South Eastern Europe High Level Working Group** was set up by Austria, Bulgaria, Croatia, Greece, Hungary, Italy, Romania, Slovakia and Slovenia and the EU in February 2015.
  - They were joined later by eight Energy Community Contracting Parties: Ukraine, Moldova, Serbia, FYROM, Albania, Bosnia and Herzegovina, Kosovo and Montenegro.
  
- The **initial aim of the group** was to:
  - coordinate efforts to facilitate the swift completion of cross-border and trans-European projects that diversify gas supplies to the region
  - develop regional gas markets and implement harmonised EU rules to ensure the optimal functioning of infrastructure.
  
- At the **4<sup>th</sup> CESEC ministerial meeting** in Bucharest in September 2017, energy ministers signed a MoU extending the scope of CESEC cooperation. It now also includes:
  - a joint approach on electricity markets, energy efficiency and renewable development
  - a list of priority projects to build an interconnected regional electricity market
  - specific actions to boost renewables and investment in energy efficiency in a region with vast growth potential in these areas.

# Energy Security - List of CESEC Gas Priority Projects



# Gas Interconnections in SE Europe



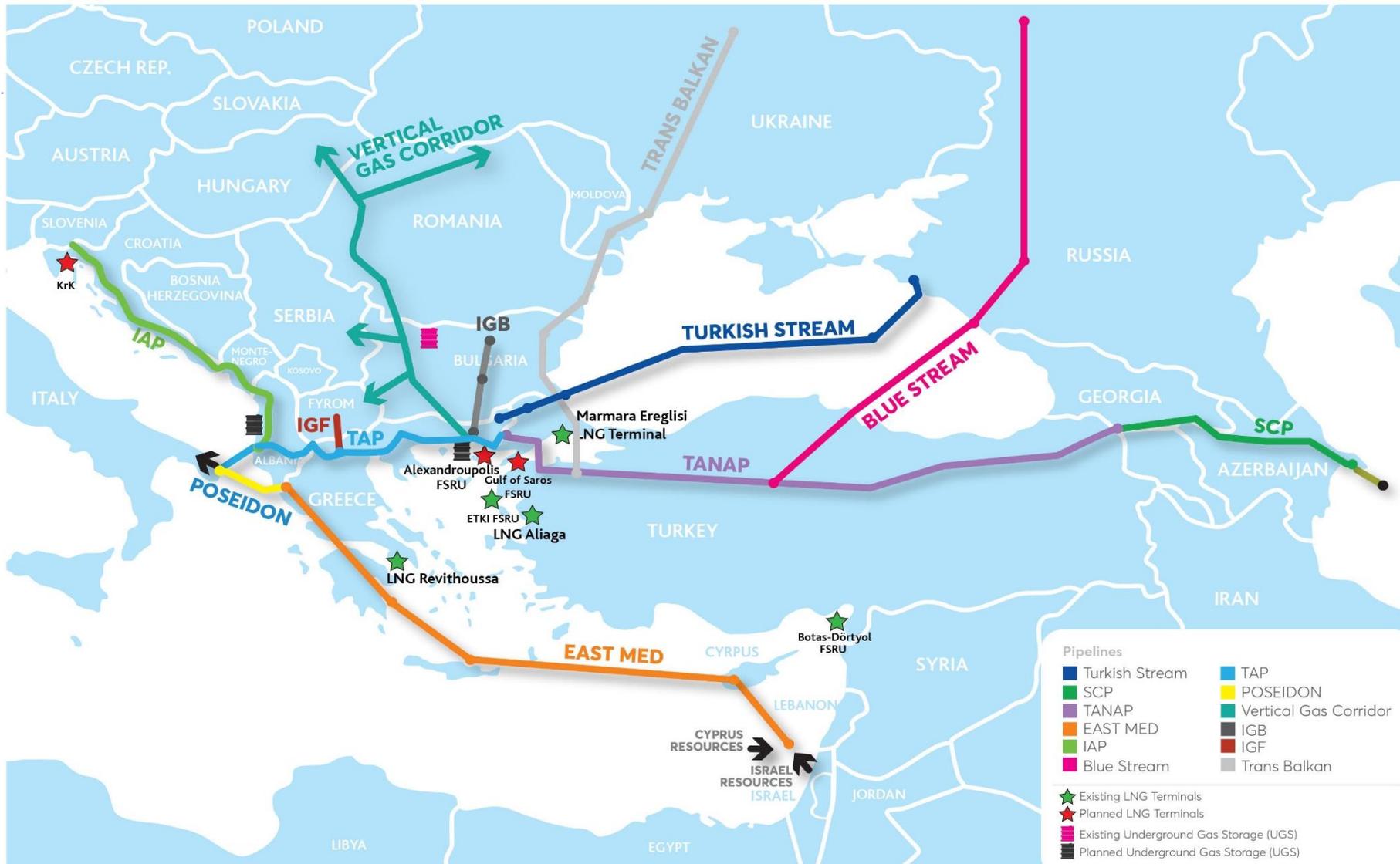
Source: IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

# Energy Security – Diversification of Supply Sources and Transportation Routes

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- ❑ Opening up a new South route to bring gas from **new supply sources** (other than Russian) to meet (then) rising European gas demand became an EC energy strategy priority in the early 2000's.
- ❑ The key objective, then as now, being the **diversification of gas supply sources and gas supply routes**.
- ❑ The South Corridor, in its present status, **satisfies the “route” diversification requirement**, but not necessarily the “supply” one.
- ❑ There is a **new architecture** to be considered in how the South Corridor is shaping up with multiple pipelines and LNG terminals, several entry points and a number of suppliers (e.g. Azerbaijan, Turkey basket, Russia, LNG).
- ❑ In view of the failure of securing sizeable gas quantities outside Russia and the changing architecture of the South Corridor, there is a need for a **wider debate** in order to redefine and reconsider priorities and expectations.

# An Expanded South Gas Corridor



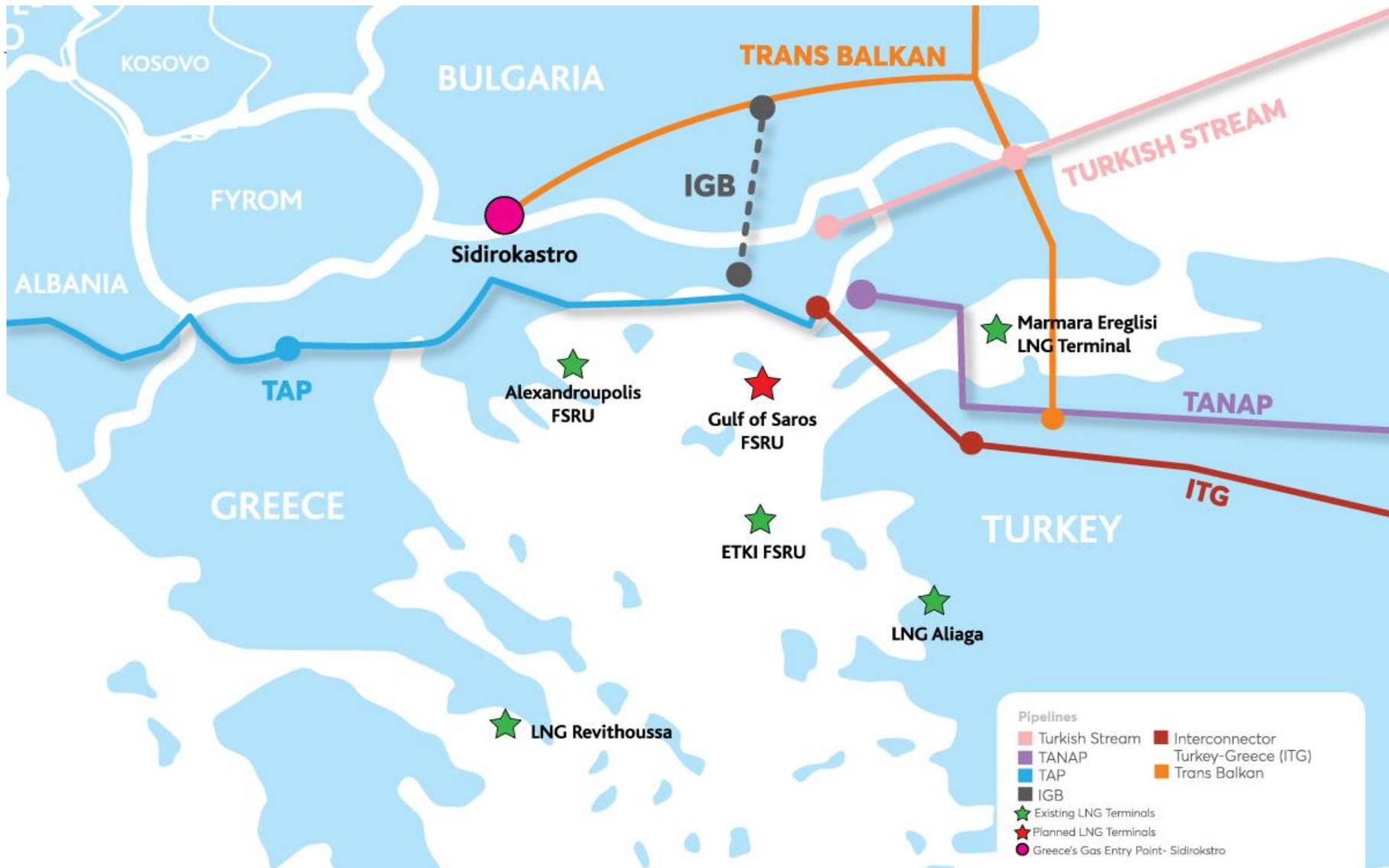
NB.: The TANAP and TAP gas pipelines as well as Turkish Stream are under construction, with IGB at an advanced planning stage with FID already taken. The IAP, the IGI Poseidon in connection with East Med pipeline and the Vertical Corridor and the IGF are still in the study phase. Blue Stream and Trans Balkan are existing pipelines.

# Contribution of Russian Gas Deliveries to SEE After 2020 Remain Uncertain

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- According to repeated statements by Gazprom's senior executives over the last 18 months, gas exports via Ukraine and destined to SEE will cease from 31.12.2019.
- This means that Russian gas to Romania, Bulgaria, FYROM, Greece and Turkey will not be delivered via the currently positioned Trans Balkan Pipeline.
- Turkey will instead obtain its corresponding gas supplies exclusively via the new Turkish Stream Pipeline.
- Hence, Romania, Greece, Bulgaria and FYROM will only be able to obtain their gas supplies from Russia via Turkey, through a reverse flow operation of the Trans-Balkan Pipeline.
- Additional Gazprom exports to European markets via the Expanded South Corridor could be channeled in three ways:
  1. By booking capacity through TAP (which is a blow to EU's gas supply diversification policy)
  2. Limited quantities via the Vertical Corridor
  3. Through a new (to be built) pipeline through Greece and Italy (i.e. revival of the old ITGI and Poseidon plan), which will certainly face stiff opposition from Brussels and the USA government.

# A Special Focus on Bulgaria, Greece and Turkey



# Can an Expanded South Corridor Provide an Alternative Gas Supply to European Markets?

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- **Yes**, if total gas quantities (of now Russian origin) to be delivered to European destinations will exceed 60 bcm, i.e. more than 10% of anticipated European gas imports by 2030.
  
- In view of current development rate and problems faced at Shah Deniz II, Azeri gas could contribute 15-20 bcm by 2025 and 25 bcm by 2030.
  
- An additional 10 bcm could (?) be delivered by East Med by 2025.
  
- It is unlikely that the difference of 35 bcm or more can be delivered by East Med originated LNG – a figure near 10-15 bcm is more likely.
  
- Consequently, a shortfall of 20-25 bcm will need to be covered from other sources which could be developed by 2030, but this will not be easy. Where this gas might come from?
  - Additional Azeri gas if Absheron field is developed meanwhile.
  - Turkmenistan, provided that political agreement is reached between Baku and Ashgabat for the construction of Trans-Caspian pipeline. Some 10-15 bcm may be expected from Turkmen fields.
  - Additional LNG deliveries via Idku and Damietta terminals without excluding a Cyprus based (greenfield) liquefaction plant, provided that additional gas becomes available from various fields.

# Recent Gas Discoveries in Offshore Eastern Mediterranean Could Provide an Alternative Gas Supply to Europe

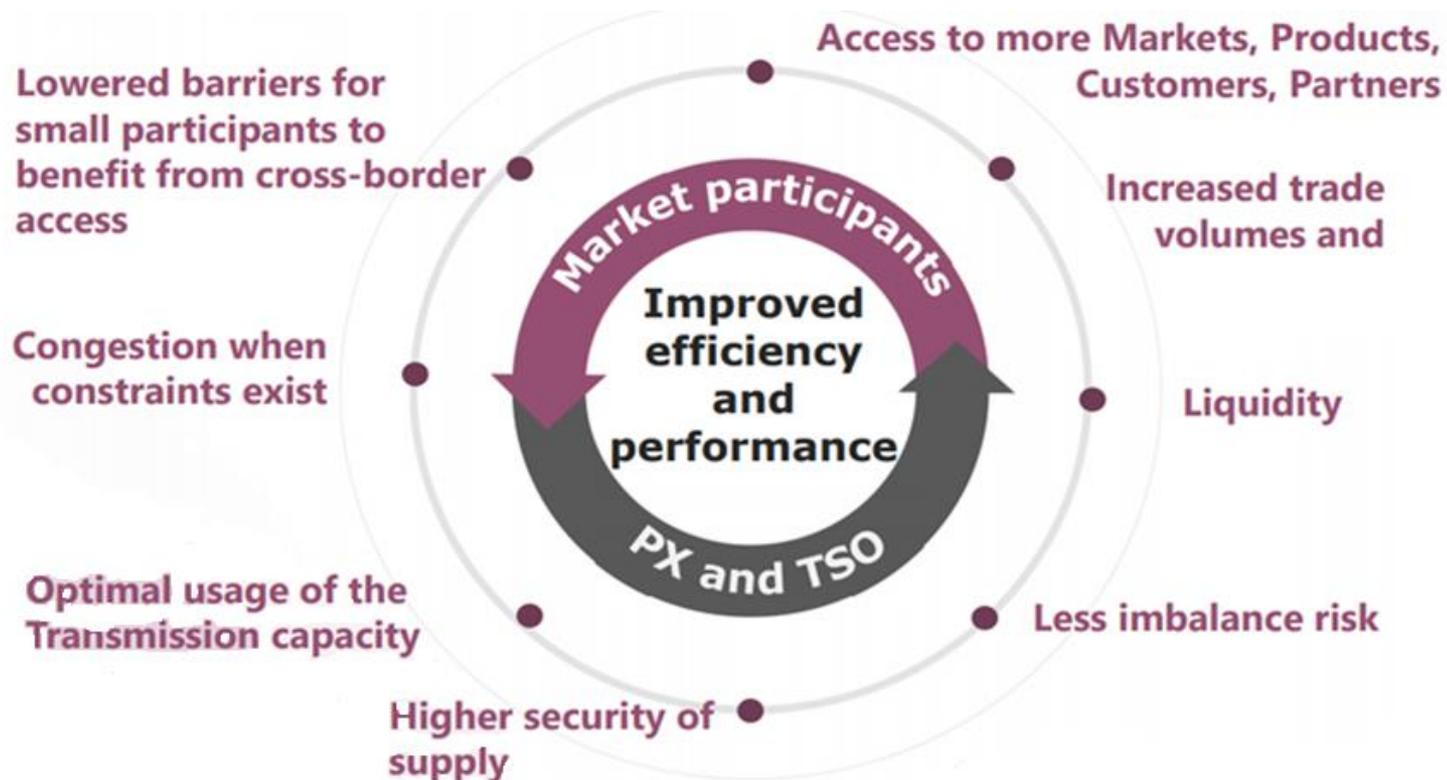


# Electricity Interconnections in SE Europe

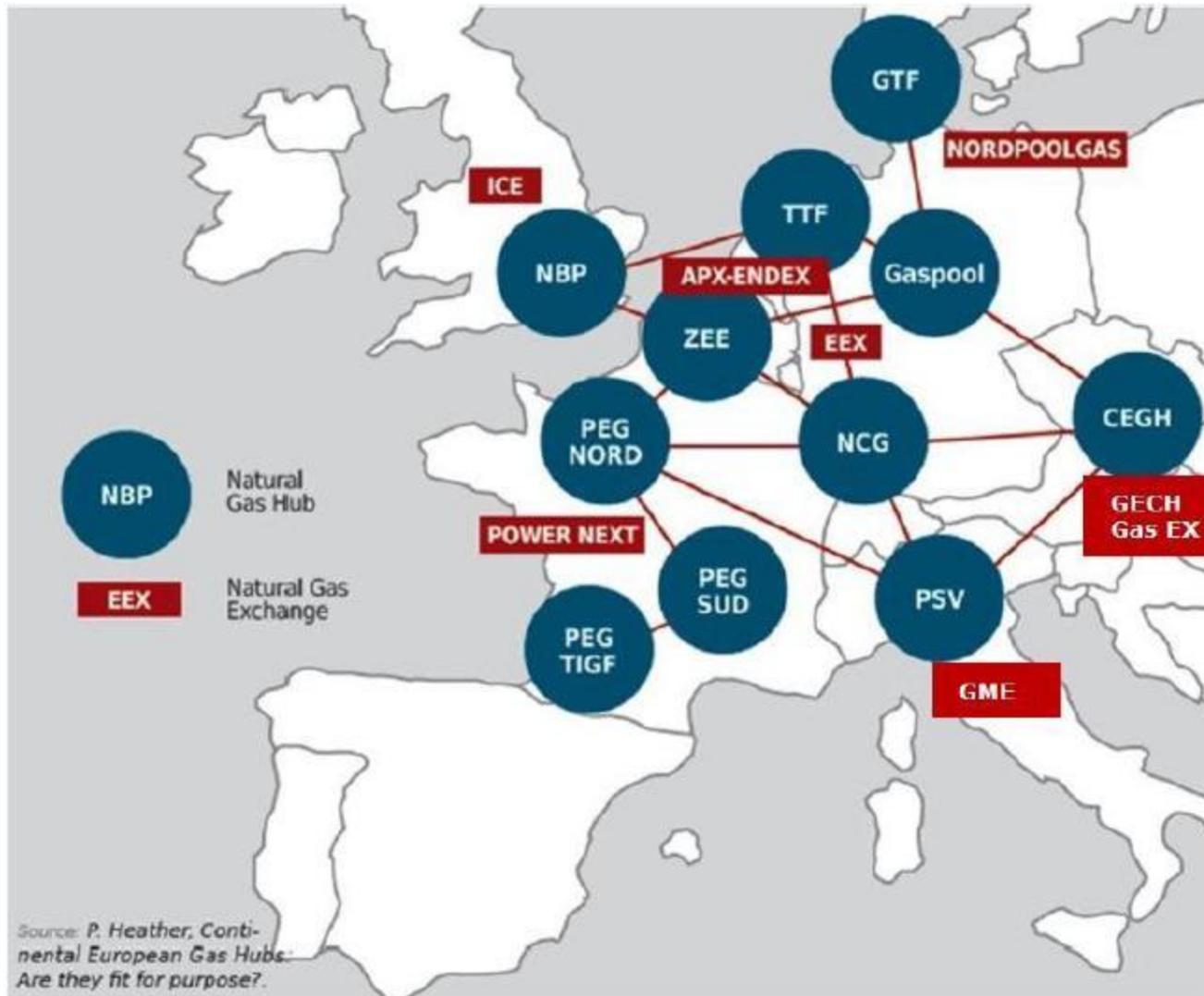


# Market Integration Benefits

- ▣ **Electricity Exchanges** and **Gas Trading Hubs** can play an important role in facilitating regional market integration and trading activity in general.



# Market Integration Benefits: European Gas Hubs and Exchanges

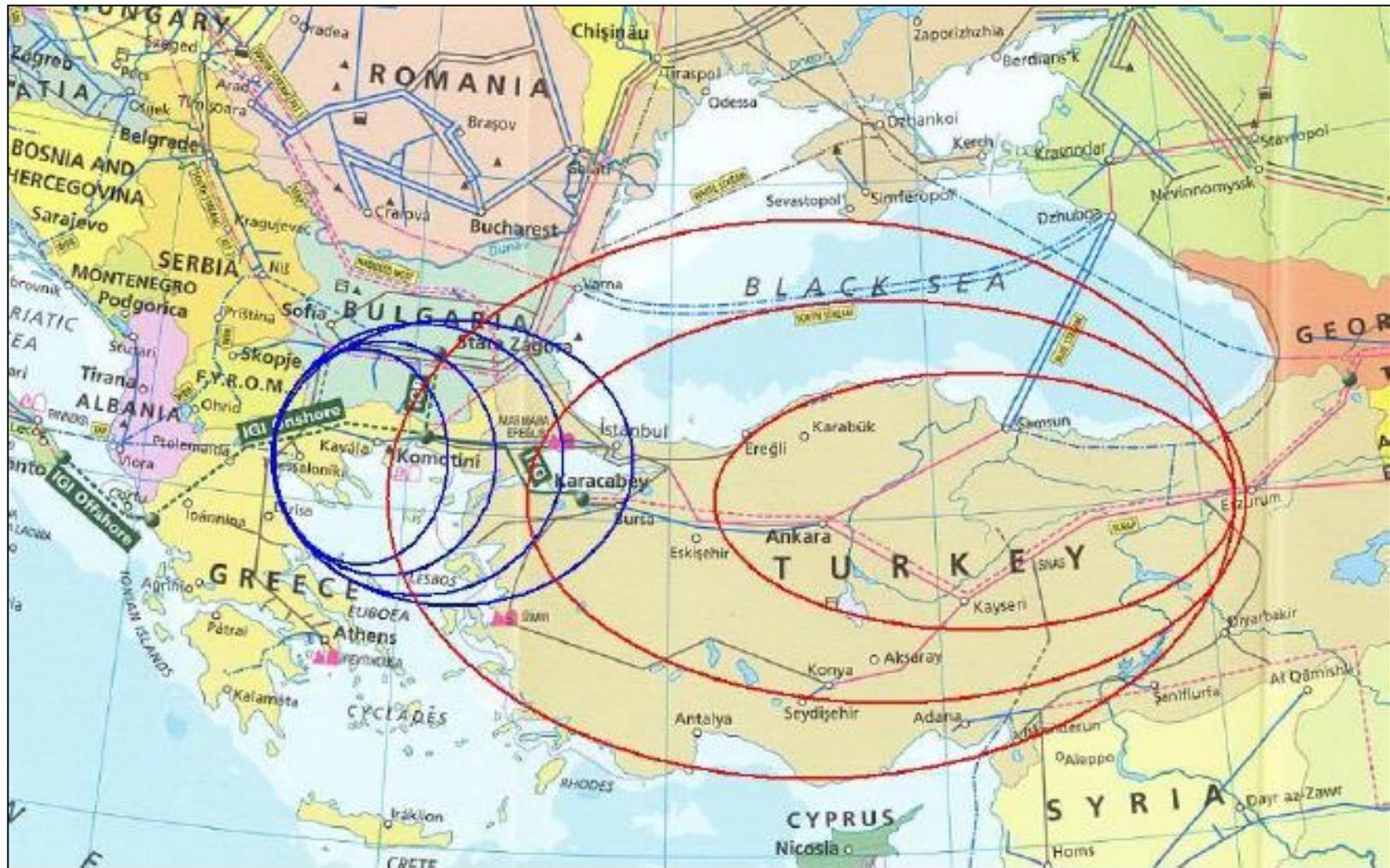


# Creating a Natural Gas Trading Hub in SE Europe Remains a Real Challenge

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- ❑ Today, there is not a single gas trading hub east and south east of Vienna whose CEGH could act as a pivot for organizing gas trading in this region.
- ❑ As gas volumes increase in SE Europe attracting more market players, there is a need for the establishment of a gas trading hub. This will facilitate **gas supply and demand to meet in a marketplace** by providing a platform for physical and/or financial transaction.
- ❑ It will **enable competitive markets to function**, even though it will probably have an administrative role in the beginning of its operation.
- ❑ Although it is difficult, at this stage, to predict market behaviour and impact on spot prices, once the hub enters full operation, based on European hub operation experience, one could safely assume that **spot prices determined through hub trading will be lower than oil-indexed ones**.
- ❑ Once the interconnections are in place and an effective gas exchange mechanism exists, traders would be willing to buy available gas, which will become available from main gas importers, by placing bids through the “hub” for both physical quantities and gas futures. Such trading activity will inevitably lead to the **formation of a new climate of competitive prices**, exerting pressure on traditional suppliers to revise their contract prices.

# Gas Hubs in Greece and Turkey Can Coexist



Source: IENE study, "The Outlook For a Natural Gas Trading Hub in SE Europe", (M19), Athens, September 2014

## Key Messages (I)

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- ❑ Geography, followed by economy, have emerged as key factors in SEE's energy assessment
- ❑ **Energy strategies and policies:** There is considerable divergence between stated objectives and actual progress on the ground (e.g. Decarbonisation, RES penetration, regional co-operation). There appears a conflict between stated EU goals for decarbonization and pre-coal policies followed by several SEE countries.
- ❑ There is **clear failure at EU policy level** in achieving national targets especially in RES, as conflict is in evidence over strict budgetary rules and allowed deficit levels
- ❑ A robust upward trend in final energy demand in SE Europe over the projection period up to 2050 is forecasted, reaching 219 Mtoe in 2050, up by 59 Mtoe compared to 2015 levels
- ❑ The **persisting relevance of solid fuels** which contributed about 33% of the gross inland consumption and 38% of gross electricity generation of the SEE region respectively in 2015
- ❑ **High oil and gas import dependence** with crude oil and oil product imports corresponding to 82.65% of total oil consumption and 69.5% of natural gas, compared to 53.5% on the EU average.
- ❑ **Peripheral countries** are playing an increasingly more influential role in the channeling of energy flows into the SEE region
- ❑ Natural gas, although not fully utilized, is becoming increasingly important to the energy mix of the various SEE countries, both for power generation and commercial/domestic use

## Key Messages (II)

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- ❑ In terms of security of energy supply, the SEE region as a whole appears **more vulnerable** than the rest of Europe. Regional connectivity of electricity and gas grids is a priority.
- ❑ Market liberalization in the electricity sector has made **huge strides** over the last five years with unbundling having taken place and competition in the retail area now evident after many years of protectionism.
- ❑ **Less impressive** is progress in the natural gas sector where competition, is largely limited to the industrial sector with retail lagging seriously behind.
- ❑ Nuclear power, although it supplies only 6.0% of the electricity mix in SEE remains a viable option since it covers important base load in certain key countries (Romania, Bulgaria, Croatia and Slovenia) and is fully compatible and supportive of EU's decarbonisation policies.
- ❑ For RES to achieve greater penetration in the SEE energy mix, and thus facilitate the region's decarbonisation, **clear policy measures** (backed by EU funds where necessary) **will be required to enable RES participation in market mechanisms.**
- ❑ **Energy efficiency in SE Europe is not being given enough priority or attention** although its role has been recognized in all EU Member States. Further efforts are required to introduce energy efficiency as an integral part of national energy planning.
- ❑ Energy Transition process is in evidence but it will take a lot more effort and much greater regional cooperation in order to fall in line with stated EU targets.



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*“There are facts only about the present and past;  
about the future there are only interests and  
aspirations.”*

**- Aristotle**



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**Thank you for  
your attention**

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