

# SE Europe Energy Outlook 2016/2017

## with Special Reference to RES and Investment

**International Energy and Investment Days**

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# Presentation Outline

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INSTITUTE OF ENERGY FOR SE EUROPE



# South East Europe Energy Outlook **2016/17**



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FOR SOUTH-EAST EUROPE

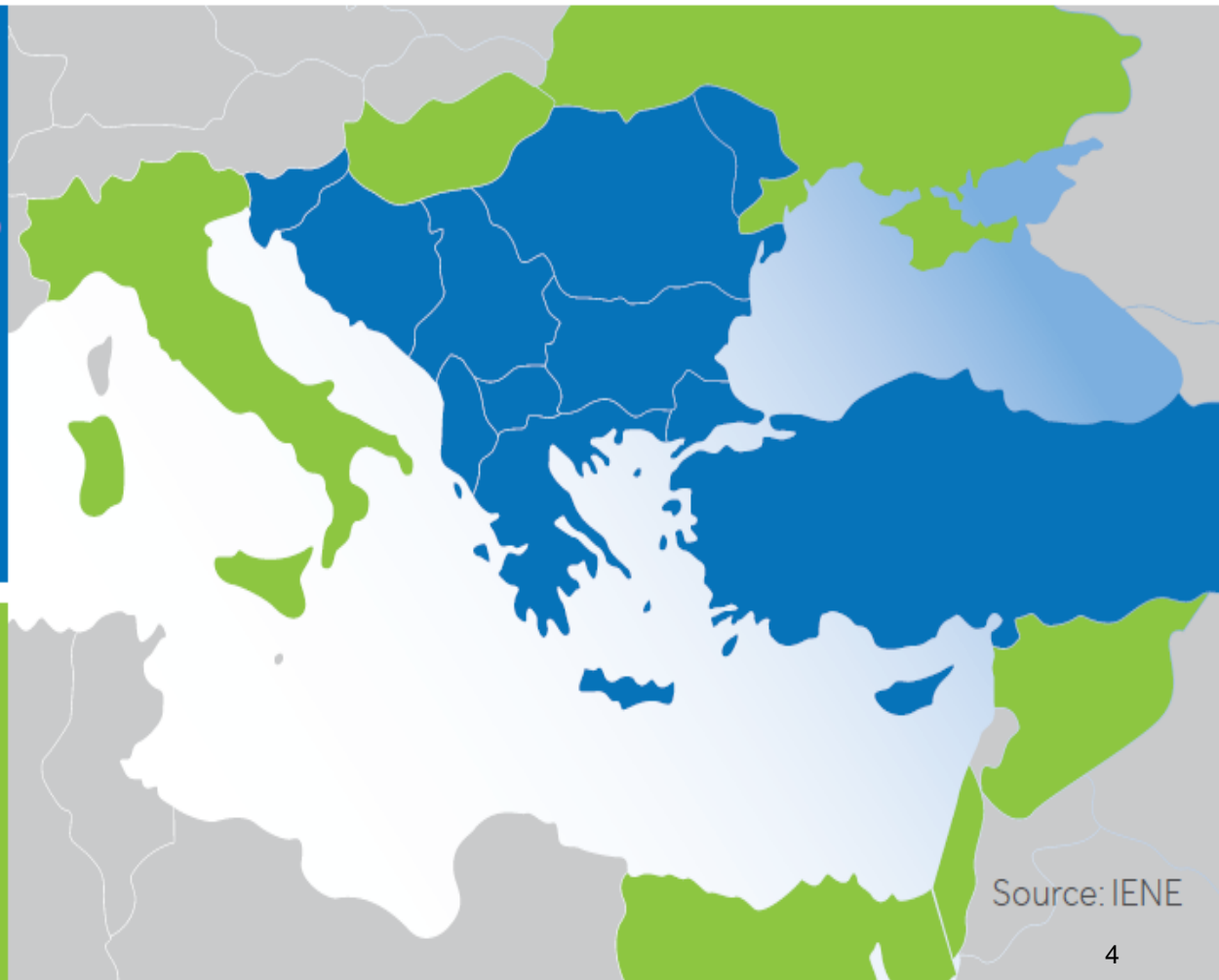
# The SE European Region Defined

## 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

# Raison d' Être of IENE's "SE Europe Energy Outlook 2016/2017" Study

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- Why a regional approach?

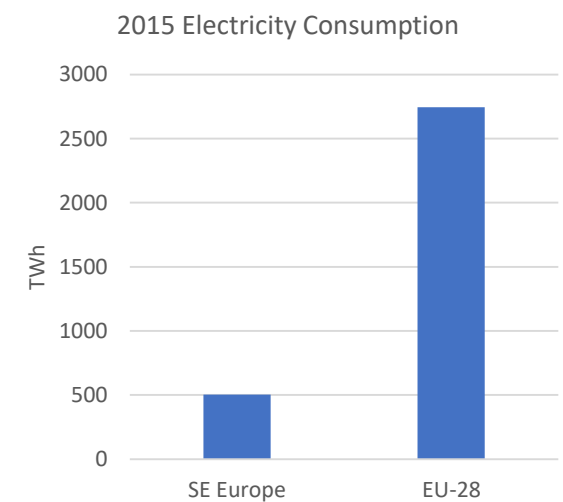
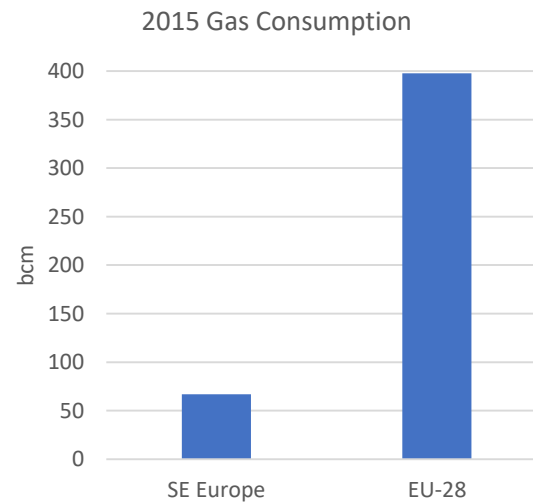
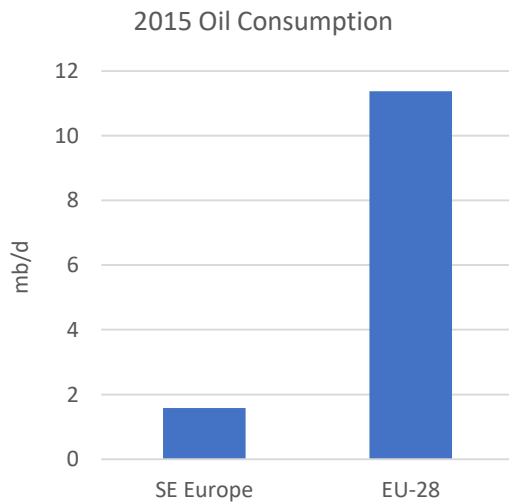
Because SE Europe, on the strength of its history, cultural background and current urban and industrial setting, constitutes a region both geographically and geopolitically important and it has a strong impact on the rest of Europe and the East Med.

- The need to **understand** the geopolitical and geographical sphere within which IENE operates, but also to **define** and **evaluate** in an objective manner the major policy challenges of the energy sector of the region.
- To **study, analyse** and **understand** the region's energy market structure and associated energy flows.
- To **identify** the important investment and business opportunities across the SE European area and **assess** the region's energy related investment potential within the given business climate.
- Energy Atlas of the region.
- An in-depth study of the energy prospects and perspectives of a particular geographic region, such as SE Europe, has an impressive cumulative effect, as the **sum often exceeds the value of its constituent parts**. Very much along the lines of Aristotle's logic when he proclaimed the *"The whole is greater than the parts"*.

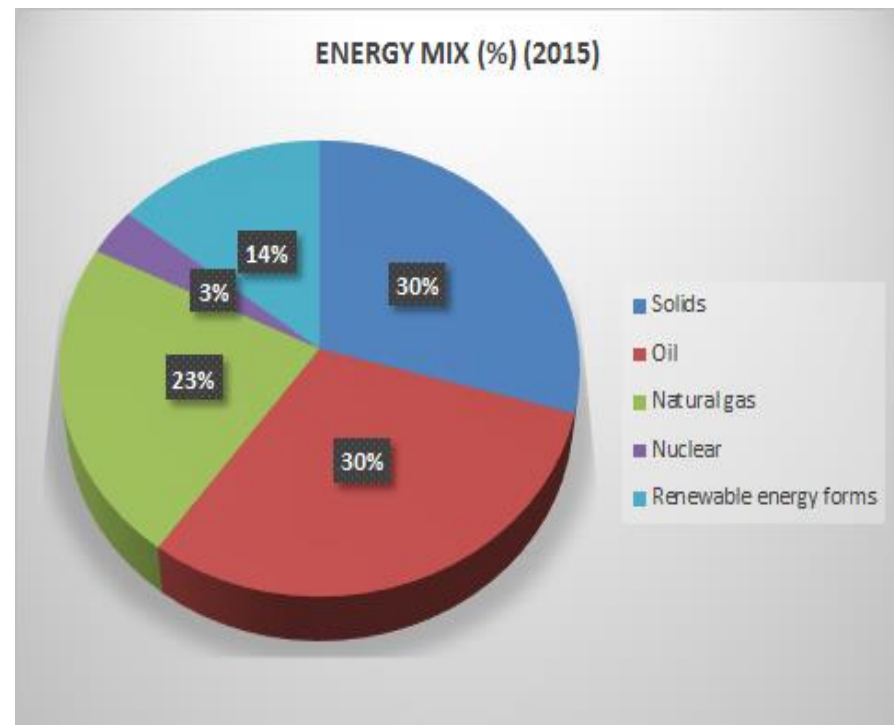
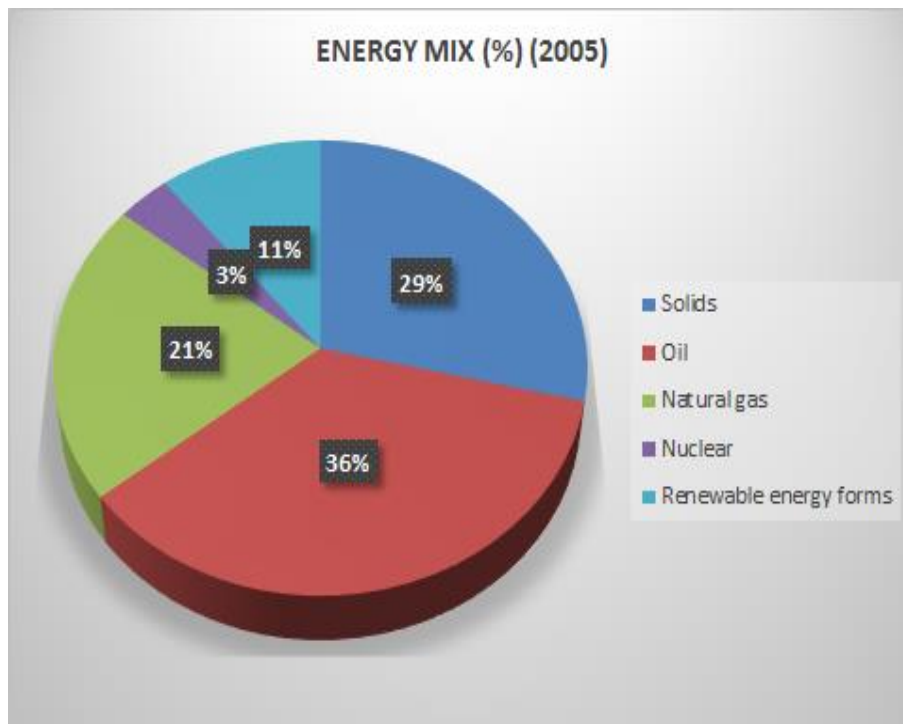
# 2015 Basic Energy Data for SE Europe

Region	Oil Consumption (b/d)	Gas consumption (bcm/y)	Electricity consumption (TWh)
SE Europe	1,579,870 (≈13.9% of EU-28)	67.00 (≈16.8% of EU-28)	504.2 (≈18.4% of EU-28)
EU-28	11,376,680	397.7	2,745

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

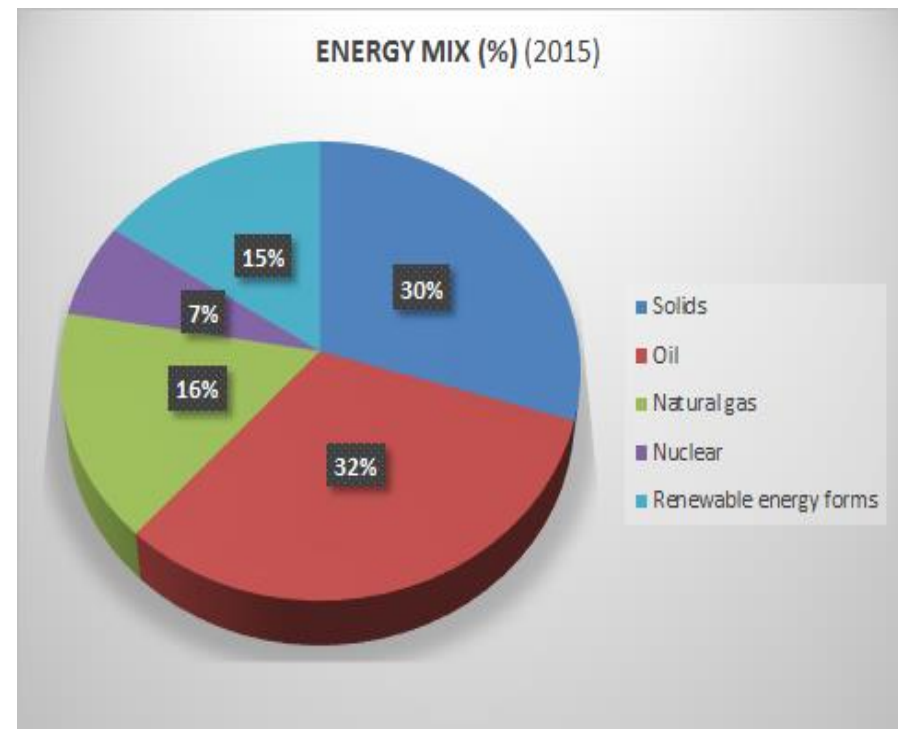
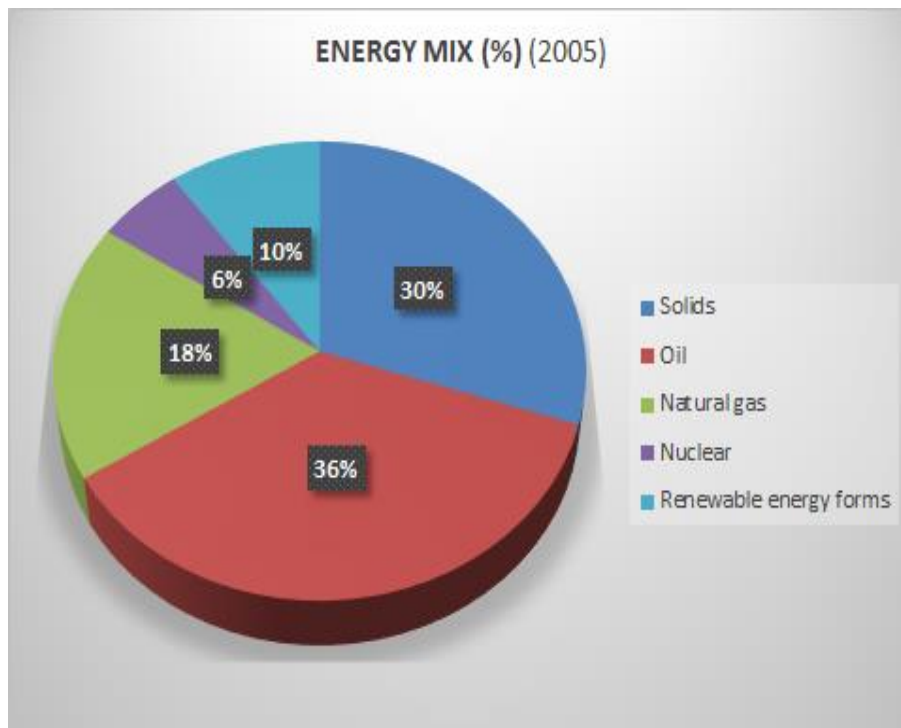


# SE Europe: Gross Inland Consumption by Source, Including Turkey (2005 and 2015)



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



## 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 there are several proposed lignite-fired power plants in **Bosnia and Herzegovina and Serbia**.
  - **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.

## 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)

## RES growth in SE Europe is Hindered (I)

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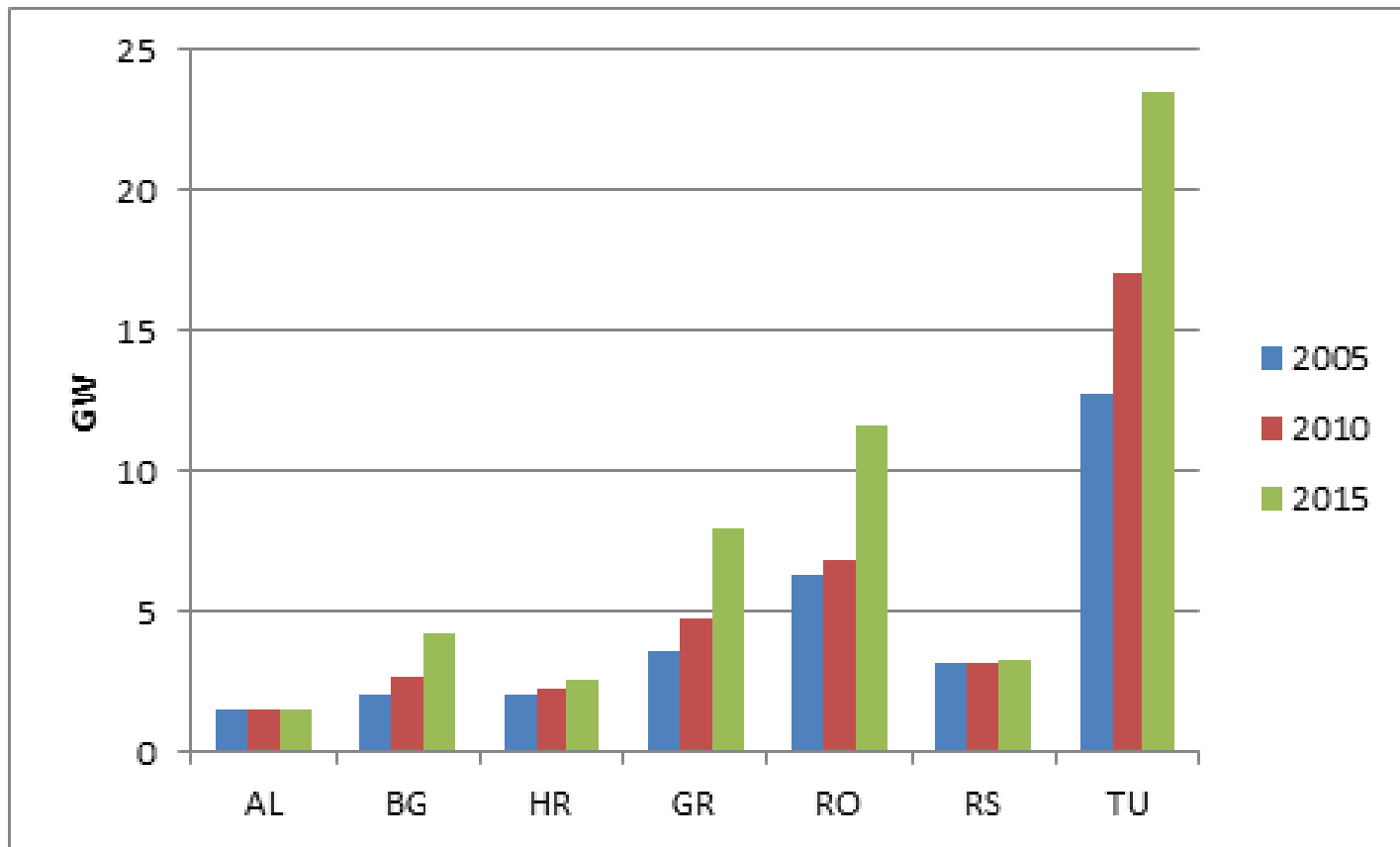
- ❑ **Greece** and **Bulgaria** introduced exceptionally high FiTs without a proper financial analysis and cash flow projections showing the impact that RES would have on the national accounts and electricity market operation over a long-time period.
- ❑ This rapid and unplanned buildup of RES based 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** had two main support mechanisms for renewable energy: a feed-in tariff and investment subsidies. The impact of such measures was limited, not because of the lack of incentives, but largely due to lengthy administrative processes. The latest legislation addresses those challenges and might significantly improve<sub>1</sub> market development.

## RES growth in SE Europe is Hindered (II)

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- The cutbacks have raised questions about whether countries in the region will meet medium- and long-term RES targets. The above 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.

# RES growth in Selected SEE Countries (2005, 2010 and 2015)



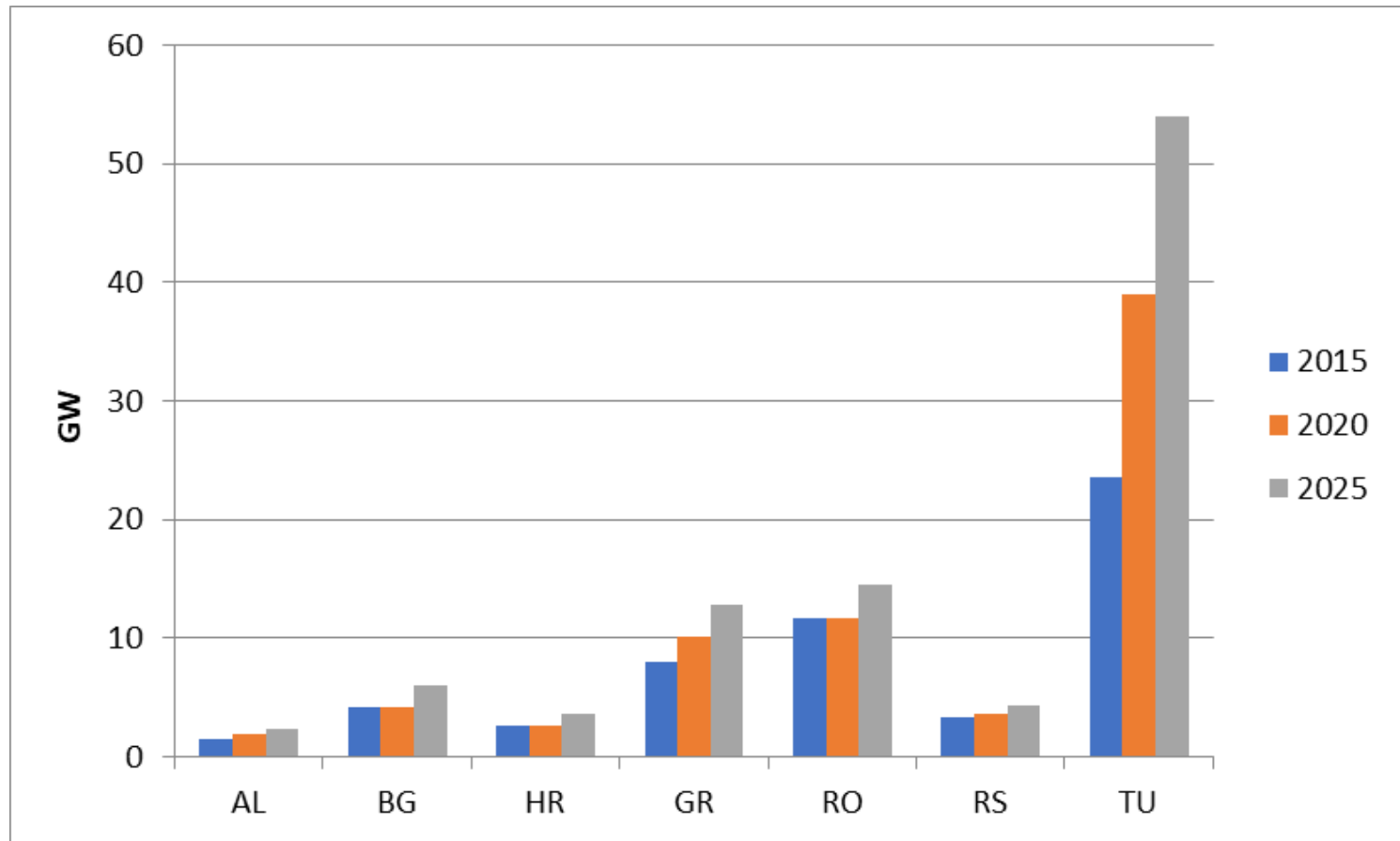
Source: IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

## 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>

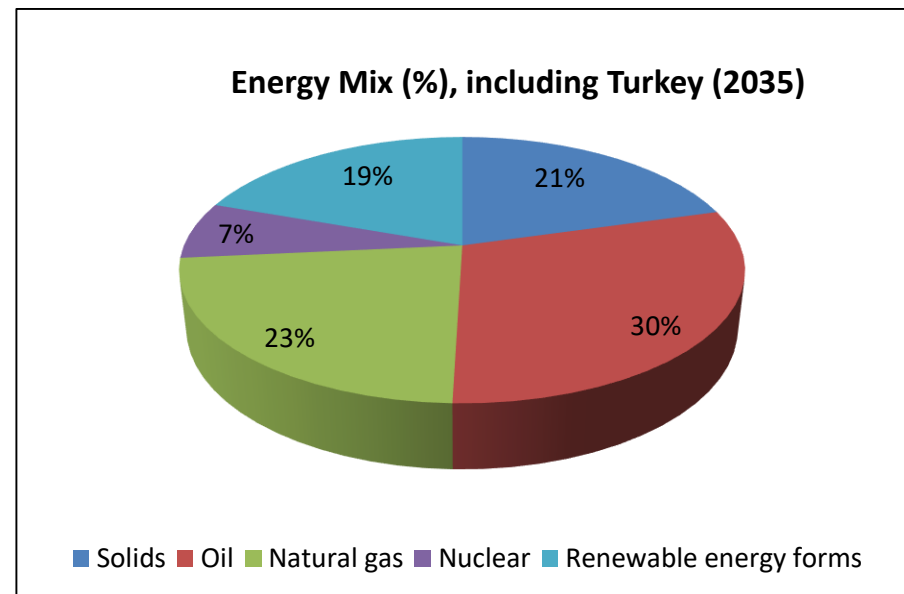
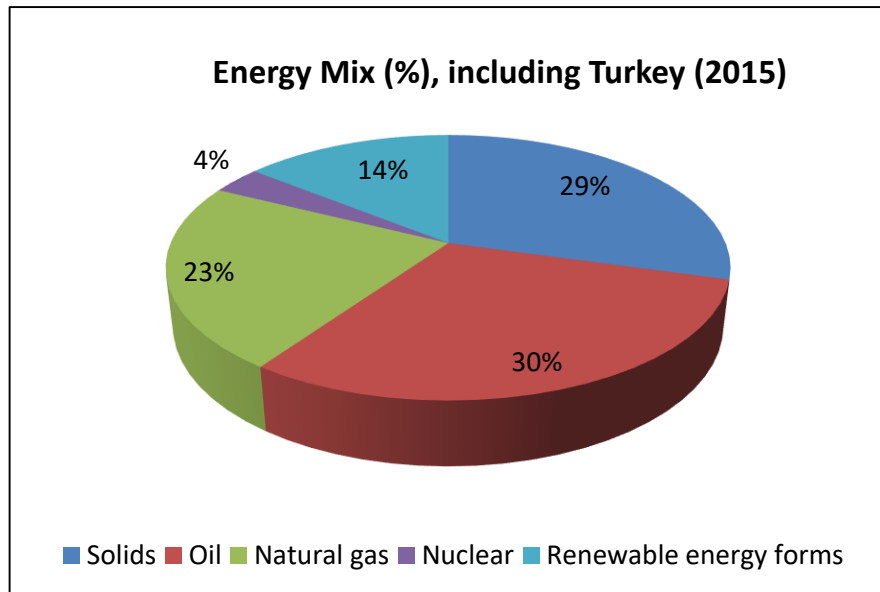
Sources: IRENA (2017), IENE study "South East Europe Energy Outlook 2016/2017", Athens, 2017

# RES growth in Selected SEE Countries (2015, 2020 and 2025)



## Regional Energy Mix: What Lies Ahead?

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





## SEE Energy Investment Outlook 2016-2025

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- By 2025, the **investment prospects** in the energy sector of SE Europe can only be described as **positive**.
  
- In terms of planned investments, a group of **five countries (i.e. Turkey, Bulgaria, Romania, Serbia, Greece)** appear to be moving **much faster than others** in attracting the needed investment for a variety of energy projects, while progress in the rest of the countries is moving more slowly.
  
- The region as a whole can be considered as presenting **attractive business opportunities in almost all branches of the energy sector**. The present analysis shows that investment in the energy sector will be spread as follows between countries and interregional projects. This analysis involves **two scenarios**:
  - An **optimistic one** (with an average real GDP growth of 3% over 2016-2025 and maximum investments) and
  - A **reference one** (with an average real GDP growth of 1% over 2016-2025 and substantial part of investments).

# Findings of SEE Energy Investment Outlook 2016-2025 per country

SEE Countries	Scenario A:	Scenario B:
	Total Investments (in million euros)	Total Investments (in million euros)
Albania	7,460	8,258
Bosnia & Herzegovina	8,722	10,060
Bulgaria	11,050	12,663
Croatia	8,525	9,178
Cyprus	7,350	8,769
FYROM	3,400	4,373
Greece	23,300	30,192
Kosovo	2,605	3,377
Montenegro	2,400	3,653
Romania	20,630	22,716
Serbia	11,260	13,527
Slovenia	3,185	4,891
Turkey	124,935	141,623
<b>TOTAL</b>	<b>234,822</b>	<b>273,280</b>

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

# Investment Prospects per RES sector in SE Europe over 2016-2025 (in Million Euros) (Reference Scenario)



	Hydro	Wind	PV	CSP	Biomass (including liquid biofuels)	Geothermal	Total
Albania	3,120	250	250	-	260	-	<b>3,880</b>
BiH	2,190	632	935	-	160	-	<b>3,917</b>
Bulgaria	380	300	200	-	120	-	<b>1,000</b>
Croatia	750	500	50	-	60	85	<b>1,445</b>
Cyprus	-	250	350	200	300	-	<b>1,100</b>
FYROM	1,150	90	10	-	20	-	<b>1,270</b>
Greece	500	5,500	2,000	200	700	300	<b>9,200</b>
Kosovo	300	190	10	-	45	-	<b>545</b>
Montenegro	720	160	30	-	100	-	<b>1,010</b>
Romania	1,900	640	150	-	280	-	<b>2,970</b>
Serbia	1,340	665	150	-	30	10	<b>2,195</b>
Slovenia	325	50	70	-	15	-	<b>460</b>
Turkey	11,350	10,500	6,000, including CSP	-	3,200	1,200	<b>32,250</b>
<b>Total</b>	<b>24,025</b>	<b>19,727</b>	<b>10,205</b>	<b>400</b>	<b>5,290</b>	<b>1,595</b>	<b>61,242</b>

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

## Sources of Finance vs Country Risk (I)

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- The **main sources of finance** for planned RES projects in SE Europe include:
  - Government/own resources
  - International Financial Institutions (IFIs)
    - European Commission
    - European Bank for Reconstruction and Development (EBRD)
    - European Investment Bank (EIB)
    - World Bank
    - German government-owned development bank KfW
    - European Western Balkans Joint Fund (EWBJF)
    - International Development Association (IDA)
  - Commercial banks/private investors
  - Financial facilities for investments in energy efficiency and renewable energy

## Sources of Finance vs Country Risk (II)

- However, the implementation of a set of planned RES projects in SE Europe may be hindered by the **high Country Risk** of several SEE countries and the **increased cost of capital**.

Country	Moody's ratings	S&P ratings	Fitch ratings
Albania	B1 (August 2017)	B+ (February 2016)	n.a.
Bosnia and Herzegovina	B3 (February 2016)	B (March 2012)	n.a.
Bulgaria	Baa2 (May 2017)	BB+ (June 2017)	BBB- (June 2017)
Croatia	Ba2 (March 2017)	BB (September 2017)	BB (July 2017)
Cyprus	Ba3 (July 2017)	BB+ (September 2017)	BB (October 2017)
FYROM	n.a.	BB- (May 2013)	BB (August 2017)
Greece	Caa2 (June 2017)	B- (July 2017)	B- (August 2017)
Montenegro	B1 (September 2017)	B+ (October 2017)	n.a.
Romania	Baa3 (April 2017)	BBB- (May 2014)	BBB- (July 2017)
Serbia	n.a.	BB- (December 2016)	BB- (June 2017)
Slovenia	Baa1 (September 2017)	A+ (June 2017)	A- (August 2017)
Turkey	Ba1 (March 2017)	BB (January 2017)	BB+ (July 2017)

Funding for “SE Europe Energy Outlook 2016/2017” came from a number of companies and IENE’s budget

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