

Executive Summary

One of the main challenges which IENE faced when it decided to embark, once again, upon this major regional project was the definition of the geographical area under examination. This became even more challenging as the contributors of the 2011 and 2017 studies (i.e. the first and second SEE Energy Outlook study which IENE published) as well as the current ones did not merely come from an interdisciplinary scientific background but also represented several states in the region, such as Albania, Bulgaria, Croatia, Cyprus, Serbia and Turkey to mention just few of them. Admittedly it is difficult, if not risky, to define SE Europe as a separate energy system as it is equally hard to think of it as a unified political sub-system of modern European geopolitics.

The finally-defined region¹ is too diverse politically, culturally and economically in order to be “separated” from other far more culturally cohesive and politically distinct regions, such as the Middle East and the Former Soviet Union, geographical areas which also happen to contain states which are major oil and gas producers and hence energy exporters to SE Europe, and as such present both potential energy risks but also offer opportunities. Yet, this perennial diversity and complexity are some of the most common characteristics of the SEE region.

Map: The SE European Area Defined



¹ The region consists of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, North Macedonia, Greece, Kosovo, Hungary, Montenegro, Romania, Serbia, Slovenia, Turkey and Israel.

A region, which has been moving slowly, but steadily over the last 20 years or so towards a new path of economic prosperity, political democratization and geostrategic stability – if not yet – reconciliation, within a common European and Euro-Atlantic future.

The historical and political framework of the SEE region is detailed in **Chapter 1**, along with the role that energy can play in creating and deepening the economic synergies, which are necessary in order to keep the region both in peace and en route to a better and more integrated European future. In this context, the importance of the “Energy Community” is stressed together with the latest policy initiatives of the EU, such as the “Energy Union” and the new “Fit for 55” package.

West Balkans is recognized as an area of special significance within the broader SEE region. However, the level of market liberalization and integration both within the area and between the region defined by the EU Member States that surround it remains incomplete to the detriment of the region’s economic/energy rehabilitation and the pace of its prospective inclusion into Euro-Atlantic institutions, and notably the European Union. This emerges as a major challenge and simultaneous impediment for the prospective inclusion of West Balkan states into the European Union as this is not merely an issue of economic under performance. As we explain in **Chapter 1** the historical background and the political content still matters a great deal.

Although the economies of the SEE region appear widely divergent in terms of structure and level of development, they share a number of challenges, which appear to be common to all. Among these, the global economic and financial crisis as well as the impact of the coronavirus pandemic have deeply affected the region collectively and each country individually. **Chapter 2** highlights the economic development challenges of the region and also examines the key economic problems facing the various countries. The present “Outlook” takes the view that, in the post-crisis period in terms of economic and financial prosperity and COVID-19 implications, only states whose governments possess the political determination to cease managing the economy through outdated state control mechanisms will eventually thrive. This is especially relevant to the energy sector which forms a key part of the economies of most countries in SE Europe and which, as it is clearly demonstrated in the present study, is in the process of rapid transition towards decarbonisation.

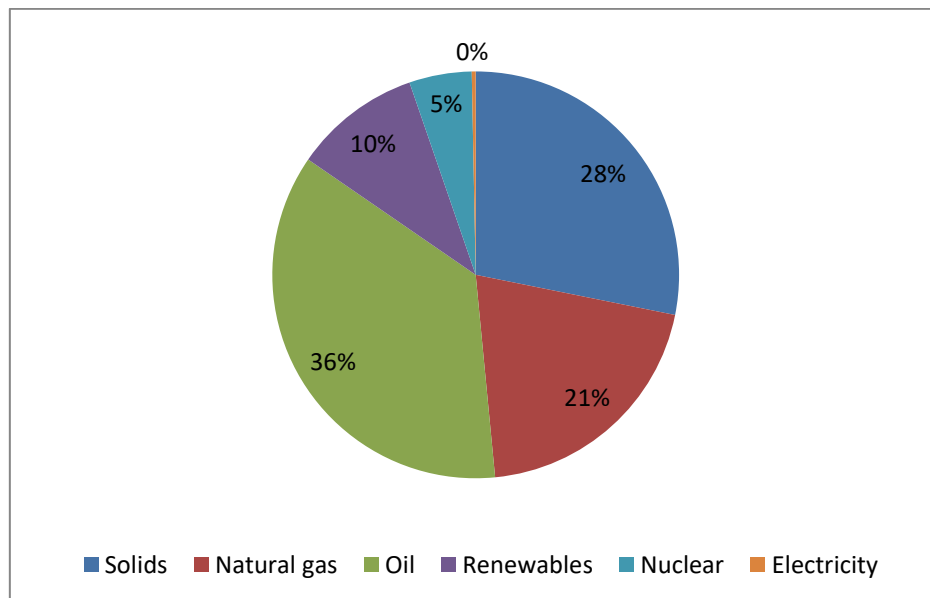
Today, energy policy formulation and decision making in the SE European region is facing tremendous challenges for a number of reasons (see **Chapter 3**), but primarily related to geography and security considerations, to the existence of abundant but largely unexplored indigenous energy resources, to the divergent demographics, to the great inequalities present in the economies of the various countries and last but not least because of the demands, made by the EU, both to member countries and Energy Community Contracting Parties, for decarbonisation commitments.

In the group of 15 countries examined in the current “Outlook”, seven are full members of the European Union and hence bound by means of current treaties and EU Directives to well-defined energy and environment related policies and specific targets, six countries in the Western Balkans are Contracting Parties of the Energy Community and have hence embarked on the road of fully adapting their energy legislation to the Energy Acquis, and finally Turkey

and Israel, which have already achieved significant progress in adapting their legislation and market operation to EU requirements, in line with their Association Agreement with the EU.

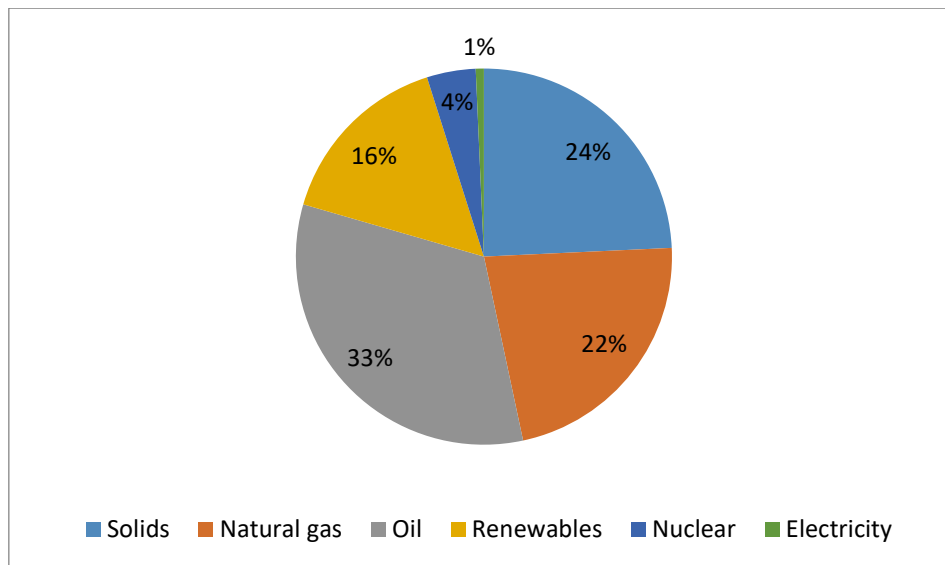
Looking at the broad map of SE Europe, it is useful to examine the big picture and get acquainted with the key issues which confront the region's energy sector (see **Chapter 4**). These include the **glacial change of the regional energy mix** between 2000 and 2019, as shown in Figures 1 and 2, which in spite of the huge rise of renewables and large contribution of gas remains bound to high solid fuel consumption and sizable oil imports. In addition, there is less use of solid fuels, but the retreat is not as big as anticipated so as to advance EU's decarbonisation agenda. Therefore, there is a major policy challenge, which the governments of the countries concerned and the EC, sooner rather than later, will have to address.

Figure 1.7: Gross Inland Consumption (%) in SE Europe, including Turkey, 2000
(Total=222.7 Mtoe)



Sources: Eurostat, IENE

**Figure 2: Gross Inland Consumption (%) in SE Europe, including Turkey, 2019
(Total=300.6 Mtoe)**



Sources: Eurostat, IENE

Chapter 5, which is the largest one of the study, not only explains how the aforementioned key energy issues translate into policy imperatives at national level, but also offers a scholastically detailed presentation of the energy system and energy resources of each of the 15 SEE countries. The Chapter contains “Energy Profiles” for each country where a concise presentation of each country’s basic political and economic data as well as the basic policymaking mechanisms in the energy sector are included. Each country’s “Energy Profile” also analyzes the basic trends of the country’s energy supply and demand. Following that, the country’s energy policy is presented on a sector-by-sector basis starting with oil, natural gas, solid fuels, electricity, renewables, energy efficiency and combined heat and power. The Country Energy Profiles also include comprehensive data on energy imports and exports and on basic energy infrastructure.

There is also a group of countries, which are termed as peripheral countries, with which the SEE region maintains close economic and trade relations including energy. These countries (i.e. Azerbaijan, Austria, Moldova, Ukraine, Italy, Slovakia, Syria, Lebanon and Egypt), presented in **Chapter 6**, are important to the present “Outlook” study as they are associated, in terms of direct energy flows but also trade links, with the region. Each of these countries, for different reasons each, is important as they influence energy related developments and issues in the various countries of the region.

The legal framework for the operation of the energy markets in all countries of SE Europe is described in detail in **Chapter 7**, which also contains ample references to latest legislation per energy source. This is an exhaustive Chapter in the sense that the energy legal background is presented in the same detail for all countries (Bosnia and Herzegovina, Hungary, Israel excluded).

Apart from presenting the current energy situation in SE Europe on a country-by-country basis, there is an analysis per energy source for the entire region. **Chapter 8** provides a

comprehensive review of the hydrocarbon exploration and production in SE Europe, as both have been undoubtedly affected due to the coronavirus pandemic. **Chapter 9** covers the oil and gas sector, including oil and gas midstream and downstream (i.e. transportation, storage, refining and retail market activities in the various countries) as well as a separate subsector with a specific reference to gas market, focusing on latest gas market developments and gas demand and supply situation in SE Europe, among others.

Special reference is also made to LNG because of its growing importance for the secure operation of various countries' gas networks and because of its potentially crucial role in market development and competition. In this context, all ongoing or planned gas interconnection projects are examined together with the major cross-country gas pipelines currently under construction or in a development phase. In view of several new projects under development in the region, a redefinition of the Southern Gas Corridor is presented in this Chapter by mapping all new potential gas supply sources and routes.

Therefore, the concept of an **Expanded South Corridor** is introduced and defined as such, to include all major gas trunk pipelines, LNG regasification terminals and underground gas storage facilities, which will ensure that gas if fed into the system with some of them being re-directed towards the main European gas markets. Finally, this Expanded South Corridor, with its multiple gas entry points and linked underground gas storage and LNG facilities, will provide the necessary background for the operation of regional gas trading hub(s). As a matter of fact, a discussion is made on the possibility of establishing such regional gas trading hubs very much in line with similar gas hubs currently operating in various European countries.

Currently, the electricity sector in SE Europe, as analysed in **Chapter 10**, faces several significant challenges that mainly derive from the ongoing process of market transformation but also the current economic climate, which is the basic driver behind demand. The industry structure, in terms of ownership and regulation framework, being under consideration for a long time, is currently changing in many countries facilitating market competition. The role of the state is reconsidered and the level of privatization and liberalization of electricity markets shapes the business environment in each country, creating new opportunities for market players, especially in the power generation and retail sector. The presence of new market entities (both old and newly established), like power producers, transmission/distribution system operators and retail suppliers, in each country illustrates the magnitude of changes that the gradual introduction of competition has brought about.

In this context, the main challenges include: **(a)** reform efforts for improving the power market model in line with EU Directives, **(b)** the continuing dominance in many countries' electricity markets of the present incumbent, **(c)** vulnerability to supply disruptions, **(d)** lack of diversification of power generation sources and **(e)** the observed low rate of switching supplier, which involves only eligible consumers who can exercise their right to switch supplier (mainly because of inertia as well as customers' poor awareness and mistrust of new incomers). Factors that have led, in many cases, to a power sector unable to be financially self-sustained, because of the high level of distribution losses, poor collection practices, high rates of illegal electricity usage and tariffs that do not reflect the cost structure.

Ever since the start of the process for developing the internal market in electricity by the European Community and then the EU, the energy sector and more particularly the electricity sector has monopolized EC's attention. It has taken more than 25 years of persistent efforts and countless disagreements and legal cases with incumbent electricity authorities for the European Commission to manage the transition from a state-controlled electricity sector to an open and market-oriented system where competition between different producers, suppliers and distributors forms the basis of operation. In SE Europe, this liberalization process was fraught with difficulties and numerous non-technical obstacles, as the incumbent companies in almost all countries solidly resisted any change on the grounds of losing control of the market and hence weakening of their bureaucratic hold.

The situation between EU Member States and Turkey and Israel looks very different with certain countries having managed to complete what appeared to be an anomalous transition period. For instance, in the case of Turkey, the achieved progress in the unbundling of electricity market operation and competition in the retail area has been exceptional and it has now entered into a critical stage with the market opening up much faster than anticipated.

In the case of the Western Balkans, the intervention of the Energy Community through the Contracting Parties has facilitated, on several occasions, the overall transition process to the European Acquis. Hence, some solid steps have been made towards electricity market competition.

Moreover, SE Europe as a whole presents a huge potential for the exploitation of Renewable Energy Sources (RES). Today, although RES penetration is limited in SE Europe, the potential for the utilization of all different forms of RES in the region is quite considerable, as it is clearly described in **Chapter 11**, which covers all different aspects of RES applications, including solar thermal, solar photovoltaic, wind, hydroelectric (both large hydro and small hydro stations), biomass and geothermal. Some countries, such as Greece, Turkey and Cyprus, are very advanced by international standards in solar water heating with millions of installations in place, but less so in electricity generation from solar energy. Indeed photovoltaics are slowly but steadily making their entry into local markets with Greece, Bulgaria, Romania and Turkey in the forefront.

Wind applications are also on the rise with Greece, Turkey, Romania and Bulgaria showing most activity. Hydroelectricity is a common denominator in RES development with almost all countries showing strong interest, especially those that are already using hydro to cover a substantial part of their electricity needs (i.e. Albania, and the rest of the Western Balkan countries, but also Greece and Turkey).

Energy efficiency and relevant application areas in SE Europe are discussed in **Chapter 12**, analyzing the energy efficiency trends of the near past in industrial, household and transport sectors. Cogeneration of Heat and Power (CHP) in SE Europe, which is also analysed in Chapter 12, can be described by its diversity. There are countries, such as Romania, Bulgaria and Slovenia, where CHP plays a serious role in their energy policy during the past period under planned economic models but also today, and there are countries, such as Cyprus, where the role of CHP in their energy mix is insignificant or minimal.

One innovation of the present “SEE Energy Outlook” study is the incorporation of a separate Chapter concerning energy technologies perspectives in the wider region. Energy technology is an engineering science whose main purpose is the efficient, safe, environmentally friendly and economically viable extraction, conversion, transportation, storage and use of energy, preventing at the same time side effects on humans, nature and the environment. After the Second World War, huge progress has been achieved in developing the energy technologies used globally, while continuous technological progress has resulted in numerous improvements and higher efficiencies as well as the introduction of new low-carbon technologies. The aim of **Chapter 13** is to review the main energy technologies already in use in SE Europe, but also identify others suitable for application in the region. Technologies, such as more efficient batteries for the faster deployment in electric vehicles’ as well as the introduction of hydrogen, biomethane and CCUS are only some of them.

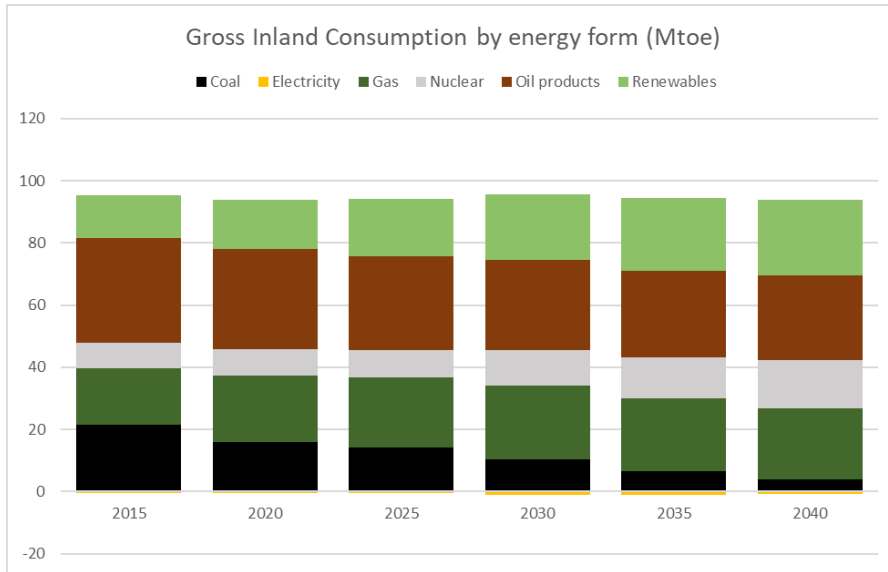
Furthermore, a clearer view of the region’s energy profile can be derived by forecasting energy demand and supply over the next 20 years, within the constraints of stated assumptions (see **Chapter 14**). This in turn helps considerably the formulation of desired policies not just on energy but also over a broader spectrum involving vital economic and social issues.

The most recently available studies and the official country submissions of strategic documents (such as the Integrated National Energy and Climate Plans for the EU Member States of SE Europe) were used in order to collect and analyse these projections. The purpose is to present the evolution of the national energy systems corresponding to a “where we are heading” storyline, providing a simple but comprehensive picture of the energy and greenhouse gas (GHG) emissions dynamics under the “current policy” efforts until 2040.

In order to study energy demand and supply patterns, a scenario approach was adopted and presented in **Chapter 15**, whereby certain assumptions have been formulated concerning basic parameters, which are likely to govern future energy demand and supply. These parameters include primarily economic, demographic and energy price information. In the present “Outlook” study, only one such scenario was selected for elaboration, namely the “Baseline” scenario.

Looking at the projection of the gross inland consumption in the EU member states of the SEE region in Figure 3, the overall tendency shows a stabilisation and even a small reduction in the time horizon to 2040. The decrease of the use of coal is evident, reaching a minimum level by 2040, while oil products lose part of their share in the gross inland consumption. The winners to this change are RES and nuclear energy.

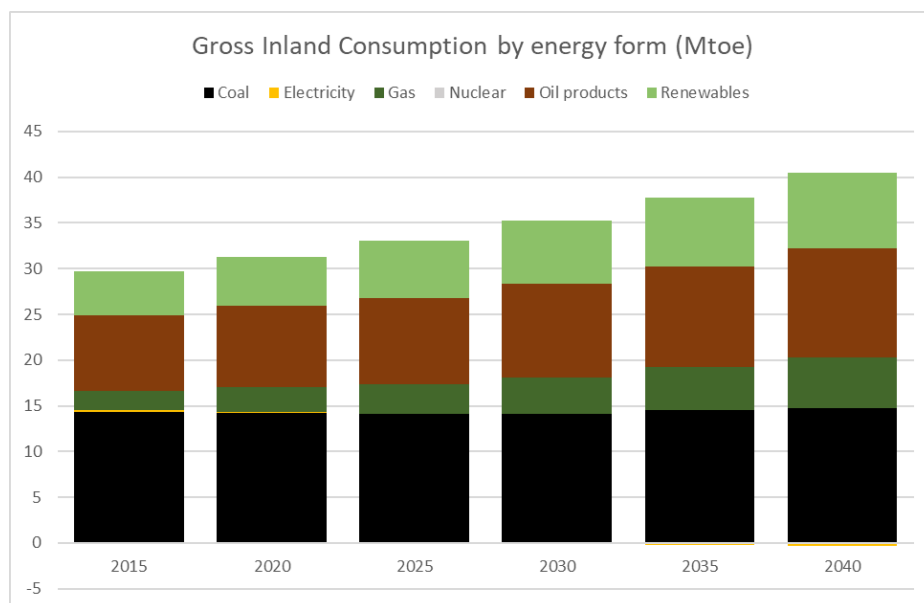
Figure 3: Gross Inland Consumption in SEE EU Member States, 2015-2040



Source: IENE

Similarly, the projection of gross inland consumption in the six Western Balkan countries in Figure 4 presents a rather different story from that of the EU member states in the region. Following the expected growth of GDP, gross inland consumption is projected to increase by almost 40% between 2015 and 2040, with the amount of coal being held almost constant, close to 15 Mtoe. Natural gas is the emerging fuel with a constant gradual increase, connected with the pipeline and grid expansion projects in the East and Western Balkans region. Crude oil and oil products will increase by 45% reaching 12 Mtoe in 2040, and renewable energy will rise substantially (by 70%) to 8.3 Mtoe in 2040, but still covering only 20% of the total gross inland consumption of the group of countries.

Figure 4: Gross Inland Consumption in the Six Western Balkan Countries, 2015-2040



Source: IENE

The investment and business potential of the region is analysed and discussed in the final section of the study, in **Chapter 15**. A detailed analysis has been undertaken in two directions **(a)** country-related investments and **(b)** cross-border energy project related investments. Country investments are reported using a standardized information format with primary information derived directly from sources in each country, while cross-border project information has been compiled using both published and company sources.

Investment prospects in the broader SEE region for energy related basic infrastructure and energy projects across the board (i.e. electricity, natural gas, RES, thermal power plants, oil and gas exploration, energy efficiency) look positive over the next decade. There appears to be significant improvement in anticipated and planned projects and related investment from now on until 2030. Compared to projections made in 2017 for the period 2016-2025, total estimated energy related investment in the region is much higher and amounts to €483.7 billion. Corresponding investments for the original 13-country group (as they appear in the 2017 Outlook) are slated at €387 billion, which is 41.8% higher compared to the 2017 estimates. This is a vast improvement compared to 5 years ago and clearly shows the substantially increased interest and appetite for energy investments in SE Europe.

Another innovation of the present “Outlook” is the special focus on issues of Environmental, Social and Corporate Governance (ESG). A growing number of large institutional investors today are incorporating ESG metrics into their capital allocation and stewardship criteria. This shift toward sustainable finance, which has evolved beyond socially responsible investing to include asset management and ownership, has profound implications for investors and companies alike, also for the case of SE Europe.