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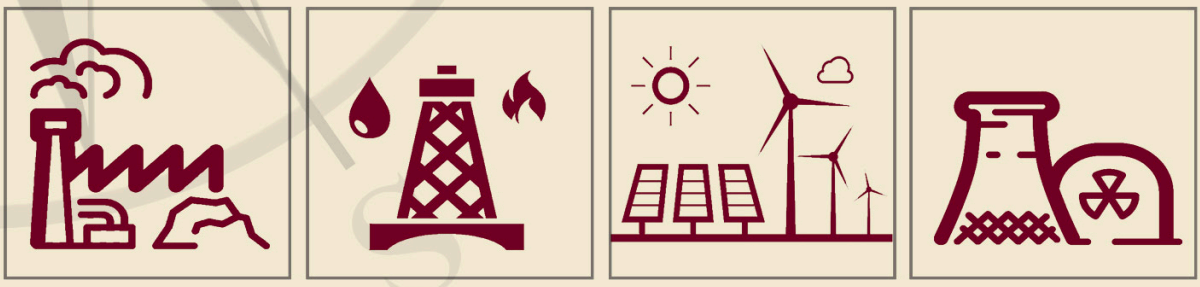

FOREIGN AFFAIRS RESEARCH PAPERS July 2021 15

REPUBLIC OF BULGARIA

Ministry of Foreign Affairs
Diplomatic Institute

ENERGY AND CLIMATE DIPLOMACY

FOREIGN AFFAIRS RESEARCH PAPERS 15

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FOLLOWING THE ENERGY POLICY CHANGES, THE FUTURE HAS ALREADY STARTED

Slavtcho Neykov
Editor-in-chief

Energy and climate diplomacy as one of the main research activities of the Bulgarian Diplomatic Institute

The sixth edition of the Energy and Climate Diplomacy journal is yet another building block in the Bulgarian Diplomatic Institute's (BDI) long-term engagement on energy governance, energy security and diplomacy. For more than a decade, the institute has put unwavering efforts in making the energy topic and its interaction with foreign policy one of its main research activities. Starting in 2010, the BDI began its journey in the field of energy by conducting the first energy diplomacy seminar geared towards Bulgarian civil servants. Throughout the years, this forum has gained an international dimension, attracting participants – both civil and diplomatic servants – from the Western Balkans, the Eastern Partnership countries, EU Member States and other corners of the world. This year marks the 10th anniversary from the first International Energy Diplomacy Seminar, and the BDI continues to provide this platform for exchange of ideas and viewpoints and finding the right solutions.

It is not only the target audience that has changed drastically. Even though the secret to a successful energy policy lies in striking the right balance between affordability (price), security (guaranteed physical flows) and sustainability (low and eventually zero-carbon footprint), the climate agenda has propelled the latter aspect quite ahead of the other two. Thus, energy and climate are becoming more interrelated than ever before, with the global energy governance being driven by climate change deliberations. The term *energy transition* may not be new but the process it denotes is rapidly accelerating, demanding quick response and ability to adapt on the part of governments, international companies and societies. It is quite clear that energy and climate cut across both bilateral and multilateral relations and that international cooperation is a key element in accomplishing a *just transition*. As radical reforms and transformations mostly affect the poorest, carbon neutrality cannot be achieved by ignoring this dynamic, and so the 2021 edition of the journal attempts to address this concern.

Introduction to the edition

Without any doubt, the key word in 2020 and 2021 worldwide was and still is Covid-19.

The pandemic certainly influenced everyday life and business in a way we could have hardly imagined. In fact, people saw in real terms how vulnerable they can be. However, looking at the issue from a positive perspective, the pandemic

turned out to be a chance for reconsideration and improvements. It stimulated creativity while pointing out existing deficiencies by placing them at the top of the strategic and operational agenda.

And the energy sector continues to be part of this process.

This background coalesced naturally as the concept for the current edition of the Energy and Climate Diplomacy journal was being developed; but it was far from the only one. In fact, the variety of topics subject to analysis in the featured articles illustrates the wide range of trends and problems in the field of energy. This includes e.g. energy cooperation, market developments, energy security. Further, particular attention is paid to energy poverty; environmental protection; international, regional and bilateral business relations, etc. Some points are linked to external energy policies of European importance etc.

Certainly, all these topics represent priority problems and challenges.

I am tempted to briefly refer to one particular article in the journal – the one, devoted to the Three Seas Initiative. Placing this article first is not by accident. In 2021, Bulgaria took over the presidency of the initiative – undoubtedly, this comes with responsibilities. Actually, while presenting its frame, the author also points out some challenges ahead. Thus, the article, which appears within a series of activities focusing on the initiative, contributes to generating the visibility that this forum will further demand throughout 2021.

My personal views in this aspect are related to the need for more concrete debate on the topic. From todays' perspective – after several years of formal existence and already a special fund in place – it seems that the political and diplomatic conversation around the Three Seas initiative is already lasting too long without sufficient focus on the business side. The time has come for much larger emphasis on the development of concrete economic dimensions. Although politics play an important role, it is neither politicians nor diplomats who make projects happen – bringing them to life is the work of businesses. This presupposes both clarity of rules and clarity of concepts. Furthermore, this also demands synergy with a set of other international, European and regional instruments, which have the same strategic goals as the Initiative when it comes to energy. Business should not be confused which way to go, incl. when politicians formulate priorities.

Coming back to the overall review of this year's edition, it should be noted that the focus on the Bulgarian energy dimensions is strong; however, it is presented via international, European and regional trends. In fact, this focus is structured along three major accents, which are interlinked: strategic dimension, legislative frame and investments.

Such an approach is more than logical. The world is facing an unprecedented technological boom, which is directly connected to the energy sector. Thus, energy dogmas (e.g. related to coal and even to nuclear) are getting older by the minute; this requires substantial reconsiderations about market

concepts, about legislative establishments and about the role of the state when it comes to market participants. In practice, investors move well ahead of public institutions – the latter are lagging behind on developing both the conceptual frame and the legislative response. This brings us to another issue – administrative capacity at the national level sometimes becomes questionable.

Another key trend is that climate neutrality is no longer an abstract, debatable point – its imprint is seen everywhere. However, the process towards achieving climate neutrality certainly comes at a price – such as loss of jobs and a need for quick social adjustments, which can cause political and public panic, concerns over rise in energy poverty, etc.

In this context, one should not forget that these are no longer theoretical areas of debate but real-life stories which demand adequate attention. Certainly, journals like the one in question can hardly provide final answers. As usual, all articles reflect only the personal views of the relevant authors. Some of them might seem even strongly disputable; however, as editor-in-chief, I fully respect the way they have been presented. In fact, this variety of subjective positions and points made may be excellent background for other thoughts and for more professional debate. However, objectively speaking, it is more than evident that developments in the field of energy are moving forward with a speed beyond imagination.

Thus, I would be glad if the readers not only note the professional opinions as expressed in the journal but also use them as a background to share their views on the topics raised – regardless of whether they agree or disagree.

Mr Slavtcho Neykov *has more than 29 years of uninterrupted experience in the energy sector, including as Secretary General of the Bulgarian Ministry of Energy, Member of the State Energy Regulatory Commission, expert at the Energy Charter Secretariat in Brussels and the first Director of the Energy Community Secretariat in Vienna (2006–2012). He led the Bulgarian negotiation team working on the energy chapter during the country's EU accession process. Throughout the years, his area of activities has been linked to international and EU energy law, energy diplomacy and energy policy matters at national, regional, EU and international level. Since the end of 2014, Mr Neykov has been serving as Chairman of the Board of Managers of the Energy Management Institute, an NGO uniting the biggest foreign investors in the energy sector in Bulgaria. He is also a member of the Board of Directors of the Union of the Electricity Industry – EURELECTRIC.*

His higher education in Bulgaria includes a law degree and two years of postgraduate studies in international economic relations and foreign economic activities. He also holds a Master of Arts in European integration from the University of Limerick in Ireland.

THREE SEAS INITIATIVE — DEVELOPMENT PERSPECTIVES THROUGH REGIONAL AND TRANSATLANTIC COOPERATION

Asen Zahariev

Introduction

The Three Seas Initiative (3SI)[1] has been launched at presidential level, with strong institutional backing from the US administration, as a platform intended to provide political support for accelerated economic development, enhanced intra-regional cooperation and greater connectivity among 12 EU Member States bordering the Black, the Adriatic and the Baltic Seas. These countries are Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Countries Participating in the Three Seas Initiative

[1] https://3seas.eu/

Whereas the nations of Western Europe are linked by roads and railways, power lines, and oil and gas pipelines, countries in Central and Eastern Europe remain comparatively disconnected from one another in terms of modern infrastructure. The deficit is particularly acute along the region's north-south axis.

The 3SI is based on the common interest of the countries in Central and Eastern Europe in overcoming the inadequacy of infrastructure connectivity as compared to Western Europe. The main goal is to guarantee energy security and sustainable economic development for 3SI member states, which currently face similar challenges and share a common ambition for the future.

The initiative develops as a pragmatic cooperation platform with a focus on fostering trade and economic relations and on deepening regional integration between the countries located within the triangle of the Black, the Adriatic and the Baltic Seas. Its purpose is to create better connectivity along the north-south axis in the areas of energy, transport, digitalisation, communication and business.

Regarding the field of energy, a key objective of the 3SI is to improve connectivity along the north-south axis so as to help ensure energy security and diversification of energy sources. Greater connectivity will allow for the economic potential of the region to be unlocked, increase trade and competitiveness, and improve the wellbeing of citizens.

The Three Seas Initiative has a geostrategic importance and a transatlantic dimension. The participating countries are willing to play a more active role in the integration process by stimulating trade and economic relations among each other as well as by attracting additional investment from European and international sources.

The Three Seas Initiative background

The idea for the initiative originated in the Atlantic Council[2] report entitled Completing Europe[3]. The paper asserts that, as an integrated set of energy, transportation and digital links spanning from the Baltic to the Adriatic and the Black Seas, the envisioned North-South Corridor would improve and enhance the power of the European single market, which is one of the basic EU concepts underlying the vision of a united Europe. The report is centred around those three dimensions of the North-South Corridor and complements them with a fourth one – addressing the financial requirements of infrastructure investments.

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[2] The Atlantic Council of the US is a non-governmental organisation, established in 1961, that promotes constructive leadership and engagement in international relations based on the central role of the Atlantic community in addressing global challenges. The headquarters of the Atlantic Council is in Washington, US.

[3] Atlantic Council and Central Europe Energy Partners, "Completing Europe – From the North-South Corridor to Energy, Transportation, and Telecommunications Union", 2014, online: https://www.ceep.be/www/wp-content/uploads/2014/11/Completing-Europe_Report.pdf.

The heads of state of Croatia and Poland – President Kolinda Grabar-Kitarović and President Andrzej Duda, respectively – launched the Three Seas Initiative in 2015[4] as a political platform aimed at promoting connectivity among nations in Central and Eastern Europe by supporting infrastructure, energy and digital interconnectivity projects.

To date, Three Seas Initiative summits have been held four times at presidential level and once in a virtual format. What started out as a platform for the presidents of the countries involved to exchange thoughts has expanded to include an annual business forum and an investment fund operating on a commercial basis. High-level politicians from the 12 countries are increasingly involved in the initiative, and both Germany and the US have become its partners.[5]

The 1st Three Seas Initiative Summit took place in Dubrovnik, Croatia on 15 August 2016 and concluded with the adoption of a joint statement by the presidents of the participating countries[6].

The second summit, which was attended by US President Donald Trump, was held in Warsaw, Poland on 6–7 July 2017. A highlight of this meeting was the Business Council of the initiative, established at the proposal of the US Atlantic Council with the main goal of promoting bilateral and multilateral cooperation between the member states of the initiative and the US[7].

The third 3SI summit took place on 17–18 September 2018 in Bucharest, Romania. For the first time, the meeting was attended by then-European Commission President Jean-Claude Juncker and other senior European Commission officials. The US was represented by Secretary of State for Energy Rick Perry. German Foreign Minister Heiko Maas, senior representatives of the European Bank for Reconstruction and Development and the World Bank also participated in the summit. The first Three Seas Business Forum was held during that event. The intention to establish a Luxembourg-based Investment Fund to finance the approved projects proposed by the countries participating in the initiative was also announced.[8]

The 4th Three Seas Initiative Summit, held on 5–6 June 2019 in Ljubljana, Slovenia, focused on the challenges facing the EU in the Adriatic, Baltic and Black Sea region, the economic development of the region and the strengthening

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[4] Wemer, D., "The Three Seas Initiative Explained", 2019, online: https://www.atlanticcouncil.org/blogs/new-atlanticist/the-three-seas-initiative-explained-2/

[5] The Three Seas story, online: https://3seas.eu/about/threeseasstory.

[6] The Joint Statement on the Three Seas Initiative (The Dubrovnik Statement), Dubrovnik Summit 2016, online: https://3seas.eu/about/past-summits/dubrovnik-summit-2016

[7] Warsaw Summit 2017, online: https://3seas.eu/about/past-summits/warsaw-summit-2017

[8] Bucharest Summit 2018, online: https://3seas.eu/about/past-summits/bucharest-summit-2018

of transatlantic cooperation. The Three Seas Initiative Investment Fund was officially established[9].

The Three Seas Virtual Summit, held in Tallinn, Estonia on 19 October 2020, represented the fifth consecutive summit but the first one organised in a hybrid format. President Kersti Kaljulaid of the Republic of Estonia, President Andrzej Duda of Poland and President Rumen Radev of Bulgaria were in Tallinn in person, while the rest of the Three Seas Initiative heads of state and partners joined them virtually. The Tallinn summit introduced the Smart Connectivity vision for the Three Seas Initiative – a push to link the energy and transport infrastructure with digital platforms and services, which will support new business models and technologies and will help render energy and transport investments future-proof. Additionally, the expansion of the Three Seas Initiative Investment Fund was also announced, taking the total number of 3SI countries involved in the fund to nine[10].

During the videoconference of the foreign ministers and the national coordinators of the 12 EU countries participating in the 3SI, held on 11 February 2021, US Secretary of State Antony Blinken expressed his country's strong support for the Three Seas Initiative, emphasising the need for further regional economic development. He reaffirmed that better infrastructure in the energy, transportation and digital sectors is key to that goal and will strengthen EU integration. The efforts to improve energy security are vital for the stability and prosperity of the region.

The Three Seas Initiative Investment Fund (3SIIF)

The Three Seas Initiative Investment Fund is a market-driven investment vehicle created in June 2019 by the Gospodarstwa Krajowego Bank in Poland and the Romanian Export-Import Bank. The fund operates under Luxembourg law on a commercial law basis[11] and has an independent investment committee[12]. The fund invests in projects in Three Seas Initiative member states that fall into one of three pillars – digital infrastructure, energy or transport. Investment decisions are made "based on the project's convergence criterion with the Fund's strategy, estimates of the expected rate of return and costs and benefits.[13]"

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[9] Ljubljana Summit 2019, online: https://3seas.eu/about/past-summits/ljubljana-summit-2019

[10] Tallinn Summit 2020, online: https://3seas.eu/about/past-summits/tallinn-summit-2020

[11] Central Europe Energy Partners, "Three Seas Initiative Investment Fund Established", 2019, online: https://www.ceep.be/three-seas-initiative-investment-fund-established/

[12] Three Seas Initiative, "Daszyńska-Muzyczka: The Three Seas Region Is One of the Fastest Growing in the World", online: https://3seas.eu/media/news/daszynska-muzyczka-the-european-three-seas-region-is-one-of-the-fastest-growing-in-the-world

[13] Central Europe Energy Partners, "Three Seas Initiative Investment Fund Established", 2019, online: https://www.ceep.be/three-seas-initiative-investment-fund-established/

The desired regional infrastructure connectivity will be achieved through strengthening the position of the investment fund, which needs to focus on attracting considerable investments and stimulating public-private partnerships. The Three Seas Initiative Investment Fund (3SIIF) is expected to provide part of the funding needed to support investments and cooperation among member states in the region of the Black, the Adriatic and the Baltic Seas. These countries represent 22% of the EU population, while they create 10% of the GDP and have a growth rate above the EU average. The fund operates on a fully commercial basis. The 3SIIF is open to regional shareholders, international finance institutions and private investors. Only commercially acceptable assets will be demanded.

The 3SIIF is a partnership between the public and private sectors which supports the development of the region located between the Baltic, Adriatic and Black Seas, where 111 million people[14] currently live. The economic growth of the 12 Three Seas Initiative member states has outperformed the EU average by 67% in recent years. Nevertheless, these countries need better interconnectivity and smarter infrastructure in order to meet their growing needs. Such projects can be funded from different sources: public budgets, EU funds, private equity and investment funds. The economic power and the political will of the Three Seas Initiative member states inspired the establishment of the Three Seas Initiative Investment Fund.

The purpose of the 3SIIF is to support profitable cross-border infrastructure projects in the sectors of energy, transport and digitalisation, to raise prosperity in the region, as well as to improve cohesion and help to drive growth for the entire continent, all while contributing to a greener future. These objectives complement the EU's existing growth strategies and carbon-neutral targets. The Three Seas Initiative Investment Fund is open to both public and private sector investors, ranging from national and international finance institutions to pension funds and private equity funds. The 3SIIF is not intended to compete with current financial instruments of the EU or the financing models of countries but to rather complement them. The fund is in line with EU growth strategies.

The 3SIIF is strategically supported by the Three Seas Initiative countries and receives financing from across the region and around the world. The Three Seas Initiative Investment Fund has attracted more than €900 million so far and expects to reach a target amount of €3-5 billion, which will be invested, in the form of equity, in projects in the countries located between the Baltic, the Adriatic and the Black Seas[15]. The Polish State Development Bank announced an additional

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[14] Eurostat, "Population and population change statistics", 2020, online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_and_population_change_statistics&fbclid=IwAR2jqCeoRMJQ6necNwQ8kgmd_wDwzS5233P0WOLmmbYUA2fxfLXo64kLuj4

[15] "Additional commitments to the Fund", online: https://3seas.eu/media/news/croatia-and-lithuania-join-the-3siif-additional-commitments-to-the-fund

investment of €250 million in the Three Seas Initiative Investment Fund, taking Poland's total contribution so far to €750 million.[16] The 3SIIF was originally set up to provide some of the necessary funding in target sectors such as transport, energy efficiency, and digital and information technologies.

The Biden administration and Congress would be welcomed if they continue to feature the Three Seas Initiative as a central component of US policy in Europe. The 3SI helps the US to strengthen ties to Central and Eastern Europe. At the beginning of 2021, a bipartisan group of US lawmakers asked the Biden administration to move forward with a US pledge made under the previous administration to invest $300 million in energy infrastructure projects in Central and Eastern Europe (CEE). In 2020, the Trump administration agreed to contribute up to $1 billion to the Three Seas Initiative Infrastructure Fund through the US Development Finance Corporation (DFC)[17], which in December approved an initial investment of $300 million.

In the sector of digital connectivity, the US is pushing for the Transatlantic Telecommunications Security Act, a piece of legislation designed to authorise the DFC to provide Europe with financing for 5G telecommunications infrastructure development[18].

The Three Seas Initiative Investment Fund can be joined by countries, pension funds, private investment funds, private investors, etc. Nine countries have already joined the 3SIIF – Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia.

The most crucial and deliberate policy of the fund is the choice to take the decision about how money is allocated out of politicians' hands. In a transparent

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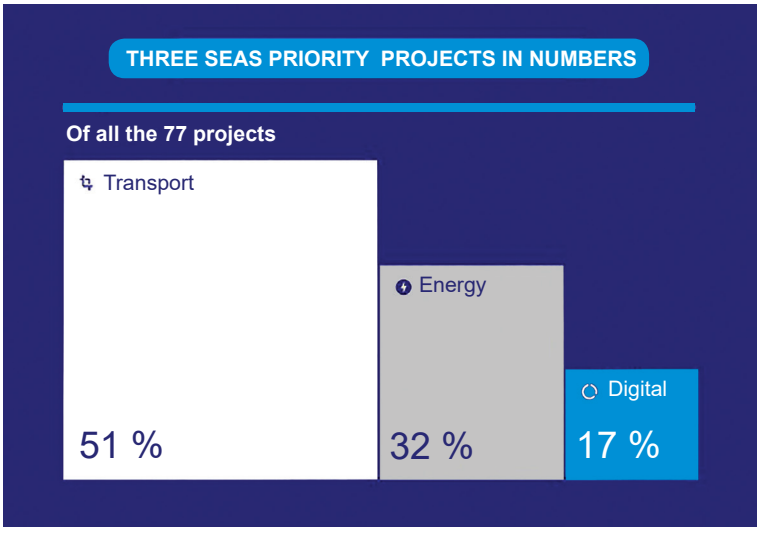
[16] 3SIF, Poland contribution, https://www.3seas.eu/media/news/high-level-summit-promised-new-investments-to-central-and-eastern-europe

[17] US Development Finance Corporation (DFC) is America's development bank. DFC partners with the private sector to finance solutions to the most critical challenges facing the developing world today. DFC invests across sectors including energy, healthcare, critical infrastructure, and technology. DFC also provides financing for small businesses in order to create jobs in emerging markets. On 5 October 2018, the Better Utilization of Investments Leading to Development (BUILD) Act was signed into law. This landmark legislation reformed and strengthened US development finance capabilities into a new federal agency to help address development challenges and foreign policy priorities of the United States. US International Development Finance Corporation (DFC) is a consolidated agency that brings together the capabilities of OPIC and USAID's Development Credit Authority, while introducing new and innovative financial products to bring private capital. DFC's investments focus on impactful global development, advancing US foreign policy and generating returns for American taxpayers.

[18] "Kaptur, Kinzinger Introduce Bipartisan Transatlantic Telecommunications Security Act", 2020, online: https://kaptur.house.gov/media-center/press-releases/kaptur-kinzinger-introduce-bipartisan-transatlantic-telecommunications

process, all investments are managed according to commercial practices and a selection method based on economic potential. The fund is advised by Amber Infrastructure Group, an international investment manager. The purpose of the Three Seas Initiative Investment Fund is to be a model for growth around the world by showing how partnership between the public and private sectors can finance large-scale cross-border infrastructure development in a commercially profitable way. The first investments by the Three Seas Initiative Investment Fund are currently underway.

The List of Priority Interconnection Projects was one of the main outcomes of the 3rd Three Seas Initiative Summit, held in Bucharest in 2018. In 2020, additional 28 projects were added to the list, bringing the total to 77 priority interconnection projects in the Three Seas region[19]. By implementing these projects, the participating countries aim to answer the needs and priorities of the member states and provide a substantial contribution to the overall objective of the Three Seas Initiative. These projects will endeavour to stimulate economic growth, develop a north-south infrastructure corridor, eliminate regional disparities within the EU and boost cohesion and unity in Europe.[20]



3SI list of Priority Interconnection Projects, percentage distribution by sectors in 2020

Two projects have already been implemented by the Three Seas Initiative Investment Fund. The 3SIIF made its first investment by acquiring a 100% interest in Cargounit, a key player in the CEE railway industry. Cargounit is the

[19] Three Seas Initiative Priority Projects list, online: https://projects.3seas.eu/

[20] Three Seas Initiative Progress report, online: https://3seas.eu/about/progressreport

largest independent locomotive leasing company in Poland and is the sixth-largest rolling stock company in Europe. It is the market leader in Central Europe. The Cargounit rolling stock is used mainly by carriers from the petrochemical, chemical and metallurgical industries as well as for the purpose of intermodal transport and transport of aggregates. The planned increase in the scale of Cargounit's operations, which will be funded as part of the 3SIIF ownership, will attempt to affect positively the development of cargo connections and improve trade links across the Three Seas region.[21]

Greenergy Data Centers in Estonia is the Three Seas Initiative Investment Fund's first digital investment. Greenergy is a data-centre platform aiming to service the compute and storage needs of the Three Seas region. Greenergy will develop much-needed infrastructure across the Three Seas region to meet the growing compute, storage and connectivity needs of enterprises and consumers. Greenergy plans to develop a number of data centres in the region over the coming years, with the Greenergy platform servicing the growing needs of customers in an otherwise undersupplied market for such infrastructure.[22]

The region bordering the Black, the Adriatic and the Baltic Seas is one of the fastest-growing regions in the world with a forecasted GDP growth of 35% by 2030[23]. All of the Three Seas countries boast a low ratio of public debt to GDP compared to the EU average, which reflects their macroeconomic stability. As a result, in the event of a sharp economic slowdown, they would have more room to apply fiscal stimuli.

The region offers the attractive combination of comparatively high GDP growth and significant levels of stability. Political stability and sustainable fiscal policy are drawing foreign investors to the Three Seas countries – the growth rate of foreign direct investment (FDI) in CEE countries rose from 2% in 2015 to 15% in 2018.[24]

The Three Seas countries are considered an attractive investment destination and have been enjoying a dynamic growth in foreign direct investment in the last couple of years. There is strong demand for private capital as infrastructure investment from EU Structural and Investment Funds is set to shrink by ~€80bln over the period of 2021–2027.

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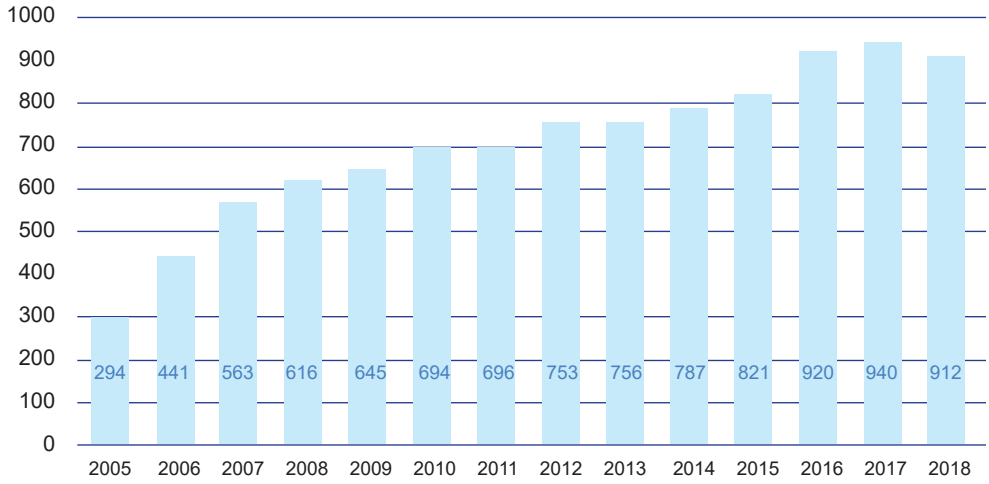
[21] Cargounit – 3SIIF, online: https://3seas.eu/media/news/three-seas-fund-agrees-its-first-investment

[22] Greenergy Data Centers – 3SIIF, online: https://www.amberinfrastructure.com/our-sectors/case-studies/greenergy-data-centers-3siif/

[23] Thompson Reuters, Eurostat, European Commission, BGK calculations, February 2020.

[24] GDP of the Three Seas countries has been growing twice as fast as the EU28 average (4.3% v. 2% YoY in 2018).



Foreign direct investment in 3SI member states increased more than three-fold in 2005–2018 (in bln euros)

Institutional cooperation in the field of energy: The Partnership for Transatlantic Energy Cooperation (P-TEC)

The main instrument for achieving the 3SI goals in the energy sector is an international platform called the Partnership for Transatlantic Energy Cooperation (P-TEC), whose role is to assist the 3SI member states in improving energy security and diversifying energy sources in the region through infrastructure investments, accelerating the interconnection and interoperability of energy networks.

During the Bucharest summit in 2018, Rick Perry, then US Secretary of Energy, announced the launch of a new initiative of the US Department of Energy – namely P-TEC.

P-TEC is designed to provide policymakers and civil-society stakeholders within Central and Eastern Europe with the resources and technical tools to build secure and resilient energy systems.

The US, 22 European countries (Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Georgia, Germany, Greece, Hungary, Latvia, Lithuania, Moldova, Montenegro, North Macedonia, Poland, Romania, Slovakia, Slovenia, and Ukraine) and the European Union participate in the P-TEC initiative.

Support for European-based energy security efforts, including the EU's Energy Union framework and the Three Seas Initiative, is a cornerstone of the P-TEC initiative.

P-TEC focuses on technical collaboration in a number of key areas – such as providing analysis and planning for natural gas and electricity transmission systems integration; ensuring energy cybersecurity best practices; promoting new capital investment in key energy infrastructure; and improving energy efficiency and clean energy deployment, including in the renewable energy, nuclear energy and fossil energy sectors.

Three Seas Initiative in 2021: Bulgaria's vision as a host of the initiative

In 2021, Bulgaria is hosting the Three Seas Initiative. The country will work towards consolidation and strengthening of the 3SIIF through greater support by all member states. It will foster cooperation with strategic partners and open the 3SI to new partnerships in order to advance efforts on energy security, diversification and smart solutions as part of the overall bid for developing sustainable transport, energy and digital connectivity.

Achieving energy security and diversification of routes and sources of supply across the region, while adhering to the standards and principles of the *green transition*, remains a top priority for the 3SI. In this respect, Bulgaria intends to further facilitate the work of established formats for cooperation as well as of partnerships between the relevant authorities, with an emphasis on energy infrastructure and connectivity in Southeast Europe and the Black Sea region[25].

Bulgaria will pursue enhanced interaction and networking between public agencies and business associations engaged in promoting foreign investments in the region. Therefore, a relevant approach would be the creation of innovative networks between agencies which are responsible for foreign investments and small and medium-sized enterprises. Efforts to develop networks and connections among innovative start-ups, digital data-centres, technological parks and green industrial zones across the region will complement the above as well.[26]

Introducing a joint and coordinated communication strategy of the member states could help the deployment of the emerging investment opportunities across the region.

In addition, Bulgaria intends to advance the practical implementation of the Smart Connectivity vision developed by Estonia. To that end, it will rely on scientific and educational exchange to introduce smart, innovative and secure digital platforms and services to serve transport, energy and digital networks.

The consolidation and strengthening of the 3SIIF through the support of all member states, strategic partners and international financial institutions is another main priority identified by the Bulgarian presidency of the initiative.

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[25] "Three Seas Initiative in 2021: Bulgaria's vision", online: https://3seas.eu/about/bulgaria-s-vision

[26] Ibid.

Bulgaria will aspire to lend the process a more practical dimension and report tangible progress in advancing the implementation of key connectivity projects with financing from the EU Structural and Investment Funds and additional resources disbursed on a commercial basis by the dedicated 3SIIF, which has now become fully operational.

Ensuring broader financial support for the 3SIIF from participating states, European financial institutions and global stakeholders will be an important goal in this respect.

Next steps

The Three Seas Initiative member states should create an operational structure and a permanent administrative office (Secretariat) located in one of the member states in order to be fully operational and efficient in fulfilling the initiative's functions. Members of the Secretariat should hold short rotational terms so that each 3SI member state is adequately represented and should have optimised staff with clearly defined functions in order to avoid unnecessary red tape.

3SI member states should continue to work actively towards achieving synergy and complementarity of the projects implemented within the 3SI with the goals of the Cohesion Policy and of EU sectoral policies and instruments.

The main task of the 3SIIF is to enhance its role and attract more capital to reach its €3-5 billion liquidity targets. Presently, only nine out of 12 member states of the Three Seas Initiative participate in the 3SIIF, and the funds raised are at €1 billion, which shows that the development of the fund is still far from its objectives. Therefore, negotiations will be held with Austria, the Czech Republic and Slovakia on their inclusion with cash contributions to the fund, to be completed as soon as possible in order to complete the accession process of all member states. The procurement of private capital is important in terms of expanding the scope of the fund.

A priority task for the 3SI countries is to seek the present opinion and support of Germany, both at political level and as a financial contributor to the 3SIIF.

It is essential to establish a transparent mechanism for financing projects under the initiative and stimulating public-private partnership. The 3SIIF should work in synergy with EU funds. Clear rules should be laid down for the submission, evaluation and approval of projects submitted by member states at national level or by the respective representatives of the private sector.

The 3SI countries will continue to prioritise working towards attracting investments in Central and Eastern Europe and implementing cross-border and regional projects of strategic importance to the participating states. Their aim is to

enhance energy security and diversification of energy supply sources and routes, to build transport infrastructure and digital connectivity.

Asen Zahariev *has extensive experience in energy policy, public finance, audit and control. Since 2018 his career has focused on the field of energy, as he currently holds the position of Chief Expert at the Energy Projects and International Cooperation Directorate of the Ministry of Energy of the Republic of Bulgaria. Along with his involvement in international energy affairs, Mr. Zahariev takes part in many intergovernmental commissions, e.g. with the Russian Federation, Serbia, Hungary, Azerbaijan, Iran etc.*

He has a Master degree in International relations, with a Major in Diplomacy and International organizations from the University of Milan (Università degli studi di Milano).

ROLE OF ENERGY SECURITY, RESILIENCE AND CIVIL PREPAREDNESS FOR NATO'S DEFENCE AND STABILITY

Milen Kisyov,
Rakovski National Defence College

Introduction

As a major factor in generating industrial, commercial and social wealth, energy provides personal comfort and mobility. The energy industry is the totality of all of the industries involved in the production and sale of energy, including fuel extraction, manufacturing, refining and distribution. Modern society consumes large amounts of fuel, and the energy industry is a crucial part of the infrastructure and maintenance of society in almost all countries.

Energy security and the security of critical elements of energy infrastructure are not new topics for NATO, and the Alliance has not yet identified a clear role it can play in ensuring energy flows to its member states. However, there are some areas in which the Alliance can take a number of important steps to ensure to some extent the proper functioning of the energy sector.

Today's security environment is unpredictable and flexible. Threats are multidimensional and can come from state and non-state actors, including terrorism and other asymmetrical threats, cyberattacks and hybrid warfare, which blur the lines between conventional and unconventional forms of conflict. They can also come from climate change and natural disasters – such as floods, fires and earthquakes – and from biohazards such as the Covid-19 pandemic. Challenges of adapting and responding to the different types of threats are compounded by trends that have radically transformed the security environment, including in the energy context.

The development of crisis and reaching favourable conditions for solving them is always subject to various political dynamics, considerations and plans. The NATO member countries strive to enable interactions in the early stages of crisis management as part of its focus on interaction. In any case, building trust and mutual understanding between international actors, including developing good cooperation and sharing burdens, has proved to be vital.

The current article provides an overview of and pays special attention to the role of energy security in resilience and civil preparedness as the first line of NATO's defence in Europe as well as to new perspectives on shared security and stability.

On 4 May 2010, the Council agreed on the Secretary General's proposal to establish an Emerging Security Challenges Division (ESCD)[1], and the Energy

[1] Emerging Security Challenges Division of NATO's IS in Brussels, available at: https://esc.hq.nato.int/default.aspx

Security Section in it, in order to address a growing range of non-traditional risks and challenges (including threats to energy security) by consolidating in one entity expertise normally spread-out across the headquarters. The ESCD should focus on the emerging security challenges identified as relevant to the Alliance, in particular, by the new Strategic Concept. It should:

- address each of these challenges through a holistic approach, including through close civil-military interaction;
- recognise their global scope, make full use of and propose changes to NATO's partnerships and outreach policies; and
- deal with their cross-cutting dimension through the identification of synergies within the ESCD and the Alliance as a whole.

Energy is an enabler of operational capabilities, fundamental to the sustainment of every military mission and operation. Whether from electricity, fossil fuels or other sources, energy powers bases and platforms, ensuring the effective performance of every military asset, so that it can fulfil its tasks. Camps, vehicles and soldiers require weapon systems and sustainment equipment to support current and future energy demands. This energy demand increases financial and logistical burdens as well as the risk to soldiers and contractors during resupply operations.[2]

NATO can contribute a role which *adds value* to a coordinated international effort to enhance energy security. Practical interaction and cooperation with countries and organisations, both local and international, has significantly progressed. The extensive experience and cooperation in crisis response, led by NATO and other organisations, objectively demands cohesion more than ever. International organisations invite each other to participate in training forums and their staffs informally and often consult each other, both in terms of operations and in the development of policy and doctrines. Moreover, they contribute to shaping the discussion on the increasing importance of both national law and civil society in terms of stability and crisis resolution. The changes in the NATO Policy of the 2001 Summit[3] reflect this significant progress and interdependent environments. These changes include specific tasks so as to improve the consistent application of tools for crisis management in NATO. Further, they focus on the dialogue and, as far as possible, on practical cooperation at all levels with relevant international organisations (IOs), non-governmental organisations (NGOs) and local authorities in planning and implementation of operations. These specific

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[2] "On Nations' Need for Energy in Military Activities, Focusing on a Comparison of the Effectiveness of National Approaches to Reduce Energy Consumption", Smart Energy Team (SENT) Comprehensive Report, 2015, available at: https://www.nato.int/science/project-reports/Smart-Energy.pdf

[3] Final Communiqué from Meeting of the North Atlantic Council, NATO Press Releases (2001) 171, para.2, available at: https://www.nato.int/docu/pr/2001/p01-171e.htm

tasks and conditions in the operational environment require military authorities and NATO personnel to be prepared to work with non-military actors and concepts. They should also promote mutual understanding and respect for the autonomy of decision, the relevant powers, restrictions, mandates and roles of the stakeholders involved. Therefore, the NATO military authorities, the national economies and systems, the energy sectors and institutions should work more effectively and take into account their capabilities, ease of access and financial opportunities.

Energy security is an issue considered likely to trigger conflicts. That type of security is closely linked to national security; it is often considered a threat to the latter and as such may lead to war because of efforts to seize or defend resources for the energetics.[4] In recent years, energy security has been a vital element of sustainability and has become an increasingly important part of the economic and social life of member states due to the new security context. Although NATO is not an energy institution, the development of energy directly affects the conditions of the international security environment and may have far-reaching security implications for some allies. Stable and secure energy supply, diversification of routes, suppliers, and energy resources, and interconnection of energy networks are crucial and increase sustainability at both European and Euro-Atlantic levels. Energy efficiency is important not only for logistics and cost savings in operations but also for environmental protection.

NATO and the energy security context

NATO's Strategic Concept states that today's security environment includes not only traditional military threats but also new types of challenges, some of which NATO can help address. This concerns e.g.: terrorism, cyberattacks, disruptions to the free and secure flow of energy supplies, the proliferation of weapons of mass destruction and their means of delivery, as well as security issues such as conflicts over resources directly or indirectly arising from climate change. In this context, it is states that "the citizens of our countries rely on NATO to defend Allied nations, to deploy robust military forces where and when required for our security, and to help promote common security with our partners around the globe. While the world is changing, NATO's essential mission will remain the same: to ensure that the Alliance remains an unparalleled community of freedom, peace, security and shared values."[5]

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[4] Monaghan, A., "Energy Security: NATO's Limited, Complementary Role", Research Paper, Research Division - NATO Defense College, Rome, No. 36, May 2008, available at: https://www.files.ethz.ch/isn/56022/rp_36en.pdf

[5] 2010 Strategic Concept "Active Engagement, Modern Defence", p. 12, available at: https://www.nato.int/cps/en/natohq/topics_82705.htm

There is no doubt that disruption of energy supply can affect the security and resilience of all societies. Thus, assuring supplies and protecting critical infrastructure is of increasing importance to the EU and NATO in the current security environment.

Thirteen years ago, at the 2008 Summit in Bucharest, NATO allies agreed their first report on NATO's role in energy security.[6] Negotiating this confidential paper, which listed major principles as well as key areas of engagement, was challenging. In fact, no one doubted that energy developments could have major security implications for allies and the Alliance. After all, particularly for some of NATO's new members that were burdened with serious energy vulnerabilities and problems, energy security reached the level of question of national security. However, given that NATO was not an energy institution, the allies struggled to define NATO's role in an area that was largely non-military in nature. This area featured many institutional players and actors, but the implementation of its policies remained mostly a national responsibility.

Some major changes in the international security environment and the energy landscape have drawn increased strategic attention to all aspects of effective implementation of such policies. This ultimately led to a pragmatic energy security agenda that provides tangible value and perspective for allies and partner countries. NATO's role in energy security, firstly identified in 2008, has traditionally focused on supporting national authorities in the protection of energy infrastructure.

However, over the last decade, energy security has gradually elevated in importance on NATO's agenda. The organisation seeks to raise its strategic awareness and calls for accepting and assessing energy as a genuinely key factor that influences international relations and turns energy security into a key element of sustainability in NATO's interests. In reality, this sustainability concept has been clearly stated in different formats. Thus, e.g. the following was pointed out: "All countries are increasingly reliant on the vital communication, transport and transit routes on which international trade, energy security and prosperity depend. They require greater international efforts to ensure their resilience against attack or disruption. Some NATO countries will become more dependent on foreign energy suppliers, and in some cases on foreign energy supply and distribution networks, for their energy needs. As a larger share of world consumption is transported across the globe, energy supplies are increasingly exposed to disruption".[7] Therefore, NATO closely monitors relevant energy trends and developments and seeks to raise its strategic awareness

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[6] Bucharest Summit Declaration, Press Release (2008) 049, available at: https://www.nato.int/cps/en/natolive/official_texts_8443.htm

[7] 2010 Strategic Concept "Active Engagement, Modern Defence", p. 15, available at: https://www.nato.int/cps/en/natohq/topics_82705.htm

in this area. This includes consultations and cooperation on energy security between allies and partner countries, improving the exchange of information regarding the sharing of assessments, and developing relations with relevant international organisations, such as the International Energy Agency, the International Atomic Energy Agency, the European Community for Nuclear Energy, etc.

Although energy security is playing an increasingly important role in Euro-Atlantic policies and programmes, NATO and the EU's renewed focus on the security of energy supply is motivated primarily by concerns about European countries' dependence on Russian gas. These fears are linked to hidden energy security challenges in the southern and eastern Mediterranean regions, where disruptions in fossil fuel supplies actually occur more frequently than along the Russian-Ukrainian transit corridor. Reliable hydrocarbon flows through the Mediterranean are not only important for Europe's energy security but also vital for the economies of major fuel exporters such as Algeria and Libya. In order to mitigate the effects of the problems in the Southern Mediterranean, EU and NATO member states must also consider the results of these impacts on their energy policies.

NATO's energy security policy also covers a number of non-EU countries. While some members may see a foreign and a security dimension to energy security, a number of EU states which are also NATO member states continue to view it as an economic issue to be regulated by the market rather than foreign or security policy tools. The Alliance is evolving: it is a comprehensive security provider that must consider a range of threats to its member states. These threats, which include energy security, are widely accepted as threats by both international and national policymaking.

Resilience and civil preparedness

Since the early 1950s, NATO has played an important role in supporting and promoting civil preparedness among allies. The principle of resilience is enshrined in Article 3 of the Alliance's founding treaty, which requires all allies to "maintain and develop their individual and collective capacity to counter armed attacks". This includes support for the continuity of governance and the provision of basic services in the member states and civilian support for the military. Such resilience is beneficial across the spectrum of threats, from countering or responding to a terrorist attack to potential collective defence scenarios. Therefore, increasing resilience through civil preparedness plays an important role in strengthening the Alliance's deterrent and defensive position.[8]

[8] Roepke, W-D. & Thanke, H., "Resilience: the first line of defence", available at: https://www.nato.int/docu/review/articles/2019/02/27/resilience-the-first-line-of-defence/index.html

NATO's focus on resilience has shifted the emphasis of its work on civil preparedness with allies, partners, and countries that are not EU members. NATO maintains the capacity to respond to major civil emergencies, building situational awareness and readiness prior to potential incidents or attacks. Members can, for instance, strengthen resilience through the development of home defence and niche skills such as cyber defence or medical support, combining civilian, economic, commercial and military factors. Countries are more resilient when the entire government, the public and the private sector are involved in civil preparedness planning. This can be used as a lever in the mechanical and intellectual ability for an adequate response aimed at probable or real opponents. Therefore, resilience proves to be an important aspect of deterrence through denial – convincing the opponent not to attack by convincing them that the attack will not achieve its goals.

Although both NATO and the EU have adopted the concept of resilience,[9] [10] the way the concept has been employed by the two organisations differs. NATO defines resilience as "society's ability to resist and recover easily and quickly from shocks" such as "a natural disaster, failure of critical infrastructure or an armed attack". Such ability "combines both civil preparedness and military capacity" and is seen as "essential to NATO's collective security and defense".[11]

In the 2013 EU Council Conclusions,[12] resilience is "understood to mean the ability of an individual, a household, a community, a country, or a region to prepare for, to withstand, to adapt, and to quickly recover from stresses and shocks without compromising long-term development prospects". The EU Global Strategy (EUGS) more vaguely defines resilience as "the ability of states and societies to reform, thus withstanding and recovering from internal and external crises".[13] The commitment set out in this document is to "address the most acute

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[9] Commitment to enhance resilience, Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw, 8-9 July 2016, available at: https://www.nato.int/cps/en/natohq/official_texts_133180.htm?selectedLocale=en

[10] European Commission, "Communication from the Commission to the European Parliament and the Council: The EU Approach to Resilience: Learning from Food Security Crises", COM(2012) 586 final, 3 October 2012, available at: http:// ec.europa.eu/ transparency/ reg-doc/ rep/ 1/ 2012/ EN/ 1- 2012- 586- EN- F1- 1.Pdf

[11] Díaz-Plaja, R., "Projecting Stability: An Agenda for Action", NATO Review, 2018, available at: https://www.nato.int/docu/review/2018/Also-in-2018/projecting-stability-an-agenda-for-action-nato-partners/EN/index.htm , Accessed 22 March 2021.

[12] Council of the European Union, Council conclusions on EU approach to resilience, 3241st FOREIGN AFFAIRS Council meeting Brussels, 28 May 2013, para.2, https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/foraff/137319.pdf

[13] Shared Vision, Common Action: A Stronger Europe. A Global Strategy for the European Union's Foreign and Security Policy, Council conclusions on EU approach to resilience, 2013, p. 23, available at: https://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/EN/foraff/137319.pdf, Accessed 21 March 2021.

cases of state, economic, social and climate instability and energy security".[14] Thus, it reaffirms that the EU has developed a sustainability approach that encompasses a much wider range of policy instruments, ranging from trade and development to security and defence.

NATO's focus on resilience has shifted from civilian preparedness with allies and partners to so-called situational awareness and preparedness requirements before potential incidents or attacks. However, NATO maintains the ability to respond to major civilian emergencies. In the event of an earthquake, forest fires, massive floods or disasters caused by human activities, NATO's main civil emergency response mechanism (the Euro-Atlantic Disaster Response Coordination Center[15]) may, upon request, coordinate the assistance of the affected ally or partner country.

When it comes to energy, attention should be paid to the capabilities of the member states for civil emergency planning. The common tendency in today's civil emergency planning is towards large-scale disasters that demand large-scale resources and various fields of knowledge. Efficient emergency management requires that all various stakeholders and representatives of governments and departments around the world are coordinated and can share situation reports, coordinate decision-making, information and efforts. This demands broad and confiding cooperation with countries in and outside Europe's borders, between various alliances and organisations, and between different fields of competence. A prerequisite for efficient cooperation is to have an understanding of different ways of solving problems as well as a mutual desire to give and take experience.[16]

In order for the economies of the countries to be developed, the energy and non-resource sectors must develop in parallel. Electricity must evolve with the formed technological basis. Unified energy systems have repeatedly shown their efficiency and sustainability. Methods to increase the efficiency of their work, including the use of digitalisation technologies, must lead to the evolutionary development of energy systems and the technologies used, and not replace goals and methods of implementation.

Especially for NATO, civil emergency planning provides planned activities supported with essential civilian expertise and capabilities in different fields of sociopolitical and economic life in society – from preparedness and consequence management to humanitarian and disaster response and protecting critical infrastructure. In order to be effective in civil emergency planning and to be resilient, societies should: be more inclined to withstand crises, recover faster

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[14] Ibid., p.3, para.3.

[15] https://www.nato.int/cps/en/natohq/topics_117757.htm

[16] "International CEP Handbook 2009 – Civil Emergency Planning in the NATO/EAPC Countries", Swedish Civil Contingencies Agency, 2009, available at: https://rib.msb.se/filer/pdf/24677.pdf

and be able to return to pre-crisis functional levels more easily than more fragile societies. This makes the continuity of government and basic services for the population more lasting. Similarly, it affects and strengthens the ability of the civilian sector to support NATO's military operations and actions, including its requirement that member countries have the ability to rapidly strengthen an ally or allies.

To ensure that NATO has the full range of capabilities needed to deter and protect against any threat to security and safety, as early as 2010 diligent and future members were tasked with developing their capabilities to contribute and develop in these two abilities. Therefore, concerning energy security, including the protection of critical energy infrastructure and transit zones and lines, cooperation must be maintained with partners and consultations are held between allies based on strategic assessments and contingency planning. Civil preparedness is particularly important to collective defence because military forces increasingly rely on civilian and commercial sectors for support, including for civilian transport services and facilities, satellite communications and energy supplies, not to mention food and water.

Civil preparedness means that basic government functions can continue during emergencies or disasters, in peacetime or in times of crisis. It also means that the civilian sector in allied countries would be ready to support NATO's military operations. Civil readiness is fundamental to the resilience of the allies and is a critical factor in the Alliance's collective defence. NATO can support allies in the assessment and, upon request, increase their civilian preparedness. Civil preparedness mainly concerns aspects of national planning relating to the ability to contribute to allied efforts in the continuity of governance, the continuity of basic services to the population, and civilian support for military operations. This means that basic government functions can continue during emergencies or disasters, in peacetime or in times of crisis.

According to NATO's basic requirements set in 2016 at the Warsaw Summit,[17] allied leaders are committed to increasing resilience by striving to meet seven basic civil preparedness requirements:

- guaranteed continuity of government and critical government services;
- resilient energy systems and supplies;
- ability to effectively deal with the uncontrolled movement of people;
- sustainable systems for food and water resources;
- ability to deal with mass casualties;
- sustainable civil communication systems;
- sustainable civil transport systems.

[17] Warsaw Summit Communiqué, Press Release (2016) 100, available at: https://www.nato.int/cps/en/natohq/official_texts_133169.htm

With the changing security environment and to ensure coherence, NATO's defence planning efforts have been stepped up (increased in intensity), including in the area of civil preparedness. NATO's seven basic requirements include a systematic approach to improving the relevant capabilities. Regular evaluations are an essential aspect that helps to identify and measure progress and challenges in areas with a critical equivalent. Findings based on data provided by the allies help to inform the direction of further national or collective action. The assessments cover both a summary report on the state of civil preparedness and, as part of the individual country reports, the state of civil readiness of an ally. The initial assessment in 2016 was followed by a report in 2018, which identified several areas of scarcity where additional resources and efforts are needed to support national authorities.

Civil readiness is essential to the collective defence and development of the allies. In large operations, around 90 percent of military transport uses civilian assets chartered or requisitioned from the commercial sector. The military medical system relies on the ability to evacuate casualties. Civilian medical infrastructure must be able to cope with both an increase in demand from civilian casualties as well as the military casualty treatment and evacuation chain. Both civil and military communications depend on reliable and secure satellite communications and fibre-optic cable networks.

Deployed NATO forces need access to host nations' industrial infrastructure; access to the power grid, to food, water and fuel supplies; access to civilian telecommunications infrastructure, and building materials. They also require local civilian expertise and manpower. On average, 75 percent of host-nation support to NATO operations is sourced from local commercial infrastructure and services.

These civil assets are often highly vulnerable because they are designed to efficiently generate a return on investment as opposed to providing redundancy and resilience in times of crisis. As hybrid threats blur traditional approaches to crisis management, governmental authorities based on wartime emergency legislation can be rendered impractical or even obsolete. In today's security environment, resilience to such challenges requires a full range of capabilities – military and civilian – and active cooperation across government and with the private sector.

Generally speaking, increasing attention is being paid to the development of the resilience of European energy infrastructures, especially in hybrid scenarios and impacts. To improve the protection of critical energy infrastructure, on which all other critical sectors rely upon, in June 2020 the European Commission launched the Thematic Network on Critical Energy Infrastructure Protection.[18]

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[18] European Commission, "Mapping of measures related to enhancing resilience and countering hybrid threats", Joint Staff Working Document, Brussels, 24.7.2020 SWD(2020) 152 final, table on p.17, in line: 8.3 Cybersecurity of energy networks, available at: https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/swd/2020/0152/COM_SWD(2020)0152_EN.pdf

The network will foster collaboration among operators of critical infrastructure in the energy sector (oil, gas, electricity). Preparatory work was launched in the area of supply chain security for critical energy technologies. An assessment was started in May 2020 to identify the critical supply chains for energy security and clean energy transition, and to propose measures for improving their resilience against pandemic and other threat scenarios.

Technological innovation, renewable energy deployment, new energy regulations, and changing consumer behaviour are driving the megatrends that will shape the future of energy policies. In today's world, understanding the interdependencies of opportunities and risks associated with these factors and being aware of how they could affect individual NATO countries, or their neighbouring countries as a whole, will enable NATO to better prepare for future operational challenges.

For this, the competence, awareness, and assessment of energy risks must be constantly increased, which also follows from the requirements for the protection of infrastructures and a more efficient energy policy. As a result, the EU and NATO will be better prepared to meet the security challenges of the 21st century.

The way ahead

"Key environmental and resource constraints, including health risks, climate change, water scarcity and increasing energy needs will further shape the future security environment in areas of concern to NATO and have the potential to significantly affect NATO planning and operations."[19]

The Alliance and the EU depend and will depend on energy security, civilian and commercial resources, as well as infrastructures, such as railways, ports, airports and energy networks, to support the rapid and efficient movement and maintenance of their military forces. Each member of these two alliances must be resilient to withstand and recover from major shocks such as natural disasters, critical infrastructure failure, hybrid or armed attack. Strong resilience through civilian preparedness in allies is essential to NATO's collective security and builds confidence in NATO's deterrence and defence.

The analysis and recommendations in the final report of the Reflection Group to the Secretary General[20] aim to inform and support the Secretary General's discussions in the interest of the NATO leaders meeting in 2021. Thus, with the

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[19] 2010 Strategic Concept "Active Engagement, Modern Defence", p. 4, available at: https://www.nato.int/cps/en/natohq/topics_82705.htm

[20] "NATO 2030: United for a new era – Analysis and recommendations of the Reflection Group appointed by the NATO Secretary General", Brussels, 25 November 2020, available at: https://www.nato.int/nato_static_fl2014/assets/pdf/2020/12/pdf/201201-Reflection-Group-Final-Report-Uni.pdf

help of this report, he will complete the process of reflection and should offer recommendations to allied heads of state and government for bolstering political and other efforts to strengthen NATO.

Concerning energy security and policies, this report reiterates that energy security is a key element of the Alliance's enhanced resilience and of the ongoing efforts for countering hybrid warfare. The coincidences in the opinions and assessments offered by the representatives of this commission confirm again that this security remains a critical area of interest to NATO and it is recommended that continued monitoring and those efforts be made by member countries to the best of their ability.

Competition for scarce energy resources will only increase in the next decade. In light of the potential consequences of this reality for the allies, energy security must be a permanent element to be monitored, evaluated and consulted between the allies, if necessary. It is natural for NATO's energy programme to be influenced by the current development of the global energy landscape. Previous examples show that energy can be used as part of the foreign policy of potential adversaries and is part of their set of hybrid activities. The main and important assessment in this report is that the energy sector is one of the main targets of cyber threats. Stable and reliable energy supply through diversification of routes, suppliers and energy resources and interconnection of energy networks are crucial and increase sustainability. On this basis, recommendations are made for NATO to continue to contribute to raising awareness of the situation and understanding of risks; assist allies, upon request, in protecting critical infrastructure, helping to increase the resilience of allies, including in cyberspace, and ensuring that allied forces have access to the necessary energy resources at all times.

In summary, the recommendations in this report indicate the following areas:

• allies must improve their political consultations at the strategic level on energy security in all aspects, involving key stakeholders;

• allies should review their national energy security plans through the security perspective of other allies and seek to avoid actions that could increase susceptibility to manipulation, political blackmail or supply disruptions;

• NATO must ensure that energy security remains the main focus of engagement with energy-producing or transit partners;

• allies must realistically assess the relationship between energy security and hybrid tactics, and this should be included in their policy consultations and scenario discussions;

• allies must raise awareness of situations by sharing information on energy development and assess their energy security;

• NATO needs to improve its *smart energy* programme, which aims to improve the energy efficiency of the military, by including relevant aspects of this issue in NATO's defence planning processes;

• NATO must continue to recognise the importance of ensuring a continuous supply of the necessary energy resources and infrastructure in order to establish the continuity of activities under Article 5 and beyond Article 5.

Conclusion

In all these matters, the primary responsibility lies with the national governments of the European NATO member states. That is why the role of EU energy policy and compliance with energy security requirements are very important for both unions and for the security of the member states.

The current unpredictable security environment has led to a new focus on civil preparedness. NATO and its member states must be prepared for a wide range of unforeseen circumstances that could seriously affect societies and critical infrastructure. The overall security of NATO and EU countries depends on what responsibilities are in place to respond to threats and what are the guarantees for actors and consumers in the energy sector.

Participation of Alliance military forces in the operations will help to prevent crises, manage conflicts and stabilise post-conflict situations together with non-military contributions from a diverse range of sources, mostly outside the Alliance. Commitments to NATO operations consistently emphasise the interdependence and interaction between military and non-military contributions to solving the crisis. Often these non-military contributions can and will be the best way to address the underlying causes of conflict and will help prevent the recurrence of instability and disequilibrium. Given such an interdependent operating environment, communication and interaction are and will be important for achieving a broader and holistic approach, in close cooperation with interested and influential interacting non-military actors.

Milen Kisyov *is lecturer at the Rakovski NDC in Sofia. He holds lectures to all categories of listeners and students, as well as in a number of qualification courses. His interests focus on areas such as civil-military cooperation, civil-military interaction, civil-military relations, planning of crisis response operations, countering of contemporary terrorism, as well as building capacity and integrity and cross-border security.*

ENERGY COOPERATION BETWEEN EU AND UKRAINE AMID POLITICS AND POLICY

Alexei Margoevski

Introduction

This paper is focused on one of the key aspects of European energy diplomacy – energy cooperation between the European Union (EU) and Ukraine in recent years. The main subject of analysis is the natural gas sector as one of the drivers for this cooperation, given that the gas transit has become a key issue for European energy security.

Russian economic influence in Europe is centred on energy. One of the pillars of its strategy is the politically controversial gas project Nord Stream 2. By sowing discord among affected European governments (particularly Germany), on the one hand, and the Baltic states, Poland and Ukraine, on the other hand, Russia is trying to undermine Europe's energy strategies and thus jeopardise the region's energy security.[1]

In recent years, several countries of the post-Soviet space, which joined the Eastern Partnership initiative in 2009, have made huge progress in achieving European standards in domestic and foreign policy. Ukraine is a typical example of the difficulties and challenges these countries face in the course of their European integration, where energy plays a major role.

On the political environment surrounding the energy challenges

In 2010, Ukraine became a member of the Energy Community, which aims to integrate Eastern European countries into the EU's internal energy market by transposing the bloc's rules in this field into their legal systems. Ukraine is the biggest and a very valuable participant in the Energy Community, not only due to its energy potential but also because of its key role in gas transit to Europe. The country is almost 100% dependent on gas imports from a single natural gas supplier, Gazprom. At the same time, it is the most important transit country for Russian natural gas delivered to Europe, a fact that has often caused disputes between Moscow and Kiev over the price of Russian gas and transit tariffs. A

[1] Vladimirov, M. & Stefanov, R., "TurkStream and the Russian economic influence in Europe", Policy Brief № 94, Center for the Study of Democracy, December 2020, available at: https://csd.bg/bg/publications/publication/policy-brief-no-94-turkstream-and-the-russian-economic-influence-in-europe/ (Accessed on 28th April 2021).

clear example of the tense relations between Kiev and Moscow in recent years is the suspension of Russian natural gas transit through Ukraine in 2006, 2009 and 2014. The core reason behind those incidents were the unsettled Russia-Ukraine economic relations, but the result was detrimental to the economies of many European countries as well. Until recently, the bulk of the Russian gas was transited through Ukraine, while some of the aforementioned affected states were almost 100% dependent on natural gas from Russia. These crises forced the EU to act as a mediator in the gas disputes between Russia and Ukraine, but the task was not an easy one. Ukraine tried to turn to Turkmenistan for an alternative to Russian natural gas in the 1990s. In fact, the suspension of gas deliveries from Turkmenistan in 1996 due to delayed payments for gas consumed by Ukraine shattered Kiev's hopes for diversification. This was well justified, as at that time Ukraine imported 40 billion cubic metres (bcm) of gas per year from Turkmenistan via the Russian pipeline system.

The Ukraine crisis is the collective name for the 2013–2014 Euromaidan protests spurred by an emergent social movement for integration of Ukraine into the EU and the subsequent efforts of Russia to destabilise the country. That episode has reinforced the understanding that, in addition to traditional threats, manifestations such as internal conflicts and non-traditional hybrid threats continue to be a security challenge in Europe, affecting energy security, among other areas. ***New hybrid threats include – aggressive propaganda, insidious hostilities, cyberattacks, influencing the media space, etc. Even powerful military and political blocs such as NATO do not have the resources to respond to such threats by traditional means.*** It was these mechanisms that were used in the Ukraine crisis, which threw international institutions in a state of turmoil. The crisis put to the test the EU's ability to respond adequately to the events that transpired, and the results are yet to be analysed and assessed.

The crisis has shown that modern conflicts are based on diverse elements – economic, human, political, military. Dealing with these conflicts, or better yet preventing them, requires the ability to address all of these elements in their entirety and to apply a unified approach. The Ukraine crisis, whose impact on the relevance of EU diplomacy has yet to be analysed and assessed, has exacerbated relations between Russia and the West. Long before the Ukraine crisis, Russia-Ukraine tensions over energy issues had prompted Moscow to seek alternative routes for its gas supplies to Europe (South Stream and Burgas-Alexandroupolis pipeline projects). However, Russia's worries about gas and petrol transit were not confined to Kiev's policy, they spilled over to its energy relations with Belarus. The seemingly endless and bitter disputes between Russia and Belarus over transit tariffs were settled only after Belarussian President Alexander Lukashenko's reelection in August 2020 (contested by his opponents), which resulted in a strong political backing from Moscow.

The policy frame of EU-Ukraine relations and the energy cooperation

In June 2014, Kiev signed an Association Agreement with the EU, which is the main instrument for establishing closer ties with the bloc and, at least for the foreseeable future, is an alternative to full EU membership. The Association Agreement, which entered into force on 1 September 2017 (after the Netherlands became the last European country to ratify it and the Council of the EU gave it a green light), paved the way for closer cooperation between Ukraine and the bloc of now 27 Member States in all areas, including energy. This includes cooperation between EUROATOM and Ukraine in the field of nuclear safety.

Given its tense relations with Russia, Ukraine's association with the EU plays a stabilising role for its foreign policy, which could bring it closer to its western neighbours, Member States, and offer it the prospect of future energy diversification. The EU sees Ukraine, with its central geographical location and economic resources, as an important and necessary economic partner and supports the country's desire to preserve its role as a major transit country for Russian gas deliveries to Europe. In this aspect, economic expediency takes precedence over political considerations.

On 1 January 2016, the EU and Ukraine began applying the Deep and Comprehensive Free Trade Area (DCFTA), which forms an essential part of the Association Agreement signed in June 2014. The rest of the Association Agreement, containing political and cooperation provisions, had already been provisionally applied since November 2014 when the DCFTA took effect. With the DCFTA, both sides ensure that markets for goods and services will be mutually opened on the basis of predictable and enforceable trade rules, so that new opportunities will be created for EU and Ukrainian businesses, investors, consumers and citizens. By aligning Ukraine's regulations with EU legislation more closely, the DCFTA will promote higher quality standards for products and will increase the levels of consumer and environmental protection. Economic cooperation and exchanges will also be enhanced, contributing to improved stability and prosperity for Ukraine.[2]

The EU recognises the growing trend of bilateral trade and the prospects for increasing its exports to Ukraine. Ukraine's exports to EU countries exceed €16.7 billion, and imports rose to €20.2 billion in 2017, making Ukraine the EU's most important trade partner in the post-Soviet space behind Russia. It is also worth noting that Kiev registered the largest trade deficit with the EU (€2.1 billion) among all former Soviet republics.

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[2] EU-Ukraine Deep and Comprehensive Free Trade Area (DCFTA), Source: European Commission, available at: http://trade.ec.europa.eu/doclib/press/index.cfm?id=1425 (Accessed on 12th May 2021).

The application of the DCFTA marks a milestone in the EU-Ukraine bilateral relationship, as it is set to offer new economic benefits to both sides. Ukrainian businesses receive stable and predictable preferential access to the largest market in the world with 500 million customers, while EU businesses will be able to take advantage of easier access to the Ukrainian market and build new relationships with Ukrainian suppliers and cooperation partners. This will also be to the benefit of Ukrainian citizens, who, along with the opportunities to travel and work more freely in the EU, receive better access to high-quality products. Furthermore, increased competition and the lowering of import tariffs should lead to lower prices of goods and services for Ukrainians. By its ambitious goals of approximation to EU legislation in areas such as competition, government procurement, and protection of intellectual property rights, the agreement could contribute to the modernisation and diversification of the Ukrainian economy and energy sector and will create additional incentives for reform, notably in the fight against corruption. The DCFTA will thus offer an opportunity to Ukraine to improve its business climate and to attract foreign investment, helping the country to further integrate into the EU.[3]

The Association Agreement between the EU and Ukraine highlights the commitment of the contracting parties to enhance cooperation in the energy sector, building on the commitment of the parties to implement the Energy Community Treaty as well as to boost energy security, facilitate the development of appropriate infrastructure and increase market integration and regulatory approximation towards key elements of the EU acquis, promoting energy efficiency and the use of renewable energy sources as well as achieving a high level of nuclear safety and security.[4]

The Association Agreement provides for the establishment of an independent regulatory authority for electricity and gas in Ukraine and stipulates that in the event of a conflict in the field of energy policy, the provisions of the Energy Community Treaty of 2005 or the provisions of the EU legislation made applicable under it shall prevail. The agreement provides for deep cooperation in the energy domain, including nuclear issues, based on the Energy Charter Treaty of 1994, the Memorandum of Understanding on cooperation in the field of energy, and other multilateral and related bilateral agreements. The Association Agreement provides for deepening of cooperation in the nuclear sector, which has a leading role in Ukraine's energy mix. It also includes joint efforts on overcoming the consequences of the nuclear disaster at Chernobyl, 26 April 1986, outlining the importance of enhancing nuclear safety.

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[3] Ibid.

[4] Association Agreement between EU and Ukraine, 29 May 2014, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0529(01)&from=EN (Accessed on 30th April 2021).

For the EU, Ukraine is a promising market and a valuable partner among the countries in the post-Soviet space, and the bloc is determined to broaden mutual cooperation in all areas, including energy. However, Germany is driven by the same kind of economic expediency in its pursuit of the completion of Nord Stream 2 pipeline, which Ukraine, Poland and the Baltic countries believe would undermine their energy security.[5] Their concerns stem from the fact that the construction of the pipeline will leave transit and delivery of natural gas through their territories at the mercy of Moscow's political calculations. Moscow, for its part, claims that the project is purely commercial and warns against its "politicisation".[6] Nord Stream 2 has created a precedent – a pipeline project widely regarded as politically driven and not contributing to the diversification of the European energy supply receives a de-facto exemption from the EU energy competition rules.[7]

In fact, Ukraine wants to keep the transit of Russian natural gas flowing through its territory, but after the events of 2014 it now refuses to receive gas for its domestic consumption directly from Gazprom and has begun importing Russian gas via reverse-flow interconnectors from its western neighbours instead, which makes these gas deliveries much more expensive. The EU is facing serious energy risks given the possibility for disruptions to or a gradual halt of gas transit through Ukraine, as the bloc is a net importer of hydrocarbons. Until recently, EU countries received Russian gas via a transit route through Ukraine and over the Transbalkan pipeline; and they still receive Russian gas via a transit route over the Urengoy-Pomari-Uzhgorod pipeline, but the latter's capacity will not be fully used due to the launch of gas deliveries through the Balkan Stream pipeline[8] and the expected completion of the Nord Stream 2 pipeline in the summer of 2021. Thus, in case Russia decides to cut entirely gas transit through Ukraine

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[5] Rau, Z. & Kuleba, D., "Nord Stream 2 has damaged the West enough. Time to put an end to it", Politico, 30 April 2021, available at: https://www.politico.eu/article/nord-stream-2-pipeline-has-damaged-the-west-enough-time-to-put-an-end-to-it/ (Accessed on 28th April 2021).

[6] Elliott, S., "Russia urges end to Nord Stream 2 'politicization' as debate enters overdrive", S&P Global, 17 September 2020, available at: https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/091720-russia-urges-end-to-nord-stream-2-politicization-as-debate-enters-overdrive (Accessed on 28th April 2021).

[7] Vladimirov, M. & Stefanov, R., "TurkStream and the Russian economic influence in Europe", Policy Brief № 94, Center for the Study of Democracy, December 2020, available at: https://csd.bg/bg/publications/publication/policy-brief-no-94-turkstream-and-the-russian-economic-influence-in-europe/ (Accessed on 28th April 2021).

[8] The Balkan Stream project is an extension of the TurkStream Gas Pipeline connecting it to the Interconnector BG-RS with Serbia through the territory of Bulgaria. Sometimes it is referred to as "the Expansion of the Bulgartransgaz EAD gas transmission infrastructure in the section from BG-TR to BG-RS" and "Balkan Gas Hub necessary expansion of the Bulgarian gas transmission system", Source: Global Energy Monotor – Wiki, available at: https://www.gem.wiki/Balkan_Stream_gas_pipeline (Accessed on 30th April 2021).

once the last transit agreement between Naftogaz and Gazprom expires at the end of 2024, Ukrainian pipelines will be free for reverse-flow energy deliveries. Nevertheless, Ukraine needs millions of dollars to be invested in upgrading and keeping its old and shabby pipeline system operational. The money may come from the IMF or from the EU pre-accession funds. Further, projects of regional energy cooperation as e.g. the Three Seas Initiative[9] potentially create an opportunity for LNG deliveries to Romania, Moldova and Ukraine from the future LNG-terminal off the shore of Alexandroupolis in northern Greece. The realisation of these plans could contribute to the abovementioned countries of the Black Sea area achieving energy security and diversification. The conclusion is that LNG-driven projects could reshape the energy landscape in the region in the foreseeable future.

Facts and dilemmas about the Russia-Ukraine gas relations

In the wake of the collapse of the Soviet Union, Ukraine was the biggest consumer of natural gas among post-Soviet states behind Russia due to the structure of its economy, where the chemical and the heavy industries had a major share. Ukraine's overall consumption of gas in 2006 amounted to around 60 bcm. Around 17 bcm were supplied by Russia at an average price of $230 for 1,000 m^3 and nearly 40 bcm were supplied by Turkmenistan at an average price of $50-60 for 1,000 m^3.[10] Russia was constantly trying to trick Ukraine through bargaining the price for its natural gas and the transit tariffs, so Kiev sought diversification of supplies and for quite a long period of time has achieved it. A year later, in 2007, Kiev, Moscow and Ashgabat agreed supplies of 55 bcm for Ukraine at $130 for 1,000 m^3, which was another major achievement for Kiev.[11] In 2009 Turkmeni gas supplies through Russia shifted entirely to market prices and in 2016 practically came to a halt. They were partially restored in 2019, but the 5.5 bcm were exclusively for the Russian domestic market. Hence, Ukraine was left without any alternative sources for diversification of gas supplies. Souring Russia-Ukraine relations led to a gradual decrease in the amount of Russian gas that Kiev wanted to buy from Moscow and in the transit of natural gas to Europe. Tensions continue to rise amid the worsening situation in eastern Ukraine.

Russia has been using its pipeline diplomacy as a tool for strengthening its dominant position on the European energy markets via Balkan Stream and North Stream 2. Hence, the most difficult issue in the EU-Russia energy dialogue

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[9] Three Seas Initiative, https://3seas.eu/about/progressreport (Accessed on 30th April 2021).

[10] Borovskiy, Y.V., Mirovaya systema energosnabzheniya [World System of Energy Supply], Moscow State Institute of International Relations (MGIMO University) of the Ministry of Foreign Affairs of the Russian Federation (MID Rossii), Navona, Moscow, 2008, p. 96.

[11] IIbid., p. 97.

has been the energy relations between Moscow and Kiev, in which the bloc has always sought to play a mediating role. Russia's energy giant Gazprom and Ukraine's state-owned company Naftogaz have been suing each other since 2014 over gas supply and their transit agreement. The Arbitration Institute of the Stockholm Chamber of Commerce ruled on 28 February 2018 that Gazprom should pay $4.637 billion in compensation to Naftogaz for undelivered gas through Ukraine, but it also satisfied a $2 billion counterclaim filed by Russia. In the end, Gazprom was due to pay Naftogaz $2.6 billion. After several months of difficult negotiations mediated by the European Commission, on 24 December 2019, six days before the expiration of the old agreement, Russia and Ukraine concluded a new agreement in principle for the transit of Russian natural gas through Ukrainian territory. Its main parameters are as follows:

- the agreement is valid for five years with the option for it to be extended for another 10;
- the volume of transit through Ukraine shall be 65 billion cubic metres in 2020, and 40 billion cubic metres for each year of the 2021–2024 period;
- the transit fee is increased (but its amount is not specified);
- Ukraine shall receive $3 billion under the ruling of the Stockholm Arbitration before the end of 2019, but the parties shall renounce all other mutual claims;
- direct deliveries of Russian gas are not expected.[12]

It seems that both contracting parties are satisfied with the agreement. Ukraine's gas transit earns it $3 billion a year and, most importantly, puts pressure on its own system, which ensures gas supplies to domestic consumers (in Europe, it is possible to buy the necessary volumes of gas back, but delivering those same quantities to consumers is problematic). Russia holds $3 billion in Ukrainian debt in the form of government securities, and President Vladimir Putin has hinted that the debt to Naftogaz could be repaid by reselling Ukrainian securities to Kiev. Russia preserves its reputation as a reliable supplier of natural gas to Europe, and Ukraine keeps its role as the leading transit country for Russian gas. Thus, the trilateral energy deal EU-Russia-Ukraine, signed at the end of 2019 following a grueling diplomatic marathon, preserved the role of Ukraine as a major transit route for Russian gas to Europe. It may also be considered a success of EU energy diplomacy. While the risks to the European energy security are minimised, the energy vulnerability of Ukraine and other countries in the Black Sea area remains high.

In recent years, Ukraine has also been following the path of the green energy transition, as the share of coal in the country's energy mix has diminished, which is also a function of the development of the nuclear energy sector.

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[12] EU-Ukraine Deep and Comprehensive Free Trade Area (DCFTA), Source: European Commission, available at: http://trade.ec.europa.eu/doclib/press/index.cfm?id=1425 (Accessed on 12th May 2021).

After the tragic accident at the Fukushima Daiichi Nuclear Power Plant in Japan in 2011, some European countries decided to close their own nuclear power plants. Among them are Germany, Austria and, most recently, Italy; in parallel, the nuclear sector enjoyed a renaissance in Central and Eastern European countries even before the EU launched its European Green Deal initiative. Such countries as Hungary and Romania plan to expand their nuclear power plants' capacity and install new nuclear power reactors. The closure of all 17 nuclear power plants in Germany by 2022 would cost the country at least €18 billion. That does not take into account the cost of storing the spent nuclear fuel, which may take the total amount to €30 billion.[13]

Ukraine is among the countries with long-standing traditions in using nuclear energy, going back to the 1970s; its nuclear sector is strongly linked to Russia as well. The tragic experience of the Chernobyl nuclear disaster did not influence the overall trend of heavy reliance on nuclear power. In contrast to the trends in some European countries, Ukraine is determined to further develop its nuclear sector. There are currently four nuclear power plants in Ukraine with a total of 15 nuclear reactors. One of them, Zaporozhye NPP, is the largest in Europe – six VVER power reactors with a total installed capacity of 6,000 MW. By the number of power reactors (all VVER types), Ukraine ranks 10th in the world and 5th in Europe.[14]

In the summer-autumn period of 2014, the generation of electricity at nuclear power plants in Ukraine exceeded 50% of the total generation for the first time in many years yet again, keeping a multi-year trend. This latest development is due to a decrease in the capacity of the thermal power industry caused by a shortage of fuel amid ongoing hostilities. In 2017, nuclear power accounted for 55% of the total electricity generation in the country, the total nuclear power plant capacity was 13,107 MW.[15]

Ukraine has sought to diversify its nuclear fuel supplies since 2008. Until 2011, all nuclear fuel was supplied from Russia. In 2008, Kiev signed a deal with the Anglo-American energy giant Westinghouse Electric Company to gradually replace Russian supply with alternative one in the 2011–2015 period. This process was accelerated after the Ukraine crisis as a result of growing tension between Kiev and Moscow. As of the end of 2018, Westinghouse supplied 46% of the nuclear fuel for Ukraine, while the remaining 54% was fuel produced by the Russian company TVEL.

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[13] Zhiznin, S.Z. & Timohov, V.M., Mezhdunarodnoe sotrudnichestvo v sfere energeticheskih tekhnologiy [International Cooperation in the Field of Energy Technology), Moscow State Institute of International Relations (MGIMO University) of the Ministry of Foreign Affairs of the Russian Federation (MID Rossii), Moscow, 2016, pp. 103-104.

[14] Atomnaya energetika Ukraini, Source: Wikipedia, https://ru.wikipedia.org/wiki/ (Accessed on 12th May 2021).

[15] Ilbid.

However, the crux of the matter as relates to the limits of the European energy diplomacy towards Ukraine is Germany's insistence on the completion of the Nord Stream 2 pipeline. As mentioned earlier, Ukraine, Poland and the Baltic states have been against this project from the very beginning. These countries believe that the project will endanger their energy security by leaving them out of the equation when it comes to Russian gas transit routes and will give Gazprom an additional lever when negotiating gas prices. The US sanctions against companies participating in the construction of the Nord Stream 2 pipeline, which were initially put in place by the Trump administration[16] and subsequently broadened by the Biden administration, did not stop the construction process but forced some major European companies to step back from the project. One by one, the Nordic states – Finland, Sweden and Denmark – gave a green light for the pipeline to pass through their territorial waters. The US sanctions sparked a falling-out between Washington and Berlin. US Ambassador to Berlin Richard Grenell made some critical remarks about Germany's policy and was accused by the country's foreign minister, Heiko Maas, of interfering in Germany's internal affairs.[17] This put additional strain on US-German ties, given the accusations of Donald Trump that Germany's share in NATO spending is disproportional to its economic weight and that, by backing Nord Stream 2, Berlin is financing Russia's belligerent ambitions.

In April 2017, Nord Stream 2 AG signed agreements with ENGIE, OMV, Royal Dutch Shell, Uniper and Wintershall to finance the Nord Stream 2 gas pipeline project.[18] Five European companies will provide long-term financing to the tune of 50% of the total project cost. The construction of the pipeline began in September 2018. It was set to finish by the end of 2020, but as a consequence of the US sanctions, the timeline moved to the summer of 2021. The aggregate capacity of the two lines of Nord Stream 2 is 55 bcm of gas per year. Thus, the combined projected capacity of Nord Stream and Nord Stream 2 is to be 110 bcm of gas per year.[19] However, in accordance with the Third Energy Package of the EU, these two pipelines cannot exceed more than half of their capacity at any point in time – 55 bcm of gas per year, or 27,5 bcm each – so as to have

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[16] Gardner, T. & Psaledakis, D., "U.S. tells European companies they face sanctions risk on Nord Stream 2 pipeline", Reuters, 13 January 2021, available at: https://www.reuters.com/article/us-usa-nord-stream-2-sanctions-exclusive-idUSKBN29I0CN)

[17] Lawton, S., "US ambassador accuses Germany of 'eroding' NATO solidarity", EURACTIV, 14 May 2020, available at: https://www.euractiv.com/section/defence-and-security/news/us-ambassador-accuses-germany-of-eroding-nato-solidarity/ (Accessed on 12th May 2021)

[18] "Nord Stream 2 AG and European energy companies sign financing agreements", ENGIE, 24 April 2017, available at: https://www.engie.com/en/journalists/press-releases/nord-stream-2 (Accessed on 12th May 2021).

[19] Gazprom, https://www.gazprom.ru/projects/nord-stream2/ (Accessed on 24th March 2021).

available capacity for other possible suppliers[20], which is rather limiting. This is a condition of the European Commission for giving a green light to the Nord Stream 2 project. From the first round of US sanctions until the end of 2020, the Russian ship Akademik Cherskiy was used for the construction of Nord Stream 2. Since the beginning of 2021, the pipe layer has been replaced by another vessel sailing under Russian flag – Fortuna. Both were guarded by Russian navy.

Russia's foreign minister, Sergei Lavrov, has repeatedly stressed that extraterritoriality in the use of sanctions, as well as the unilateral actions used by the US, are considered unacceptable by Russia.[21] Moscow sees US sanctions against the Nord Stream 2 project as unfair competition and accuses the US of wanting to displace Russia from the European gas market in order to sell its more expensive LNG there. Germany has also sharply criticised plans to expand sanctions against the project. The closure of German nuclear power plants and the implementation of the European Green Deal leave Germany little choice but to focus on using more imported natural gas for its fast-growing economy, and Russia offers stable supplies at affordable prices for Germany. One of the keenest supporters of the Nord Stream 2 project is social democrat Manuela Schwesig, premier of the German northeastern state of Mecklenburg-Western Pomerania, who accuses the US of acting in pursuit of its own interests. At the same time, Washington claims to be protecting the interests of its closest European allies – Poland, Ukraine and the Baltic states.[22] It is in Mecklenburg-Western Pomerania's port Greifswald that the pipeline's entry point into Germany would be. The US sanctions have inflicted huge damage on the Nord Stream 2 project so far, slowing it down by almost a year, and if they ever include the foreign companies which are to certify the pipeline, it can never enter into service. This could be a major blow for Gazprom, as the energy giant would lose almost €5 billion in investments. So, the completion of the project is both a race against the clock and a matter of prestige for Russia.

The future of the Nord Stream 2 project was even discussed at the meeting of NATO ministers of foreign affairs held on 24-25 March 2021 in Brussels, where the US and Germany failed to reach an understanding and each side remained

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[20] Source: Wikipedia

https://bg.wikipedia.org/wiki/%D0%A1%D0%B5%D0%B2%D0%B5%D1%80%D0%B5%D0%BD_%D0%BF%D0%BE%D1%82%D0%BE%D0%BA (Accessed on 30th April 2021).

[21] "Russia to retaliate for US sanctions against Nord Stream 2", Associated Press, 23 December 2020, available at: https://apnews.com/article/d9be604ed8628e46dc526302a672297e (Accessed on 30th April 2021).

[22] Blinken, A.J., Nord Stream 2 and Potential Sanctionable Activity, Press Statement, U.S. Department of State, 18 March 2021, available at: https://www.state.gov/nord-stream-2-and-potential-sanctionable-activity/ (Accessed on 30th April 2021).

unyielding in its position on the project.[23] Thus, Russia indirectly managed to drive a wedge between the most powerful allies in NATO and to derive political dividends from it. Germany's Minister of Foreign Affairs Heiko Maas even invited Moscow to the negotiating table within the NATO-Russia Council in the foreseeable future.

In September 2020, Berlin offered a lucrative deal to Washington to revoke its sanctions on Nord Stream 2. Germany expressed readiness to invest up to €1 billion in the construction of two LNG terminals for receiving American LNG, but the US did not change its staunch position. In May 2021, Secretary of State Antony Blinken announced that the US will waive sanctions on Nord Stream 2 AG, the company overseeing the project, as well as its chief executive Matthias Warnig and the company's corporate officers. This step could eliminate a key bone of contention between Washington and Berlin. Minister Heiko Maas saluted a "constructive step" that showed the US was "taking into account the really excellent relations that we've built up with the Biden administration".[24]

Wrap-up

Brussels was caught in the crossfire of the gas dispute between the US and Germany. European officials can do nothing to help Ukraine in its efforts to thwart the construction of Nord Stream 2, which is leading to even greater rapprochement between Kiev and Washington, as the latter is the only reliable ally with a leverage to hinder the completion of the project. At least in theory, this should help Ukraine, but the Biden administration is quite reserved about the Ukrainian authorities given the scandal that erupted in the US over the dubious business practices of Hunter Biden, the son of current US President Joe Biden, related to the Ukrainian gas company Burisma.[25] Another well-known fact is that the US wants to get its hands on Ukraine's gas infrastructure, but so far neither the new US administration nor the authorities in Kiev are ready for such a deal.

One of the latest developments around the Nord Stream 2 project came not from Moscow or Brussels but from Washington. On 1 January 2021, the

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[23] "At NATO, Blinken warns Germany over Nord Stream 2", Reuters, 23 March 2021, available at: https://www.reuters.com/business/nato-blinken-warns-germany-over-nord-stream-2-2021-03-23/ (Accessed on 30th April 2021).

[24] Chazan, G. & Manson, K., "Biden to waive Trump-era sanctions on operator of Russian pipeline", Financial Times, 20 May 2021, available at: https://www.ft.com/content/22555df1-0b88-4d46-8287-9e0c8f03cc6a (Accessed on 20th May 2021).

[25] "Hunter Biden: What was he doing in China and Ukraine?", BBC, 6 April 2020, available at: https://www.bbc.com/news/world-54553132 (Accessed on 30th April 2021).

provisions of the new defence budget of the US came into force, which includes the extension of sanctions against the Nord Stream 2 and the Balkan Stream gas pipelines. The latter was already operational at that point. As a result, on 3 January the international certification company Det Norske Veritas suspended all certification activities for the Nord Stream 2 gas pipeline due to the new US sanctions.[26] Only the future will tell whether this will finally derail the project, but in Germany an environmental organisation has been set up to lobby for its completion before both the German authorities and Brussels officials. Russia's Minister of Energy Alexander Novak has refrained from predicting the project's exact completion date, but it will be until the end of 2021.

On 4 June at the International economic forum in Saint-Petersburg Russian president Vladimir Putin made an unexpected announcement about the completion of the Nord Stream 2 gas pipeline. Putin announced that despite the roadblocks, which included sanctions that forced international contractors to abandon the project and a restructuring of its funding, the first of its two pipes was fully laid and gas supplies could begin in 10 days. This developement signals that Germany and Austria are not in danger of losing a lot of money, because their companies are the biggest investors, while Ukraine and Poland may lose the revenue from transit tariffs along with their geopolitical positions. Kiev is tired of seeking sympathy from Brussels, as the economic giant Germany continues to dictate what energy projects become reality in Europe. That is why Washington's engagement is an important signal to Ukraine that the limits of European energy diplomacy stem from both internal contradictions in the bloc and the inability to reach common decisions or a comprehensive vision. In this context, the European Green Deal will prove to be another serious test of whether a common European energy policy could be viable or not.

The energy cooperation between the EU and Ukraine has reached a decisive point. Kiev is a partner key to the bloc's energy security. But the incoherent stance of Member States on EU energy strategy gives little hope of unravelling contradictions with Russia. The core issues of European energy diplomacy are the Ukrainian gas transit and the completion of the Nord Stream 2 project. These two issues are deeply connected and it seems increasingly obvious that US policy will have major influence on both. The desire of the EU to achieve strategic autonomy, including in the energy sector, is hampered by diverging national stances on the most important issues on the common European energy agenda. And that relates not only to diversification of gas supply routes but also to the European Green Deal and the future of nuclear energy and the coal

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[26] Fishman, E., "Sanctions Won't Stop Nord Stream 2. Diplomacy Will – Quiet negotiations with Berlin can do what economic coercion can't", Foreign Policy, 9 April 2021, available at: https://foreignpolicy.com/2021/04/09/sanctions-wont-stop-nord-stream-2-diplomacy-will/ (Accessed on 30th April 2021).

industry. Europe tries to speak with one voice, but European energy diplomacy lacks feasible perspective and benefits particular countries rather than the EU as a whole. Thus, EU-Ukraine energy relations would remain a function of power politics, rather than a consistent EU policy. In such a context, any long-term prognosis on the future of these relations would depend on the actions of external powers, particularly the US and Russia.

Aleksey Margoevski *is an international reporter at Bulgarian News Agency. He holds an MA in International Relations from New Bulgarian University and an MA in National Security and Defence from Georgi Rakovski Military Academy. Aleksey is a PhD student at University of National and World Economy. His research interests are focused mainly on energy security.*

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2. Zhiznin, S.Z. & Timohov, V.M., Mezhdunarodnoe sotrudnichestvo v sfere energeticheskih tekhnologiy [International Cooperation in the Field of Energy Technology), Moscow State Institute of International Relations (MGIMO University) of the Ministry of Foreign Affairs of the Russian Federation (MID Rossii), Moscow, 2016.

3. Blinken, A.J., Nord Stream 2 and Potential Sanctionable Activity, Press Statement, U.S. Department of State, 18 March 2021, available at: https://www.state.gov/nord-stream-2-and-potential-sanctionable-activity/

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8. Gardner, T. & Psaledakis, D., "U.S. tells European companies they face sanctions risk on Nord Stream 2 pipeline", Reuters, 13 January 2021, available at:
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14. “Russia and Ukraine sign agreement on natural gas transit”, Radio Free Europe, 31 December 2019, available at: https://www.svobodnaevropa.bg/a/30353580.html

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LOST IN TRANSITION – ARCHITECTURE OF BULGARIA'S NEXT ENERGY DECADE WITHIN EU FRAMEWORK

Sofia Savova

Introduction

Energy management is one of those topics that provoke strong reactions, polar-opposite emotions and vague truths. After a turbulent end to 2019, which culminated in the announcement of the European Green Deal, followed by an even more unstable 2020, this year is hardly expected to rapidly bring about the desired pacification. The figurative bomb that was dropped with the European Green Deal was promptly overshadowed by the emergence of a new global phenomenon called Covid-19, which has since wrecked all precisely devised plans of the European leaders.

The onset of a new decade, one that promises to be full of great ambitions, challenges and uncertainties, is probably a proper time for goal setting. Since the energy topic is poised to be one of the cornerstones of Bulgaria's political, social and environmental life in the next 10 years and beyond, it is high time that the country deepened and intensified its dialogue at the level of scientific experts, which will contribute to progress in this direction. Lacking the comfort of energy independence while at the same time having certain energy obligations due to its EU membership, Bulgaria is swinging from its insecure energy past to an uncertain energy future. However, being in the "club of the world's richest" requires significant effort, motivation and consistency to achieve the expected high standards and ambitions.

The main focus of the present article is to provide a cross-section of the current energy policy in Bulgaria considering the circumstances created by the European Green Deal. It aims to analyse political, social and environmental behaviour in the context of the forthcoming structural changes envisaged by Europe's new growth strategy. The paper elaborates possible development paths alongside potential challenges and traps that could compromise Bulgaria's journey to a sustainable, reliable and clean energy future.

In the last couple of years, the need for veridical, credible and adequate political discourse has become more and more tangible, especially in the context of the new and ambitious development course set by Europe. As the overall development direction of the EU is more or less fixed and clear, national authorities should not waste energy on interpreting it in favour of local interests and old-school sentiments but should rather start formulating the respective leverages, tools and mechanisms needed to get their economies prepared for the envisaged shift.

Indeed, even the most proficient strategist with an excellent implementation programme would be hard-pressed to find compelling arguments to offer to those stakeholders who are bound to experience the most negative effects of the so-called decarbonisation processes envisaged by the European Green Deal. This takes us back to the need for decision-makers and officials to use trustworthy and truthful language. It is, in fact, their first and most important task to comprehensively explain to and convince society that these changes are not just inevitable or imposed by foreign powers or interests but that they are reasonable, necessary and justified in a political, socioeconomic and environmental aspect.

What is more, the truth is that alternatives do exist. Indeed, they go beyond putting photovoltaic systems on roofs or installing wind turbines on mountain tops. It is not about being brown or green, conventional or innovative, old-fashioned or modern. The European Green Deal preaches that it is all about being sustainable – in an economic, social and environmental way. Granted, it will take time until alternative sources begin functioning with sufficient capacity to satisfy the energy demand of the country (and of the continent). Great investments will be needed to fill the gap that is going to open up from phasing out coal. It is a fact that coal regions will face a dramatic shift in employment and economic orientation. However, the stakes are high – the future of our planet.

At a crossroads – Geopolitics, Economics and Energy

Although Bulgaria is not endowed with rich natural deposits on its territory, the country is blessed to be situated at the crossroads of the world – at the intersection of the East and the West, the North and the South, energy producers and energy consumers. Representing more so the latter group, Bulgaria will face multiple challenges in the next decade in terms of its energy choices and behaviour. The extensive change to be introduced in the economic structure and way of functioning requires clear political vision beyond a four-year term in office, adequate economic strategies and stimulus efforts for overcoming the effects of the transition. What is more, it necessitates secure, reliable and sustainable sources of energy.

For better or worse, Bulgaria is located between two energy giants, both defining factors in the world's energy economy – Asia and the Middle East, which possess huge energy resources, capacity and reserves, and Europe, which demands vast energy supplies. From a global standpoint, however, Bulgaria's (and the region's) energy consumption as well as own energy production are rather negligible. These two circumstances, combined with an advantageous geographical location, provide reasons as to why the Balkans are going to play a leading role on the world energy scene in the next decade – not as an energy producer but as an energy transporter.

However, the region's predestined future as the main transit hub for Eurasia is a double-edged sword.

On the one hand, it opens up huge opportunities for economic and financial growth, energy diversification and influencing the pricing of resources. It is in line with Europe's strategic goal of building an interconnected and single pan-European energy market. Indeed, the luxury of transporting raw materials that one also needs affords a country certain advantages. Having direct access to resources will help the region meet its energy needs, especially given the fact that it is more of a consumer than a producer. This will be a serious step in the direction of increasing security of supply and diversification of sources. Finally, investing in major energy infrastructure projects will create jobs, support the local employment and prevent the brain-drain tendencies so widespread in the observed country and regions. This matter becomes even more important in light of the European Green Deal and the expectations for high unemployment rates once coal is phased out.

At the same time, Bulgaria's energy future as a strategic energy transportation hub is quite challenging. Faced with a serious economic decline, mainly due to the spread of Covid-19, the country may see its capacity to respond to the major demand its new role would entail hampered. Bulgaria must intentionally direct its efforts towards building engineering, technical, mechanical and economic capacity to satisfy the growing need. What is more, a firm political course and a clear vision beyond a certain mandate is needed to guarantee that the national interest will be protected in this complicated game. Indeed, serving as a field of a strategic battle and a struggle for dominance can be tricky. Forward thinking would also suggest diversifying energy sources since supply monopoly could often imply abuses.

Nevertheless, Bulgaria is at a crossroads not only geopolitically speaking – its economy is confronted with a series of challenges that need to be resolved in the next decade. Bulgaria remains among the countries with most energy-intensive economies in the Union, as its amount of energy resources spent per unit of GDP is 3.6 times more than the average energy cost in the EU[1]. Hence, the national economy requires a massive transformation to meet the increasing market, quality and environmental requirements. There are two different ways to carry out this shift in how the economy functions: an inside-out push or an outside-driven one. The chosen approach will define the course of Bulgaria's economic development not only in the next 10 years but within a much longer horizon.

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[1] Setting National Priorities for the Period 2021–2027, 2018. https://www.eufunds.bg/sites/default/files/uploads/eip/docs/2019-04/%D0%A0%D0%9C%D0%A1%20196%20%D0%BF%D1%80%D0%B8%D0%BB%D0%BE%D0%B6%D0%B5%D0%BD%D0%B8%D0%B5.pdf

Market-driven factors may have not been enough for the Bulgarian economy to launch an intensive modernisation process in the past few decades, but it seems that outside forces (e.g. the European Green Deal) will prove successful in boosting the new industrial revolution. Considering the widespread perception that Europe's new growth strategy is the result of a foreign ambition, it is worth mentioning that the document was negotiated by all Member States, who had equal right to influence its design. Moreover, Bulgaria's government approved, albeit resignedly, the EU's target of reducing carbon emissions by 55% (compared to 1990s level) by 2030 and becoming carbon neutral by 2050[2] despite a wave of public resentment. Therefore, facing a fork in the road – a choice between extraordinary energy ambitions and strong dependence on foreign supplies, between a green energy future and reliance on brown energy – Bulgaria's behaviour in the next decade will be deeply defining.

Nonetheless, the new era is here – developed societies worldwide have already set ambitious targets for reaching carbon neutrality in the near future. In line with the EU, Japan[3] and South Korea[4] plan to reach net zero by 2050, while China pledges to get there by 2060[5]. The US claims to be back in the Paris Agreement. Mathematically speaking, more than half of the world's (well-developed) economies declare themselves engaged in the net-zero movement. It seems that Europe is not alone in its ambitious undertaking. Now it is Member States' turn to show their readiness and willingness to commit on a national level. Indeed, each country has a different price to pay for this transition. Given Bulgaria's specific economic potential and financial capacity, decarbonisation equals demonisation in the country – a major problem the solution to which needs to be found in the upcoming years.

The need for mind revolution in the Bulgarian energy sector

Indeed, the Bulgarian energy sector is to be considered as a multilevel concept that could be observed from many different perspectives; and all of them would be justified. In this context, the present analysis, which makes no claim to

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[2] "The EU to Reduce Harmful Emissions by 55% by 2030. What Does This Mean for Bulgaria?", Svobodna Evropa, 2020. https://www.svobodnaevropa.bg/a/30996006.html

[3] Lies, E., "Japan's Plan to Become Carbon Neutral by 2050", World Economic Forum, 2020. https://www.weforum.org/agenda/2020/10/japan-zero-emissions-carbon-neutral-society-2050/

[4] McCurry, J., South Korea Vows to Go Carbon Neutral by 2050 to Fight Climate Emergency, The Guardian, 2020. https://www.theguardian.com/world/2020/oct/28/south-korea-vows-to-go-carbon-neutral-by-2050-to-fight-climate-emergency

[5] "Net-Zero Emissions Must Be Met by 2050 or COVID-19 Impact on Global Economies Will Pale Beside Climate Crisis, Secretary-General Tells Finance Summit", United Nations, 2020. https://www.un.org/press/en/2020/sgsm20411.doc.htm#:~:text=The%20United%20Kingdom%2C%20Japan%20and,to%20get%20there%20before%202060.

be comprehensive, will elaborate mainly on the political point of view, followed by social and environmental angles.

Political viewpoint: Does nobody see the elephant in the room?

If Bulgaria considers itself to be one of the developed economies, it must compete with them rather than developing economies. The beginning of a new decade is the right time to start rethinking concepts linked to opportunities, alternatives and challenges. At the same time, a new term has emerged in Bulgaria – energy populism. Inept political maneuvers, mostly driven by a mixture of fear of responsibility, lack of knowledge and desire to remain empowered, have recently created an explosive environment.

Although the government in Sofia agreed to the EU's carbon neutrality target set by the European Green Deal and the country is expected to be among the largest net beneficiaries of the Just Transition Fund, Bulgaria is yet to have a detailed plan for phasing out coal, not to mention a time frame for the envisaged transition. According to Bulgaria's National Energy and Climate Plan (NECP) 2021–2030, the country intends to "make full use of the existing potential of indigenous coal, which is sufficient to generate electricity for the next 60 years[6]". Presented visually, phasing out coal in Bulgaria looks as follows:

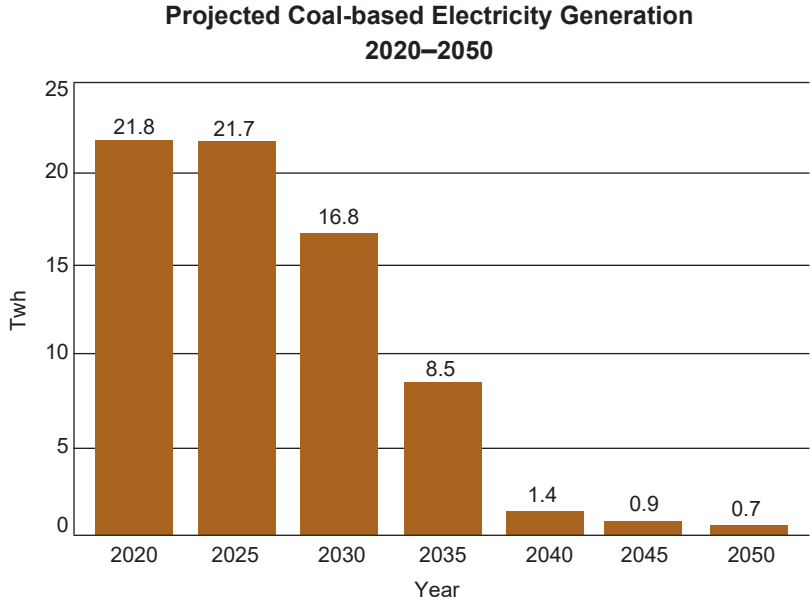

Figure 1: Projected coal-based electricity generation in Bulgaria 2020–2050

Source: National Energy and Climate Plan 2021–2030, 2020

[6] Bulgaria's National Energy and Climate Plan 2021–2030, https://ec.europa.eu/energy/sites/ener/files/documents/bg_final_necp_main_en.pdf

The controversial messages of this strategic document, which undeniably contradict EU decarbonisation goals, demonstrate a lack of clear political guidance. On the one hand, the government invests a great deal of effort in bringing national legislation in line with the European one to please the EU political elite. On the other hand, it does not dare raising key questions regarding the timeline for phasing out coal, since doing so would undoubtedly irritate the coal industry. This political hypocrisy prevents Bulgaria from taking the ever-so-important first steps on the way to the so-called just transition. Predictably, the plan was sharply criticised in Brussels for only partially addressing the recommendations made by the European Commission[7].

The Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a Horizon until 2050[8], the draft of which was published in February 2021, is another Bulgarian strategic document in the energy field that is causing confusion. Expected to upgrade the NECP, the strategy largely repeats the requisites of the plan that was not warmly welcomed in Brussels. Soon after the document's release for public consultation, however, it became clear that it requires a serious revision in order to fulfill its purpose as a leading document in the field of energy policy in Bulgaria.

Nevertheless, the topic of decarbonisation is emerging as a crucial point on the agenda of the next two Bulgarian governments. Having committed to the target of a 55% reduction in carbon emissions by 2030, Bulgarian politicians need to urgently overcome their political shortsightedness and take action. The national political elite has the tough task of catching up with other Member States while maneuvering between EU carbon goals and the local coal lobby. The plan for transition in Bulgaria begins with an expert-level consensus on how and when decarbonisation will happen and ends with the motto "No one is left behind".

Social viewpoint: The easiest way to handle a problem is to neglect it

Indeed, the Bulgarian public was angry in the beginning, arguing that the European Green Deal is another Brussels-imposed requirement that goes against national interests. Over time, however, many have come to realise that it is something that the country could not sidestep, especially since the government declared its support for the pre-set targets for reducing carbon emissions. Nevertheless, the level of uncertainty surrounding the social dimension of the problem remains quite high. The only certainty is that energy transition will

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[7] EU Commission, "Assessment of the Final National Energy and Climate Plan of Bulgaria", 2020. https://ec.europa.eu/energy/sites/ener/files/documents/staff_working_document_assessment_necp_bulgaria.pdf

[8] Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a Horizon until 2050. https://www.me.government.bg/uploads/manager/source/video_upload/Strategia.pdf

happen and that persistent opposition and negation only dooms Bulgaria to backwardness and losses.

Naturally, the Bulgarian coal sector is struggling with the idea that the coal era is going to end in the foreseeable future. Bulgaria, where coal powers about 40% of electricity generation[9], is indisputably faced with a serious challenge when it comes to making its energy transition within the European goal of carbon neutrality by 2050. This implies considerable structural, economic and social changes that will affect a significant share of the population in the three main coal regions of the country – Stara Zagora, Pernik, Kyustendil – and their surroundings. Having coal as its main source of energy and a major employer, Bulgaria ranks among the Member States set to be most impacted by Europe's new green course. Considering the EU's emission reduction goal, Bulgaria's high-carbon, energy-intensive economy, which is strongly dependent on coal-fired power plants, requires significant transition investments and political will.

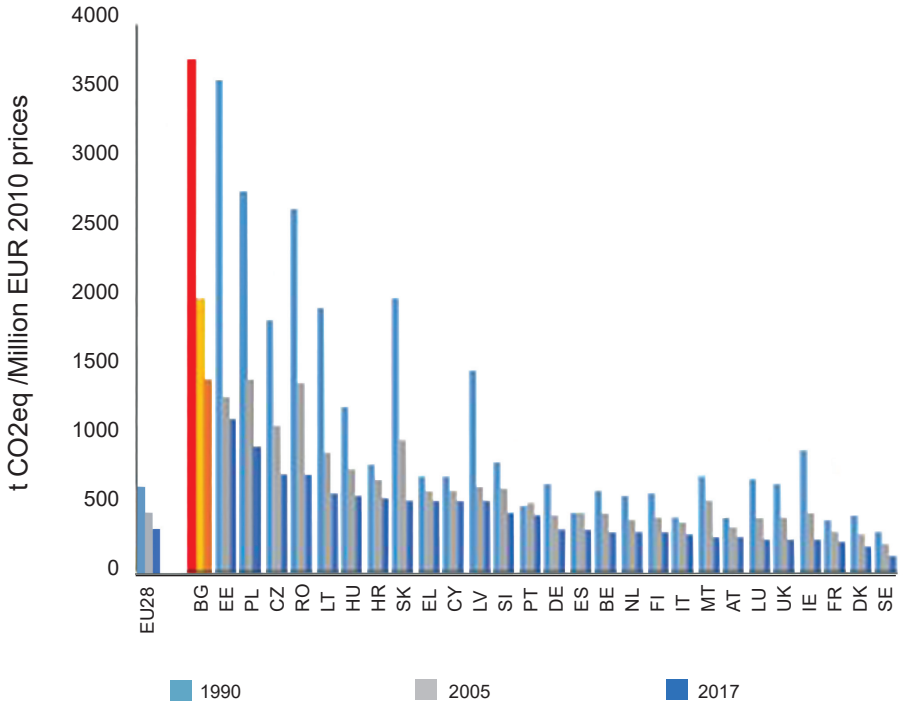

Figure 2: Average CO2 emissions EU 28

Source: European Environment Agency

[9] Energy and Water Regulatory Commission (EWRC) Bulgaria, Annual Report to the European Commission, 2020. https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf

The three leading coal regions in Bulgaria will be exposed to a dramatic socioeconomic impact in the coming decade as a consequence of the transition towards low-carbon, clean-energy sources. Depending on the source of information, the number of people employed in the coal sector ranges from around 12,000[10] to over 120,000[11]. The long years of neglecting and minimising the problem, in combination with populist rhetoric and incorrect political speaking, have turned the European Green Deal into enemy number one, instead of a promise of growth and prosperity. The intention to close power plants fuels fear, mistrust and uncertainty among members of the coal sector, creating fertile ground for manipulation and disinformation. The Bulgarian political elite missed its chance to adequately and carefully explain the European Green Deal's key messages[12]. This lack of timely reaction has created conditions for wide-spread resistance against Europe's new development strategy.

Energy transition is a prerequisite for the emergence of another disturbing phenomenon – energy poverty. The lack of affordable, accessible and adequate energy for certain groups of the population is a challenge that Bulgarian governments will face in the next decade. Energy poverty is a term that is gaining importance across Europe; however, this is a subject for a separate analysis.

Nevertheless, when Europe started to illustrate its promises with numbers, things became much more different. Financial numbers with many zeros were being cited in public, which generated undisguised interest and excitement. This new atmosphere gave the Bulgarian government a serious political advantage – the ability to dream of a bright future and make generous promises. However, there were much more appropriate and needed measures to be taken in light of the foreseen economic, social and environmental shift. The *bible of transition* is the plan for how to carry out this process smoothly, compassionately and justly. The territorial just transition plans (TJTP) should answer the most burning questions about timetable, employment and fund allocation. Lending the transition process a clear shape and form would alleviate social pressure and allow proper implementation of the envisaged transformation.

However, the social factor of the European Green Deal is a crucial point that will significantly contribute to turning the energy transition into a success story. The EU's political elite has repeatedly underlined that individuals are the central focus and no one will be left behind. Dialogue on how to prevent mass unemployment

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[10] Za Zemiata, "Just Transition In Bulgaria – Mission possible for Maritsa Iztok energy complex?", 2018. https://bankwatch.org/wp-content/uploads/2018/11/Maritsa-Iztok.pdf

[11] Chobaligova, B., "Trade unions: 122 thousand people lose their jobs when Maritza Iztok Complex closes", Investor.bg. https://www.investor.bg/ikonomika-i-politika/332/a/sindikati-122-hil-dushi-ostavat-bez-rabota-pri-zatvariane-na-mini-marica-iztok-298731/

[12] European Anti-Poverty Network, "Key Messages on the European Green Deal and 'Just Transition'", 2020. https://www.eapn.eu/wp-content/uploads/2020/08/EAPN-2020_EAPN-Green-Deal-Key-Messages-Reflection-Paper-4601.pdf

due to the phasing out of coal should be at the top of the political agenda. If the EU stays on it, the path of decarbonisation will result in tremendous destabilisation of the labour force, which will then have to be purposefully balanced. Reskilling and upskilling will not always be an option, especially for employees who confidently defend coal now. Compensatory measures cannot generate value added or stimulate economic activity and growth to fill the resulting gap. In this context, the social dimension of the so-called just transition appears to be the most decision-demanding one, bearing in mind the European Green Deal's key message that "Just transition will not be just, if the poor pay for it!"

Environmental viewpoint: The it-does-not-depend-on-me behaviour

Ultimately, once the initial shock that came with the European Green Deal announcement wore off, once the excitement caused by the great promises died down, once the fog created by the big numbers cleared, what remained were the hard facts. According to rough estimates, more than 200[13] people per 100,000 in Bulgaria die due to poor air quality – a criterion by which the country leads all European countries. Stara Zagora, which is the heart of Bulgaria's energy industry, ranks among the cities with worst air in the EU[14]. According to a recent report[15] by Harvard Medicine, fossil fuels have dreadful consequences not only for the environment but for human health as well, causing one in every five deaths worldwide in 2018.

All these facts have often been forgotten by decision-makers not only in the EU but worldwide as well. The envisaged green stimulus, originally meant to protect the planet, is starting to look more and more like that mouse and cheese game. Frequently, economic prosperity and financial growth are politicians' highest priority, even over environmental preservation and human health and wellbeing. Unfortunate prioritisation and placing the emphasis on economic interests managed to create a dangerous atmosphere threatening the future of several generations.

This toxic atmosphere naturally gave rise to the European Green Deal concept. It is much more than the long-term growth strategy of the Union or an ambitious plan for climate neutrality and environmental preservation. It also exceeds the notion of a stimulus package that awards those who fulfill the pre-set

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[13] DW, "Bulgaria has the dirtiest air in Europe", 2018. https://www.dw.com/bg/%D0%B1%D1%8A%D0%BB%D0%B3%D0%B0%D1%80%D0%B8%D1%8F-%D0%B5-%D1%81-%D0%BD%D0%B0%D0%B9-%D0%BC%D1%80%D1%8A%D1%81%D0%BD%D0%B8%D1%8F-%D0%B2%D1%8A%D0%B7%D0%B4%D1%83%D1%85-%D0%B2-%D0%B5%D0%B2%D1%80%D0%BE%D0%BF%D0%B0/a-46239882

[14] Dnevnik, "Stara Zagora has the dirtiest air in the EU", 2020. https://www.dnevnik.bg/zelen/2020/10/21/4129608_stara_zagora_sa_s_nai-mrusniia_vuzduh_v_es/

[15] Dutchen, S., "Particulates that Matter", Harvard Medicine, 2021. https://hms.harvard.edu/magazine/racism-medicine/particulates-matter#.YBwUHFFJi3c.twitter

targets. The European Green Deal aims to explain why such steps are needed. Thus, it is an attempt to shift attention to two important aspects: a) what we are doing to the planet and b) what would be the consequences of that damage for the future generations. The answers to these two questions are clearly given in the European Green Deal, which outlines concrete actions for tackling challenges.

In fact, renewable energy sources (RES) are not the only answer to the eternal search for an alternative to fossil fuels on the way to net zero emissions by 2050. Indeed, it will take a long time, considerable investments and purposeful political will before RES start providing a significant share of Bulgaria's energy mix. Nevertheless, renewable energy technologies have serious potential for improving energy diversification, enhancing energy efficiency and strengthening the economy of Bulgaria. In the last decade, Bulgaria has witnessed a boost in the RES sector thanks to targeted investments under the EU-funded Rural Development Programme, followed by a certain decline in excitement once the grants dried up. Nevertheless, Bulgaria's path to sustainable development passes through a strategic increase in renewable energy use. A recent report by the International Renewable Energy Agency (IRENA)[16] on RES potential in Southeast Europe points out that the next decade will bring a noticeable drop in costs for renewables, a circumstance that national governments should take advantage of.

Hence, the sooner the it-does-not-depend-on-me behaviour is left behind, the better chances will become available for people to get out of the energy labyrinth they are in. The environmental aspect of energy has been a top priority with advanced societies for decades, and they are already in the process of restructuring their economies in an environmental-friendly manner, despite the high price of this shift. It is becoming increasingly clearer that every single actor on the international political scene has its own role, function and purpose in the environmental puzzle.

Thus, the wide-spread excuses that Bulgaria is a small polluter or that it began extracting and burning coal many decades after western industries, which gives it the right to catch up, sound ridiculous. In the upcoming years Bulgaria should bring its economy fully in line with the relevant European standards, especially given its status as one of the most coal-intensive countries on the continent. It should be reminded that Bulgaria is set to be a major net beneficiary of funds under the Just Transition Mechanism and other EU-funded formats. Therefore, it is in the hands of decision-makers to make the best out of the enormous funding, which might flow into the Bulgarian economy. Further, it should be recalled that it is the duty of decision-makers to make this effort not only for the sake of turnover but for the sake of future human prosperity, health and wealth.

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[16] IRENA, "Renewable Energy Market Analysis: Southeast Europe", 2019. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Dec/IRENA_Market_Analysis_SEE_2019.pdf

The circular approach or going in a circle?

Motivated by a desire to be in line with EU standards and trends, Bulgarian politicians often use key European terms such as circular approach, carbon-neutral economy, just transition and green industry. Unfortunately, quite often this happens without any factual background or notion of the price of the envisaged transition. Furthermore, while attempting to formulate their own long-term energy perspective, decision-makers regularly fail to pay attention to short-term planning. E.g., the Bulgarian society and European leaders are staring at the long-awaited announcement of a concrete plan (including dates) for the gradual phasing out of coal. Certainly, that could be a tricky proposition given the circumstances around time of elections; in this regard, the Covid-19 pandemic also creates additional tension.

The fear of dependence on foreign energy supply

The last decade of fierce energy struggle has shown that the question of securing uninterrupted energy supply at European level is not just a matter of economic but of national security as well. Bulgaria's strong reliance on foreign energy deliveries (mostly coming from Russia) renders the country vulnerable to energy disturbances and supply shocks, which were experienced several times in the last 10 years. This fact explains to a large extent the subordinate position of the Bulgarian energy policy as relates to the Russian one, despite considerable efforts for energy diversification made in the past couple of years.

Actually, the situation in Bulgaria differs little from the common European energy landscape. The country's strong reliance on foreign energy supplies has the potential to significantly disturb Bulgarian society, especially in the context of the transition to carbon neutrality within a horizon shorter than 30 years. The country was among the most affected ones during the gas interruption crisis in 2009. In 2018, Russia was the main supplier of natural gas and crude oil to the EU and to Bulgaria[17]. Whereas the Russian monopoly in Bulgaria with respect to petrol delivery is less than 50%, the country's level of reliance on Russian gas is close to 100%. The latter is subject to change, although that change will be gradual and take some time.

Until recently, this dependence created a comfortable environment for: a) Russian energy dominance in the state; b) growing anxiety among members of society over the European Green Deal ambitions; and c) clinging to own energy resources, however limited. All these challenges should be at the top of the to-do list of the Bulgarian political elite in the upcoming decade. The widening gap between production and consumption, the limited intra-EU primary energy production, as well as the EU's growing dependence on energy

[17] Eurostat, "Energy production and imports", 2018. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_production_and_imports/bg

imports from non-EU countries make the energy market within the EU quite an uncertain field of operation. Available statistical data confirms that in 2018 more than half (58.2%) of the gross available energy in the EU was supplied through imports[18].

Although the gas infrastructure network is planned to get denser in the next decade, that will not lower Bulgaria's dependence on foreign energy supplies. The recent actions of the national government raise the question where exactly is Bulgaria on the international gas scene, being, as it is, entangled in Russian projects and pressed by the urgent need for alternative supply options.

The myth of Bulgaria's energy independence is often used in populist messages by local politicians, who cite the growing importance of the country as an energy transportation hub. Indeed, this role brings a series of advantages, but it will not bring the desired energy independence if all the pipes are fed by a single energy provider. What is more, it became clear that diversification of sources is not enough to ensure uninterrupted flow. Diversification of routs is needed as well.

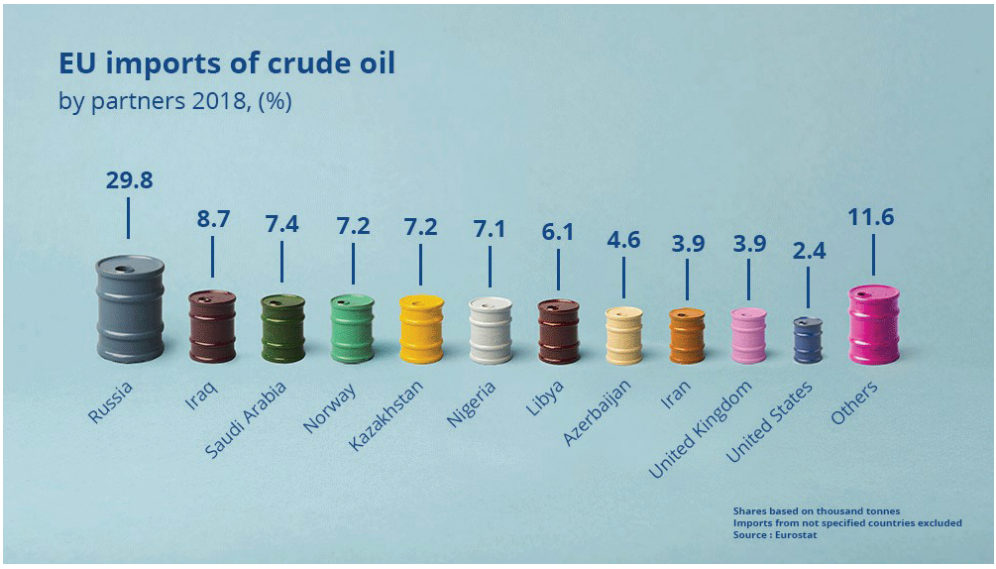

Figure 3: EU imports of crude oil

Source: Eurostat, 2018

[18] Eurostat, "2.3 From where do we import energy and how dependent are we?". https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html#:~:text=What%20do%20we%20import%3F&text=In%202018%2C%20the%20main%20imported,fossil%20fuels%20(8%20%25) 2c.html#:~:text=What%20do%20we%20import%3F&text=In%202018%2C%20the%20main%20imported,fossil%20fuels%20(8%20%25).

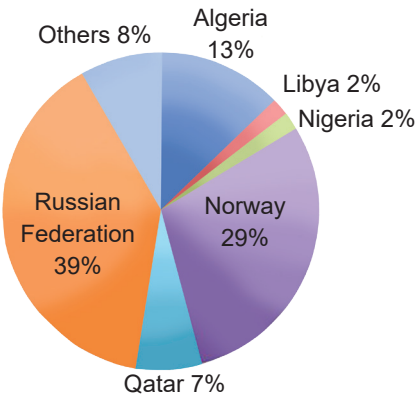

Figure 4: Supplier countries: % of total EU natural gas imports

Source: Eurostat, 2018

The salvation of coal

Albeit low-quality, lignite, brown and black types of coal are widely discovered on the territory of Bulgaria and are the most considerable natural resource in the country. As mentioned, on average, coal powers about 40%[19] of the nation's electricity generation and has been a driving force behind industrial development in the recent decades. Moreover, being the only natural resource Bulgaria enjoys, coal is indicated as the only solution to dependence on foreign energy deliveries.

And then the European Green Deal came and changed everything.

Until recently seen as object of salvation, coal became a political hot potato in Bulgaria. Wavering between promises for clean future, the imperative of climate goals and discomfort at the very prospect of destroying an entire industry, decision-makers in Bulgaria made the most logical decision – to stay silent on the topic. Currently, they are refusing to set a concrete and realistic timeline for phasing out coal. And this is happening despite their full awareness of the fact that the state-owned TPPs could not operate without the enormous public financial support granted at the beginning of 2020 and that the power plants would no longer be competitive beyond 2025.

What is more, Bulgaria must show significant progress in lowering its carbon emissions in the next decade so as to meet the intermediate goal of CO_2 gas reduction by 2030. This commitment means that the transition should have already been started by now. What is more, a substantial segment of society is now arguing that coal needs saving and is calling for immediate action. This

[19] Energy and Water Regulatory Commission (EWRC) Bulgaria, Annual Report to the European Commission, 2020. https://www.dker.bg/uploads/2020/report_EC_2020_EN.pdf

question pits different stakeholders against each other and causes serious tension not only in the communities of the affected regions but nationally. Nonetheless, it is an undeniable fact that coal has become less competitive in recent years – a tendency that will probably continue in the next decade.

Currently, Bulgaria is at this strategic point of modelling its own energy vision, driven by a common EU notion for a cleaner future. Designing a goal-oriented, well-adapted sectoral plan for the transition of affected regions will guarantee the smooth, gradual and just transition of coal-intensive regions towards carbon-neutral, clean future. Making good use of the funds provided through all tools, including the Just Transition Mechanism, will not only erase the nostalgia felt by coal supporters but also boost the region's economic, industrial and social development on a qualitatively new level. Undoubtedly, it is a sign of significant progress that the topic of the Bulgarian energy mix has moved up the priority list of the country's political agenda against the backdrop of a rapidly changing EU and global energy landscape. But the time for concrete steps has already come.

The nuclear perspective for Bulgaria

Although it emits no polluting CO_2 gases, nuclear energy has had an increasingly declining role in Europe's energy mix. According to Eurostat, electricity generation from nuclear plants in the EU-27 decreased by 16.3 % between 2006 and 2019[20]. If we look ahead to the upcoming decade, the nuclear sector in Bulgaria is probably the most challenging one in terms of making prognoses and analyses. Currently, due to substantial open questions not only about nuclear but about the energy sector in general, it is impossible to plan or predict the future of nuclear energy without clear policies and strategies for the development of this industry.

The end of 2020 also effectively brought the end of the Belene saga, another major Russian energy project on the Balkans – this was done via a clear statement on behalf of Rosatom's senior official, asking for a reimbursement mechanism for the investments made in the project. This step backwards concludes an era full of uncertainty, wandering and populism amid pointless giant investments in unusable equipment for the construction of a nuclear power plant on Bulgarian territory.

The plan that the Bulgarian government came up with at the beginning of the new decade was to install the Belene equipment, carefully stored for more than seven years, in Kozloduy NPP. Energy experts still argue over the feasibility of this option; however, the idea was a clever political move to address public outcry over the fact that billions of levs worth of equipment is rotting unpacked on the Belene site. At first, this sounded like a long-awaited response to a mystical riddle.

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[20] Eurostat, "Nuclear energy statistics", 2021. https://ec.europa.eu/eurostat/statistics-explained/index.php/Nuclear_energy_statistics#:~:text=Nuclear%20plants%20generated%20around%2026.4,%2C%20Slovakia%2C%20Finland%20and%20Sweden.

However, soon many question marks arose. Even if possible, implementing the Belene equipment in the Kozloduy site would probably go beyond the current decade; besides, its economic viability is also in question.

What is evident from the actions or inaction of Bulgarian authorities is the absolute lack of a long-term energy strategy, and not only regarding nuclear power. The need for strategically justified and economically, technologically and environmentally motivated solutions is becoming more and more pronounced, especially in light of the European Green Deal. The national energy vision should be outlined with concrete argumentation, time frame and methodology that will guarantee proper realisation of the Bulgarian energy sector in the fast-growing energy reality of the upcoming decade.

Final words

Considering the new EU development course outlined in the European Green Deal, the third decade of the 21st century promises to be purposeful, ambitious and controversial. Consumer countries such as Bulgaria will experience most of the effects arising from the transition towards low-carbon economy and clean technologies. The main challenge in managing the energy chain is the lack of political consensus on a long-term national energy strategy supported by financial instruments, a document that would minimise fragmented decision-making, often attributed to suspected private political and economic interests.

The status quo of the Bulgarian energy sector shows that the modern circular approach has been transformed into a *going-in-a-circle game*. The government refuses to provide a timeline for the process of phasing out coal. The deep-rooted fear shared by Bulgarian politicians and the biggest share of the population alike – namely that the country could not survive without foreign energy supplies (predominantly coming from Russia) – has laid a solid foundation for the notion that domestic coal is a major lifeline for the Bulgarian energy system. These perceptions, which are shared by high-level politicians and energy experts alike, feed spreading apprehension that the new European course will be a major obstacle to Bulgaria's role in the EU energy context. However, an alternative cannot be identified, given that Europe plans to be carbon neutral until 2050.

Moreover, insufficient attention is paid to the preparation of TJTPs and their significance for the socioeconomic development of coal regions in the country over the next decades. In the spirit of the "No one is left behind" motto, TJTPs are a prerequisite for access to the desired funds within the Just Transition Mechanism. The plans are supposed to provide an outline for the transition process until 2030 in accordance with national energy strategies and climate plans; to identify challenges and needs as well as objectives and tools for their achievement in the transition regions. Thus, the creation of TJTPs that are relevant, purposeful and customised to reflect regional needs is an essential milestone for future policymakers in the coming years.

At this stage, Bulgaria's path to a low-carbon economy within the framework of the European Green Deal is suffering from low political know-how, growing social and economic resistance, and great energy vulnerability to third parties. The only way to overcome this multilevel crisis is through designing, implementing and pursuing a consistent energy policy that goes beyond a political mandate and reflects an understanding of the relief and the complexity of the national features. Based on legitimate, scientifically proven and objective data, this strategy will shape the future of Bulgaria not only in an energy context but in an industrial, environmental and humanitarian aspect as well.

Now, at the beginning of the new decade, Bulgaria is faced with an era-defining choice – to head West or East, to be self-sufficient or to rely on others, to be green or brown, to be clean or polluted. Its choice will determine which part of the world Bulgaria belongs to – innovators or old-school countries. It will reveal the nation's dominant value – short-term economic stability causing long-term environmental damage or long-term care for long-term welfare.

Sofia Savova *works on the energy topic ever since her student years when she graduated M.A. European Studies at the University of Hamburg, Germany. After a master thesis on the Bulgarian energy policy, she focused on offshore wind energy in Germany and the Baltic region. Her current work is dedicated to the Just Transition and the EU Green Deal, coordinating several projects on the topic as an expert at Stara Zagora Regional Economic Development Agency.*

LIBERALISATION OF THE ELECTRICITY MARKET IN BULGARIA IN THE CONTEXT OF THE CHALLENGES OF THE EUROPEAN GREEN DEAL

Lyubomira Gancheva

Introduction

The current paper reviews the challenges that the European Green Deal (EGD) poses to the process of liberalisation of the electricity market in Bulgaria. It is divided into two parts. The first one analyses the changes made to European Union (EU) climate and energy law in order to implement the mitigation targets under the Paris Agreement of the United Nations (Paris Agreement)[1]. In this context, the paper addresses the possibility for a more radical transformation considering the EGD and the ongoing Covid-19 pandemic. The second part explores some key prospects for liberalisation of the electricity market in Bulgaria. It provides a helicopter view of the current Bulgarian energy system and energy mix on the eve of the market liberalisation process. It outlines the main challenges of maintaining the balance of the national system and focuses specifically on the design and im-plementation of a special instrument called capacity mechanisms (CMs). Following these accents, the analysis is narrowed to an executive summary of the implementa-tion of the capacity mechanism instrument in Bulgaria and outlines a number of questions concerning the Bulgarian energy mix, which need to be answered today in order for the balance of the national energy system to be maintained in the future.

Brief overview of market liberalisation and EU climate policy

The liberalisation of energy markets, and specifically that of the electricity market, is a direct consequence of the commitments made under both the EDG and the Paris Agreement. Over the past 30 years, climate and environmental policies in the EU have been constantly developing and evolving into common measures in the field of greenhouse gas emissions, renewable energy sources (RES) and energy efficiency. In this regard, a fundamental question is whether the EU 2030 Climate and Energy Policy Framework (2030 Framework)[2] is a refinement or a revolutionary improve-ment of the 2020 Climate & Energy Package (2020 Package) and the Paris Agree-ment. Annex 1 presents an overview of the 2030 Framework and explains why it falls short of laying out the way to the radical transformation targeted with the goals of the Paris Agreement. What is more, it provides a reason why the ambition is not in line with the EU's goal of becoming climate neutral.

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[1] Paris Agreement – United Nations, 2015, available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[2] European Commission, 2030 Climate and Energy Policy Framework, 2021, available at: https://ec.europa.eu/clima/policies/strategies/2030_en

While it is hard to measure the still-emerging impact of the Covid-19 pandemic on the development of EU climate and energy law, the EGD could be very useful in promoting sustainable, climate-neutral economic growth through the Recovery Plan for Europe.[3]

Following the calls of the European Parliament[4] and a massive EU plan for eco-nomic reconstruction and recovery[5], the European Commission (EC) proposed a €750 billion economic stimulus plan alongside a revised proposal for the EU's 2021–2027 budget with the aim to stimulate the economy while combating climate change. The Next Generation EU plan[6] shows that the European institutions strive not only to deliberate the effects of the pandemic but also to outline a sustainable future, using 25% of the EU budget *"on climate investments and additional funding for Horizon Europe, reflecting the crucial role of research and innovation in driving the shift towards a clean, circular, competitive and climate neutral economy".*[7] In the November 2020 compromise[8] outlining a political agreement on the long-term EU budget,[9] at least 30% of expenditure is set aside to support climate objectives. So far, the EU has had a mixed performance on energy efficiency. The Covid-19 crisis will probably decrease energy consumption just in time for the 20% target to be accomplished. However, that formal achievement will not be a result of the EU carrying out common policies or measures, as reducing energy demand and con-sumption decreases greenhouse gas emissions and increases the renewable energy share.

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[3] European Commission, Recovery Plan for Europe, available at: https://ec.europa.eu/info/strategy/recovery-plan-europe_en

[4] European Parliament: Press release on Plenary Session: Parliament: EU27 need €2 trillion recovery package to tackle COVID-19 fallout (15 May 2020), available at: https://www.europarl.europa.eu/news/en/press-room/20200512IPR78912/parliament-eu27-need-EU2-trillion-recovery-package-to-tackle-covid-19-fallout

[5] European Parliament: Press release on Plenary Session: Covid-19: The EU plan for the economic recovery (18 May 2020), available at: https://www.europarl.europa.eu/news/en/headlines/priorities/eu-response-to-coronavirus/20200513STO79012/covid-19-the-eu-plan-for-the-economic-recovery

[6] European Commission: Press release: Europe's moment: Repair and prepare for the next generation (27 May 2020), available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_940

[7] European Commission: Communication: Europe's moment: Repair and Prepare for the Next Generation (27 May 2020), available at: https://ec.europa.eu/info/sites/info/files/communication-europe-moment-repair-prepare-next-generation.pdf

[8] European Parliament: News: Compromise on long-term EU budget: EP obtains €16 billion more for key programmes (10 November 2020), available at: https://www.europarl.europa.eu/news/en/press-room/20201106IPR91014/compromise-on-long-term-eu-budget-ep-obtains-EU16-billion-more-for-key-programmes

[9] European Parliament: News: The EU's long-term budget explained (17 December 2020), available at: https://www.europarl.europa.eu/news/en/headlines/priorities/eu-s-long-term-budget/20200131STO71519/the-eu-s-long-term-budget-explained

The analysis of the specified documents justifies the conclusion that there is a clear need to strengthen EU climate and energy legislation before 2030 by taking a set of steps such as:

- **establishment in the EU legislation of a medium-term climate neutrality target, which would provide basis for reforms at national level in the Member States;**
- **substantial boost of the 2030 emission reduction target and a more ambitious new one;**
- **a more determined energy target for RES, a governance system for an emis-sion forecast for climate neutrality, national climate laws, hard measures and constant monitoring of the process, and even an independent EU-level scien-tific body.**

The process of liberalisation of the electricity market in Bulgaria

Status and forecasts

Bulgaria's electricity sector is well developed; there is access to the grid and numerous cross-border connections with the neighboring countries. Environmentally friendly, efficient and secure energy is crucial to Bulgaria's growth and competitiveness. Over the next four years, the Bulgarian electricity market is expected to face significant challenges arising from the new legislative framework, the EU's increased green-transition ambitions, and the structure of electricity generation. The forthcoming challenges and ambitious goals set for rapid decarbonisation, combined with the expected installation of a considerable share of non-permanent production capacity, will require significant investment in flexible facilities and production, further development of existing networks, effective resource allocation, market integration, modernisation, innovation and new technologies, and a high degree of cooperation. All that, in turn, requires alterations in the current legislative framework, so that a suitable environment, conditions and opportunities for organisation and development of the market are created and the legal course of the forthcoming fundamental transition for Bulgaria is ensured.

Currently, Bulgaria is the only EU country which has both regulated and liberal energy markets (gas and electricity). Over the last 15 years, the country has been conducting a policy aimed at gradual liberalisation of the electricity market in response to the commitments made to the European institutions. The overall objective is to create conditions for free competition, to set wholesale and retail prices based on supply and demand, to stimulate competition, to increase liquidity and the options consumers can choose from, and to create new opportunities for electricity producers and suppliers accordingly as well as to improve security of supply.

The European legislative framework requires full liberalisation of the wholesale electricity market in the Member States. The Second Energy Package (particularly Directive 2003/54/EC)[10] provided for the total amount of electricity produced to be subject to demand and supply of free trade on the wholesale market. Article 21, p.1, c from the Directive 2003/54/EC foresaw the liberalisation to be implemented in Bulgaria by 2007. That never happened. The Third Energy Package[11] focused on building the common rules for creating a well-functioning single European energy market that guarantees competitive prices, high-quality service affordability, security of supply and sustainable development. With the introduction of the Clean Energy for All Europeans package, it has become clear that electricity markets have an obligation to operate entirely on market principles. The new European legislative framework (specifically Directive EU 2019/944/EC[12], Article 5) allows for public intervention only in the retail market – exceptionally and for a transitional period. In the wholesale markets, it is again provisionally envisaged in case there is a proven need for action due to market failures; specific capacity instruments are to be applied, which will be discussed later.

According to § 14. (1) of the Transitional and Final Provisions in the Energy Act of the Republic of Bulgaria[13], **full liberalisation of the wholesale electricity market has to be implemented in the country by 1 July 2021. This will lead to numerous changes in the structure and operation of the market**, some of which were explained in recently proposed (but rejected by the Bulgarian parliament) amendments to the Energy Act.[14]

The proposal included several end results of the liberalisation process, the most important of which are:

1. **change of competences** – the National Electricity Company EAD (NEC) would drop its function as a public supplier but maintain the role of producer and

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[10] Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32003L0054&from=bg

[11] European Commission, The Third Energy package, available at: https://ec.europa.eu/energy/topics/markets-and-consumers/market-legislation/third-energy-package_en#documents

[12] Directive 2019/944/EC of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast), available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944&from=BG

[13] DECREE № 123 of the President of the Republic of Bulgaria to promulgate in the State Gazette the Law on Amendments to the Energy Act, adopted by the 44th National Assembly on 17 June 2020, available at: https://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=149187

[14] Proposal for amendments to the Energy Act of 16 December 2020, available at: https://www.parliament.bg/bills/44/054-04-313.pdf

seller of electricity, the Energy and Water Regulatory Commission (EWRC) would drop its commitment to determine monthly the availability of electricity generation for the producers from whom NEC purchases as well as the individual quantities of electricity according to which NEC concludes its transactions;

2. **all producers would sell their energy at freely negotiated prices**;

3. **the final suppliers would actively participate in the market and thus in-crease its liquidity**;

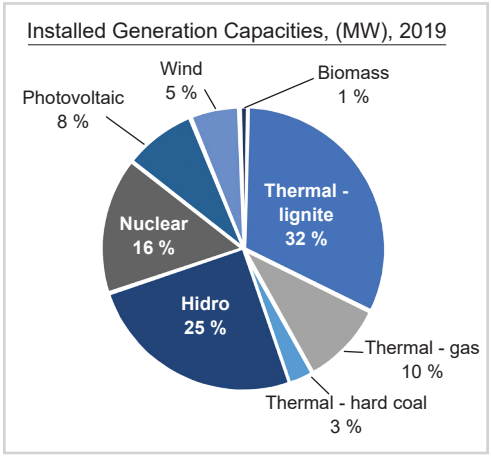
4. according to that forecast, **end household consumers would be buying electricity at regulated prices until 31 December 2024**.

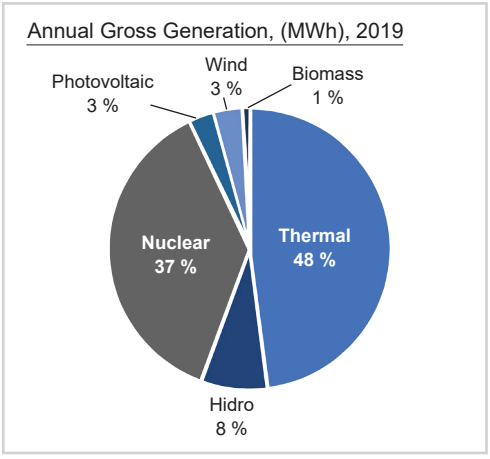
The bill amendment project did not pass. However, it started a discussion of the proposed amendments, which are revolutionary in nature and volume and are explained by the introduction of more market relations in the sector. Such a drastic transformation without prior public assessment, implementation plan and training of the market participants could be dangerous both for the market players and for the energy system of the country as a whole. To prevent the main challenges involved in implementing such radical changes to the regulatory framework, the structure of electricity production in the country must be additionally analysed.

On the current national energy system and mix

Without any doubt, the liberalisation process will, inter alia, influence the energy mix in the country. According to the Electricity System Operator (ESO), Bulgaria has 12,758 GW of installed capacity, enabling the country to meet and exceed domestic demand.

Over the period between 1 January 2021 and 4 April 2021, the electricity production was 12,678 GWh, 4.66% decrease year-to-year. Data shows that the installed generation capacities and the annual gross generation in 2019 were as follows:





Source: Eurostat, 2018

The presented figures, based on the production mix, show that nearly one half (44.8%) of the installed capacity in Bulgaria is thermal, two thirds of which is based on lignite coal. Thermal power plants (TPPs) were encouraged in Bulgaria in the early 2000s due to the closure of nuclear power plant (NPP) units as part of the agreement on the country's accession to the EU. According to employers and trade unions, lignite-fired power plants generate about 40% of the country's electricity and employ more than 43,000 workers. According to the latest draft of the ESO's 10-year plan for the development of the electricity transmission network in Bulgaria,[15] all existing coal-fired power plants are expected to operate at least until 2028 – *"The transit of electricity through our country would become even greater in the event of closure of generating capacity in the complex Maritsa East" and "The projected gross balances for maximum and extreme winter loads reflect the producer intentions to decommission the units, the capacities committed to the legally required reserves and the accident probability in the condensing plants."*

At the same time, according to EU forecasts, coal capacity is expected to decline significantly. In his March 2021 article,[16] Alastair Clewer, communications officer at Europe Beyond Coal, presents data on the trend of and forecasts for the closure of TPPs in Europe. In Bulgaria, TPPs are needed in terms of satisfying consumption, security of supply and sustainability of the national electricity system. However, the existing plants have completely different profiles when it comes to ownership, level of modernisation, financial state and production capacity. Each of them has a different way of dealing with the challenges of the EGD. Given the essential role of conventional generation in the country, while meeting the EGD require-ments, the electricity market may find itself in a situation where peak demand cannot be met. What is more, since the current revenues are often insufficient to cover costs and production costs have been increasing in recent years, lack of investment in modernisation and capacity building is a real danger.

Key liberalisation challenges in the Bulgarian context

The main challenges of the electricity market liberalisation in Bulgaria up to date are as follows:

- ***Risk for the security of supply to end users***

Currently, there are still two types of electricity prices – fixed prices on the regulated market (approved by the EWRC) and flexible prices on the free market. The latter type is facing serious problems, such as unpredictable legislation, low

[15] ESO, "Plan for development of the transmission electricity network of Bulgaria for the period 2019–2028", available at: http://www.eso.bg/fileObj.php?oid=2022

[16] Clewer, A., "Europe's coal phaseout: we're halfway there", Europe Beyond Coal, 2021, available at: https://beyond-coal.eu/2021/03/23/europes-coal-phaseout-were-halfway-there/

liquidity, insufficient electricity traded, price volatility and unsatisfactory integration with neighbouring markets.

The Independent Bulgarian Energy Exchange (IBEX) was launched in 2016; in fact, Bulgaria was among the last Member States to introduce an electricity exchange. On paper, all companies and households should be able to easily purchase electricity from the free market in Bulgaria. However, in reality that task is very difficult. Households will get the right to choose their electricity supplier in 2021, which, according to the line minister, will not cause a price increase. This reveals the social and political side of the electricity liberalisation process in Bulgaria. The possible price volatility and overall net increase would have a destructive effect on the population, which is the poorest in the EU. According to Eurostat, Bulgaria is the country with the highest EU share of population declaring they have difficulties maintaining an adequate temperature in their home – 30.1% in 2019 compared to an EU average of 6.9%.[17]

• ***Threat to the overall cash liquidity in the system and related social effects***

The fact is the NEC will no longer receive funds from the Energy Security Fund[18] – a special Bulgarian government fund created specifically to compensate for the lack of funds available to cover the NEC's costs. Contributions to the fund are made by all electricity producers as a percentage of their monthly income from electricity sold or through revenues from the sale of carbon emissions, in addition to the amounts collected via the *debt-to-society fee*. This could, in practice, lead to problems with payments to TPPs and by extension to problems with payments and mines. Thus, the social consequences will be inevitable and serious. The latter topic is particularly important for Bulgaria and should be analysed in detail separately.

• ***Lack of vision for the future of the energy mix in the country, more specifically coal mining and TPPs***

The liquidity problems described above, combined with the serious financial state of the government-owned TPP against the background of the EU transition to a low-carbon future, will lead to an avalanche of negative effects in the context of energy security and the social sphere in Bulgaria. The closure of TPPs will lead to the loss of approximately 4 GW of installed capacity and that will have a direct impact on security of supply nationwide, as these plants account for 48% of electricity production (according to ESO data for 2019).

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[17] Eurostat, "Inability to keep home adequately warm", EU-SILC survey, 2021, available at: https://ec.europa.eu/eurostat/databrowser/view/ILC_MDES01__custom_137816/bookmark/table?lang=en&bookmarkId=f4f90944-6627-4c6b-8035-f966532e2036

[18] Energy Security Fund of the Republic of Bulgaria, https://www.fses.bg

• **Market and business climate obstacles**

The change of the market model will not only alter the role and function of the main market participants and the actual energy mix production but also cause the introduction of new mechanisms; further, termination of existing contracts is being discussed, etc. However, such steps are neither easy to realize nor fully possible within the existing legislative framework, which needs both adjustment and careful consideration.

The main problem with such a radical shift as the full liberalisation of the electricity market in Bulgaria is the total lack of concrete and detailed analysis of the end effect of the proposed changes. Moreover, those changes will be *paid* by the end consumers (households and businesses) and the producers and traders, not the authorities and MPs. **Such a document needs to be prepared ASAP by the authorities and feature strategy, forecasts and evaluation of these changes, includ-ing regarding the trend for an increasing role of prosumers.**

Capacity mechanisms in Bulgaria – design elements and main challenges

In order to establish guarantees that in the long run the electricity supply will be managed, a decision was made to temporarily introduce in Bulgaria the so-called capacity mechanism,[19] a step that requires a notification from the European Commission. Its expected benefits are: providing support for existing capacity during the transition period as well as stimulating investment in new low-emission industries. The capacity mechanism is considered extremely important in the frame of the electricity market liberalisation in Bulgaria, which is why it will pay special attention to that process.

The CM offers the only possibility for a short-term period instrument to be implemented in Bulgaria; that measure constitutes state aid and should be notified to the European Commission in compliance with EU legislation and Commission Regulation 2009/403 (EC).[20] The latter requires that the introduction of the mechanism take place in parallel with an implementation plan, which should contain clear market reforms in continuation of the measures taken towards full

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[19] Ministry of Energy of the Republic of Bulgaria, Press release: Minister Petkova: The introduction of a capacity mechanism is a natural measure to guarantee the security of the electricity system (7 November 2019), available at: https://www.me.government.bg/bg/news/ministar-petkova-vavejdaneto-na-mehanizam-za-kapacitet-e-estestvena-myarka-za-garantirane-sigurnostta-na-elektroenergiinata-sistema-2791.html?p=eyJ0eXBlIjoiYXJjaGl2ZW5ld3MiLCJwYWdlIjo4fQ==

[20] Regulation (EU) 2019/943 of the European Parliament and of the Council on the internal market for electricity, (5 June 2019), available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0943&from=EN

liberalisation of the electricity market in the country. Bulgaria is in the process of notifying that mechanism before the EC. This is not a measure chosen only in Bulgaria but a relatively common practice among Member States. Annex 2 presents an overview of capacity mecha-nisms in the EU context.

So far, there has been no policy paper provided or official public consultation held by the Bulgarian authorities on exactly how to design and implement the CM. As stated in the latest version of Bulgaria's Integrated National Energy and Climate Plan 2021–2030,[21] the main strategic aim is ensuring security of power supply from local resources. None of the public discussions on the topic was initiated or organised by the competent state agency – the Ministry of Energy. Although the ministry's representatives often resented those events, in practice no specific information about the design of the Bulgarian CM has been shared.

There are expectations that, in addition to fulfilling Bulgaria's obligations arising from the European regulatory framework, the CM implementation will also lead to a number of positive results:

- This instrument will help preserve the coal-fired facilities, which, as previously mentioned, are crucial for the national energy system against the background of the evolving climate and environmental EU restrictions.
- It can also stimulate investment in those facilities for the purpose of greening the installed generation capacity (following the example of Contour Global Maritsa East 3 and AES Bulgaria).
- In general, it will create conditions for safe and stable functioning of the entire electricity system of the country, while in a state of predictability. The involve-ment of all producers in a transparent procedure on a competitive basis will in-crease free market liquidity.
- Finally, the security of supply will be guaranteed in the long term.

At the same time, there are a number of concerns, the main ones coming from business and academia representatives worried, just a few months before the implementation of the CM in the country, that this is a temporary measure according to prerequisite 4 of the Regulation (EU) 2019/943 (with quotation of the text of the regulation (*"This Regulation establishes rules to ensure the functioning of the inter-nal market for electricity and includes requirements related to the development of renewable forms of energy and environmental policy, in particular specific rules for certain types of renewable power-generating facilities, concerning balancing responsibility, dispatch and redispatching, as well as a threshold for CO2 emissions of new generation capacity where such capacity* ***is subject to temporary measures to ensure the necessary level of resource***

[21] Republic of Bulgaria, Ministry of Energy, Ministry of the Environment and Water, 2030 Integrated National Energy and Climate Plan of Bulgaria: https://ec.europa.eu/energy/sites/ener/files/documents/bg_final_necp_main_en.pdf

adequacy, namely, capacity mechanisms"), which only increases the existing concerns over the lack of a clear vision at the state level. What is more, there is still no detailed information about the CM design. Such is not included in the last draft of the energy strategy for the period 2021–2030.

That information should be presented ASAP in a simple form and accessible language and should be included in the strategy and the subsequent national energy policy documents and legislation. The next step is holding a widely inclusive public consultation and reaching consensus among the main stakeholders (business, academia, consumer organisations, social partners, local authorities, sector branch associations, NGOs, etc.) on the design of the instrument before its official launching. **It is the government that should be the proactive, leading side in that process and the current lack of actions is dangerous for the Bulgarian energy market as a whole.** There is still no information regarding: who will conduct the auctions, what availability will be traded, what types of contracts will be used – specifics and term – whether a secondary market of capacities is envisaged, etc. It is important to stress that for the smooth running of the implementation process and, above all, for achieving the strategic goals, it is crucial that all stakeholders receive information as soon as possible about what exactly is to come, when and how the CM will be implemented in Bulgaria.

Although the idea for the instrument has been in the public domain for a long time, as of the end of March 2021, **only three months before its expected introduction into practice, no details about it have been reflected in any political or legal document**. Beyond the theoretical assumptions and forecasts, there is a lack of practical aspects – information, methodology – which would have allowed market participants time to test different models and choose the right strategy for their participation in the market. There is still no information on whether the Covid-19 crisis would affect the CM implementation deadlines. This uncertainty amid economic difficulties for electricity market participants further exacerbates the challenges faced by the market players.

It should be explicitly noted that every day that the implementation of the CM in Bulgaria is further delayed is already a problem, because we are limited in the period by which it can last – 1 July 2025, according to article 22.4 (b) of the Regulation (EU) 2019/943 of the European Parliament on the internal market for electricity.[22] Moreover, in practice, the implementation of the regulation is not a brief process, as part of the notification procedure to the EC, and will also require amendments to a few strategic and legislative documents.

The CM should by no means be considered as an EU-approved method

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[22] Regulation (EU) 2019/943 of the European Parliament and of the Council on the internal market for electricity, 5 June 2019, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0943&from=EN

for saving one or another coal-fired power plant or for tolerating the production of a chosen plant but as a means of optimising the work of market participants and ensuring security of electricity supply based on competitiveness and equal opportunities for all participants.

Last but not least, **the role of business in the CM implementation process seems to be underestimated**. Once it receives information from the authorities regarding the specific design of the instrument, the Bulgarian business will be able to give feedback and participate in the implementation of the chosen procedure. Moreover, it will be most useful if it is involved in the decision-making process – something that, unfortunately, has not happened in recent decades with radical changes in the energy sector in Bulgaria.

It can be concluded that **in order to develop any effective future energy policy measures, the Bulgarian authorities and regulatory body must plan ASAP a successive CM implementation, with pre-set annual targets based on real facts, ensuring the possibility of continuous monitoring and control**. This is particularly important given the poor coherence between the government's strategic documents so far and the EU's long-term goals for the transition to a low-carbon economy. Impact assessments have not yet been made and there are few indications that those are planned in the future. The Bulgarian government should hold a public consultation on the CM implementation and present details about its design, specifics and launch timing as soon as possible. Should this be done, the balance of the country's energy system could be maintained and the CM instrument could in practice support the process of market liberalisation, not hamper it.

The implementation of the CM could turn into a useful tool against the challenges arising from the liberalisation of the electricity market in Bulgaria in the context of the challenges posed by the EGD. It could enable the coal plants to receive financial stabilisation during the transitional period until 2025. Meanwhile, it could give the government time to find possibilities for maintaining the financial stability of producers, stimulating innovations and attracting investments for the necessary new capacities.

Conclusion

The next four years will be crucial for seizing these opportunities and achieving an economic transition in Bulgaria, which could also help improve the wellbeing and quality of life of citizens. The role of government in tackling this challenge is critical, but the practical steps, particularly concerning decarbonisation and the introduction of the CM, show substantial conceptual and legal gaps. T**he analyses of the situation indicate that the Bulgarian policy measures in these aspects are too slow, chaotic and inconsistent to embrace and manage the transition to clean energy. The decision-makers are unable to**

give create momentum for establish-ing a clear path outlining the transition from coal to clean energy, to ensure a clear and comprehensible procedure for its implementation.

Thus, Bulgaria is in danger of getting caught between a rock and a hard place – on the one hand, the agreed obligations to the EU for full energy market liberalisation (whose term has long expired), and on the other hand, the systematic failure to implement specific measures in time and their conspicuous absence from strategic and legislative energy papers on national level. This serious danger was also indirectly confirmed by the European Commission, which, in its "Assessment of the final national energy and climate plan of Bulgaria,"[23] dated 14 October 2020, strongly criticised the transition plan outlined by the national government.

Bulgarian politicians should not underestimate any of the facts described above – the situation requires speedy, well-justified reactions.

Note: All sources were last verified on 5 May 2021

[23] European Commission, "Assessment of the final national energy and climate plan of Bulgaria", 14 October 2020, available at: https://ec.europa.eu/energy/sites/default/files/documents/staff_working_document_assessment_necp_bulgaria_en.pdf

ANNEX 1

Overview of the 2030 Climate and Energy Policy Framework

The EU climate policy framework is under constant development and revision. It is believed that current climate and economy challenges could be overcome through a new growth strategy designed to completely transform the economy, energy, transport and agriculture in a sustainable way, in which the net emissions of greenhouse gases will be reduced to zero by 2050, growth will occur as a result of increased efficiency and no one and nothing will be left behind in that process.

In October 2014, the European Council agreed that renewable energy should account for "at least 27%" of EU energy consumption in 2030[24], while the European Parliament (EP) demanded a 35% target.[25] Finally, the goal for "at least 32%" share for renewable energy was set in the 2030 Framework. Implementation of the renewable energy target is to be ensured through the system of planning, reporting and monitoring under the Governance Regulation. However, the EP yielded on the national targets by stating that the achievement of that goal for 32% RES is a "binding overall Union target".

The 2030 Climate and Energy Policy Framework is based on the EU's 2020 Cli-mate & Energy Package,[26] which aims to cut greenhouse gas emissions by 20%, increase the share of renewable energy in the EU's final energy consumption to 20% and improve energy efficiency by 20%. Along the same lines, the 2030 Framework contains an at least 32% target for renewable energy and a goal to improve energy efficiency by at least 32.5%. It complements the legal structure of its 2020 predecessor – improves the Energy Efficiency Directives and the Emis-sions Trading Systems (ETSs), evolves the Effort Sharing Decision to an Effort Sharing Regulation (ESR). It also adds two new mechanisms: LULUCF Regulation[27] and Climate Action and Governance Regulation,[28] which introduces

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[24] European Council, "Conclusions", EUCO 169/14 (24 October 2014) part 3, available at: https://data.consilium.europa.eu/doc/document/ST-169-2014-INIT/en/pdf

[25] European Parliament, Press release, 2017, available at: https://www.europarl.europa.eu/news/bg/press-room/20171128IPR89009/cleaner-energy-new-binding-targets-for-energy-efficiency-and-use-of-renewables

[26] European Commission, 2020 Climate & Energy Package, available at: https://ec.europa.eu/clima/policies/strategies/2020_en

[27] Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land-use change and forestry in the 2030 climate and energy framework [2018] OJ L156/1 (LULUCF Regulation), available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.156.01.0001.01.ENG

[28] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action [2018] OJ L328/1 (Governance Regulation), available at: https://eur-lex.europa.eu/eli/reg/2018/1999/oj

new, more integrated and detailed planning and reporting requirements and strengthens the monitoring role of the EC. The 2030 Framework sets out specific measures for achieving those goals during the post-2020 period. Its main aim is to implement the EU's emission reduction contribution under the Paris Agreement.[29] The Paris Agreement relies on nationally determined contributions (NDCs), or climate change mitigation plans, which the countries design and define nationally. It brings several legislative instruments to the electricity market of the Union, such as: revised Regulation and Directive on the Electricity Market, revised Regulation on the Agency for Cooperation of the Energy Regulators (ACER) and Regulation on Risk Preparedness. The forthcoming changes of the Regulation and Directive are tied to the EU's decarbonisation efforts and are relevant to the climate transition because of the capacity mechanisms and grid access to low-carbon electricity (especially from renewables). As cross-border flows are important as relates to both trade and balancing of the electricity, the 2030 Framework establishes a 15% target and thus upgrades the 10% one of the 2020 Package.

When comparing the targets under the Paris Agreement with the 2030 Framework, it should be noted that the latter misses some of the main ambitions of the agreement, such as: limiting the global average temperature increase to well below 2°C and pursuing efforts to limit it to 1.5°C.[30] In December 2019, the European Commission (EC) published the EGD Communication with the intention of putting the European economy onto a more sustainable path and achieving climate neutrality by 2050.[31] In March 2020, the EC proposed, as part of the EGD, a new Climate Law[32] in its bid to achieve the 2050 climate neutrality target. It was submitted to the EP, the Council, the Economic and Social Committee and the Committee of the Regions for further consideration.

Whereas the Paris Agreement focuses on general procedural responsibilities for the countries, the 2030 Framework combines binding obligations and defined targets with detailed procedures. The Paris Agreement calls for urgency, as stated in the Executive Summary "Why is it necessary and even vital to maintain the global temperature increase below 1.5°C versus higher levels"[33] of The

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[29] United Nations, Paris Agreement, 2015, available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[30] United Nations, Paris Agreement, 2015, part.2(1).

[31] European Commission, "The European Green Deal" (Communication), Annex, 2019, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1596443911913&uri=CELEX%3A52019DC0640#document2

[32] European Commission, European Climate Law Proposal, 2020, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0080&from=EN

[33] IPCC, "Why is it necessary and even vital to maintain the global temperature increase below 1.5°C versus higher levels", available at: https://www.ipcc.ch/sr15/

Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change. Meanwhile, the 2030 Framework fosters and improves EU climate and energy law but does not revolutionise it. It puts the EU on a high-way to a continuous transition to a new, low-carbon world; it does not set off a radical transformation.

On 28 November 2019, the EP declared a climate emergency[34] and called for all relevant EU legislation to be in line with the goal of keeping global warming to under 1.5°C. In October 2020, the EP adopted its negotiating mandate on the EU Climate Law, backing the goal for climate neutrality by 2050 and calling for a *"reduction of 60% in 2030, adding that national targets shall be increased in a cost-efficient and fair way."*[35] Before coming into force, the law must be approved by the EP and the Council of Ministers.

[34] European Parliament: News: The European Parliament declares climate emergency (29 November 2019), available at: https://www.europarl.europa.eu/news/en/headlines/priorities/climate-change/20191121IPR67110/the-european-parliament-declares-climate-emergency

[35] European Parliament: Press room: EU climate law: MEPs want to increase 2030 emissions reduction target to 60% (8 October 2020), available at: https://www.europarl.europa.eu/news/en/press-room/20201002IPR88431/eu-climate-law-meps-want-to-increase-2030-emissions-reduction-target-to-60

ANNEX 2

Overview of the capacity mechanisms in the EU context

Ever since the first liberalisation directive got introduced, the EU electricity market has constantly been undergoing changes, which have shocked the electricity systems of the Member States. To prevent upheavals and more serious imbalances and crises, in 2015 the EC presented the Energy Union Package, according to which the aim is "an integrated continent-wide energy system where energy flows freely across the border".

In 2016, the Clean Energy for All Europeans package was presented. To ensure the security of supply during the transition to a low-emission future, action was taken in Europe to develop the so-called capacity remuneration mechanism (CRM). It is permitted when "there is a real risk of insufficient electricity generation capacity".[36] Thus, new generation facilities could be encouraged or the closure of existing ones postponed. The purpose of this instrument is to support the existing capacities during the transition process and to invest in low-emission ones. It provides com-pensation for the availability of capacity and thus is believed to stimulate invest-ments and help maintain the energy security of the EU. Over the years, the EU legislation on and regulation of the CRM has varied.

Even though this is a relatively new instrument, by the end of 2018 quite a few Member States had already implemented a specific type of capacity remuneration mechanism or were working on it, according to an Agency for Cooperation of the Energy Regulators (ACER) publication.[37] It is important to note that, since CMs have been implemented only recently, there are no significant empirical studies over the results from them as of yet. This makes any analysis of or forecast about them mostly theoretical. Yet, having that discussion is very important in order to avoid failures, risks to the stability of the national energy system and additional costs for consumers.

It should be noted that there is neither a unified standard for the implementation of such mechanisms nor a platform for their trade, as they have been designed through a case-by-case approach in each individual country rather than based on a common EU framework. According to the classification proposed by ACER, there are three main subtypes of capacity mechanisms – strategic reserve, capacity payments and capacity markets, the latter being the most complex ones of them all.

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[36] European Commission, Guidelines on State aid for environmental protection and energy 2014–2020, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0628(01)&from=EN

[37] ACER, ACER Market Monitoring Report 2018 – Electricity Wholesale Markets Volume, 2019, available at: https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202018%20-%20Electricity%20Wholesale%20Markets%20Volume.pdf

Critics claim that the CRM is a de-facto subsidiary system for the conventional power plants, as storage units cannot provide full power output. Attention is also being drawn to the reliability of the necessary forecasts to be made. This is a challenging, ongoing process in which, in view of market integration, the national forecasts, their precise estimation and real imbalances of the Member States will be included. It is a challenging process also because future electricity consumption will depend on many external factors such as economic growth, technological progress and speed of implementation of energy efficiency measures. There is a particularly serious concern that, due to possible significant discrepancies between the forecasted and the actual electricity demand (and with the restrictions of the capacities), there is a significant risk of distortion of the market electricity price formation. For this reason, there are opinions within the EU that a decentralised CM will be more effective than the one determined centrally on the single European electricity market. The proponents of this thesis insist that the regulatory framework should be as small as possible. With the development of the CM – its implementation in a growing number of Member States and the accumulation of results from it – the debate on the form and structure of this instrument is expected to develop to a greater extent.

Lyubomira Gancheva *is a macroeconomist and an energy professional with a decade's worth of experience in the management of the oldest cosmetics manufacturer in Bulgaria, currently working in an investment banking boutique. She has a specific focus on: gas markets, nuclear knowledge, sustainable energy, energy diplomacy. Ms Gancheva holds a bachelor's degree in macroeconomy and a master's degree in energy markets and services. She is a PhD-candidate working on the topic of the challenges and possibilities facing Bulgaria in implementing the European Green Deal and its impact on the opportunities for innovation in the country. She has also done postgraduate training and specialisations at the Leadership Academy of the Women in Business in Bulgaria and the Bulgarian School of Politics. She has taken part in various energy-related programmes and courses at: IFP School and Total, Florence School of Regulation, Robert Schuman Centre for Advanced Studies and European University Institute, Sofia University "St Kliment Ohridski", etc. Lately, Ms Gancheva is a frequent guest lecturer at Bulgarian and international energy forums.*

LIBERALISATION 2.0 AND NEW PLAYERS – GLOBAL ENERGY AND CLIMATE CHALLENGES FACING REGULATORY AUTHORITIES

Assoc. Prof. Atanas Georgiev, PhD[1]

Introduction

Arriving at a global consensus regarding the world's low-carbon future looks imminent. Global leaders are taking decisive steps in compliance with the Paris Agreement: Europe is leading the way through its European Green Deal, the United States through the actions of its new administration, and even China is stepping up its carbon-related policies and measures. In this context, a key question, then, becomes what is the best way to ensure that global climate accords result in real projects, initiatives and actions by the respective stakeholders. For the regulated sectors of electricity and natural gas, this would be only possible via the pivotal role of the policies and instruments shaped by energy regulatory authorities. Consequently, the energy and climate transition institutional burden is largely for those agencies to shoulder. This circumstance raises a key question – are stakeholders prepared for the merging of *regulatory capitalism*[2] with *stakeholder capitalism*[3]?

From the perspective of regulation, the main associated challenges stem from the latest technological advancements in the energy sector, which are leading to the promotion of solutions for prosumers, distributed generation, renewables and electric vehicles. Based on these changes and trends, a clash between incumbents and new players seems highly likely. This presupposes new regulatory competences, which are already being considered.

1. The traditional role of regulatory authorities

In a traditional context, energy regulatory authorities (ERAs) deal mainly with enforcing technical standards for quality of service and setting prices and tariffs in monopoly segments of the market. Over the past two decades, however, EU-based regulators have been dealing more and more with additional support

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[1] Assoc. Prof. Atanas Georgiev, Faculty of Economics and Business Administration, Sofia University "St Kliment Ohridski". bit.ly/ageorgiev-su, ageorgiev@feb.uni-sofia.bg

[2] Levi-Faur, D., "The Global Diffusion of Regulatory Capitalism", *The Annals of the American Academy of Political and Social Science*, 598(1), 2005, pp. 12-32. doi:10.1177/0002716204272371

[3] Schwab, K. & Vanham, P., *Stakeholder Capitalism – A Global Economy That Works for Progress, People and Planet*, 2021.

schemes and rebalancing of stakeholder interests. The EU's march towards decarbonisation demands a reconsideration of their role. Currently, in practical terms, the key functions of regulatory authorities are still mostly related to redistribution of income and wealth, correction of externalities, and guaranteed provision of common goods and public services.

Regulators in many countries have opted for competitive electricity markets as an alternative to traditional monopolies and have introduced competition into generation and retail market activities. This is a process which has been ongoing for the past three decades and one may call it Liberalisation 1.0. During this process, electricity transmission and distribution, where strong economies of scale still prevail, have, for the most part, remained regulated monopolies in the value chain.

Electricity markets, particularly for wholesale but also for retail trading, have been instituted in a significant number of countries around the world since the early 1990s. This process has *unbundled* the vertically integrated monopolies in the electricity and gas businesses and has opened space for competition, innovation and more efficient provision of services.

There have been many cases of competitive markets failing to ensure efficient output. Such failures may occur when: a) not all players have full information about the market; b) there are high transaction costs which deter the entry of new players; and/or c) the commodities traded generate externalities, namely costs and benefits not acknowledged by the market.

When such failures take place, markets must be regulated through suitable intervention and policy instruments. It should be recalled that liberalisation of the market does not equal deregulation. It just means regulating different segments of the market with new and improved regulatory tools.

2. New sets of regulatory tools

One of the leading examples of transformation efforts related to the role of regulatory authorities concerns the EU's Agency for Cooperation of the Energy Regulators (ACER), which has gotten a substantial update of its priorities. These include, inter alia:

- the completion of a well-functioning internal electricity market, which is "key for clean, reliable and affordable energy";
- ensuring that "the electricity market rules and design (originally not intended for large amounts of renewables) are 'fit for purpose' to integrate the massive expansion in renewables";
- improving market access to renewables;
- fostering "all sources of flexibility", including flexible storage and aggregators;

• structuring network tariffs “to better suit the energy transition”;

• building “cost-efficient infrastructure […] based on robust regulatory scrutiny (and not building at any cost)”; etc[4].

The new role of regulators is a direct result of technological advancements related to the evolution of distribution grids. Traditional passive distribution networks were developed using a fit-and-forget approach. However, the new realities of the market require active system management on the part of distribution system operators (DSOs), which would allow them to become real system operators through active network management strategies[5].

3. Innovations and disruptions

There are many newcomers to the electricity market – mainly electric-vehicle-related businesses and energy service companies. They are actively reshaping the landscape of the energy sector in a process which may be called Liberalisation 2.0. Retail customers are increasingly entitled to not only switch their supplier but also replace grid supplies with their own generation or with an energy service provided by a third party.

Many innovative start-up companies (and well-transformed traditional utilities) offer subscription and as-a-service energy supply and solutions. For example, they may buy and install energy-efficient devices – LED lamps, electric vehicle (EV) charging stations, etc. – at their clients’ locations and then maintain and operate those during a negotiated period of time. In exchange for this service, customers pay a fixed monthly fee, similar to renting or leasing the equipment, etc.

Energy services already cross national (and continental) borders even easier than energy itself. In May 2020, the US-based EV producer Tesla promoted its Autobidder solution in combination with its new battery farm in Australia. According to the official information released by Tesla[6], “Autobidder is a real-time trading and control platform […], enabling owners and operators to […] maximize revenue according to their business objectives and risk preferences”. Tesla also points out that in wholesale markets Autobidder may ensure participation in day-ahead, real-time, and continuous markets. In mid-2020, Tesla became a member of the Paris-based EPEX Spot power exchange and started probing its customers in Western Europe whether they would like to charge their EVs with

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[4] ACER, Green Deal, 2021. https://www.acer.europa.eu/en/The_agency/Pages/Green-Deal.aspx

[5] MIT, “Utility of the Future – An MIT Energy Initiative response to an industry in transition”, 2016. https://energy.mit.edu/wp-content/uploads/2016/12/Utility-of-the-Future-Full-Report.pdf

[6] Tesla, Autobidder, 2021. https://www.tesla.com/support/energy/tesla-software/autobidder

electricity provided by the automaker[7]. This move would add to the portfolio of popular energy services provided by the US company – selling solar panels and Powerwall batteries for homes.

In February 2021, another project with an interesting market model was announced in Germany[8]. It allows consumers to buy local renewable energy and incorporate their loads into the trading system through a government-backed blockchain solution. It joins several existing blockchain projects already underway in the country: RegHee, which is ran by utility providers in Bavaria; the Pebbles local energy trading project of Siemens and the utility AUEW; and FlexHub, a data registry developed by the Fraunhofer Institute.

Both examples clearly indicate that energy trading and energy services are going to be quickly digitalised and turned into a high-tech service model, which could be replicated on a global scale by a new set of energy players. Considering that margins have mostly been in the retail market and that generation is already pressured both ways – by environmental regulations and by customer expectations – this would lead to a quick and unwilling passing of the ball from traditional players to high-tech newcomers. Once these US- and German-based companies start this transition, other national high-tech champions (from Asia or elsewhere) may follow. For example, about half of the global demand for electric vehicles in 2020 was in China. While Tesla produced half a million EVs for the whole year of 2020, Chinese automakers made a combined 317,000 EVs for January and February 2021 alone, marking a 720% annual growth[9].

4. Setting a new regulatory bargain

The challenge facing today's regulators is a bit similar to the challenges encountered in the first years of electrification, in the last two decades of the 19th century. Back then, newly built, overlapping electricity grids competed for the same customers in big cities like New York in the absence of any regulation. At the time, providing electricity supply through wires was a new type of service, which required a new set of societal rules to govern the relationships between companies and their customers. Eventually, the so-called *regulatory bargain* was negotiated between utility companies and states in the US so as to create a universal service and price controls protecting the clients while simultaneously providing proper environment for doing business and a guaranteed minimum return on investment for private utilities.

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[7] Eckert, V. et al., "Tesla tests the circuits for German energy market push", *Reuters*, 2020. https://www.reuters.com/article/tesla-energy-germany-focus-int-idUSKBN25T1SB

[8] Argus Media, "Germany launches blockchain energy trading project", 2021. https://www.argusmedia.com/en/news/2182684-germany-launches-blockchain-energy-trading-project

[9] Argus, "China's February EV production, sales at record high", 2021. https://www.argusmedia.com/en/news/2194906-chinas-february-ev-production-sales-at-record-high

New regulations are always made right after new technologies develop new markets. Currently, the world and national governments find themselves in a similar situation with the rapid pace of technological breakthroughs in the fields of electric vehicles, renewables and smart grids. Whereas in the 20th century consumers were passive receivers of energy from the network, now, in the 21st century, they have started turning themselves into prosumers, who may even become fully independent from the grid. Therefore, in order to regulate the new type of relationships between companies and their customers, the energy regulatory authorities will need to build new tools and mechanisms to help with distribution of wealth and with balancing the interests of the respective stakeholders.

The traditional model of electricity grid regulation combines cost recovery for two main services – transmission via the transmission and distribution grids and an energy component. In addition, there may be levies or fees supporting renewable energy production, an approach quite common for the European Union.

In the traditional model of utility service provision, the fixed costs of building and maintaining the electricity grid are redistributed to all the customers; this is based either on their consumption from the grid or on their energy consumption for a given period. Such an approach worked well when customers used to consume only electricity produced by the utility provider or other centralised power stations on the grid. However, in the current situation, with a rising number of prosumers who are generating electricity on site on their roof, this model of charging for the grid service cannot reflect the new relationships between the company and its customers and between the customers themselves.

If consumers use their own generating device and consume less from the grid, they will pay less for the fixed service, which includes access to the grid and transmission services. This dynamic is a potential driver behind a paradox that has been described by many authors, including Amory Lovins from the Rocky Mountain Institute – the so-called *utility death spiral*[10]. In that scenario, customers who are not prosumers pay less for their grid connection based on their consumption from the grid. It creates a clear incentive for all customers who are yet to become prosumers to do so. This, in turn, increases the incentive for other grid-connected users to follow suit as residual network costs are borne by fewer remaining customers.

A new regulatory model for fixed pricing of the grid services may be needed so that there are no wrong incentives. Most prosumers are unlikely to disconnect from the grid, as they would prefer to always use it as a backup. This new backup service should be priced in a way that reflects all associated costs. It would seem that the traditional model of cost coverage can no longer work.

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[10] RMI, “The Economics of Grid Defection”, 2014. https://www.homerenergy.com/pdf/RMI_Grid_Defection_Report.pdf

5. From a global commodity to a local service – different types of independence

The new energy market model would also mean that energy supply may turn from a global commodity to a local service. Energy markets have evolved based on a) existing demand for different types of energy resources in a particular region or country and b) regional or global supply determined by trade relations, physical and market infrastructure. Getting back to basics, it should be recalled that consumers do not find any additional market value in an energy resource except for the energy services it provides. Thus, e.g., natural gas or coal is of no use to a household or a company if they cannot transform these resources into heat, light or mechanical power. In a world where energy services are provided through the wholesale market (with large power plants, substations, and electricity and gas grids, etc.), global energy commodity markets have great significance. In a hypothetical world where energy services could be provided locally (on the roof, in the industrial park, etc.), global balances of energy trades would change as well.

Further in this context, it should be noted that what happens *behind the meters* of consumers is equally important to and non-transparent for traditional energy suppliers. The utility company is usually not able to predict or see the consumption of electricity *behind the meter* (produced by a solar panel or supplied by a battery in a different time frame), which means that this information is not readily available to regulators and policymakers either. If one looks even deeper, this information is not readily available for the purpose of energy statistics, as such data is usually collected and reported by centralised utility providers. The only thing that utility providers can see is the actual consumption, the time of consumption and the peak consumption of each customer. Certainly, if a traditional utility provider transforms itself into an energy service company, it will be able to not only monitor but also actively participate in the provision of electricity behind the meter. Some companies have already done so, becoming integrated utility providers, but most players in the energy business are still in the process of taking their first steps towards such a transformation.

The paradigm of true energy independence, shaped by new energy sources such as solar and wind, is poised to be related not so much to the bulk production of electricity at centralised locations but to the possibility for each single consumer to provide for their own energy services with their own or leased equipment.

Thus, even concepts of energy independence are set to change. From a national perspective, this term will come to mean the ability to guarantee energy independence in the wholesale market; and from a single-user perspective, the new energy independence status may be defined as the sum of every consumer's energy dependence position.

This could result in changing balances in many ways. In some countries, it may mean replacing imported natural gas for grid-size electricity production

with locally produced solar panels on everyone's roof. In other countries, it may lead to replacing locally produced energy for the wholesale market with imported technological solutions for households and businesses. The latter would mean that this particular country may go from energy independence to technological dependence. Energy security should not be considered in isolation – it should be regarded in the larger context of the energy trilemma and sustainability to avoid formulating short-sighted policies with positive effects on energy security in the short run but with longer-term problems[11].

Cybersecurity threats should also be considered in this context. This is especially relevant when such technological solutions are constantly online and could be managed remotely by a benevolent energy service company or by any type of malevolent actors with an authorised or unauthorised access to this new digital infrastructure. Unfortunately, this is not a film script – examples of such security threats have already been manifested. Even if cybersecurity of distributed energy resources is starting to improve, more standards must be established to ensure that installations not owned by utilities remain secure in non-controllable environments[12].

6. The social aspect

With the number of prosumers rising, an added dimension of electricity regulation is the problem of redistributing the cost of building and upgrading the grid for its new applications. Many potential conflict points may arise in this respect. Thus, e.g., a potential new issue may occur if many customers in a neighbourhood want to charge their electric vehicles at home with fast chargers. In case the high peak consumption requires the grid, which was not originally designed for such big loads, to be upgraded, it should be clear who would be paying for this upgrade[13]. One possible solution is to use a model by which the necessary investment would be made as part of the utility's investment programme with a follow-up redistribution of the costs among all connected consumers. Another solution could be to charge the customers who want to have these peak loads available with higher bills for the grid services. The choice here is between the interests of those who would be using fast chargers for their electric vehicles and the interests of the other consumers who may not even own an EV.

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[11] Ang, B.W.; W.L. Choong; T.S. Ng, "Energy security: Definitions, dimensions and indexes", *Renewable and Sustainable Energy Reviews*, Vol. 42, 2015, pp. 1077-1093, ISSN 1364-0321, doi: 10.1016/j.rser.2014.10.064.

[12] Sebastian, D. J., & A. Hahn, "Exploring Emerging Cybersecurity Risks from Network-Connected DER Devices." at 2017 North American Power Symposium (NAPS), 1–6. doi: 10.1109/NAPS.2017.8107267

[13] ACER, "Report on Distribution Tariff Methodologies in Europe", 2021. https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Report%20on%20D-Tariff%20Methodologies.pdf

This is only one practical example of an area where the energy regulatory authorities should assume their new role as a balancing factor for the interests of different groups of consumers. Certainly, the regulators' decisions should be based on a new deal struck between all stakeholders in society – deciding whether it should incentivise specific patterns of consumption or not.

The same example is valid for customers who have become prosumers and now produce, at certain moments in time, more electricity than they consume. Again, if there are many consumers who have chosen to do so and this requires that the grid in a town or a neighbourhood should be upgraded, the practical question of who should pay for the grid upgrade arises. Should the cost be distributed among all consumers of the utility provider or should the prosumers pay for a greater part, as they would be generating revenue for themselves? Should low-carbon production on-site be incentivised or should the balance of cost redistribution be kept between all customers of the grid, including the ones who may never want to become prosumers?

There may be different answers to these questions depending on the particular countries and regions that are subject to analysis. It matters greatly whether the low-carbon and electric vehicle costs are redistributed among all the customers in a country with a high standard of living or in a country where energy poverty is substantial.

Again, the EU may serve as an example here. Although the electricity market has actively been liberalised in the past two decades, with fewer and fewer barriers to trade, there are still huge differences between end-user prices in the 27 Member States. The margins are several-fold, e.g., in the case of the most expensive retail markets (like Germany or Denmark) when compared with the market of Bulgaria, which has one of the lowest end-user prices of electricity. Similar differences occur in other regions and countries as well.

This further highlights the role of regulatory authorities in finding the right balance of incentives, including those of low-carbon nature; in addition, however, the regulatory model should also consider the economic situation of all households in a given country.

This challenging social balance will be a cornerstone of the European Green Deal both in its intra-European policy role and its projection, or export, to neighbouring or farther countries. The social model of the energy transition and decarbonisation will be the most important selling point of these priorities when they are communicated to and negotiated with all relevant stakeholders – both nationwide and internationally. New social tools and a new balance of stakeholder interests will be created once again with the leading role of national energy regulatory authorities.

7. The new boundaries of regulation

One challenge, particularly with the current model of electricity sector regulation, is drawing the boundary between regulated and non-regulated services. The traditional boundary of regulation is at the meter. Thus, every economic activity *before the meter* is part of an integrated electricity grid, and all network costs are regulated, as are the market entry and exit conditions for generators above a certain threshold of generating capacity. Usually, anything that happens *behind the meter* is nonregulated because it happens within the internal grids of the connected customers and is not part of the natural monopoly service. Also, island systems and new off-grid systems in developing countries may be subject of such discussion[14].

At the same time, one can witness the development of behind-the-meter energy services – this includes, inter alia, leasing and renting schemes for renewable energy, charging stations and batteries on the premises of households and business locations.

While there may be regulatory control over the general conditions for the provision of grid electricity or gas supply, there are no special requirements for the contracts concluded between energy service providers and their customers. In many cases, these contracts are for renting or leasing, but the actual service provided is the supply of kilowatt-hours of electricity for a given household or business. Thus, a few key questions occur:

- Should the pricing of these services and the quality of service be regulated?
- Should there be market entry control?
- If these services are nonregulated, how would customer protection be managed? After all, energy supply is still an essential service, even if this service happens behind the meter and behind the boundary of traditional regulation.

Further, getting back to the abovementioned examples, if an automaker provides electricity for the buyers of its electric vehicles, is this a *mobility* service or an electricity trade deal? If an energy service company signs a leasing contract for installing a device on someone's roof and this contract has a fixed price for the electricity produced, is this an *energy service* contract or an electricity trade deal?

There are no easy and no clear answers to these questions, similar to the first years of electrification at the end of the 19th century.

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[14] Bhattacharyya, S.C., "To regulate or not to regulate off-grid electricity access in developing countries", Energy Policy, Vol. 63, 2013, pp. 494-503, ISSN 0301-4215, doi: 10.1016/j.enpol.2013.08.028.

Conclusion

The decentralisation of the electricity grid and the spurring of new energy supply business models already requires a new set of policy and regulatory knowledge, skills and instruments – so that the incentives in the market will be right and that the interests of all stakeholders are well balanced.

As demonstrated above, regulatory paradigms are shifting together with other aspects of the energy business. The move from wholesale energy independence to a single-consumer energy independence is a key process. The boundaries of traditional regulation are rapidly changing along with the social aspects of the provision of energy. Last but not least, transformations in the energy sector are not only happening on a national scale but will have global energy implications as well. In this process, one may witness old energy incumbents losing their position, new national champions of energy services taking the lead, and a global reshuffling of technological leaders. All these dynamics will cause a new balance of power in the energy sector. Liberalisation 2.0 is here and has already started to define the global move towards decarbonisation.

Assoc. Prof. Atanas Georgiev *is Dean of the Faculty of Economics and Business Administration at Sofia University "St Kliment Ohridski" and an associate professor there. He is a director of and a lecturer in the MA programme Energy Markets and Services. He is also chief editor and publisher of the Utilities monthly business magazine and the website publics.bg, responsible for the editorial content of the electricity and natural gas sections. Assoc. Prof. Georgiev has taken part in various energy-related programmes and workshops in the United States, the Russian Federation, Azerbaijan, Italy, etc. He is a member of the Management Board of the National Committee of Bulgaria for the World Energy Council (NCBWEC), member of the MB at the Electric Vehicles Industrial Cluster, as well as member of the International Association for Energy Economics. Assoc. Prof. Georgiev is also a guest lecturer in the Energy Diplomacy seminars organised by the Bulgarian Diplomatic Institute.*

ON THE ENERGY POVERTY ISSUE IN THE CONTEXT OF THE EUROPEAN GREEN DEAL

Kalina Koleva

I. Introduction

The concept of energy poverty has been analysed worldwide, coming under increasingly intense scrutiny in recent years. In addition to receiving the treatment of more theoretical discussions (e.g., within the framework of the World Economic Forum[1], the International Energy Agency[2], etc.), the topic has been under active and concrete consideration within the European Union (EU) at different levels.

The current paper will focus explicitly on the basics of the EU position on and approach to the energy poverty issue, with particular attention paid to those of its dimensions related to the European Green Deal.

The goal of achieving a climate-neutral Union by 2050 is central to the European Green Deal proposed by the European Commission (EC) in December 2019[3]. Mitigating the issue of energy poverty would be a function of reaching the European Green Deal milestones. In this context, the undeniable sensitivity of the topic has a very simple explanation. The European Green Deal is certainly about more than energy – it is about a complete transformation of the economies of EU Member States and thus of the economy of the Union as a whole. However, these reforms will be neither quick nor easy, and they will definitely be accompanied by visible social effects, including such on the welfare of European citizens. Furthermore, the impact will be felt not only by Member States but also by countries that target strengthening of their cooperation with the EU and even EU membership as they will have to permanently commit to following EU rules.

In general, the inevitable and already actively ongoing reforms stemming from the European Green Deal objectives present a new set of challenges with enormous social dimension, and the topic of energy poverty is one of them.

II. On the EU framework and the topic

Energy poverty is a key concept, which was somewhat consolidated in the Clean Energy for All Europeans[4] legislative package but continues to be actively

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[1] See e.g. https://www.weforum.org/agenda/2021/04/affordable-clean-energy-solutions-can-tackle-energy-poverty/

[2] See e.g. https://www.iea.org/reports/energy-access-outlook-2017

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN

[4] https://ec.europa.eu/energy/sites/ener/files/documents/com_860_final.pdf; see explicitly p.11, etc.

developed further. The development of the concept draws attention to the topic, which is rapidly growing in prominence across Europe; thus, the issue itself is being increasingly integrated within the activities of the EU. It also underlines the importance of policies aimed at tackling the problem, especially those associated with national energy and climate plans (NECPs), an element introduced by the Regulation on the Governance of the Energy Union[5], which also deals explicitly with the aspects of energy poverty (see, e.g., recitals 5, 26, Article 3.3.d, etc.).

In fact, one of the key characteristics of the topic is that it has been treated as one of the steps towards facilitating the so-called just *energy transition* – thus, it is easy to understand the tremendous amount of attention devoted to various details, which continue to appear in and be the centrepiece of debates, including regarding the long-term renovation strategies[6] and specifically the Renovation Wave[7], the latter being a centrepiece of the European Green Deal.

It has been underlined that the Renovation Wave and the recommendations given by the EC[8] should be jointly adopted in order to strengthen simultaneously calls to tackle energy poverty and those urging action on the worst-performing buildings. Further in this context, the Just Transition Mechanism (JTM) was set up with the aim of providing targeted economic and social support for the regions most affected by the reforms under the European Green Deal. The mechanism envisages a set of measures and relevant financing so as to back both economic development and social support, which, inter alia, are undoubtedly steps towards limiting energy poverty.

The crisis sparked by the Covid-19 pandemic further highlighted the urgency to address energy poverty due to a number of factors. Objectively speaking, this circumstance coincided with recent movement on the topic via an EC-level assessment of the actions taken by Member States so far, which have evidently been deemed insufficient. Furthermore, differences persist regarding national definitions and approaches. In fact, focusing on the relevant EU platform[9], the current state of affairs shows there is neither a standard definition of energy poverty nor a specific legislative programme to address the issue. Therefore, it is mostly left to Member States to develop their own criteria according to their particular national context. In fact, only a few countries have some form of definition.

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[5] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN

[6] As e.g. pursuant to Article 2a of the Energy Performance of Buildings Directive 2010/31/EU of the European Parliament and of the Council (OJ L 153, 18.6.2010, p. 13), amended by Directive (EU) 2018/844 (OJ L 156, 19.6.2018, p. 75).

[7] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A0662%3AFIN

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020H1563

[9] Accordingly with Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020H1563

On the definition of energy poverty at EU and national level

The question of what energy poverty means exactly is yet to have a clear official answer. A formal definition at EU level does not exist either – at least not one on the basis of which policies can be conducted or the level of energy poverty in all Member States can be measured, as much as that is possible with the official definition of total poverty. According to the current definition referred to in EU documents, *energy poverty* constitutes a situation in which household members cannot afford to heat their home to an acceptable standard, determined by the recommended levels of the World Health Organization. In fact, the clear reference at EU level is related to a definition that has been used in the UK since 1991[10] and denotes a situation in which "a household is said to be fuel poor if it needs to spend more than 10% of its income on fuel to maintain an adequate level of warmth".

As for EU legislation, the 2019 **Clean Energy for All Europeans** package seems to be the initial framework, a set of policies addressing energy poverty[11], which is designed to facilitate a fair energy transition. Through their interaction, the relevant parts of the legislation are designed to provide structural remedies to the problem and ensure that energy poverty is addressed exhaustively and comprehensively in the new governance framework[12] and in the mix of energy policy measures implemented under the NECPs.

Aside from the framework documents at EU level, some of which were mentioned above, there is a set of examples in this direction deriving from specific legislative acts.

The **recast Electricity Directive 2019/944/EU**[13] requires Member States to take appropriate measures[14] to address energy poverty wherever it is identified, including in the broader context of poverty. This includes protection

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[10] https://ec.europa.eu/energy/content/share-households-expenditure-electricity-gas-and-other-housing-fuels_bg

[11] European Commission, Clean Energy for All Europeans, Luxembourg, Publications Office of the European Union, March 2019, https://op.europa.eu/s/oy8C.

[12] Regulation 2018/1999/EU on the Governance of the Energy Union and Climate Action.

[13] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

[14] Such as formulating national energy action plans, providing benefits in social security systems to ensure the necessary electricity supply to vulnerable customers, or providing for support for energy efficiency improvements (see Article 28). Important requirements are also laid down in Article 27 of the Electricity Directive, which requires Member States to ensure that all household customers, and, where Member States deem it appropriate, small enterprises, enjoy universal service, i.e. the right to be supplied with electricity of a specified quality within their territory at reasonable, easily and clearly comparable, transparent and non-discriminatory prices. To ensure the provision of universal service, Member States may appoint a supplier of last resort.

for vulnerable customers, specifically those in remote areas. A significant new element in the legislative framework is that it requires the number of households experiencing energy poverty to be quantified. Thus, Article 29 of the directive refers to Member States' obligation to assess the number of households in energy poverty and provides that MS must establish and publish the criteria underpinning this assessment. The text also suggests possible criteria: low income, high expenditure of disposable income on energy, and poor energy efficiency of dwellings. Where the number of households in energy poverty is significant, Member States must include in their NECPs an indicative objective of reducing energy poverty, provide a time frame, and outline relevant policies[15].

They are then under an obligation to report on any progress made towards the objective of reducing the number of households in energy poverty[16]. This most pressing requirement outlines the need to start energy poverty assessments by indicating the number of households in energy poverty as well as their main characteristics (composition, income levels, etc.) and their potential geographic concentration. In concrete areas of energy policy, Member States were given recommendations to further elaborate on the role of buildings of public bodies and explore more extensively the ways in which energy efficiency policies could address energy poverty in the final plans. Furthermore, it was communicated to Member States that national strategies to tackle energy poverty could benefit from a more structured approach ensuring better safeguards for consumer empowerment, protection and awareness.

The **Energy Efficiency Directive 2018/2002/EU** requires Member States to take into account the need to reduce energy poverty in the context of their energy efficiency obligations. Article 7(11) states that Member States shall require, to the extent appropriate, a share of energy efficiency measures, under their national energy efficiency obligation schemes or alternative policy measures, to be implemented as a priority among vulnerable households, including those affected by energy poverty[17]. There are also reporting obligations in this regard in the Governance Regulation[18]. Finally, under the **revised version of the Energy Performance of Buildings Directive 2018/844/EC**, Member States have to outline relevant national measures that help alleviate energy poverty as part of their long-term renovation strategies to support the renovation of the

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[15] Article 3(3)(d) of the Governance Regulation, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.328.01.0001.01.ENG

[16] Article 24 of the Governance Regulation.

[17] This builds on existing obligations under Directive 2012/27/EU. See also the Annex to the Commission Recommendation on the transposition of the energy savings obligation under the amended Energy Efficiency Directive, C(2019) 6621 final.

[18] Regulation 2018/1999/EU on the Governance of the Energy Union and Climate Action

national stock of residential and non-residential buildings[19]. Similarly, in mid-October 2020, the EC issued Recommendations on Energy Poverty to Member States[20] that were published jointly with the Renovation Wave initiative[21] for the buildings sector sector under the European Green Deal. The document gave further impetus to the long-standing discussion on energy poverty in Europe and can be linked to renewed references to the need for a *just transition* in EU policy. Besides, the Covid-19 pandemic sharply increases the levels of energy poverty, so the Renovation Wave initiative comes at a pivotal time. This, together with new guidelines on energy poverty[22] for Member States, shows that the EC is taking the challenges of energy poverty and inclusive green transition seriously.

Nonetheless, as it is more than evident from EU-level formulations, the role of the national approach along this EU frame remains a key factor in identifying and managing energy poverty.

And some national examples of approaching energy poverty

To date, energy poverty has been conceptualised and measured in a variety of divergent ways across EU countries, with the availability of data often driving definition and measurement.

Before we introduce the range of definitions that exists, it is important to comment on terminology – namely that at the European level the terms energy poverty and fuel poverty are used interchangeably in policy and academic literature. These terms can be treated as distinct, with energy poverty in some cases referring more so to the lack of access to modern energy services in developing countries, while fuel poverty referring to a problem of affordability in the world's most developed countries.

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[19] This builds on existing obligations under Article 4 of the Energy Efficiency Directive 2012/27/EU that have been moved to the Energy Performance of Buildings Directive and strengthened as regards the need to address energy poverty. Recital 11 of Directive 2018/844/EU clarifies that the need to alleviate energy poverty should be taken into account, in accordance with criteria defined by the Member States. The Recital further clarifies that while outlining national actions that contribute to the alleviation of energy poverty in their renovation strategies, the Member States have the right to establish what they consider to be relevant actions.

[20] European Commission, Recommendation (EU) 2020/1563 on Energy Poverty (C/2020/9600), 14 October 2020, https://eur-lex.europa.eu/eli/reco/2020/1563/oj.

[21] European Commission, A Renovation Wave for Europe – Greening Our Buildings, Creating Jobs, Improving Lives (COM/2020/662), 14 October 2020, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0662.

[22] https://ec.europa.eu/transparency/regdoc/rep/10102/2020/EN/SWD-2020-960-F1-EN-MAIN-PART-1.PDF

As already mentioned, at EU level there is neither an official definition of energy poverty nor a specific legislative programme to address the issue. The limited formal policy interest in energy poverty is also reflected at the level of Member States[23], since currently only a few countries have some form of definition. Examples are noted below:

England (2013–): "A household is considered to be fuel poor where: • they have required fuel costs that are above average (the national median level) • were they to spend that amount, they would be left with a residual income below the official poverty line (60% median income)" (Department of Energy and Climate Change, 2013: 3)	UK-wide (2001–2013) and Northern Ireland, Scotland, Wales (2013–): "A household is said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain an adequate level of warmth." (Department of Energy and Climate Change, 2010: 1)
Slovakia (2015–): "Energy poverty under the law No. 250 /2012 Coll. of Laws is a status when average monthly expenditures of a household on consumption of electricity, gas, heating and hot water production represent a substantial share of average monthly income of the household." (Strakova, 2014: 3)	France (2009–): Officially a person is considered fuel poor "if he/she encounters particular difficulties in his/her accommodation in terms of energy supply related to the satisfaction of elementary needs, this being due to the inadequacy of financial resources or housing conditions" (Translation of De Quero and Lapostolet, 2009: 16). In practice, this is complemented by an unofficial definition of spending more than 10% of income on energy costs (Dubois, 2012a).

[23] Even though the UK is now out of the EU, the reference to it has been left in the context of its first attempt to formulate a definition at national level while still a member of the EU.

There are various explanations for the limited number of formal energy poverty definitions. Thus, e.g., it may be due to the multidimensionality of the phenomenon, which means that the latter requires joint multinational policy solutions. Working off of this assumption, the underlying reason may be speculated to be a lack of a strong institutional centre within the political initiatives addressing the problem, a limited base of scientific evidence, or an unwillingness on the part of some Member States to recognise a new form of deprivation.

On energy poverty – some Bulgarian dimensions

As emphasised earlier, the EC's legislative proposal Clean Energy for All Europeans underlines the importance of policies aimed at tackling the energy poverty problem. The topic was also particularly elaborated in the context of the national energy and climate plans and with long-term renovation strategies. Further, it was noted that a major challenge in this regard is the fact that, presently, there is no standard EU definition of energy poverty. However, the EC has provided sufficient guidance of general nature and has introduced obligations for Member States to follow in this context. Unfortunately, Bulgaria is still failing its citizens when it comes to clarity on the topic. This circumstance has been explicitly noted by the EC in its assessment of the final Integrated National Energy and Climate Plan (INECP) 2021–2030[24], which contains a clear summary statement on the situation. "As regards energy poverty, the NECP remains vague about setting an indicative target and defining robust policies and measures to reduce the number of energy-poor households,"[25] the assessment reads.

In fact, the policies and measures included in the final Bulgarian INECP take into account some interlinking between the various dimensions, but this is often done in a qualitative manner only. The INECP contains many instances where the same policies and measures are listed in more than one dimension or influences are suggested to have a bearing on more than one dimension. In the decarbonisation dimension, for example, the final INECP acknowledges the importance of developing the electricity transmission infrastructure and of the use of smart grids or storage facilities to support renewable energy integration. Issues such as the socioeconomic effects of decarbonising the economy, the impact of market liberalisation on vulnerable customers, and energy poverty are also briefly referred to; however, this effort is evidently far from enough.

As regards the aspects of just and fair transition, the final INECP does partially address the European Green Deal and Bulgaria's commitment to decarbonising its economy by 2050. However, it does not deal in depth with the future of lignite mining and power generation. In the NECP, there seems to be tension between

[24] https://ec.europa.eu/energy/sites/ener/files/documents/bg_final_necp_main_en.pdf

[25] https://ec.europa.eu/energy/sites/ener/files/documents/staff_working_document_assessment_necp_bulgaria.pdf, p.8, 15 etc.

the objective of promoting low-carbon economic development, on the one hand, and the objective of exploiting domestic coal resources to the fullest, along with the use of gas as a transitional fuel, on the other hand. A more substantive analysis of the further use of coal-based electricity production (including the expected impact of rising carbon prices on the competitiveness of coal power generation assets and on the financial stability of state-owned enterprises relying on coal power generation) is missing from the NECP. More generally, while the just transition is partially integrated throughout the plan, no section of the document pays sufficient attention to the issue of how to achieve a fair transition to a climate-neutral economy, and the socioeconomic impact cannot be clearly defined. In particular, the country needs to prepare a more comprehensive assessment of the social, employment and skills impact of planned objectives, policies and measures.

And all these aspects are directly connected to the energy poverty issue. Thus, regarding the topic, it would be useful if Bulgarian authorities plan clear legislative and regulatory steps to be taken and provide more detailed information on the respective timelines for implementation in the short run. Such information could include an estimate of the number of energy-poor households and an indicative target to reduce this number, together with appropriate policies and measures. In this respect, the country has some very strong starting points that can back up the relevant efforts effectively. On the one hand, Bulgaria already has some legislation in place, which evidently needs reconsideration. On the other hand, the recent steps at EU level (both at conceptual and legislative level) provide some substantial backup in this regard. Further, Bulgaria could benefit from the experience of other Member States.

Among other measures, energy poverty could be addressed through specific support for socially innovative solutions and social enterprises that work on addressing this challenge (e.g., launching energy-awareness campaigns, retraining unemployed people as energy advisors, supporting green installations by cooperatives, buying energy-saving appliances for social enterprises to rent out, etc.).

Last but not least, another reason why it will be extremely important for the country to plan its next steps well lies in the context of making the best use of available EU financing. Thus, e.g., when it comes to the implementation of its final NECP, Bulgaria should clearly consider all available options — an overview of EU funding sources which should be available to Bulgaria during the forthcoming multiannual financing period (2021–2027), and for EU funding addressed to all Member States and companies, is provided in tables 1 and 2 of annex I of “Commission staff working document for assessment of the final national energy and climate plan of Bulgaria”. At the same time, EU expenditure should be consistent with the Paris Agreement and the “do no harm” principle of the European Green Deal. At the EU level, funding will be also available

for Bulgaria from the Innovation Fund and the Modernisation Fund, based on revenues from the auctioning of allowances under the EU Emissions Trading System, etc. In the case of Bulgaria, one particular dimension in this context has to do with the impact of the transition of coal-based and carbon-intensive industries in terms of potential job losses resulting from changes necessitated by the process of decarbonising the economy. This, however, should be subject to separate analyses, both in general terms and in the scope of the so-called just *transition*, for which there is a separate financing mechanism envisaged.

Thus, funding does not seem to be an issue – what might prove problematic is preparedness at the national level to make the best use of the funds made available. In a time of political instability and inadequate administrative capacity, this type of problems in Bulgaria might appear more and more difficult to handle while looking both for satisfactory and timely solutions.

Besides, there is another unresolved issue – Bulgarian politicians continue to mix energy and social policy. In this context, it should be clearly noted that energy poverty is rather a social than an energy problem, and so the state should deal with it through its social competences. The energy sector should be supported in a way that allows it to develop on market principles, while efforts to combat energy poverty should be targeted via social mechanisms, guaranteeing support for those who really need it.

Some wrap-ups

Tackling energy poverty has the potential to lead to multiple benefits, including lower expenditures on health, reduced air pollution (e.g., by replacing heating sources that are not fit for purpose), improved comfort and wellbeing, and improved household budgets. Taken together, these benefits would contribute to the overall economic growth and prosperity in the European Union. However, aside from policy considerations at EU level, the national-level approach is the key when addressing this issue.

Further, in all the climate impact scenarios considered, rise in commodity prices should not be underestimated as a chance. This could reduce real income and increase poverty. The analysis of the social impact is hardly comprehensive at European level but may be much more concrete, both in terms of fact-finding and considered measures, when the topics are analysed nationally. In parallel, the process is hardly smooth – some measures currently in progress are surrounded by controversy, compounded by considerations of purely political nature. The European Green Deal is already spreading throughout the EU at a surprising pace. A product of its reforms is the new dimension that the social effects resulting from these economic transformations represent. The energy market is rapidly changing as part of the larger push to make the economy greener, giving rise to new social challenges – unemployment threats, price increases, etc. This inevitably puts

the elaborations linked to energy poverty in new dimensions. It is likely that over the coming months the topic will pose a significant challenge to Europe's ability to protect the poorest segment of society as it pursues increasingly ambitious goals of decarbonisation. The EU has a sense of urgency when addressing the energy poverty topic, but this mostly concerns the general framework. The key responsibilities for actually analysing and combating the problem lie with national authorities. What is more, their readiness to address these responsibilities with clear answers will be tested in very concrete terms sooner than expected.

Kalina Koleva *holds Master degree in "Marketing management" from the Technical University in Sofia Most of her professional experience is linked to the state administration. She has been at different positions in the Ministry of Energy and Energy Resources, the Ministry of Finance and the Ministry of Regional Development and Public Works. The key areas of her activities are linked to European integration, multilateral cooperation and management of different donor programs. This includes inter alia expertise in tendering, contracting and monitoring of the implementation process.*

REGIONAL COOPERATION ON RENEWABLES – REGULATORY OPTIONS FOR DEVELOPMENT OF RENEWABLES AND NEW TECHNOLOGICAL SOLUTIONS IN THE ENERGY SECTOR

Viktoriya Dimitrova and Pavlin Stoyanoff

Introduction

According to the International Renewable Energy Agency (IRENA)[1], renewable energy sources are becoming a go-to option for many countries in their transition towards a secure, cost-effective and environmentally sustainable energy supply. They underpin continued socioeconomic development with jobs and local value creation while combating climate change and local air pollution.

By definition[2], renewable sources of energy (wind power, solar power, hydro power, geothermal energy, biomass, etc.) are alternatives to fossil fuels which aim to contribute to reducing greenhouse gas emissions, diversifying energy supply and reducing dependence on the unreliable and volatile fossil fuel markets, in particular oil and gas. The definition is pretty clear; however, the importance of renewables in practical terms should be clearly explained both at national and regional level.

Thus, the current analysis will focus on key aspects of the development, regulation and technological innovation in the field of renewable energy and their future outlook.

Why renewables?

Burning wood has been a primary way of heating and cooking since the dawn of humanity. History tells us that the humans started using sunlight to light fires with magnifying glass materials in the 7th century BC; those later became known as *burning mirrors*. Prior to the industrial revolution, i.e. for most of human history, renewable energy was the nearly only the energy option available. The utilisation of renewable energy dates back more than 2,000 years to the usage of waterwheels to convert the kinetic energy of moving water into mechanical movement that generates power. The Persians are said to be the inventors of the windmills, which gradually became widely used in Europe for various needs – e.g., land drains, groundwater extraction or crops grinding – until their popularity

[1] IRENA, "Innovation landscape for a renewable-powered future: Solutions to integrate variable renewables", International Renewable Energy Agency, Abu Dhabi, 2019 https://www.irena.org/publications/2019/Feb/Innovation-landscape-for-a-renewable-powered-future

[2] Fact Sheets on the European Union – Renewable energy https://www.europarl.europa.eu/factsheets/en/sheet/70/renewable-energy

reached its peak in the Netherlands and England c.a. 16th century. These are just simple examples of the role of renewables in the human evolution.

At first, only the poor burned coal, but soon the shortage of wood drove even wealthier people to adopt it. Technological innovation, such as better-designed fireplaces, flues and chimneys, led to its wider adoption. Coal wrought tremendous changes in society. “It reduced the pressure on land because energy could be found below ground”[3] says Nicolas Fouquet, French finance minister in the early years of the reign of Louis XIV.

For the past 150 years or so, people and industries all over the world have relied heavily on coal, oil and other fossil fuels to power everything from light bulbs to cars and factories. The availability of cheap, reliable electricity was changing the world, but it came at a price. As the years wore on, it became increasingly clear that the world’s reliance on fossil fuels posed other dangers of all kind. Fossil fuels have become embedded in nearly everything we do; as a result, the greenhouse gases released from the burning of those fuels have reached historically high levels. We only have one planet to live on and action needs to be taken.

Nowadays, a climate revolution is on the way. The excess of greenhouse gases such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorinated gases etc., along with plastic pollution and human behaviour, are deemed to be the main drivers of global warming, respectively the emerging dreadful climate changes, and pose a direct threat to all ecosystems and natural habitats worldwide. Action is urgently needed in order to limit the increasing risks and their related effects.

The energy sector has been proven to be one of the biggest emitters of greenhouse gases. There are many paths to counteract this factor and manage the transition to clean energy and one of them are renewables. Most renewable energy technologies have low specific emissions of CO_2 released into the atmosphere compared to, e.g., fossil fuels, which makes them useful tools in addressing climate change. At the dawn of renewables, price was a major issue as the technology was good for the environment but came at high prices.

Thanks to the passage of time and the constant advancement of technology, developing renewable energy sources is no longer merely about pushing for a more expensive alternative on the basis of it being more environmentally friendly. Today, renewables are actually a “much cheaper solution”, according to Neven Duić, full professor at the Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb[4].

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[3] Pain, S., “Power through the ages”, Nature Outlook: Energy transitions, 2017.

[4] Quote, https://balkangreenenergynews.com/croatian-government-has-realized-renewables-are-the-cheapest-solution/

An overview of (climate) policymaking in the EU

Energy policy is without a doubt one of the most important political issues today. It is intrinsically tied to climate change, making it not only one of the most complex issues but also one of the topics of highest priority within the EU[5].

Back in the 1950s, the establishment of the European Coal and Steel Community marked a step towards uniting European countries economically and politically in order to secure lasting peace. Historically, European integration in the field of energy policy did not develop too smoothly. The differences in the energy mixes of EU Member States, the transport routes or the structures of energy markets resulted in a situation where the competing interests and priorities of Member States hindered energy policy cooperation. As the years passed, the degree of collaboration certainly grew higher, but the speed of Member States' development varied widely.

Over the years, the issue of environmental protection became more prominent in Europe, but this did not translate into European legislation quickly enough, especially considering that climate change gradually climbed to the top of the agenda. Attempts at promoting renewable energy sources at EU level began in the late 1970s[6]; and in the 1980s the promotion of RES was incorporated into the EU's regional policy. In the 1990s, climate change came to the forefront of the EU's agenda, giving impetus to the promotion of renewable energy sources, which was subsequently reframed as a means of addressing global warming.

Following a series of discussions over the years leading up to it, the European Commission's An Energy Policy for Europe strategy[7] marked the beginning of a more integrated European energy policy, which has gained considerable momentum since then.

More recently, the Clean Energy for All Europeans package[8] was formally finalised in June 2019. The completion of this legislative initiative provided stable environment so as to stimulate the necessary investments and modernised rules to provide the energy industry with new business opportunities and investments. RED II[9] entered into force as part of this package to build on the progress being

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[5] Langsdorf, S., "EU Energy Policy: From the ECSC to the Energy Roadmap 2050", Green European Foundation, 2011 http://archive.gef.eu/uploads/media/History_of_EU_energy_policy.pdf

[6] Solorio, I. & Bocquillon, P., EU *Renewable Energy Policy: A Brief Overview of its History and Evolution*, Nilsson, 2017

[7] "An energy policy for Europe" COM (2007) 1 final – Not published in the Official Journal, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52007DC0001

[8] European Commission, Clean Energy for All Europeans package, 2019 https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en

[9] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC

achieved under the Renewable Energy Directive[10] on promoting the use of energy from renewables.

Nowadays, the EU aims to be climate-neutral by 2050, meaning to build an economy with zero greenhouse gas emissions by 2050. This objective for climate-neutrality lies at the centre of the European Green Deal and is in line with the commitment for global climate action under the Paris Agreement[11]. The European Green Deal was presented in December 2019 as "a new growth strategy that will transform the Union into a modern, resource-efficient and competitive economy".[12]

Following the new European Green Deal path, the European Commission presented in the middle of 2020, after the coronavirus outbreak, its plan to reduce EU greenhouse gas emissions by at least 55% (compared to 1990 levels) by 2030.[13] This level of ambition for the next decade is said to put the EU on a balanced pathway to reaching climate neutrality by 2050, but is that actually so? Will such high GHG reduction levels be achieved, and if so, at what cost?

Achieving the new GHG reduction target might be quite a challenging undertaking given the fact that there are Member States highly dependent on CO_2-intensive energy sources, including the countries in Southeast Europe (Bulgaria, Romania, Greece, etc.). Following this line of thinking, the EU's more ambitious target raises questions regarding energy security and supply, diversification of sources, and implementation of new technology and innovations.

The global trend is shifting from fossil fuels to renewable energy sources. In order to boost the pace of this transition towards clean energy and the use of renewables, a lucid and detailed plan is needed. To make this transition happen, Member States shall join forces in their efforts.

Renewables in Southeast Europe

The energy sector landscape of the SEE consists of heterogeneous national contexts, strongly shaped by the availability of natural resources and the region's

[10] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028

[11] The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), adopted at COP 21 in Paris, on 12 December 2015, to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low-carbon future.

[12] European Commission , A European Green Deal, 2019 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[13] European Commission, "State of the Union: Commission raises climate ambition and proposes 55% cut in emissions by 2030", Press Release of 17 September 2020 https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1599

history[14]. At the same time, the SEE region has a great potential for renewable energy deployment and energy efficiency implementation. With the exception of Albania, SEE countries have high shares of electricity generation from an ageing fleet of coal-fired power units with quite low efficiencies[15]. Indeed, the age of the SEE's power plants, their carbon intensity and the lack of diversity in the power supply are creating serious technical and political challenges for the region in terms of climate change. The glaring need for widespread rehabilitation and replacement of the aging infrastructure, combined with a high dependence on imports, may, however, pave the way for investing in renewable energy generation.[16]

An SEE market analysis[17] conducted by IRENA in 2019 outlines that most of the renewable energy capacity in the SEE region is concentrated in Member States, while the rest of the region has been relatively slow to roll out such projects.

The SEE as a region, like most regions in the world, still lacks a comprehensive legal framework supporting renewables in all sectors. The changing investment pattern can be attributed to the presence (or lack thereof) of dedicated supporting policies. Without stable policy and regulatory frameworks, regional-level investments in renewable energy will continue to be sporadic. An enabling environment, with appropriate policies, is conducive to attracting investments in the renewable energy sector. The countries in the region have taken different approaches or have reached different levels of development of policies affecting renewables. Here are some examples.

Greece

In Greece, there are a number of policies aimed at promoting the development, installation and usage of renewable energy sources. Since 2017, electricity from renewable sources has been promoted through a feed-in premium granted via tenders. In December 2016, a pilot tender was held for PV only, then in 2018 two tenders for PV and wind energy took place. In addition to this, a new tax regulation mechanism and subsidies are available under the Development Law adopted in 2016, along with a net metering scheme. Renewable energy sources for heating purposes profit from a new tax regulation mechanism and subsidies

[14] IRENA "Renewable energy market analysis: Southeast Europe", International Renewable Energy Agency, Abu Dhabi, 2019b https://www.irena.org/publications/2019/Dec/RE-Market-Analysis-Southeast-Europe

[15] Koltsaklis, N., Dagoumas, A., Seritan, G. & Porumb, R., "Energy transition in the South East Europe: The case of the Romanian power system", Energy Reports, Vol. 6, 2020 https://www.sciencedirect.com/science/article/pii/S2352484720312555

[16] Ibid.

[17] IRENA (2019a) Innovation landscape for a renewable-powered future: Solutions to integrate variable renewables, International Renewable Energy Agency, Abu Dhabi https://www.irena.org/publications/2019/Feb/Innovation-landscape-for-a-renewable-powered-future

that are also envisaged in the Development Law, as well as from an income tax relief. The main incentive for renewable energy use in transport is a quota system, with a new tax regulation mechanism and subsidies again available under the Development Law, etc.

Romania

In Romania, electricity from renewable sources was mainly promoted via a quota system. The financial support scheme for new installations producing electricity from renewable sources concluded in December 2016. As of 2017, there is no longer a comprehensive support scheme in place for electricity from renewables. The quota system is still valid for the installations commissioned before 2017 and will be in place until 2031. Under the quota system, electricity suppliers and producers were obliged to present a certain number of so-called *green certificates*, issued for electricity from renewable sources. While the quota system is no longer available for new installations, these can still obtain a subsidy and financial support for energy production from biomass, biogas and geothermal energy under a new support scheme for less exploited energy sources. Further, to address the issues around the continued deterioration of existing capacities and to help the transition to clean energy and the new mix generated by an increasing share of renewable energy sources, the Romanian Ministry of Energy has considered the introduction of a support scheme which will back investments in new-generation electricity capacities with low carbon emissions.

Serbia

The renewable sector in Serbia is undergoing significant development, despite its long-delayed start. In 2016, the Serbian government introduced regulations governing the renewables sector, which fostered further development of the entire energy market. The regulations were consistent and comprehensive in a manner which appeared to be unmatched in the Western Balkans at the time, both in the quality of drafting and the completeness of the solutions in place. As candidate for the EU, Serbia has taken additional steps towards harmonisation of the national legislation with the EU one. In the first quarter of 2021 alone, the Serbian government adopted four new bills on renewables that aim to open the door to new investors by introducing auctions for the allocation of premiums and conditions for the development of the free electricity market for RES energy.

Bulgaria and the development of renewables

In accordance with the Governance Regulation, Bulgaria adopted its national energy and climate plan (NECP) at the beginning of 2020. The plan sets Bulgaria's national targets and objectives for the period until 2030.

In terms of renewable energy, Bulgaria will strive to achieve at least a 27.09% share of energy from renewable sources in the gross final energy consumption[18]. This target was determined by taking into account the European Commission's recommendation to raise the targeted level of renewables to at least 27%.

On paper, the set objectives and targets are in line with the European climate policy, which identifies climate neutrality by 2050 as a goal. However, energy experts have questioned whether Bulgaria has the actual capabilities to accomplish its objectives.

The NECP projections for the development of renewables sees the consumption of renewable energy in all three sectors – electricity, heat and cooling, and transport – increasing.

Bulgaria has a little over 10 years of experience with the Europeanisation process, which involves not only harmonisation of law but also balancing EU targets with national interests[19]. At the national level, Bulgaria started renewable energy promotion much later than the other Member States, and that includes the establishment and implementation of its institutional and legal framework.

In 2002, Bulgaria ratified the Kyoto Protocol, which imposed certain targets on the country to reduce greenhouse gas emissions by decreasing its reliance on conventional energy sources and encouraging renewable energy production. Following this step, the National Assembly adopted the Energy Act seeking to develop, inter alia, the renewable energy sector.

Since the early 2000s, the popularity of renewables has been rather fickle. The first wave of investments was between 2007 and 2012, when Bulgaria had extremely high levels of feed-in-tariffs and statutory obligation for purchase. Unfortunately, this period was followed by a series of restrictive policy measures and growing regulatory uncertainty, which curtailed and set the development of renewables in the country back for a long period before their popularity went on the rise again.

In 2007, the Renewable and Alternative Energy Sources and Biofuels Act (RAESB Act) was adopted to establish a system for producing electricity from RES and to foster a favourable investment climate. This piece of legislation was later repealed by the Renewable Energy Sources Act (RES Act) in 2011. The RES Act regulated the generation and consumption of energy from renewable sources with the aim of achieving the national targets on renewable energy use in the gross final energy consumption. Since its promulgation, the law has undergone numerous changes and remains rather imperfect.

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[18] Integrated Energy and Climate Plan of the Republic of Bulgaria 2021–2030, https://ec.europa.eu/energy/sites/ener/files/documents/bg_final_necp_main_en.pdf

[19] Ruseva T. & Petrova M., "Implementing the European Union Renewable Energy Policy Targets in Bulgaria", Cases on Green Energy and Sustainable Development, 2020, pp.30-59, DOI:10.4018/978-1-5225-8559-6.ch002

The feed-in tariffs (FITs), combined with the purchase obligation, were first introduced as a main policy tool for RES promotion in Bulgaria in 2007 with the RAESB Act and were later revised with the RES Act in 2011. The FITs and the purchase obligations applied to power purchase agreements for projects implemented prior to meeting the policy target embedded in the National Renewable Energy Action Plan 2020. The revised 2011 incentive programme resulted in substantial investments and enabled Bulgaria to be ahead of schedule on meeting its EU targets by 2013.

When in July 2012 Bulgaria realised that it would reach its target ahead of schedule and that the incentives programme would continue to encourage more investments in the renewables sector, the country, along with many other European nations, decided to take measures to withhold further investment, especially in solar and wind. This led to the gradual decrease of the FITs until their ultimate revocation for RES projects to be developed after 27 December 2013, which effectively halted RES investments in Bulgaria for the ensuing years.

The Energy Act amendments from May 2018 introduced a new support scheme for the producers of electricity from renewable energy sources: Starting July 2018, all RES-E producers are obliged to sell their electricity on the Independent Bulgarian Energy Exchange (IBEX)[20] and to enter into feed-in premium agreements and terminate their long-term power purchase agreements.

To stimulate new investments in RES, the law now allows new projects after 1 December 2019 to rely on power purchase agreements outside the IBEX[21].

The successful future of the renewables development in Bulgaria is directly connected to the regional development of the energy sector, in addition to financing, administrative procedures and internal policies. The energy and climate policy framework for 2030 as well as the European Green Deal emphasise the importance of regional cooperation on renewable energy sources for enhancing national efforts and facilitating the realisation of the EU's targets, especially the binding EU RES target of at least 32% by 2030[22].

The Fundaments Of Regional Cooperation On Renewables

The natural resources of the region, the shrinking cost of renewable energy and the introduction of renewable energy and energy efficiency targets are good prerequisites for a change in the way energy is generated, distributed and consumed in the region.

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[20] IBEX is the Independent Bulgarian Energy Exchange, established January 2014 as a fully-owned subsidiary of the Bulgarian Energy Holding EAD, https://ibex.bg/en/

[21] Bulgarian Energy Act, Art. 100, Para. 5

[22] RED II sets a new binding renewable energy target for the EU for 2030 of at least 32%, with a clause for a possible upwards revision by 2023, and comprises measures for the different sectors to make it happen, https://ec.europa.eu/energy/topics/renewable-energy/renewable-energy-directive/overview_bg

As part of its objective to achieve a climate-neutral energy system, the EU has been encouraging regional cooperation on renewable energy. It may take the form of:

- joint renewable energy projects,
- support schemes, or
- statistical transfers.

Despite the clear and abundant benefits of such cooperation, few states have explored the opportunity for cross-border projects.

The NECPs of the Member States in the region do not focus on strong measures of cooperation between the countries.

The importance of cross-border cooperation on renewable energy – where two or more countries develop a joint RES project or support mechanism – has been emphasised in the energy and climate policy framework for 2030 as well as in the European Green Dea[23]. The economic case for cross-border cooperation is strong. Researchers[24] outline that adopting a cooperative approach when meeting national and EU renewable energy targets can reduce overall costs and maximise benefits for European citizens, with an estimated cost-saving potential of up to €1.3 billion a year[25]. Beyond the economic benefits, developing strong cooperation on RES can also bring about other positive impacts: from promoting long-term partnerships and investment opportunities to fostering innovation.

Developing cross-border mechanisms also increases certainty in the market and creates safe trading conditions for investors given that renewable energy sources, such as wind and solar, have variable supply. Electricity generators using variable renewable energy sources can only produce electricity when weather conditions allow it; e.g, since Bulgaria has low storage capacities and no smart grids, the excess energy generated has to go somewhere. This is where the need for regional market coupling and increased liquidity comes in.

A broader energy market also means increased options for balancing the system. In fact, balancing has been one of the most crucial issues hindering

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[23] European Commission, European Green Deal COM/2019/640 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1596443911913&uri=CELEX:52019DC0640#document2

[24] Meynaerts, E., Renders, N., Hof, A., Hsuan Chen, H., Esparrago, J. & Tomescu, M., ETC/CME Report 6/2020: "Cross-border regional cooperation for deployment of renewable energy sources", 2020 https://www.eionet.europa.eu/etcs/etc-cme/products/etc-cme-reports/etc-cme-report-6-2020-cross-border-regional-cooperation-for-deployment-of-renewable-energy-sources

[25] European Commission, Staff Working Document, Impact Assessment accompanying the document Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast), 2016 https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:52016SC0418

the faster adoption of renewables. To address that challenge, the EU has been pushing for more rapid deployment and coupling of the energy spot markets across the Union. Now new technologies, such as smart grids, storage capacities, new energy carriers, and smart energy efficiency measures, should help further stabilise the new energy mix of the region.

International analyses constantly highlight how critical it is for the following period that an appropriate institutional framework for storage units is developed and that they participate in the electricity market. The inclusion of these units is considered to be crucial for attaining high shares of RES in the electricity market. Access to storage facilities across the borders would allow for flexibility of the energy systems.

What should be the place of regional cooperation in regulations

The investors

From the perspective of an investor, a regional energy market translates into a wider reach to clients and better stability of economic variables and regulations. After all, it is a proven fact that amending international treaties is more difficult, and it is never so sudden or surprising.

In a regional market, an owner of a renewable project would like to be able to:

- have single entity and single ownership over its project assets;
- develop physically the project cross-border; this may literally mean having one's project expanding into the lands or seas of two or more countries;
- buy resources, hire people, and sell and buy energy cross-border without tax, customs, or currency gaps;
- fulfil regulatory requirements by a single effort and in a similar manner in the two or more countries (e.g., reporting to competent authorities);
- be aware of what comes next in the legal framework.

Thus, regulations at national and international level should be developed to accommodate the abovementioned fundamental desires. Certain approximation and harmonisation is already achieved where the EU has the competences to intervene. This is mostly in the economic and technical spaces – market coupling, harmonised cross-border capacity tenders and fees, interoperability of the national systems, mandatory level of cross-border technical connectivity of the power systems. In other areas or between countries which are not EU members, the gap is wider and cross-border projects not so easy to pursue.

It is not only energy laws that need to be changed. The same applies to:

- land ownership and development permits – one might want to have one's substation in one country while some of the generation equipment is in a neighbouring country;

• commercial & tax law – one would not like having to form a company in each country and pay and report different taxes;

• contract law – ensuring equal enforceability of agreed terms and conditions.

Going to the core energy regulations, actual administrative cooperation between regulators and competent authorities, a harmonised market, technical interoperability, and balancing rules are a must.

The future trend at EU level is headed towards creating competent authorities at Union level, which also means collective bodies comprising Member States' national regulators. A really close regional cooperation and regulation would inevitably require such administrative cohesion between neighbours.

Where incentives are needed for innovation and investments, countries would need to cooperate if they aim for cross-border effects and projects.

The consumers

Investors would want to reach more clients in the region of operation. On the other hand, consumers, whether businesses or households, would need certainty that the conditions of buying energy would not vary or surprise them, irrespective of the origin of the production and seller. Consumers would be driven by the ease of access to the cheapest reliable energy supply; further, what is highly relevant nowadays is that this should concern clean energy. Consumers would probably not care whether the energy comes from Albania or Greece as long as they do not have to deal with additional formalities and unknowns.

This takes us to the concept of having similar aspects of the legal framework, which would relax cross-border consumption of energy. This refers to harmonised market conditions, cross-border capacities, predictable fees and energy prices, and no need for going through redundant regulatory formalities in every country. Consumers would also desire enforceability of their contractual or administrative rights in any country they are supplied energy from.

Further, the role of consumers in modern energy is becoming more sophisticated. Consumption gets controlled by smart appliances, and consumers gain a crucial role in balancing and supplying the grid through their own generators or batteries. These technological capabilities turn consumers into investors in the energy domain. That requires certain elements of the regulations to stimulate consumer activity and involvement. We observe that such regulations are being introduced extremely slowly in the Balkan countries.

Consumers, as well as investors, have greater access to global technologies and innovation that facilitate not only regional but also cross-border trade. An especially disruptive example is the blockchain, which enables trade in tokenised assets and settling of payments without intermediaries and at a significantly decreased cost. Regulation at EU level has started, but it needs more active involvement by states and national regulators.

The state

The state has a dualistic role when it comes to innovation and disruption. Each government is called upon to push social and economic growth, but it cannot stray too far from its protectionist nature. National priorities are still put higher in the international relations pecking order, despite the crystallisation of a more integrated global agenda and priorities that should unite the nations.

Thus, countries would often think how to boost investment in their own territory first and not allow leakage of capital to the neighbours. This dynamic halts international cooperation. In fact, it is a reason why the EU founded its pursuit of an energy union on the pillar of *solidarity*. What is good for one state and its citizens should be good for all members and citizens of the Union. This conceptual approach should be considered as the basis of any regional cooperation.

Also, the protectionist nature of a government implies slower and more deliberate introduction of legal novelties as the executive branch of power should be guided by defending the interests of society as a whole and not only those of certain projects or investment initiatives.

Future outlook of renewables

Despite the unexpected Covid-19 pandemic, renewable sources generated 38% of Europe's electricity[26] in 2020, while 37% came from fossil fuels, meaning that for the first time renewables overtook fossil fuels and became the EU's main source of electricity. In 2020, investment in wind and solar power was the chief driver of decarbonisation, with wind generation increasing by 9% and solar by 15%[27], accounting for a total of 51 additional terawatt hours (TWh) of renewable electricity. Due to the global trend of transformation and switching to clean technology, renewables are expected to keep up the pace.

Innovation and technology will certainly power energy transformation not only at a regional level but also at a global. Around the world, the pace of developing and introducing better, more efficient renewable energy technologies is accelerating. The power sector has led the way, with rapid reductions in the cost of solar and wind technologies resulting in widespread adoption in many countries. Experts agree that the advance of electrification in the coming decades will supercharge the shift to renewables. The renewables-based electrification of European industry, buildings and transport will allow the continent to reduce its energy-related carbon dioxide emissions by 90% by 2050, according to some predictions.

The integration of renewable energy poses specific challenges as its share of power generation rises – in essence, maintaining the balance of supply and

[26] Agora Energiewende, Ember, "The European Power Sector in 2020 – Up-to-Date Analysis on the Electricity Transition", 2020 https://ember-climate.org/wp-content/uploads/2021/01/Report-European-Power-Sector-in-2020.pdf

[27] Ibid.

demand becomes more of a challenge. More flexible and integrated power systems are needed to maximise the value of low-cost variable renewable energy, meaning solar and wind. Focusing at regional level and having in mind the decreasing price of renewable power generation, the success of the energy transition will be underpinned by the implementation of strategies to integrate high shares of variable renewable energy into the power systems at the lowest possible cost.

IRENA's Innovation Landscape study[28] maps innovations emerging across four key dimensions of the world's power systems – namely, enabling technologies (technologies that play a key role in facilitating the integration of renewable energy); business models (innovative models that create the business case for new services, enhancing the system's flexibility and incentivising further integration of renewable energy technologies); market design (new market structures and changes in the regulatory framework to encourage flexibility and value services needed in a renewable-based power energy system, stimulating new business opportunities); and system operation (innovative ways of operating the electricity system, allowing the integration of higher shares of variable renewable power generation).

The policies and regulation in place to drive technological innovation should be continually revisited and updated to keep up with new developments and breakthroughs. Naturally, not all proposed innovations within these groups are suitable and achievable within the next decade at SEE level, but a good start would be introducing innovations and technology such as:

- battery storage technologies, enabling to back up the variability of renewables and the provision of various services to the grid;
- technologies that enable electrification – such as expanding the electric-vehicle smart charging, renewable power-to-heat and renewable power-to-hydrogen;
- new large and small-scale grids, which complement each other by enabling new ways to manage the variable renewable energy generation;
- new operation procedures and models that would enhance electricity system flexibility such as advanced forecasting of variable renewable power generation or innovative operation of pumped hydropower storage.

Wrap-up

The issues outlined above are rather natural obstacles to a faster approximation of the regional regulatory and economic environment to cross-border energy markets. It may be easily inferred that results would be better

[28] IRENA, "Innovation landscape for a renewable-powered future: Solutions to integrate variable renewables", International Renewable Energy Agency, Abu Dhabi, 2019 https://www.irena.org/publications/2019/Feb/Innovation-landscape-for-a-renewable-powered-future

achieved if supranational governance and operational bodies are established between the involved countries to permanently pursue the regional agenda and goals. At the moment, even the national energy and climate plans (NECP) of the different countries are not interrelated. Each country has projected its energy and climate development without taking into account what the plans of its neighbours and of other nations are. The delineation between national plans and projections is sharper between countries that are not members of the EU. A supranational body could start by outlining the regional outlook, challenges and objectives.

The interest of each state is to boost investments, ensure social security, and, in the current global agenda, work relentlessly to improve and protect the environment. It is easy to observe that the regulatory framework has intensified in the last decades and is becoming very technical. Trying to regulate everything is impossible and at one point the regulatory burden becomes an obstacle even as its role is supposed to be that of a facilitator to economic activity.

Therefore, the best approach to be used in regulations is the incentive-based one – where economic operators are not guided how to act every step of the way by constant reporting to competent authorities. Regulated subjects are instead incentivised to achieve certain goals by choosing their own way. This is specifically valid in the current technological era with booming innovation. Regulators should consider that the means and forms of economic activity can change drastically every day. Laws should, thus, remain open to innovation and technology in all areas – energy generation and consumption, market formation, economic interaction, service delivery, payments.

To accommodate innovation and stimulate cross-border energy markets, states should go through three fundamental phases of development:

- improving and approximating contract and trade legal framework (this covers e-contracting, enforceability of rights, consumer protection, etc.);
- improving and opening fundamental economic regulations, such as construction and financial regulations;
- improving and regulating the energy-specific areas that will open the energy markets.

In doing so, legislators and regulators must be guided by the following fundamental principles:

- lifting obstacles;
- incentivising innovation;
- improving legal certainty;
- restricting only where risk of abuse is imminent (following the so-called principle of proportionality in regulations).

It seems that states still see their energy markets as closed systems which must encompass all necessary elements from resources and production to final consumption in order to sustain and survive. It is uncommon to appreciate that

there may be some level of imbalance internally while achieving harmony at a regional level. One country may be focusing on production from one energy source or technology, while a neighbour is pursuing excellence in, for example, storage. A third country may well strive for proficiency in energy services (market operation, trading platforms, fintech, etc.) without actually having so much generation installations internally. Interdependence actually creates inevitable approximation and trust and factually dominates over the fear of dependence on one's neighbour.

In terms of regulations, the same trend is observed – individual countries are not focused so much on incentivising cross-border projects. Laws are very inland oriented. The achievement of a certain potentially desired result usually requires the creation of an appropriate form. In the area of cross-border energy regulations, this would mean a supranational authority or authorities, charged with a particular task and purpose – to achieve the regional energy market for the good of participating countries. In fact, such authorities exist (ACER, the Energy Community, etc.) – however, their competences should be permanently adjusted to the changing energy environment; and this is particularly relevant to renewables.

Viktoriya Dimitrova *is a legal expert in Visiaw – a legal tech company helping small and large business grow, and consulting in-house and professional legal teams to work better. Viktoriya holds a LL.M in law and is currently pursuing a second master in Energy Markets and Services at Sofia University, Faculty of Economics and Business Administration. Her areas of interest and expertise include energy and environmental law, regulatory compliance, digitalisation and technology. During her studies and prior to joining Visiaw, she was shaped as specialist in the legal practice of one of the Big 4 Companies, in one of the leading Bulgarian law firms and in one of the first and biggest electricity traders on the liberalised energy market in Bulgaria.*

Pavlin Stoyanoff *is owner and co-founder of Visiaw – a legal tech company helping small and large business grow, and consulting in-house and professional legal teams to work better. Pavlin has more than 14 years experience in the energy and legal tech sector. He has LL.M. from Sofia University "St. Kliment Ohridski", and a specialisation in EU and UK law in Cambridge. He was part of the Energy, Projects and Construction (EPC), Public Procurement and PPP team in one of the leading international law firms in Bulgaria, and later was manager of the energy practice of the legal department in one of the Big 4 Companies. In recent years Pavlin developed his expertise and knowledge in legal technology and digitalisation.*

EU DSO ENTITY – THE MISSING PIECE OF EU ENERGY TRANSITION'S INSTITUTIONAL PUZZLE

Mag. Ilina Stefanova, MBA

Introduction

One of Europe's main priorities for the next decade is to achieve sustainable energy production and consumption. President of the European Commission Ursula von der Leyen pledged to enshrine this political commitment in legislation and make Europe the first climate neutral continent by 2050[1]. The subsequent action on this promise built upon the established legal framework introduced at the end of 2019[2]. Such an ambitious target can only be achieved through dedicated policies, institutional engagement and broad involvement of the stakeholders.

Predictable and centralised power generation is being gradually phased out to provide room for variable distributed generation, resulting in a shift in the whole energy supply chain. Over the past decade, these developments in Europe's energy sector have triggered substantial legislative amendments and introduced plenty of new challenges and roles to the market.

The Clean Energy for all Europeans package provided a comprehensive update of the energy policy of the Union, aiming to facilitate the transition from obsolete fossil fuel production towards clean and sustainable sources. Based on the initial Commission proposal[3], which was presented in November 2016, the package consists of eight legislative acts – four directives and four regulations, which were fully adopted by the end of 2019.

Distribution system operators (DSOs) will continue to play a particular role in this transition process. However, the changes in the market presuppose deeper cooperation among them. This reality gradually shaped the concept of an EU DSO entity.

The background for DSO cooperation

In the framework of the Clean Energy Package, the recast of the Electricity Directive[4] (2019/944/EC) provided for a new scope for the activities of DSOs.

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[1] Von der Leyen, U., Making the EU climate-neutral by 2050 (europa.eu), European Commission, Brussels, Belgium, 4 March 2020.

[2] Clean Energy for all Europeans package, < https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en#documents >, accessed 22 April 2021.

[3] European Commission, COM (2016) 860 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the regions and the European Investment Bank, Brussels, Belgium, 30 November 2016.

[4] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU.

With the increasing share of decentralised production, the introduction of smart grids and the growing number of electric vehicles, the role of the distribution grid operators as a backbone of the transition has become paramount. The new regulations and restrictions laid out in the package require that DSOs remain neutral market facilitators, interacting with consumers and active decentralised prosumers, aggregators and providers of flexibility services. The final version of the directive does not allow grid operators to build and operate their own storage facilities or to own and manage electric vehicle charging stations (with some exceptions). The Commission was reluctant to touch those free-market activities as a risk was foreseen that operators may favour their own services rather than choose market alternatives coming at a lower cost. The legislators decided that those activities should be provided on a competitive basis and that operators must maintain their neutral role and refrain from any commercial interest.

Operators should also take care of optimal grid planning, coordination on a regional basis and cooperation with transmission system operators. The progressive roll-out of smart meters taking place in most EU countries generates large quantities of information. This data needs to be collected, processed and validated by DSOs in a secure and reliable way, while respecting customers' privacy and the growing number of legal requirements. In order to facilitate competition, operators have to make data accessible to third parties and ensure efficient and secure data management, with high quality and various granularities. In order to create a level playing field for new services in a transparent and cost-efficient way, DSOs shall procure flexibility services from free providers on a market basis. The growing share of this market will impact infrastructure investments, avoiding peaks and bottlenecks in the system. Thus, stable, interconnected, future-proof grid will be established to meet the needs of the electricity market of tomorrow.

The new tasks of operators comprise managing the constantly growing intermittent production and securing reliable flow by integrating new storage facilities. In the emerging energy transition, DSOs need to handle a vast number of new renewable capacities, decarbonising the system in a secure and affordable way. Consumers, on the other hand, are also becoming more demanding. They realise their new role as prosumers – active participants on the market who plug their new electric vehicles and expect the grid to be flexible, digital and stable at least cost.

In this new and dynamic environment, the European map of DSOs is quite an interesting read – rather inhomogeneous and highly diverse in size, ownership and concentration. According to a recent report by Eurelectric[5], there are 3,319 DSOs, of which only 195 are legally unbundled. In some countries, like Ireland, Slovenia and Greece, there is only one operator on the entire territory, while in countries like Germany the number of DSOs reaches 883. In most countries, the

[5] Eurelectric, "Distribution grids in Europe – facts and figures", December 2020.

DSOs are publicly owned while private investments appear to be an exception. According to the same report, 60% of the European power network is composed of low-voltage lines, 37% of medium-voltage lines and only 3% of high-voltage lines.

On the other hand, the transmission system operators' representation in Europe is quite well-structured, with 41 transmission system operators from 34 countries united into the association European Network of Transmission System Operators for Electricity (ENTSO-E). The latter was introduced together with the Agency for Cooperation of the Energy Regulators (ACER) via the Third Energy Package. ACER received its legal mandate through Regulation (EC) 713/2009[6] and ENTSO-E was established based on Regulation (EC) 714/2009. At that time, it was already obvious that liberalisation of the gas and electricity markets could only be enabled through closer institutionalised interaction between the relevant EU institutions, regulators and industry stakeholders.

In order to deliver on the carbon neutrality objectives, set by the European Green Deal, grid operators, both on transmission and distribution level, need to plan together. Furthermore, they need to optimise the grids, integrate flexibility sources, improve cross-border flows by coupling markets, and develop unified technical rules enabling the establishment of the internal energy market. With the share of decentralised production constantly growing, such codification is required on distributional grid level, as well, in order to increase the security of supply and ensure stability of the grid at an affordable price.

The steps towards EU DSO Entity

Back in 2016, when the Commission first made its proposal for a recast of the regulation[8], it became clear that the cooperation between transmission and distribution operators needs to be enhanced. At that point, ENTSO-E had no eligible counterpart to discuss and elaborate the network development plans with. Transmission infrastructure had to grow considering new demands and capacities at distribution level and their impact on the overall reliability of the system. Besides efficiency and transparency in that work, the Union needed one single and official representation of DSOs vis-à-vis TSOs and the latter's association. One of the primary tasks of the legislation discussed was to foster

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[6] Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

[7] European Commission, COM (2016) 860 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the regions and the European Investment Bank, Brussels, Belgium, 30 November 2016.

[8] Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 (OJ L 211, 14.8.2009, p. 15).

cooperation between DSOs and TSOs with regard to planning and operation of their networks. Acting together, both operators' associations had to elaborate and implement system network codes and guidelines.

Both the European Council and the European Parliament repeatedly underlined that a *"well-functioning integrated energy market is the best tool to guarantee affordable energy prices, secure energy supplies and to allow for the integration and development of larger volumes of electricity produced from renewable sources in a cost-efficient manner"*. Thus, along with optimal management and a coordinated operation of distribution and transmission systems, the Entity will have to take on the task of promoting the completion and functioning of the internal market in electricity.

The Entity is intended to facilitate efficient local grid approach towards some of the new challenges that DSOs are facing. They relate to variable generation and potential use of local flexibility and storage solutions, which would allow significant reduction in network costs.

Prior to the establishment of the Entity, there was a total of four European-level associations representing DSOs – E.DSO, Eurelectric, CEDEC, and GEODE. They have often interacted together and presented common positions. However, their scope, focus, mission and vision have not always been uniform.

In 1989, the Union of the Electricity Industry (Eurelectric) was established in Brussels. Thanks to it, more than 3,500 companies from 32 countries operating in power generation, distribution and supply have stayed connected and promoted the role of the electricity sector in climate change mitigation. The industrial players are represented through 34 national associations comprising the Eurelectric membership. As an electricity industry federation, it strongly advocates for a growing share of renewables, electric vehicle penetration and a central role of DSOs in the energy transition.

With its 91 members, GEODE, which was established in 1991, has a rather local dimension by bringing together regional energy companies active in the fields of electricity, gas and district heating and based mostly in Germany, Spain and the Scandinavian countries. Its primary goal is the support of electricity and gas network operators, as well as promotion of a sustainable, efficient and reliable grid as the backbone of the future resilient energy system.

CEDEC was founded in 1992 with a focus on the local and regional energy companies active in gas and electricity generation, distribution and supply. Its 1,500 members from 10 countries are mostly public and based in Western Europe, with the exception of one association of RES producers coming from Bulgaria.

In 2010, E.DSO (European Distribution System Operators) for smart grids was established in Brussels by 11 founding members. A decade later, it already represents 39 DSO members and two associations from 24 European countries. Serving as a policy platform connecting operators and institutions at EU level,

E.DSO has a powerful say in major legislative amendments and has actively participated in shaping the Clean Energy for All Europeans package. Its members have been active on initiatives that have a cross-sectoral impact and affect DSOs, such as the need to streamline investments in distribution level, data operability and digitalisation.

However, these four Brussels-based industry associations could not substitute the need for a strong, DSO-centric institutionalised entity able to ensure well-balanced, transparent and efficient representation vis-à-vis the European stakeholders. In its 2016 Communication[9], the Commission states that *"the EU DSO Entity should closely cooperate with ENTSO for Electricity on the preparation and implementation of the network codes where applicable and should work on providing guidance on the integration inter alia of distributed generation and storage in distribution networks or other areas which relate to the management of distribution networks."*

The initial Commission proposal suggested a membership in the Entity only for operators that are not part of a vertically integrated undertaking or that are unbundled according to the provisions of the European legislation. In light of the growing complexity of the market structure, characterised by an increasing number of new services and interactions among players, the neutral role of the market facilitator becomes crucially important.

In parallel, the share of operators that meet those requirements is less than 10% of all DSOs in the EU – thus, the Commission would have risked excluding from participation numerous small-size vertically integrated electricity undertakings. In addition, operators are still heavily regulated; national regulatory authorities have good experience and efficient tools to monitor and interfere the very moment they suspect grid activities driven by market interest. These considerations led to amendments in the final text of the regulation[10] that made the inclusion of every DSO in Europe possible. Provisions guarantee a fair representation in the Board of Directors, as well as a balanced decision-making process in the General Assembly.

The initiative to prepare the establishment of the Entity came from the four associations representing DSOs at European level – E.DSO, Eurelectric, CEDEC, and GEODE. They split in several working groups to draft the statutory documents, develop financial rules and work on communication and cooperation with external stakeholders. After several months of intense discussions, on 24 June 2020,

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[9] European Commission, COM (2016) 860 final, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the regions and the European Investment Bank*, Brussels, Belgium, 30 November 2016.

[10] Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (Text with EEA relevance.) PE/9/2019/REV/1, *OJ L 158, 14.6.2019, pp. 54–124.*

the four associations submitted to the Commission and ACER the statutory documents on the establishment of the new European body, as prescribed in Article 49-53 of the Electricity Regulation. The package contained four documents – Statutes of the EU DSO Entity; Rules of Procedure, including the rules of procedure on consultations; Code of Conduct; and a tentative list of potential members. Two months later, on 25 August 2020, ACER gave its opinion[11] to the Commission after holding a round of public consultation with the participation of all stakeholders, DSOs in particular. Following that, on 25 November 2020, the Commission delivered its opinion[12] on the statutory documents.

Membership and governance structure

The participation of and cooperation between DSOs in the Entity is set up on a voluntary basis, after registration and annual fee payment. The fee shall be fair and proportionate to the number of connected customers[13] and recognised by the national regulatory authorities in the network tariffs.

The legislation provides for the governance of the Entity and its bodies, which include General Assembly, Secretary-General, Board of Directors, Strategic Advisory Group and expert groups.

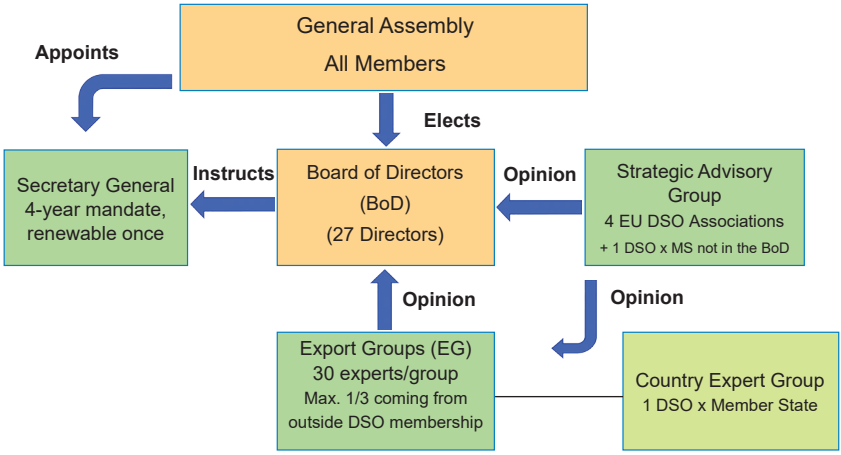

Figure 1. EU DSO Entity Webinar, presented on 21 January 2021,
<https://www.eudsoentity.eu/media/yt0lh1ud/webinar-presentation_final.pd> accessed 22 April 2021

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[11] ACER Opinion No 05/2020 of the European Union Agency for the Cooperation of Energy Regulators of 25 August 2020 on the statutory documents on the establishment of the EU DSO entity

[12] Commission Opinion of 25.11.2020 on the statutory documents on the establishment of the EU DSO Entity.

[13] The number of connected customers of a member is calculated by the number of metering points of this member, therefore, connected customers are considered within the meaning of Article 32 (5) and Article 35 (4) Electricity Directive (EU) 2019/944.

The Board of Directors is composed of President of the Board and 27 members' representatives divided into three categories. Each category consists of nine directors, a legislative solution aimed at achieving a fair representation for members of all sizes. The first category comes from members with more than 1 million grid users, the second is voted among members having between 100,000 and 1 million users, and the third one consists of representatives of the smallest DSOs, with fewer than 100,000 grid users. The statutes provide for diversity in the board in terms of geographic and gender balance. However, those objectives are not bound with explicit provisions. The gender-balanced participation was of particular interest for ACER, especially in the context of the new EU Gender Equality Strategy[14]. The agency even made a recommendation that a mandatory gender quota be included for the board. However, that recommendation was not introduced in the final version of the statutes. Instead, the board is assigned the task of developing its own gender equality strategy with annual revision of its targets.

The lack of clear definition in the regulation provoked intense discussions on the role of the President of the Board as President of the Entity. The approved version of the statutes provides that the president shall be elected among board members and he or she shall be endorsed by the General Assembly. This compromise decision avoided dual representation of the Entity while guaranteeing that the president will be endorsed by the General Assembly and, therefore, remain the key representative figure of the EU DSO Entity. This double-hatted leadership avoids an additional complication for an association boasting large and diverse membership. The President of the Board acts independently as the 28th member of the board and has no voting rights. He/she shall maintain neutrality and ensure a fair balance among the three categories in the board.

Once the first board is elected by the General Assembly, the formation of the expert groups will start. The four DSO associations will be integrated through the Strategic Advisory Group. DSO representatives from Member States not represented in the board also have the right to a seat in this group.

A body that is not stipulated in the regulation but has been added though the statutes is the Country Expert Group. Comprised of one DSO per EU country, it will aim to ensure straightforward communication. The country group will maintain contact with the other expert groups and will be able to give its opinion on relevant matters.

The positive effect of having EU DSO Entity

Regional cooperation is essential for creating resilient power grids, avoiding bottlenecks and ensuring stable supply even under extreme conditions. A system

[14] COM(2020) 152 final, Gender Equality Strategy 2020–2025.

that is able to respond to variability and uncertainty in electricity production can only be built by including all acting operators, irrespective of their size, legal or ownership unbundling.

The ultimate goal of the policymakers was to ensure that the distribution grid operators are enabled to cooperate at EU level via a single institutionalised setting. Unlike the other DSO organisations, the Entity has its objectives, structure, membership, procedures and decision-making processes clearly determined by EU legislation. The communication between institutions, stakeholders and DSOs will flow easily, streamlined through the establishment of the new Entity.

EU authorities have always claimed that the new Entity will be a dedicated expert association working for the common European interest and not seeking to influence the political agenda of the Union. The registered members of the Entity shall not promote their specific company interest rather than support decentralisation, decarbonisation and digitalisation of the future electricity market. Its establishment is intended to create a level playing field between DSOs and the formal organisation of the TSOs, thus completing the EU institutional setting.

A primary task of the Entity's working groups shall be the elaboration of the Network Codes and Guidelines in cooperation with ENTSO-E. The Third Energy Package, and more concretely Regulation (EC) 714/2009, sets the foundation for the development of Network Codes and Guidelines as a prerequisite for further liberalisation and unification of the electricity and gas market in Europe. The first eight network codes were adopted after a lengthy negotiation process between the Commission, ACER and ENTSO-E. Introduced between 2015 and 2017, they cover the rules for grid connection, system operation, emergency and restoration, and the functioning of the market with capacity allocation and balancing.

According to the Commission's Targeted Stakeholders Consultation paper[15], the first codes prepared with the active involvement of the newly established EU DSO Entity shall be on cybersecurity and demand-side flexibility, to be completed by 2022. Those two key areas were identified as the growing share of decentralised production requires more flexible and responsive customers, who are offered the right incentives and benefit from their active participation on the market. DSOs have a central role in supporting that process through improved data exchange and interoperability. DSOs shall remain neutral market facilitators, collecting and exchanging data among themselves, with TSOs and with third parties such as prosumers, aggregators and system service providers. To meet these requirements, they need a unified structure and common technical rules adopted and implemented by all operators. The network codes address the bottlenecks in cross-border flows and allow for future European markets to be guided by a systemised single set of rules.

[15] 07-02-2020-targeted_stakeholder_consultation-2020-2023-for_europa.pdf

The Challenge

The need to strike a balance between members of different sizes (the Entity has a registered DSO with more than 30 million metering points and another one with less than a hundred) generated a lot of discussion during the elaboration of the voting rules. The voting process in the board is structured as “one member, one vote”, which, in practice, gives more leverage to DSOs with less than one million customers. In contrast, the voting in the General Assembly takes into account both the number of metering points of individual DSOs and the number of DSOs that are in favour. Therefore, the pursuit of balance between the interests of large DSOs and smaller ones could lead to a deadlock in the decision-making process.

In addition to its diversity in size, the membership of the Entity comprises of different categories based on the Commission’s explicit request. Said categories are defined as: members, associated members, and third country representatives. Only DSOs originating from EU countries are granted status as a Member with full rights to participate in all bodies of the Entity. Associated members come from non-EU countries that apply the relevant EU energy legislation. However, they have no voting rights in the General Assembly and no formal participation in the Board of Directors. Third country representatives, as a new category, broadens the membership of the Entity by involving other distribution system operators that do not apply the EU energy law at all (such as Turkey, Russia or the US). As of the time of this article’s completion, interest to join the Entity has already been shown by a Turkish DSO with more than 3 million connected customers.

The role of the existing EU associations – E.DSO, Eurelectric, CEDEC, and GEODE – is expected to be further reconsidered. The establishment of the new institutionalised Entity would imply a new balance vis-à-vis Brussels stakeholders.

On a global scale, DSOs are facing unprecedented transformation as a result of increased intermittent generation at distribution level, advanced technologies and a growing number of consumers ready to become active participants on the market. This landscape requires DSOs to introduce innovations, explore smart and flexible solutions, exchange large volumes of data and maintain a stable and secure grid. It implies the need for them to find common ground and make progress on the development of secondary legislation despite their divergence.

The opportunity provided by the Clean Energy for All Europeans package allows distribution operators to have strong and single representation in the European institutional structure and underpin the transition towards climate neutrality of the continent, as promised by President Ursula von der Leyen. The biggest challenge for member DSOs will be consolidating their highly diverse

membership and working at a high policy level while maintaining political neutrality and preserving the technical nature of the association.

Ilina Stefanova *has recently joined United Nations Industrial Development Organization (UNIDO) in Vienna as Coordinator of energy efficiency projects in newly industrialized countries in Africa and Asia. Before that she worked at EVN AG as a public affairs manager and was responsible for stakeholder engagement and coordination for CEE (Central and Eastern Europe) and Western Balkans. Ilina has worked in the energy sector for over 15 years and has extensive experience in shaping renewable energy policy, grid operators' neutrality and just transition in less-developed parts of Europe. Ilina holds Masters' degree in Law and Energy Management MBA from Vienna University of Economics and Business.*

WASTE-TO-ENERGY COMPATIBLE WITH THE CIRCULAR ECONOMY – CHALLENGES AND OPPORTUNITIES

Tsvetozar Zahariev

Introduction

Waste, and what to do with it, is one of the central problems of our time. Waste accounts for about 4.5 million tonnes per day worldwide. According to the World Bank, this figure will grow to more than 8 million tonnes per day by 2050[1]. Increasing prohibitions on the transfer of waste across borders also puts a burden on national governments to find practical solutions themselves.

At the same time, many countries have achieved considerable progress in waste management and a high degree of sophistication in the way they manage waste. Long gone are the days when trash was simply *thrown out* of the house or the factory. It has become both an issue of great public concern and, importantly, a rather flourishing business with considerable commercial opportunities (see description of the waste-to-energy (WtE) industry and its global spread below).

There is now a growing consensus that the response to waste must be part of moves aimed at promoting the so-called *circular economy* – a concept that is increasingly driving policymakers. This approach calls, inter alia, for the nine Rs[2] as a foundation stone of action and for protecting the planet by eliminating waste altogether.

In this regard, the European Green Deal initiative is a timely set of tools to tackle the looming waste problem.

Is Waste-to-energy compatible with the circular economy?

This part explores the arguments surrounding the compatibility of the WtE industry with the circular economy, and the recent responses of policymakers to this debate.

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[1] Kaza, S., Yao, L.C., Bhada-Tata, P. & Van Woerden, F., What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050, World Bank, 2018, available online at: https://openknowledge.worldbank.org/handle/10986/30317

[2] At the beginning of the century, the 4 Rs (Reduce-Reuse-Recycle-Recover) were introduced, which later evolved into the circular economy and the 9 Rs approach (Refuse-Rethink-Reduce-Reuse-Repair-Refurbish-Remanufacture-Repurpose-Recycle-Recover). The concept puts emphasis on the redesign of materials and production of new cycles that will secure sustainable development.

Linear economy

The mantra of today's so-called linear economy can be summarised as follows: take (raw material) – make (products) – use (consume) – dispose (of non-recyclable waste). This has been the economic and social *modus operandi* for many years now. Under this model, waste is the final phase in a society that, it is fair to argue, assumes it has unlimited resources for its consumption and production cycle.

The main consequences arising from the linear economy

This model has, however, consequences. Currently, there are more than seven and a half billion people in the world and this population is growing by roughly 80 million each year. The energy consumption amounted to 14,282 million tonnes of oil equivalent in 2018 (in 1971 it was 5,519 million tonnes of oil equivalent), and the CO2 equivalent emissions reached 36.6 billion tonnes (in 1971 it was 15.4 billion tonnes).

Global municipal solid waste (MSW) of approximately 2.01 billion tonnes per year is generated, with at least 33% of that – at an extremely conservative estimate – not managed in an environmentally safe manner. The global MSW generation is expected to increase to around 2.2 billion by 2025 and to 3.4 billion tonnes by 2050[3].

These figures considerably demonstrate that the challenge of dealing with waste is both rather stark and pressing.

Circular economy

In response to the problems of a wasteful linear economy, the concept of the so-called circular economy has emerged – an economy that focuses, by contrast, on maintaining the value of products, materials and resources in circulation for as long as possible, thus minimising waste generation and resource consumption. The transition towards a circular economy is argued to create new business opportunities and jobs and will imply innovative, more efficient ways of producing and consuming. It is also presumed that a circular economy will save energy and will help avoid irreversible damages to the environment and to society caused by the consumption of resources at a rate that exceeds the Earth's capacity to renew them.

Moving away from landfills and towards circularity

In many countries, the huge rise in waste has made traditional dumping in landfills unsustainable. One example of this is the *fast fashion industry*. Textiles represent one of the world's fastest-growing streams of discarded material; this encompasses all forms of fabric, including materials used to make clothing. In the

[3] Kaza, S., Yao, L.C., Bhada-Tata, P. & Van Woerden, F., What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050, World Bank, 2018.

developed world, fast fashion industries encourage consumers to purchase new apparel in quick succession; as a result, more used and not-so-used clothes are being tossed into landfills.

However, diverting waste from landfills is becoming increasingly commonplace for urban dwellers. Recycling and composting programmes are now a feature of urban life, the familiar recycling bins ubiquitous almost everywhere. The benefits also are significant. Recycling materials – such as wood pulp and paper, plastics, glass and metals – helps prevent the depletion of natural resources. A circular economy also creates economic opportunities, with more companies making new products from diverted materials. In many instances, less energy – fossil fuels for example – is required to produce recycled goods than similar items made from raw materials.

Waste-to-energy

WtE is a process that uses heat to recover energy or fuels from waste materials. It has been applied for many decades, as a well-established waste management method in many highly environmentally sensitive economies, e.g. in Europe and in countries such as Japan, the Republic of Korea, Singapore, etc.

In total, in 2019, there were over 1,200 WtE plants in the world, with a total capacity of approximately 310 million tonnes of waste per year. Most of the existing WtE plants are located in China (total capacity of approximately 130 million tonnes per year), the EU (approximately 90 million tonnes per year), Japan (approximately 60 million tonnes per year), the US (approximately 27 million tonnes per year), South Korea (approximately 4.5 million tonnes per year) and Singapore (approximately 2.5 million tonnes per year).[4]

The contribution of WtE to the global renewable energy supply from the combustion of the biogenic fraction of the waste is approximately 1%. The global WtE market size was valued at $31.0 billion in 2019 and is projected to register a compound annual growth rate (CAGR) of 7.4% until 2027.

WtE is an oligopolistic industry dominated by major players from European developed countries, the US as well as Japan and China in Asia. Many of the latter enter into strategic collaborations with smaller local companies or take stakes in local companies when accessing new markets, thereby contributing to foreign direct investment (FDI) flows into these countries. The top players in the WtE industry are Babcock &Wilcox Enterprises Inc., Everbright Environment, CNIM (Martin GmbH owns 10.25% of CNIM), Covanta Energy, Hitachi Zosen Inova AG (formerly Von Roll Inova), Keppel Seghers, SUEZ Environment, Veolia Environment S.A., Viridor, etc.[5]

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[4] See online https://www.prnewswire.com/news-releases/top-20-companies-in-the-waste-to-energy- wte-market-2018-visiongain-report-868219369.html

[5] See online https://www.prnewswire.com/news-releases/top-20-companies-in-the-waste-to-energy- wte-market-2018-visiongain-report-868219369.html

Waste hierarchy

Figure 1 graphically represents the EU waste hierarchy which is the basis of the EU waste policy and legislation[6]. The waste hierarchy dictates that waste should be managed with the following priority order: prevention, reuse, recycling, recovery and disposal. WtE is only competing with landfilling for residual waste and the waste hierarchy recognises that landfilling should come last.

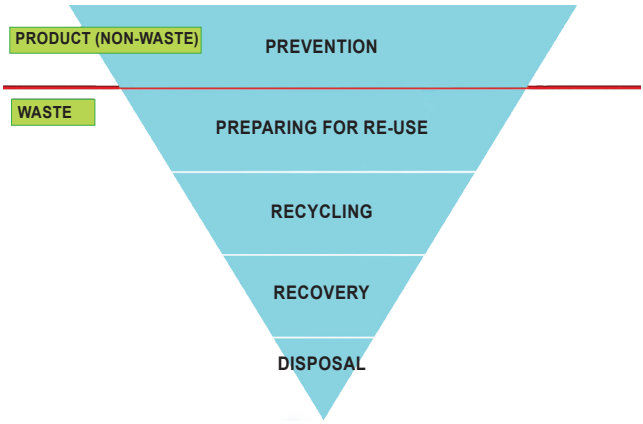

Figure 1: Hierarchy of sustainable waste management

The primary purpose of the hierarchy is to establish an order of priority that minimises adverse environmental effects and negative public health impacts and optimises resource efficiency in waste prevention and management by diverting waste from landfills. It is, therefore, of paramount importance that, going forward, this waste management principle remains a key driver in legislative actions and policies touching on waste management.

Arguments against and in favour of waste-to-energy

Over the years, countries have modified their approach to the WtE industry. A Box with the chronology of the main actions of the EU to the circular economy and waste management which demonstrates the step-by-step declassification of WtE as a circular economy activity. It is worth exploring the main arguments behind the concerns and negative positions that WtE has given rise to as well as the arguments in favour of WtE, as detailed in Table 1 below.[7]

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[6] Source: European Union, Directive 2008/98/EC on waste (Waste Framework Directive).

[7] ECE, based on Draft People-first Public-Private Partnerships Evaluation Methodology for the Sustainable Development Goals (ECE/CECI/WP/PPP/2020/3), 2020.

Table 1: Arguments put forward against and in favour of waste-to-energy

Arguments put forward against	Arguments put forward in favour
WtE reduces recycling/composting, acting as a disincentive or even barrier to circular economy or zero-waste practices. Turning unsorted and usable trash into a valuable fuel commodity means communities are less likely to choose to reduce, reuse and recycle it.	WtE can be part of a holistic waste management strategy. The EU countries reduce landfilling of wastes by a combined effort of recycling/composting and WtE. In the US, counties and municipalities that utilise WtE consistently show an increased recycling rate, in parallel to WtE practice.
WtE raises environmental concerns, exacerbating climate change, emitting toxic emissions and giving rise to air pollution.	Today's technology allows WtE projects to operate with limited to no polluting effects. WtE plants must comply with stringent environmental standards, such as the EU Industrial Emissions Directive. The latter also sets standards for non-EU countries. WtE and incineration are different processes. Incineration does cause emissions; however, WtE facilities equipped with sophisticated air pollution control (APC) systems have far less severe impacts on air pollution. Moreover, incinerators do not produce energy. There are hundreds of thousands of incinerators in the world, whereas WtE facilities are far less numerous, over 1,200.21
WtE raises public health concerns for the population, emitting carcinogenic pathogens.	Today's technology allows WtE projects to operate with limited to no polluting effects, and WtE plants must comply with stringent regulatory requirements. The only proven alternative to landfilling of materials that cannot be recycled is WtE. Landfilling relates to methane emissions, a potent greenhouse gas, and it is well documented that WtE saves 0.5 to 1 tonne of CO_2 equivalent per tonne of waste.

WtE raises societal concerns, and communities are opposed to having them in their neighbourhoods. In some countries, popular protests have taken place over the location of WtE plants, reflecting serious concerns by residents on the impact to their health.	WtE plants monitor their emissions continuously and report these on site and/or online. Many WtE plants around the world are built in the middle of residential or industrial sites so as to facilitate the use of heat for district or industrial heating or cooling. Some cities, such as Brescia, Osaka, Paris, Vienna, have built WtE plants that have become tourist attractions. The most recent addition is the new WtE Plant in Copenhagen, which is planned to have a roof that can be used as a ski slope.

In conclusion, WtE can serve as a transition step to a more circular and more sustainable development path, depending on where countries are at the start. WtE is expected to decrease because of the increased reusing and recycling of products. However, WtE will remain necessary for residual mixed waste. Moreover, there are some good reasons why WtE has a potential to contribute to circular economy principles and practices:

- Some products simply cannot be recycled.
- Landfills are a major health and environmental problem and need to be scaled down. Even in the most developed countries, their role is still too strong and WtE is a means of ultimately eliminating them.
- There are technologies (not using combustion to produce energy) coming through which can lower CO_2 emissions and radically change the WtE industry and make it more circular economy responsive.

Overcoming the problems in waste-to-energy projects in the transition to the circular economy and making them people-first

This section explores individual WtE projects to assess their actual and potential impact on circular economy practices. It consists of two parts. The first looks at traditional PPP and why better, more expansive models are needed if the sustainable development goals (SDG) and the transition to a circular economy are to be achieved. The second part deals with the problems that WtE projects will have to overcome in order to contribute to this transition.

Public-private partnerships and people-first public-private partnerships (PPP): A comparison and the main challenges to overcome

Typical PPP in the WtE industry

PPPs are a favoured development strategy in countries for several industries, including WtE facilities. In a typical PPP structure for WtE projects, the developer undertakes the development of the project under the design-build-own-operate (DBOO) model. In the DBOO model, the developer secures its own financing and builds, owns, maintains and operates the WtE facility to meet the contracted ways to create the energy capacity over the lifespan of the facility, which is about 25 to 30 years.

WtE facilities require significant upfront investments, however, and developers and their financiers require assurances from the government agency commissioning the project. That enables satisfactory returns from the investment to be recovered over time.

Along with government incentives (see Part III below), WtE projects are based mainly on two sources of revenue. The first source is a *gate fee* charged when municipalities, businesses or other organisations deliver their waste to the facility for disposal. The second source is the generation of energy, electricity and/or heat, which is sold to local power grids. Some end products coming out of WtE incineration, such as bottom ash, represent a third, smaller source of revenue.

There are two possibilities for financing this type of projects according to the EU Green Deal:

✓ 100% EU funding – this is only eligible for strategic capacities and projects depending on the priorities of the specific country;

✓ low-interest credit financing for a period of 30 years – this instrument is the most suitable for business because it offers a cheap and long-term secure resource for securing viable projects such as the WtE projects.

The gate fee is driven by the volume of waste, while energy sales are driven by the heat produced. This fact, in turn, can influence the business model of the WtE project. The more waste that is combustible, such as plastics, paper or wood, the hotter the furnaces burn and the higher the calorific value (CV) produced. The more non-combustible waste, such as bricks or glass, the lower the CV. This mix determines the facility's revenue streams.

In addition, safety regulations require that the facility is designed for a certain thermal capacity. If the percentage of combustible waste is too high, the CV will be above the designated level and the operator will have to reduce the amount of waste going through the facility. This reduces gate fees. However, if the CV is too low, the facility generates less electricity than it can sell. The single biggest business challenge for PPP WtE projects is to balance the right CV and quality of the waste in order to optimise both waste volumes and sales of power and electricity.

People-first PPPs

The UN's Economic Commission for Europe (ECE) has advocated the need for a more expansive and broader developmental model, arguing that such people-first PPPs should place sustainable development at its core and *the people* as the main beneficiaries. Partnerships must now be evaluated according to a new set of criteria which are *quality infrastructure* investments. Overall, such people-first PPPs should give meaning to concepts such as *value to people* and *value to the planet* through achieving and complying with five people-first outcomes as referred to in Table 2 below.[8]

Table 2: People-first PPP outcomes and benchmarks

Outcomes	Benchmarks
Access and equity	Provide essential services
	Advance affordability and universal access
	Improve equity and social justice
	Plan for long-term access and equity
Economic effectiveness and fiscal sustainability	Avoid corruption and encourage transparent procurement
	Maximise economic viability and fiscal sustainability
	Maximise long-term financial viability
	Enhance employment and economic opportunities
Environmental sustainability and resilience	Reduce greenhouse gas emissions and improve energy efficiency
	Reduce waste and restore degraded land
	Reduce water consumption and wastewater discharge
	Protect biodiversity
	Assess risk and resilience for disaster management
	Allocate funds for resilience and disaster management
	Advance community-driven development
Replicability	Encourage replicability and scalability

[8] ECE, based on Draft People-first Public-Private Partnerships Evaluation Methodology for the Sustainable Development Goals (ECE/CECI/WP/PPP/2020/3), 2020.

Stakeholder engagement	Enhance government, industry and community capacity Support innovation and technology transfer Plan for stakeholder engagement and public participation Maximise stakeholder engagement and public participation Provide transparent and quality project information Manage public grievances and end-user feedback

Key challenges to achieving people-first waste-to-energy projects

Becoming *high-quality investments* and *people-first* is challenging for the WtE industry. This section looks into each of the five people-first outcomes, demonstrating the nature of the problem under each outcome and how projects are addressing and overcoming these problem areas

Increase access and promote equity

Increasing access and promoting equity refers to whether, as a result of the project, access to critical services like energy is achieved, especially for those who were previously unserved or served by a much lower quality of service. WtE projects are more expensive than other energy sources and are not affordable to consumers in low- and middle-income communities.

Some critics argue that the WtE industry itself prefer to be perceived as power plants, when in fact they produce rather little energy and fundamentally remain waste disposal facilities. Also, critics claim that WtE facilities do not provide cheaper energy than other sources. In such a characterisation, WtE can hardly be presented as making energy more accessible to vulnerable groups that were previously unserved or underserved in energy provision.

As for the volume of energy generated overall, WtE projects typically do not contribute significantly to the national grid and the energy supply of the country. Yet, this picture is changing. For example, WtE projects in Olsztyn, Poland and Klaipeda, Lithuania contribute significantly to the energy needs of the respective municipality but also help the regions to replace fossil fuels and their energy imports from neighbouring countries. In the case of Olsztyn, the WtE plant produces a significant amount of heat that was previously produced from a fossil fuel plant that shut down, whereas the WtE plant in Klaipeda provides about 40% of the heating demand of the region and substitutes a significant amount of gas that otherwise would have been imported from other countries.

The situation in rural areas shows that, to date, there are few WtE projects that contribute significantly to the energy needs of rural dwellers. A similar trend is observed when looking at the cost of energy. For example, the WtE project in Maardu, Estonia contributed to approximately 20% of the heating demand of the local communities, at one fourth of the price provided by the conventional fossil fuels, and generated enough electricity to meet the demands of small cities in proximity to the facility.

Improve projects' economic effectiveness and fiscal sustainability

This criterion refers to the project's contribution to, inter alia, good-quality jobs, technology and innovation, including the project's ability to utilise sufficiently all economic assets, including the empowerment of women; profitability of the project.

Challenge: WtE projects have few local economic impacts such as high-quality jobs, etc.

This challenge relates to two major points at different ends of the income spectrum: a) do WtE projects provide well-paid jobs, transfer knowledge to local people and benefits to the community as a whole; and b) at the base of the pyramid, do WtE projects materially improve livelihood of low-income and marginalised groups – e.g. families working informally as waste-pickers – and of vulnerable groups like refugees?

WtE plants can indeed negatively affect the livelihood of communities if the interests of local people are not adequately considered during the construction and operation of the project. A major concern relates to low-income families which rely for their income on informal recycling activities. Also in this group are those who are very vulnerable, e.g. refugees, who have no jobs. However, in many cases WtE projects can provide a viable support for these groups. For example, the project in Cox's Bazar in Bangladesh, mobilised the refugees themselves to help in the construction and operation of the facility, and in the case of Belgrade, Serbia, the municipality aided Roma families that were living on the old landfill in finding new jobs and accommodation. Also, many projects provide high-quality jobs and transfer of knowledge to the local community, in addition to other monetary benefits. For example, the WtE project in Dublin, Ireland provided about 100 jobs to local people for the operation of the plant and more than 50 jobs during construction that also included extensive training and transfer of know-how. In addition, more than €10 million has been allocated to the community to date, paid for out of the revenues generated by the project.[9]

Moreover, WtE projects typically do not advocate gender equality and women's empowerment, which is something they should put emphasis on in order to fully comply with that specific outcome. What needs to change to make this happen?

[9] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

Improve environmental sustainability and resilience

Environmental sustainability refers to the protection and preservation of the planet and is a basic requirement of sustainability. Mitigating the impacts of climate change is integral to the successful implementation of the SDGs.

Challenge: WtE combustion causes the release of CO_2 equivalent emissions into the atmosphere that can seriously damage people's health.

This challenge consists of two components: a) does the project negatively affect the public health and the environment by producing hazardous emissions and depleting natural resources; and b) does the WtE project affect the waste recycling targets of communities, which are a priority with regard to the waste hierarchy?

There is a significant concern that WtEs relate to emissions that harm the environment. If not designed properly, WtEs can also reduce recycling in communities. However, many WtE projects produce significant environmental benefits for communities and enhance recycling with the recovery of metals and minerals from the bottom ash fraction.

For example, the WtE plant in Barcelona, Spain saves 19,000 tonnes of CO_2 equivalent per year, reduces fossil fuel consumption by 58%, improves the energy performance of the buildings that are using heat from the plant, and recovers about 15,000 tonnes of metals and minerals. The plant in Glasgow, the UK diverts 90% of materials away from landfills, saves about 20,000m^2 of land per year and 90,000 tonnes of CO_2 equivalent per year but also recovers about 10,000 tonnes of metals and minerals. In Doel, Belgium the WtE plant was associated with the decommissioning of the gas-fired boilers, which resulted in savings of 200,000 tonnes of CO_2 equivalent per year; the process also recovers about 20,000 tonnes of metals and minerals that are used in construction. The plant in Singapore will achieve *zero waste to landfills* by co-processing the residual wastes from recycling facilities with wastewater treatment residues in a WtE plant. The development will save about 1 million tonnes of CO_2 equivalent per year and about 100,000m^2 of land per year; additionally, it will recover about 30,000 tonnes of metals and minerals from the bottom ash residues[10].

A step in the right direction has been taken by the project in Surrey, British Columbia, Canada, which at the collection stage has undertaken advanced source separation of organic materials like food waste and then at the processing stage has built anaerobic digestion plants (recovering bioenergy or biofuels) as a first step towards diverting materials from landfills. By contrast, by clustering different processes together in an integrated fashion, several projects elsewhere have had a much more significant impact than the aforementioned project in

[10] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

Canada. Integrated sustainable waste management facilities consist of recycling centres to recover recyclables from dry materials – metals, paper, plastics, etc. – anaerobic digestion plants to recover compostable materials and energy from the organic fraction, and WtE plants to recover energy from the residues of these operations, which in many cases are mixed with other residues, such as sludge. Good examples of this type of integrated approach are found in Barcelona, Glasgow and Singapore.

These cases demonstrate excellence in circularity by reducing, or even eliminating, the use of landfills as well as by maximising the resource and energy efficiency of the waste management systems. These developments put emphasis on industrial symbiosis, in which several industrial entities develop mutually beneficial relationships. Such systems increase resilience and economic gains, while reducing the environmental impact and costs.

Replicability

Replicability refers to the project's emphasis on the replicability and scalability of the technologies and programmes, so that these can be developed elsewhere. To that end, the governmental, industrial and communal capacities should be enhanced by providing training opportunities for the local communities and cultivating specific skills of the local stakeholders.

Challenge: Making the WtE model replicable and its use more prevalent will require extensive skills transfer and the training of local staff in sophisticated technologies. This can be expensive. WtE projects tend not to train local people who can embed the skills necessary to develop local WtE companies and start-ups.

In terms of skills transfer, WtE companies do frequently provide training opportunities to local people. For example, in Cần Thơ, Mekong Delta, Vietnam the company responsible for the construction and the operation of a WtE plant provided in-depth training to local people. As a result, employees became professional plant operators of a very high standard. On the technology side, however, the wrong selection of the WtE technology can lead to significant losses for the community as well as the project sponsors. For example, in the case of the Tees valley project in the UK, where the first plasma gasification plant was to be built, the project resulted in the loss of 700 jobs and reported a loss of about $1 billion because the technology involved failed.

Stakeholder engagement

People-first PPPs encourage the project developers to engage all the people and stakeholders who may be affected by the project. Effective engagement requires high-quality, understandable data – provided by the project sponsors to all stakeholders – on the basis of which to evaluate the performance of the plant.

Challenge: Projects do not develop plans to engage with local communities which are largely hostile to WtE plants being located near them. This negativity has even given birth to the so-called not-in-my-back-yard (NIMBY) effect.

This challenge is mainly associated with two aspects: a) does the project engage all the stakeholders, including vulnerable groups, in the planning, construction and operation of the plant; and b) does the project provide high-quality, understandable data to the stakeholders to allow zero tolerance to corruption as well as transparency of the projects?

WtE projects can face strong opposition from local stakeholders. Typically, the latter are not well informed about the project. They tend also not to trust the authorities and/or the project sponsors responsible for the construction and operation of the project. Strong opposition can delay or even cancel the construction of the plant. For example, in Araucania, Chile the stakeholders expressed strong opposition to a WtE project. This was partly because communication with the group was poor, while existing concerns over the livelihood of vulnerable groups were not sufficiently addressed. As a result of the strong opposition, the WtE project was cancelled – a lesson for all project sponsors in the future.

In Trimmis, Switzerland, by contrast, local groups organised effectively to change the policy of a company involved in a WtE project and were given opportunities to have their views heard. They were fully consulted in drawing up the plans, in setting up the facilities, in the tendering process, etc. Also, many projects gave assurances to the citizens about the project, such as monitoring of emissions, etc. The local community and economy also saw indirect benefits, notably to the local infrastructure. This contribution to the local community also took place in Nanning, China, where the project sponsors built new roads as part of their WtE investment and the municipalities enforced strict emission standards for WtE operations, which were continuously monitored and shared with the public.

Overall conclusion

The above-mentioned discussion on projects demonstrates that, in spite of the problems, people-first projects can achieve significant social and environmental objectives and become people-first: it is not, by any means, a lost cause. Indeed, some projects as seen above, are presented today as being consistent with circular economy criteria. However, to scale up these examples of a new, more circular-economy-consistent approach, governments and other stakeholders need to play a key role in taking the WtE industry to another level.

Best practice options for adapting and transforming projects into people-first waste-to-energy public-private partnerships

As stated above, people-first PPPs have the potential for overcoming key problems and barriers to the circular economy and becoming people-first PPPs –

a holistic and integrated response to problems affecting our societies, economics and planet. This part tentatively sets down seven best practice options for transforming projects in line with circular economy principles. These best practice options are aimed at governments, private sector and civil society groups.

WtE is evolving as a result of several factors, such as government policy and actions against climate change and in support of circular economy processes, new technological developments, and corporate strategies. Three scenarios can be identified:

- a scenario where there is continuation of WtE as placed above landfills in the waste hierarchy;
- a scenario where a WtE facility is placed at the same level as landfills in the waste hierarchy; or
- a scenario where WtE is placed above its current status and becomes fully incorporated into circular economy activities.

The following is a list of best practice options, seven of them. Governments that decide to use WtE as a strategy for waste management in any of these three above-mentioned scenarios can select any of these options and would ideally adopt all seven.[11]

Vision

Challenge

Most of the world is still overwhelmed by waste and cannot manage it as a resource. Europe and Central Asia together are expected to generate 490 million tonnes per year by 2050, roughly 100 million tonnes more than the amount generated in 2016. A high percentage of waste still goes to landfills. Waste, up until now, has been perceived as a thing to get rid of and this throwaway mentality is part of the old thinking of the linear economy and at odds with circular economy principles and processes.

Option 1: Embed circular economy visions and principles into government policies.

People-first WtE PPPs should turn waste into a resource and operate the enterprise as a purpose-oriented business (with purpose before profit) that has a client-oriented focus and generates new business and service opportunities. Governments and local authorities need to encourage the WtE industry to operate with contributing to the circular economy as a core objective.

[11] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

Specific options

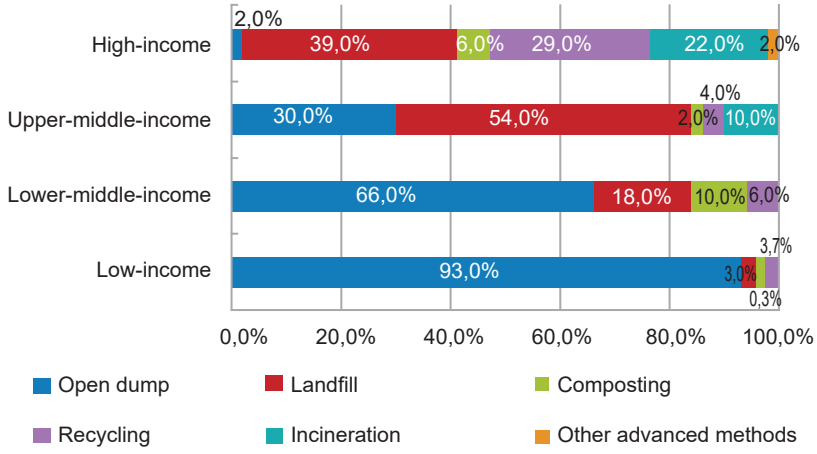
- Valuing waste: projects should prioritise efficient collection and pre-processing systems, which can prevent the loss of potentially valuable waste, and should aim to avoid the use of land for throwing waste away. In order to promote WtE, it is, therefore, necessary to highlight the importance of preventing waste, reusing waste products and recycling as much as possible.

- Encouraging new WtE technologies and processes where WtE is not common: such a programme should particularly focus on low- and middle-income countries, where WtE projects are relatively rare. These are the countries where WtE has to be promoted in the place of landfills, which are cheaper but dangerous for the public health and the environment.

Box 1. Waste-to-Energy mainly exists in high income countries

WtE is almost non-existent in low- and middle-income countries where open dumpsites are prevalent. In low-income countries, 93% of waste is dumped (or burned) in roads, open land, or waterways, whereas only 2% of waste is dumped in high-income countries (see Chart 1).

Chart 1. Disposal methods by income



Source: What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050, World Bank, 2018.

Scope and scale

Challenge

Waste is set to grow exponentially in the coming years and the size of WtE plants is predicted to grow in commensurate fashion, creating mega plants

dealing with enormous quantities of waste. But in the circular economy, there should be a focus on smaller-scale, decentralised operations serving specific purposes in decentralised systems. Waste hierarchy, that is a standard, needs to reflect the circular economy challenges.

Option 2: Internalise externalities, gain social acceptance and mobilise investments.

The waste hierarchy should encapsulate the circular economy activities as presented in Figure 2.[12] In this context, emphasis should be placed on two separate activities: resource management and waste management. The first requires advocacy of innovations and a strong regulatory environment to enhance the smarter product use and manufacture and to extend the lifespan of product cycles. Waste management should be related to maximum resource and energy recovery, not landfilling or incineration of wastes without energy recovery. Also, people-first PPPs should focus on marginalised and vulnerable groups trying to survive in an increasingly dangerous world, such as refugees, first nation, etc.

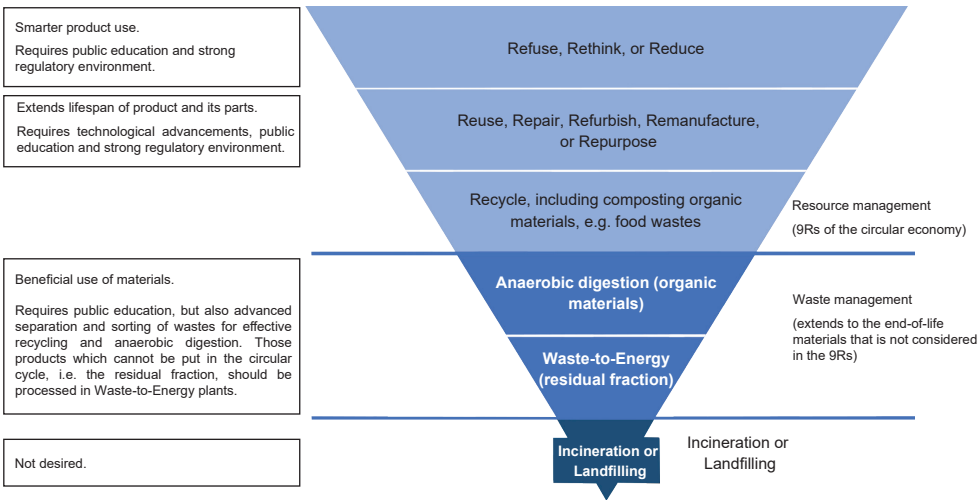


Figure 2: Hierarchy of sustainable resource and waste management

[12] ECE, based on European Union Directive 2008/98/EC on waste (Waste Framework Directive).

Specific options

For better waste resource management, people-first WtE PPPs should focus on specific areas and purposes that are *circular*:

- People-first PPPs should advocate the implementation of industrial symbiosis solutions that aim at maximum recycling/composting of resources and maximum energy recovery from the residual fraction by using the waste from one process as raw materials for another.
- People-first WtE PPPs should address the so-called residual fraction of waste, which is waste of poor quality. This prevents the recycling cycle from being contaminated with polluted products.
- People-first WtE projects should create renewable energy out of the biodegradable fraction of wastes in the WtE process.
- People-first WtE PPPs should ensure that the bottom ashes from incineration are turned into real valuable products with the recovery of metals as well as for construction purposes, roads and bridges etc. People-first PPPs should ensure that the fly ashes from incineration are disposed of in a sustainable and safe manner.

Box 2. A circular economy does not mean maintaining all materials in circulation at all costs[13]

Bisphenol A – an endocrine disruptor and reproductive toxic substance – is used as a colour developer in thermal paper, which is used, for example, for sale receipts. Since thermal paper is typically recycled, it contaminates other paper products and, therefore, hampers the whole recycling chain. Through its long-standing role in decontaminating the waste, waste-to-energy prevents such contaminations, thus contributing to high-quality recycling.

Technology and capacity building

Challenge

Many projects in the WtE industry are often outdated and utilise technologies that are polluting and cancer inducing. Combustion technologies can lead to a dangerous level of CO_2 equivalent emissions. Accordingly, the challenge is to encourage the use of more appropriate and advanced technologies, which are both expensive and require skills that are not available in many countries.

[13] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

Option 3: Select suitable technologies that are innovative and less polluting.

People-first WtE PPPs should adopt the right circular-economy-enhancing technologies including *cleaning* the circular process by removing dangerous, harmful substances and helping the local economy with skills development to utilise these technologies.

Specific options

- People-first WtE PPPs should operate with sophisticated air pollution control systems, and their emissions must be lower than strict emission standards, such as those set out in the Industrial Emissions Directive.
- A system of monitoring of emissions from WtE plants needs to be put in place with centralised registers controlled by the appropriate public environmental agencies.
- Such data and information need to be publicly available.

Fiscal incentives

Challenge

Tax incentives and subsidies are being used to encourage environmentally harmful WtE plants by, for example, supporting projects claiming to produce renewable energy when in fact they do not.

Option 4: Provide economic incentives and price supports.

People-first WtE PPPs should benefit from fiscal incentives that encourage such projects to adopt circular economy processes and move upwards in the waste hierarchy.

Specific options

- Governments should increase the landfill tax and consider a credit for WtE for renewable energy production, e.g. feed-in tariffs or the issuance of tradable green certificates with a guaranteed minimum market value for capacity installed.
- Results-based financing, e.g. environmental impact bonds, should be considered to address the construction, operation and counterparty risks in WtE investments.

Partnering and partnerships

Challenge

Partnership can bring countries financial resources, technology and management skills, but countries rarely know the track record of good international partners with these attributes.

Option 5: Identify good partners and monitor the performance of such partnerships.

People-first WtE PPPs should partner only with enterprises that display WtE technologies compatible with circular economy processes.

Specific options

- Governments should use all means available to help companies roll out their innovative technological solutions beyond their borders, especially to the low- and middle-income countries, which lack such technologies. Such promotion can have beneficial outcomes on lowering emissions in such countries which predominantly use landfills.
- Investment promotion agencies (IPAs) should identify opportunities and ways to use foreign direct investment (FDI) to green their economies and give greater visibility to green investment opportunities, e.g. through successful pilot projects and the preparation of pipelines of bankable projects.[14]

Public procurements and good governance

Challenge

Many countries lack proper procurement regulatory frameworks, which, in turn, can lead to a lack of transparency and poor governance.

Option 6: Establish transparent and open procurement processes and the adoption of a zero-tolerance approach to corruption in public procurement.

People-first WtE PPPs should participate in open, competitive procurements and be selected on the basis of their commitment to circular economy values and processes, their track record and their own commitment and rigorous endorsement of a zero-tolerance approach to corruption.

Specific options

- Critical for the improvement of projects and their impact on society and the environment are transparent and open procurement processes and the adoption of a zero-tolerance approach to corruption in public procurement.
- Governments should be encouraged to comply with the ECE Standard on a Zero Tolerance Approach to Corruption in PPP Procurement and inform the ECE secretariat on how they are implementing this option.
- The establishment of (or the coordination with existing) regulatory authorities is key to ensuring the continuous monitoring of the operations and to improving the confidence of the public and the investors.

[14] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

Stakeholder and community engagement

Challenge

WtE plants are sometimes located in poor and marginalised communities that lack the economic power to resist and challenge the location of WtE plants and those facilities have been accordingly criticised for *environmental discrimination*.

Option 7: Enhance local participation in projects that include women's empowerment and vulnerable groups and ensure strong stakeholder engagement.

People-first WtE PPPs should engage with stakeholders in a new *social contract* that regularly consults with communities, providing the latter regularly with information and data on the former's performance, as well as be accountable to regular monitoring and scrutiny by local communities where plants are located.

Specific options

- Include local groups in the design, construction and operation of the plant in order to help public acceptance and advance the social contribution of the projects.
- Project sponsors should promote the development of civil engineering projects for the community, e.g. land restoration, open dumps to land, WtE, etc.; and with benefits to the community, such as cheap energy, lower collection costs, green areas, etc.

Conclusions and follow-up

At its purest form, the circular economy has no waste, leading to a perfect and optimal cycle that allows materials to be forever used once extracted from the environment. Currently, however, this is not possible for many reasons, ranging from the limitations of technology to patterns of human behaviour. Therefore, until this perfect cycle is achieved in practice, society has the responsibility to employ all solutions available to sustainably manage materials that become waste, including WtE.

The WtE industry thus forms an interesting subplot of the transition to the circular economy. From this perspective, it is considered an industry with a transition technology. But such technologies can go up as well as down; and so the WtE industry can climb the waste hierarchy and become an industry with a future in the circular economy. As stated above, this will require the right enabling environment for the circular economy and WtE. It is, therefore, important that governments and all stakeholders as well as new projects adopt the seven best-practice options proposed in this document:

1) embed circular economy visions and principles into government policies;

2) internalise externalities, gain social acceptance and mobilise investments;

3) select suitable technologies that are innovative and less polluting;

4) provide economic incentives and price supports;

5) identify good partners and monitor the performance of such partnerships;

6) establish transparent and open procurement processes and the adoption of a zero-tolerance approach to corruption in public procurement; and

7) enhance local participation in projects that includes women's empowerment and vulnerable groups and ensure strong stakeholder engagement.

As a follow-up to these ECE guidelines, the following can be suggested:[15]

- Promote discussions on the WtE guidelines and its best practice options with the participation of governments, the business community and civil society. In this regard, consult, among others, with those governments who have ample experience in the matter as well as those whose engagement with WtE is still at an emerging stage.
- Disseminate the WtE guidelines to low- and middle-income countries in the ECE region. In this regard, encourage countries to cooperate both bilaterally and multilaterally to disseminate best-practice, people-first PPPs in the WtE industry, e.g. Switzerland.
- Use the WtE guidelines as a test case for the ECE people-first PPP Evaluation Methodology, when finalised and approved by ECE member states, in some WtE projects to determine their people-first qualities and disseminate the results to stakeholders.
- Prepare stepwise guidance on how the WtE industry can maximise its contribution to the transition to a circular economy.

Tsvetozar Zahariev *has been working for BNP Paribas, CEZ Bulgaria and other international companies and organizations. He is also developing his doctoral dissertation at the Technical University in Sofia. Mr. Zahariev has various articles in specialized scientific magazines.*

[15] ECE, Guidelines on Promoting People-first Public-Private Partnerships Waste-to-Energy Projects for the Circular Economy (ECE/CECI/WP/PPP/2020/5), 2020.

GEOTHERMAL ENERGY AND THE CHALLENGING BALANCE

Georgi Kortov

Introduction

As the world continues its expansion in solar and wind energy, the industry has to find more effective ways to balance the energy produced. The inconsistency of those renewable sources will present the global electrical grid with great challenges. High CO_2 emissions will lead us to turn increasingly to renewables. Converting coal-powered power plants to natural gas will be time-consuming and extremely expensive. Regional electricity system operators and regulators will face difficulties they will have to balance, occasional blackouts and maybe even power rationing.

Water is an inexpensive and consistent way of producing power without harming the environment too much. The current technologies, however, are very high-priced, as is the building of dams. Although dams are made to help local communities, they often cause them more harm. As mentioned earlier, the solution is right under our feet. In order to achieve carbon neutrality[1], the European Green Deal must tap into the full potential of all renewables, especially geothermal energy.

The EU's climate ambition[2] for the Union to become carbon free by 2050 is possible if the European Commission focuses on support for the next generation of geothermal power technologies and promotes new investments in this area of technological development.

Geothermal energy

Geothermal energy is a sustainable way of producing electricity by benefiting from Earth's temperature. It can power the world for generations ahead and is a sustainable alternative to fossil fuels.

A lot of countries are already making significant progress in harvesting this type of energy and converting it into electricity or heat.

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[1] European Green Deal, p. 6, available at: https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf

[2] European Green Deal, p. 8, available at: https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf

The graphic[3] below shows the leaders in that regard and their installed capacity:

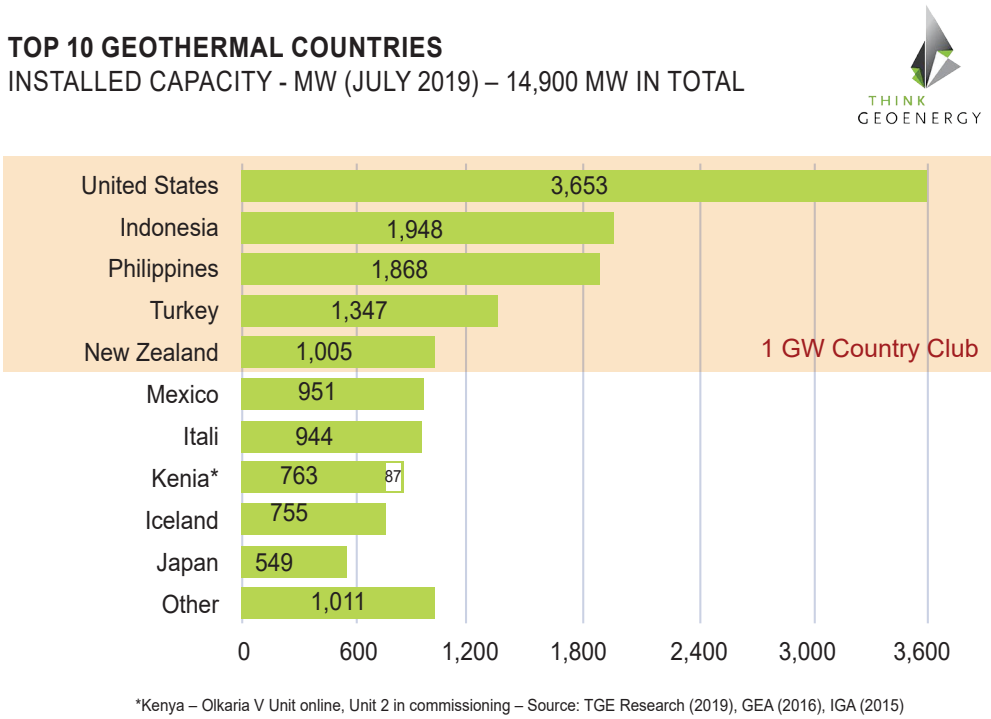

Figure 1: TGE Research (2019), GEA (2016), IGA (2015)

Although a lot of countries can harvest geothermal energy, the efficiency of these power plants depends on numerous factors[4]. Some of the geophysical factors are still unknown. The required invasive inspections and drilling provide enough analysed information on which areas are suitable for construction.

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[3] Richter, A., "ThinkGeoEnergy's Top 10 Geothermal Countries 2020 – installed power generation capacity (MWe)", p. 1, available at https://www.thinkgeoenergy.com/thinkgeoenergys-top-10-geothermal-countries-2020-installed-power-generation-capacity-mwe/

[4] Coro, G. & Trumpy, E., "Predicting geographical suitability of geothermal power plants", *Journal of Cleaner Production*, Vol. 267, 2020, p. 2, available at: https://reader.elsevier.com/reader/sd/pii/S0959652620319211?token=CDAE65C0F8C87B19287036D01E54F85B08BAE37E9C2B8096768E8080B14D57A2A37C3D4C0525C85C3DAE41AC911EB767&originRegion=eu-west-1&originCreation=20210511212743

The people living in those areas tend to question how and on what principle a particular area is chosen for construction. Moreover, what are the social and ecological risks that this construction may entail and are they taken into account?

To address this matter, over the course of more than two years, the Institute of Geosciences and Earth Resources (CNR–IGG) and the Institute of Science and Technologies Information "A. Faedo" (CNR–ISTI) collaborated on a scientific project[5]. Researchers Eugenio Trumpy (CNR–IGG) and Gianpaolo Coro (CNR–ISTI) created the first global map showing in 50km resolution all areas suitable for installation of high-efficiency geothermal power plants. In conducting their study, they used artificial intelligence, geospatial analysis and careful selection of processing parameters potentially related to geothermal power plants.

The most important variables that this model relies on to assess the area's suitability are altitude, earthquake density, carbon dioxide emissions to the ground, surface air temperature and, last but not least, heat flow. The ideal combination of those factors was synchronized with the help of an artificial intelligence model developed by the two researchers.

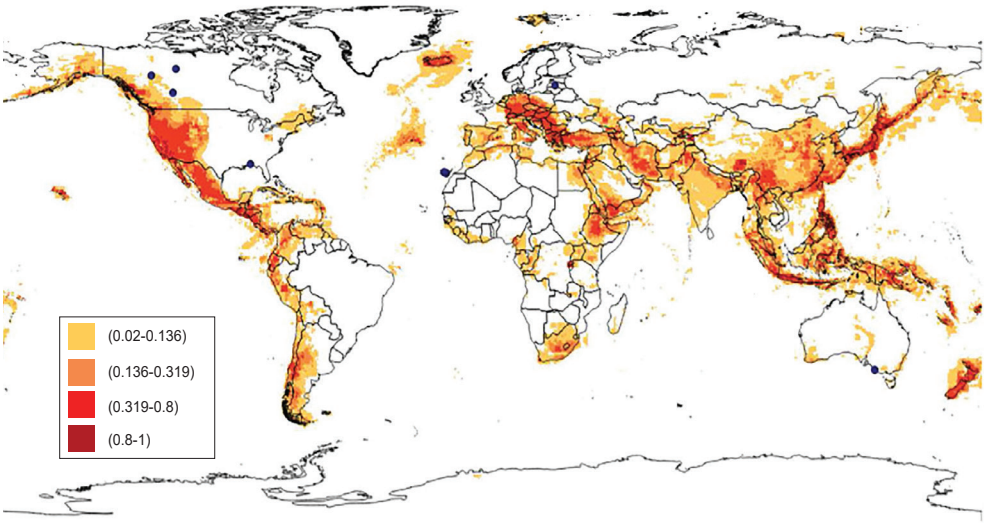

Figure 2: G. Coro, E. Trumpy / Journal of Cleaner Production 267 (2020) 12187

[5] Ibid., p. 4, available at: https://reader.elsevier.com/reader/sd/pii/S0959652620319211?token=CDAE65C0F8C87B19287036D01E54F85B08BAE37E9C2B8096768E8080B14D57A2A37C3D4C0525C85C3DAE41AC911EB767&originRegion=eu-west-1&originCreation=20210511212743

On this map[6], Bulgaria and several countries in Central Europe exhibit optimal potential for highly efficient geothermal power plants. Iceland is a good example of how those resources can be used for heating and producing electricity without affecting the tourism industry. As we know, tourism is a major part of Bulgaria's economy; therefore, geothermal power plants should be built outside of tourist destinations.

Environmental concerns surrounding geothermal energy

Geothermal energy also causes some concerns among environmental organisations even though it has the reputation of an environmentally friendly alternative energy source. Drilling for and extracting geothermal energy from the ground comes with the release of some greenhouse gases such as carbon dioxide, ammonia, hydrogen sulfide and methane. However, the amount of gases released in this process is significantly lower than that associated with fossil fuels[7].

Environmental activists claim there is a slight chance that some of these locations might cool down after some years despite being considered sustainable renewable energy. There is a way for this outcome to be avoided as a possible scenario, and the solution is to use closed-loop[8] power plants. Additionally, modern closed-loop geothermal power plants emit no greenhouse gases. In the lifecycle of a geothermal power plant, greenhouse gas emissions are four times lower than those associated with solar PV installations and six to twenty times lower than those associated with natural gas. On average, geothermal power plants consume less water over their lifetime energy output compared to most of the other generation technologies.

In regard to the usage of land, small-footprint geothermal power plants are compact and use less land per GWh than solar PV installations, wind farms or coal. Those small-footprint geothermal power plants are widely used in Africa. Kenya is the regional leader in geothermal energy usage. The Intergovernmental Panel on Climate Change (IPCC) covers mitigation of climate change in one of its last reports. According to this report, geothermal power plants have an approximate lifecycle emission of greenhouse gases of 38 gCO_2eq/kWh.[9]

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[6] First geothermal global map – p. 8, available at: https://reader.elsevier.com/reader/sd/pii/S0959652620319211?token=CDAE65C0F8C87B19287036D01E54F85B08BAE37E9C2B8096768E8080B14D57A2A37C3D4C0525C85C3DAE41AC911EB767&originRegion=eu-west-1&originCreation=20210511212743

[7] Energy Sage, "Environmental impacts of geothermal energy", p. 2, 2019, available at: https://www.energysage.com/about-clean-energy/geothermal/environmental-impacts-geothermal-energy/

[8] A closed-loop geothermal system continuously circulates a heat transfer solution through buried or submerged plastic pipes.

[9] Intergovernmental Panel on Climate Change, "Mitigation of Climate Change", 2014, Chapt. 7, p. 539, available at: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf

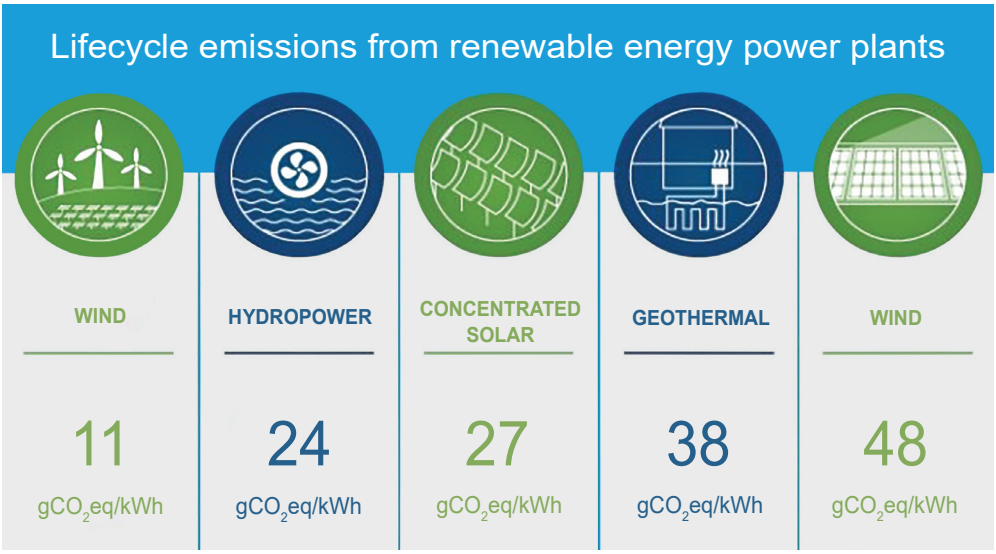

Figure 3: Lifecycle emissions from renewable energy power plants — IPCC Mitigation of Climate Change report (2014)

That is 95%[10] less than coal (820 gCO_2eq/kWh) and 92% less than natural gas (490 gCO_2eq/kWh). Most of those environmental concerns can be alleviated by using all the current technologies so that geothermal power plants have no more than minimal impact on the environment in general.

Bulgaria's geothermal potential and the balancing of the national grid

As mentioned earlier, Bulgaria has geothermal mineral resources with high potential. However, this potential is yet to be harnessed into producing electricity. On the one hand, a lot of restrictions[11] are making it almost impossible or simply not worth the cost for potential investors. One solution to this problem is for the government to found a special state-owned company.

For example, in 2020 the Council of Ministers of Bulgaria decided to set up a state-owned oil company[12] tasked with building filling stations across the country

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[10] Ibid., Chapt. 7, p. 540, available at: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf

[11] Bojadgieva, K., Hristov, H., Hristov, V. & Benderev, A., "General overview of geothermal energy in Bulgaria", p. 3, available at: https://www.geothermal-energy.org/pdf/IGAstandard/WGC/2000/R0201.PDF

[12] https://energyindustryreview.com/oil-gas/bulgaria-to-set-up-a-state-owned-oil-company/

and managing oil and fuel depots. Following the same logic, the Council of Ministers could plan a new government-owned company that would work directly with the Ministry of Energy, or it could also be integrated into the existing National Electric Company. This enterprise would be responsible for building geothermal power plants in order to help balance all the energy produced from solar and wind.

Presently, only around 6%[13] of the country's entire geothermal potential is being used properly. Some provisions in the Water Act[14] of Bulgaria restrict the usage of geothermal energy and set a very high price per cubic meter of mineral water, no matter what temperature the water is. If there is governmental support and this hypothetical company builds numerous geothermal power plants, the power produced by them could be used to stabilise and balance the electrical grid of Bulgaria or could be exported to neighbouring countries.

With this strategy, the country can gradually become carbon neutral like the Province of Siena in the Tuscany region, which reached this milestone in 2011.[15] This extraordinary result was achieved thanks to geothermal energy, which accounts for 92% of local power production.

As most thermal power plants operate on coal, they will eventually have to either transition to natural gas or shut down. The ensuing disbalance could lead to blackouts or power rationing in some areas of the country where the regional operators may struggle to balance the grid.

As we know, geothermal power plants can play a strategic role in carrying out the so-called *demand response*. Geothermal energy itself has the potential to help large parts of the world switch to a cleaner and more sustainable energy system. Possessing own geothermal reserves means independence.

Geothermal energy is one of the few renewable energy technologies that can supply continuous baseload power. These power plants have the capacity to shift from 100% of the nominal power to a minimum of 10% several times a day. The graphic below shows the reliability of renewable energy sources globally.

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[13] BNR, "Bulgaria utilises a mere 6% of mineral waters", Bulgarian National Radio, 2011, available at: https://bnr.bg/en/post/100129465/bulgaria-utilizes-a-mere-6-of-mineral-waters

[14] Water Act of Bulgaria, Ministry of Regional Development and Public Works, available at: https://www.mrrb.bg/en/act-on-waters/

[15] https://electricenergyonline.com/article/energy/category/geothermal/85/876639/the-province-of-siena-italy-is-carbon-neutral-thanks-to-geothermal-energy.html

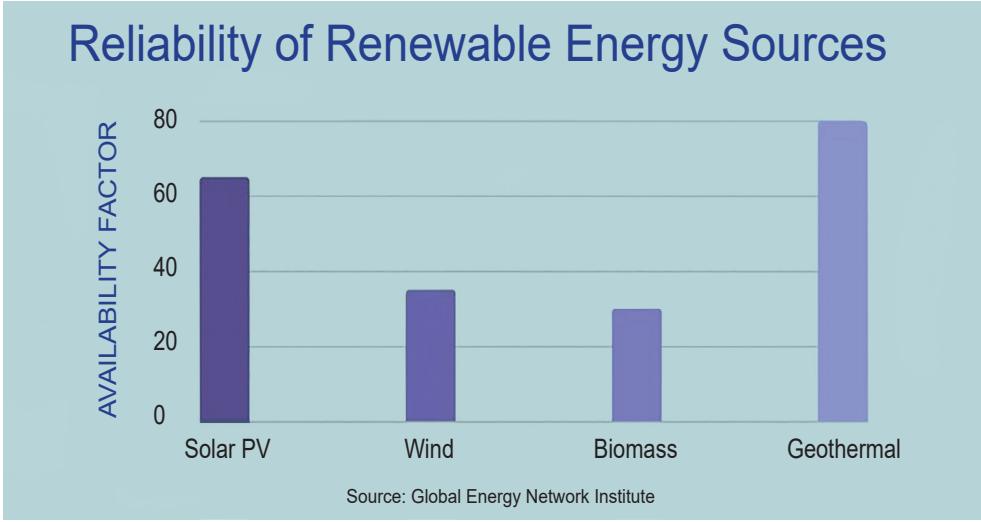

Figure 4: Global Energy Network Institute (2019)

Tourism represents a significant share of the GDP of Bulgaria (11.8%)[16] and is projected to reach a share of 20% in the upcoming years. Geothermal springs play a considerable role in the tourism industry, mostly for their health benefits and use for recovery purposes. Negatively impacting this sector of the Bulgarian economy is among the major existing concerns.

On this matter, we will look closely into Iceland's way of balancing nature conservation in the interest of tourism, on the one hand, with growth in power generation, on the other. Bulgaria and Iceland have a lot in common when it comes to territory size, thermal mineral springs and contribution of tourism and travel as a share of GDP. Tourism and travel account for a combined 8.6%[17] of Iceland's GDP.

The 8th largest geothermal power plant[18] in the world and Iceland's biggest one, with a capacity of 303MW, also supplies most of the aluminum smelters in the area. Strategic and efficient utilisation of Icelandic energy resources has strengthened the country's economy.

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[16] https://www.statista.com/statistics/1027150/bulgaria-tourism-balance-over-gdp/

[17] https://www.statista.com/statistics/786578/travel-and-tourism-s-total-contribution-to-gdp-in-iceland/

[18] Renewable Energy Cluster, "Iceland Overview — Energy Market & Geothermal Energy", IRENA, 2020, p. 11, available at: https://irena.org/-/media/Files/IRENA/Agency/Events/2020/May/Overview--Energy-Market--Geothermal-Energy--Iceland.pdf?la=en&hash=6303B09B654AEE9D7F05C82E19D3C29A9DAF62B1

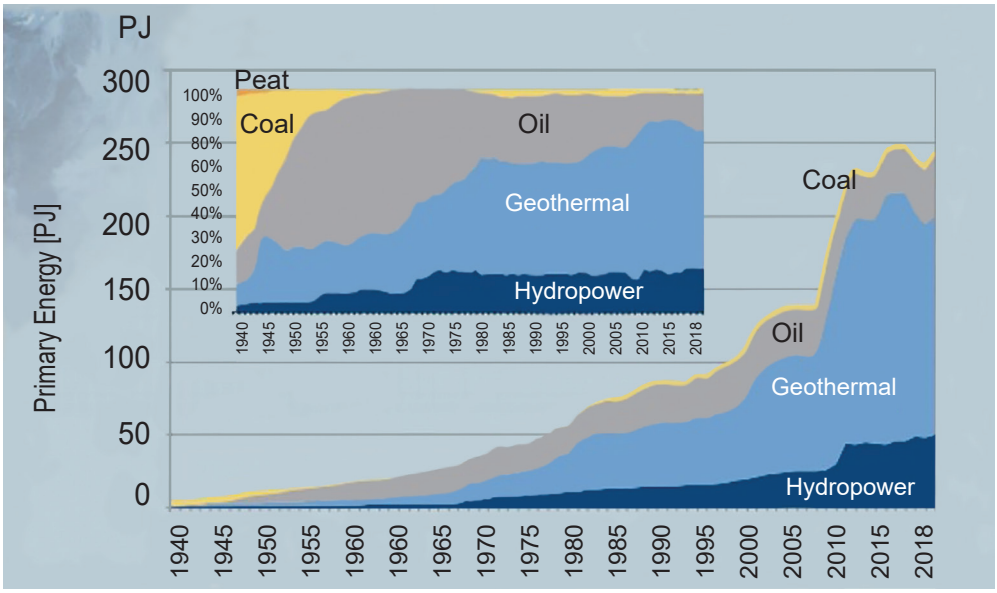

Figure 5: Energy Authority of Iceland (2020)

Presently, about 72%[19] of the national electricity production is used for power-intensive industries, primarily aluminum production.

Not long ago, the Organisation for Economic Co-operation and Development (OECD)[20], of which Iceland is a founding member, warned the nation, after reviewing its environmental performance, that it should be more careful when it comes to natural asset preservation, tourism, and growing power generation for aluminum smelting. “The combination of renewable energy and spectacular natural tourist attractions create[s] opportunities for Iceland to play a pioneering role in the World’s transition to green growth,” said former OECD Environment Director Simon Upton[21]. Still, those aspects must be carefully managed so as to avoid an exodus of tourists.

In a large-scale case study[22], the Department of Geography and Tourism

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[19] https://time.com/4844086/geothermal-energy-iceland-deep-drilling-project/

[20] OECD, “Environmental Performance Review of Iceland”, 2014, p. 2, available at: https://www.oecd-ilibrary.org/environment/oecd-environmental-performance-reviews-iceland-2014_9789264214200-en?_ga=2.188943531.1041879626.1620774254-1378712200.1614291830

[21] https://www.oecd.org/env/country-reviews/iceland-must-balance-growth-in-power-and-tourism-industries-with-nature-conservation.htm

[22] Sæþórsdóttir, A. & Hall, C., “Floating Away: The Impact of Hydroelectric Power Stations on Tourists’ Experience in Iceland”, MDPI, 2018, p. 2, available at: https://www.mdpi.com/2071-1050/10/7/2315/pdf

with the Faculty of Life and Environmental Sciences at the University of Iceland and the Department of Management, Marketing and Entrepreneurship at the University of Canterbury collected data from several locations by asking tourists to complete a questionnaire. The goal was to estimate the potential impact of power plants on the experience of tourists visiting the researched areas.

Research Areas	**Location**	**Attraction**	**Main Tourist Activity**	**Main Tourist Market**	**Proposed Power Plant**
Hagavatn	Highlands	A glacier lagoon and wilderness landscape	Jeep safari and hiking	International and Icelanders	Hydroelectric
Nýjidalur	Highlands	Wilderness landscape	Mostly driving, some hiking and riding	International and Icelanders	Hydroelectric and Geothermal
Aldeyjarfoss	Edge of the Highlands	A waterfall and wilderness landscape	Driving, hiking, riding and biking	Mainly international	Hydroelectric
Hólaskjól	Edge of the Highlands	Wilderness landscape	River rafting, hiking and riding	Mainly international	Hydroelectric
Skagafjörður	Lowlands	Rural landscape	Hiking, close to the capital area	Mainly international, some Icelanders	Hydroelectric
Trölladyngja	Lowlands	Geothermal area in natural area	Popular for daytrips from Reykjavik	Mainly Icelanders	Geothermal
Seltún	Lowlands	Geothermal area in rural landscape		Mainly international	Geothermal

Analyzed from Sæþórsdóttir, Stefánsdóttir and Stefánsson

Figure 6: Main characteristics of the seven areas of comparison analysed by Sæþórsdóttir, Stefánsdóttir and Stefánsson

The data collected over the course of two weeks, one in the summer and one in the autumn, was analysed in detail. The results[23] of this study provide us with an insight into how tourists in Iceland view the impact of energy infrastructure on areas with unspoilt nature. The respondents were also asked to rate how appropriate they found 19 different types of infrastructure. The figure below shows the information summed up:

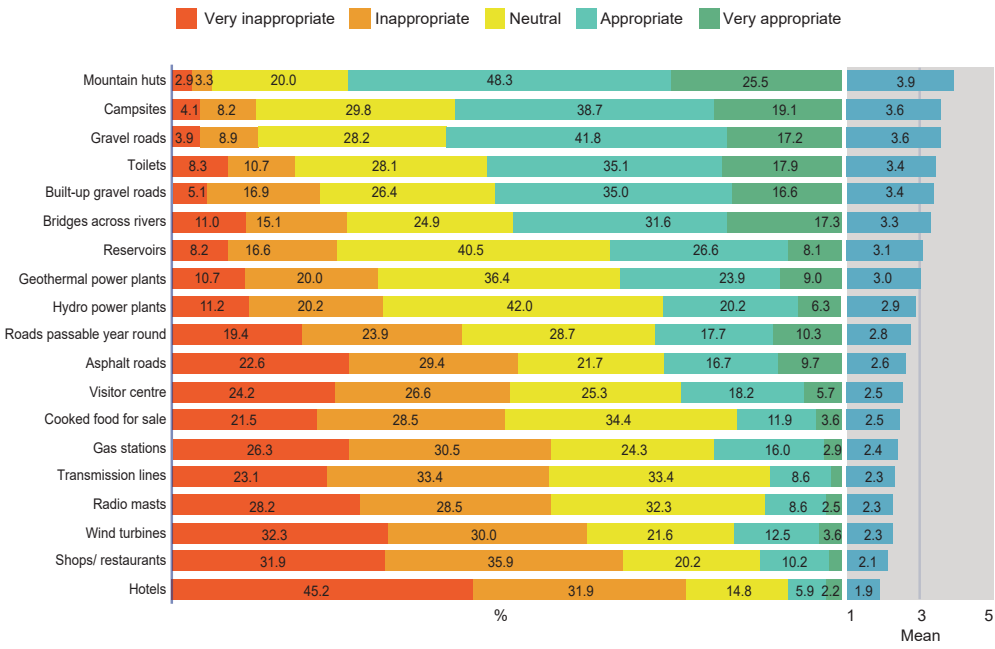

Figure 7: Opinions on structures and facilities in the area analysed by Anna Dóra Sæþórsdóttir and C. Michael Hall

Based on the study's results, most of the interviewed tourists found their stay exceptional, while 8% were dissatisfied with the main attraction in the area where they stayed – beautiful nature, vast landscapes and quietness. Some 92% of the interviewed tourists considered the unspoilt wilderness part of the attraction.

A large portion of the people who took the questionnaire found the areas surrounding the power plants natural, although 7% considered them artificial. Around 67% of tourists claimed that the existence of the power plants did not affect their interest in travelling in the area.

Additionally, tourism benefits from the infrastructure built to increase accessibility to the construction sites. The results of the study suggest that, in general, geothermal and hydroelectric power plants have only limited effect on tourists' perception of untouched nature. Although transmission lines have

been identified as having a bigger impact, more careful planning for use of transmission lines or pipes underground would be more compatible with tourism. The graphic below illustrates the tourist experience in relation to specific types of infrastructure:

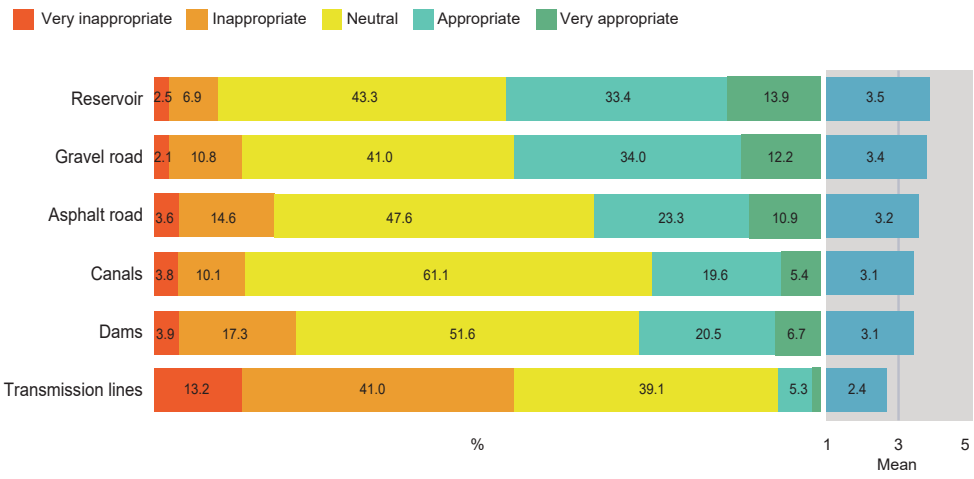

Figure 8: Effects of power plant infrastructure on tourist experiences. Anna Dóra Sæþórsdóttir and C. Michael Hall

Conclusion

The world is making significant progress in geothermal energy usage. Globally, Iceland ranks 8th in geothermal electricity production, and it serves as a useful example for Bulgaria, despite being way ahead, since there are a lot of similarities between the two countries. Bulgaria can learn from the experience of other countries as well. Energy diplomacy is an instrument of foreign policy and can help countries entering this specific field of energy conversion learn from their more experienced counterparts. Looking deeply into this matter, we can affirm that geothermal power plants lead to cleaner environment and less pollution when compared to fossil fuel power plants. They also perform as well as the other types of renewable technology.

A lot of factors are conducive to geothermal development in Bulgaria, including long-standing traditions in thermal water usage. The know-how of experienced countries, combined with new administrative regulations, will provide better conditions for the utilisation of these renewable sources.

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Georgi Kortov *is an entrepreneur in the tourism and renewable energy sectors. He has been working predominantly in the energy field in Bulgaria, aside from a couple of stints with companies in the US during his stay there. He holds a bachelor's degree in regional development and a master's degree in international trade. His professional interests lie in renewable energy solutions, tourism and investment analysis.*

MORE ABOUT THE BULGARIAN DIPLOMATIC INSTITUTE

The DIPLOMATIC INSTITUTE (DI) was created on 23 September, 2003, pursuant to a Decree of the Council of Ministers. Its status and functions were regulated by the Diplomatic Service Act adopted by the National Assembly on 13 September, 2007. Its work meets the high demands and professional expectations pursuant to Bulgaria's membership in EU and NATO, and displays continuity that allows the Bulgarian diplomatic profession to have the place it deserves in the large Euro-Atlantic family.

Our mission is to:

- Guarantee the high-level expertise and skills of the diplomatic staff and the public administration by applying up-to-date professional standards of training;

- Enhance continuity in the Bulgarian Foreign Service by promoting exchange of experience and good practices among generations of diplomats;

- Promote the diplomatic profession and Bulgaria's foreign policy by reaching out to the general public;

- Provoke exchange of expertise on foreign policy issues by providing a platform for debate among government and non-government actors;

- Support the diplomatic profession and the foreign policy debate by research and publications;

- Develop national and international cooperation by implementing joint projects.

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We provide trainings for both Bulgarian and foreign diplomats and government officials, as well as experts from the NGO and private sector. They meet all demands of modern diplomacy and use the good practices of our counterparts from all over the world. To respond to the need of high-quality training, we focus on interactive and practical sessions and have as trainers Bulgarian and foreign diplomats, university professors and other highly qualified experts, providing the benefit of a broad range of opinions and approaches.

Among our major training programmes are the courses for the MFA trainee attaches and consular staff, foreign language training, courses for diplomats, representatives of the public administration and of the NGO and private sector in

the field of regional issues and security, energy diplomacy, economic diplomacy, environment, public diplomacy, diplomatic protocol, as well as tailor-made trainings for foreign diplomats and our traditional Winter School of Diplomacy.

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To provoke public interest and debate on current foreign policy issues, we hold public lectures by prominent public figures, leading politicians and diplomats. We also organize conferences and round-table discussions with Bulgarian and foreign experts, to contribute to the exchange of expertise and to the foreign policy theory and practice. We interact actively with the young public by organizing essay competitions on foreign policy topics, visits of school and university students within our “Open Doors” programme, and by implementing a coherent internship programme. To enhance our public outreach, we aims at strong media and digital presence, and maintain our own radio broadcast, a webpage in Bulgarian, English and French, Facebook and Twitter account. The Institute’s national and international partnerships with government, research, NGO and academic institutions is visible in the implementation of joint projects and exchange in the field of training, research and public activities and EU policies.

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A strategic task of the DI is to provide comprehensive analyses by internal and outside experts on international topics to meet the needs of the MFA and to enhance the expertise in foreign policy theory and practice. As of 2013 the Institute also holds national contests for applied research projects.

Among our publications, in Bulgarian and/or English, are the Foreign Policy Research Papers series, the Energy Diplomacy collection, books and textbooks on EU matters, security and environment issues, diplomatic skills and practice, as well as the long-established Diplomacy Journal which has already grown into an online platform for foreign policy analysis and research.

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“In the service of democracy, peace and development” – this motto is present in the work and mission of the Hanns Seidel Foundation. This motto applies both to its domestic activities – especially Bavaria – as well as its engagements abroad.

Former German President Roman Herzog once described “education on democracy” as a “permanent and intrinsic duty of political foundations”. It contributes to “citizens of an open society being able to participate in the democratic development process with as much knowledge as possible”.

Understanding of democracy must be secured again with each generation. Political contexts must be made clear, especially to young people. Only then can they be motivated to get involved themselves and take on responsibility. To put it briefly: Democracy needs political education.

Lobbying like this for our democracy and our social order that celebrates freedom and the rule of law also involves reassuring our citizens of this and anchoring in their consciousness the tenets and standards of our polity. The profound and rapid shift our country is currently experiencing reinforces the need for value orientation and rooting ourselves in reliable structures and straightforward regulatory frameworks. To put it another way: The growing pressure to innovate facing the State, society, the economy, science and technology makes returning to our historical roots and our intellectual and cultural foundations all the more necessary.

Since its founding on 11 April 1967, the Hanns Seidel Foundation has been engaged in political education with the aim of promoting the “democratic and civic education of the German people on a Christian basis” , to quote its statutes. The foundation, which is politically aligned with the CSU, is named after the former Bavarian prime minister and CSU chairman, Hanns Seidel. Political foundations are financially, legally and organisationally independent of each party, although they do operate within the bounds of their respective party’s ideology. The Hanns Seidel Foundation embodies Christian-social values, which influence our work both domestically and abroad.

The Hanns Seidel Foundation’s political education work is based on an idea of man that incorporates the free development of personality and personal responsibility just as much as social responsibility and solidarity. Particularly in our own era, a time in which we need greater individual responsibility, our mission is to do even more to bring about a new “culture of independence” and an “active civil society”, now more than ever.

Editor-in-chief: Slavtcho Neykov

Editor: Stela Stancheva

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