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How Effectively Can EU's Clean Energy Policies be Applied in SE Europe?

On July 8, 2020, the EU adopted strategies for energy system integration[1] and hydrogen[2], aiming to become climate-neutral by 2050. The plans will transform Europe's energy system, which accounts for 75% of the EU's greenhouse gas emissions, paving the way towards a more efficient and interconnected energy sector, driven by the twin goals of a cleaner planet and a stronger economy. **(1)**

According to the European Commission, the two strategies present a new clean energy investment agenda, in line with the Next Generation EU recovery package and the European Green Deal[3]. According to EU officials, the planned investments have the potential to stimulate the economic recovery from the coronavirus crisis. In their view, they create European jobs and boost the bloc's leadership and competitiveness in strategic industries, which are crucial to Europe's resilience.

EU Executive Vice-President for the Green Deal, Frans Timmermans, said if Europe wants to become the first climate neutral continent by 2050, it needs to switch its energy systems from fossil fuels to clean. He said the strategies adopted on July 8 will bolster the European Green Deal and the green recovery, and put the EU firmly on the path of decarbonising its economy by 2050. "The new hydrogen economy can be a growth engine to help overcome the economic damage caused by COVID-19. In developing and deploying a clean hydrogen value chain, Europe will become a global frontrunner and retain its leadership in clean tech," Timmermans said.

At the same time, EU Energy Commissioner Kadri Simson noted that with 75% of the EU's greenhouse gas emissions coming from energy, the EU needs a paradigm shift to reach our 2030 and 2050 targets. "The EU's energy system has to become better integrated, more

[1] https://ec.europa.eu/energy/sites/ener/files/energy_system_integration_strategy_.pdf
[2] https://ec.europa.eu/energy/sites/ener/files/hydrogen_strategy.pdf
[3] https://eurlex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN

flexible and able to accommodate the cleanest and most cost-effective solutions. Hydrogen will play a key role in this, as falling renewable energy prices and continuous innovation make it a viable solution for a climate-neutral economy," Simson said.

The EU Strategy for Energy System Integration will provide the framework for the green energy transition, the European Commission said, adding that the current model where energy consumption in transport, industry, gas and buildings is happening in 'silos' – each with separate value chains, rules, infrastructure, planning and operations – cannot deliver climate neutrality by 2050 in a cost efficient way; the changing costs of innovative solutions have to be integrated in the way we operate our energy system. New links between sectors must be created and technological progress exploited.

In EC's view, energy system integration means that the system is planned and operated as a whole, linking different energy carriers, infrastructures, and consumption sectors, and so by becoming connected and flexible, the system can be characterized as more efficient and can reduce costs for society. "For example, this means a system where the electricity that fuels Europe's cars could come from the solar panels on our roofs, while our buildings are kept warm with heat from a nearby factory, and the factory is fuelled by clean hydrogen produced from off-shore wind energy," they note.

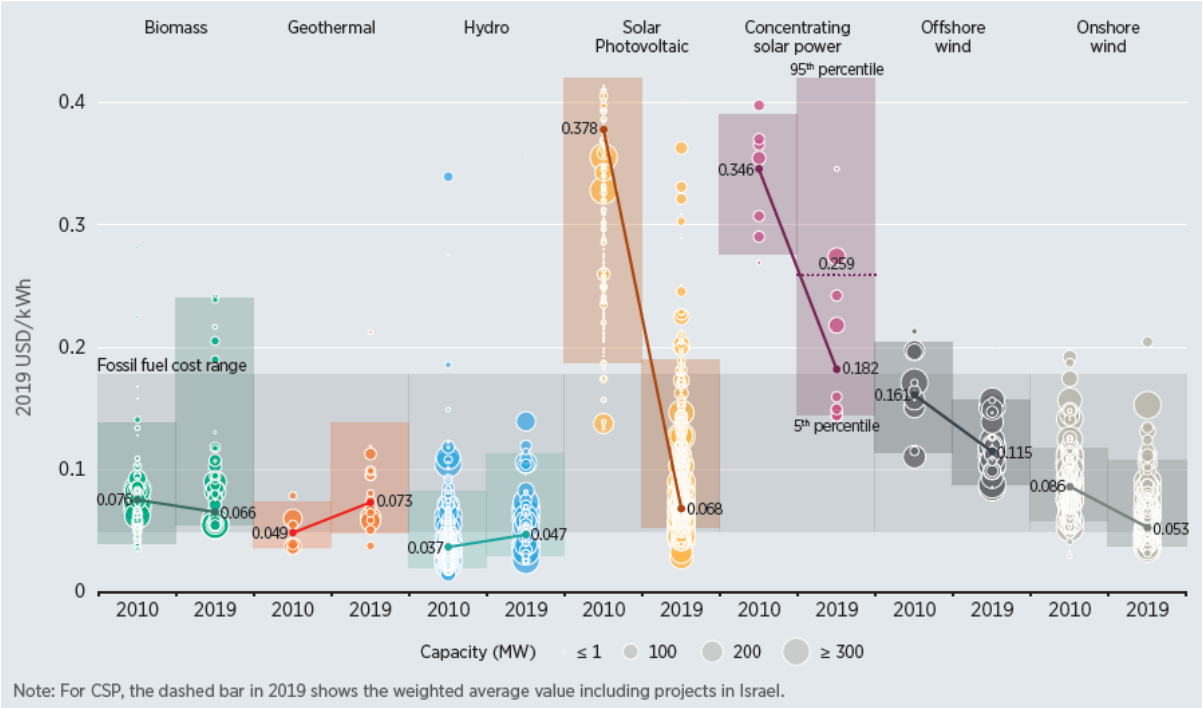
Hence, EC's Energy System Integration strategy sets out 38 actions to link different energy carriers, infrastructures and sectors and exploit technological progress, while the Hydrogen strategy will support the decarbonisation of industry, transport and more across Europe, through investments, regulation, market creation, and research and innovation. **(2)**

According to the European Commission, this gradual transition will require a phased approach. From 2020 to 2024, the EU will support the installation of at least 6 GW of renewable hydrogen electrolysers in the EU, and the production of up to 1 million tonnes of renewable hydrogen. From 2025 to 2030, hydrogen needs to become an intrinsic part of our integrated energy system, with at least 40 GW of renewable hydrogen electrolysers and the production of up to 10 million tonnes of renewable hydrogen in the EU. From 2030 to 2050, renewable hydrogen technologies should reach maturity and be deployed at large scale across all hard-to-decarbonise sectors, the Commission said.

EU Internal Market Commissioner Thierry Breton said the European Clean Hydrogen Alliance launched on July 8 will channel investments into hydrogen production. "It will develop a pipeline of concrete projects to support the decarbonisation efforts of European energy intensive industries such as steel and chemicals. The Alliance is strategically important for our Green Deal ambitions and the resilience of our industry," Breton said.

WindEurope hailed on July 8 the EU's decision to promote direct electrification across the whole economy and the use of renewable hydrogen in hard-to-abate sectors. "It's good these new EU Strategies recognise the primary role of direct electrification," WindEurope CEO Giles Dickson said. "Electrifying heating, transport and industry directly via renewables is the cheapest (see Figure) and most efficient way to decarbonise energy. Renewables are well over a third of Europe's electricity and rising. We now have to get renewable electricity into heating, transport and industry," he added.

Figure: Global LCOEs from Newly Commissioned Utility-scale RES Power Generation Technologies, 2010-2019



Note: This data is for the year of commissioning. The diameter of the circle represents the size of the project, with its centre the value for the cost of each project on the Y axis. The thick lines are the global weighted-average LCOE value for plants commissioned in each year. Real weighted average cost of capital (WACC) is 7.5% for OECD countries and China and 10% for the rest of the world. The single band represents the fossil fuel-fired power generation cost range, while the bands for each technology and year represent the 5th and 95th percentile bands for renewable projects.

Source: IRENA

The European Green Deal

Discussing EU's latest clean energy policies, one should be aware of the European Green Deal, unveiled in December 2019, which is the new growth strategy of the EU and a roadmap to make its economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all. EC officials do not waste the opportunity to stress that a better-integrated energy system is essential in order to move to climate neutrality by 2050, while also creating jobs, ensuring a fair transition and strengthening innovation in the EU and industrial leadership at a global level. The sector, they claim, can make a key contribution to Europe's economic recovery from the coronavirus crisis, as outlined in the Next Generation EU recovery package presented by the Commission on May 27, 2020.

Today's energy system is still built on several parallel, vertical energy value chains, which rigidly link specific energy resources with specific end-use sectors, wasting a significant amount of energy. For instance, petroleum products are predominant in the transport sector and as feedstock for industry. Coal and natural gas are mainly used to produce electricity and heating. Electricity and gas networks are planned and managed independently from each other. Market rules are also largely specific to different sectors. It is the prevailing view among EC officials that this model of separate silos cannot deliver a climate neutral economy as it is technically and economically inefficient, and leads to substantial losses in the form of waste heat and low energy efficiency.

The ultimate solution, note EC officials, to deliver sector integration is by deploying renewable hydrogen. It can be used as a feedstock, a fuel or an energy carrier and storage, and has many possible applications across industry, transport, power and buildings sectors. Most importantly, it emits no CO_2 and almost no air pollution when used. Therefore, it offers a solution to decarbonise industrial processes and economic sectors where reducing carbon emissions is both urgent and hard to achieve. All this makes hydrogen essential to support the EU's commitment to reach carbon neutrality by 2050 and for the global effort to implement the Paris Agreement.

The Case of SE Europe

The current energy issues of the SE European countries, including EU and Energy Community member states, concern primarily the further utilization of indigenous resources, both

conventional and renewable, which inevitably give rise to strong differences on views and approaches at local level, often leading to conflicting policy views that cannot be easily reconciled.

A major such issue is the further and sustained development of coal and lignite resources, which are abundant in Greece, Bulgaria, Kosovo, Serbia, Bosnia and Herzegovina and Turkey. Solid fuel extraction and use in the power generation sector in these countries are responsible for many thousands of jobs, while it forms the basis of an extensive industrial base. Yet, there is a disturbing lack of well thought out regional policies in SE Europe in such areas as Carbon Capture and Storage (CCS) and Carbon Capture, Utilization and Storage (CCUS) that could see the prolongation in the life of local coal and lignite industries and the smooth transition to decarbonized power generation.

Today, regional energy policies, as defined in the context of the Energy Union, do not leave much room for developing or maintaining regionally advantageous policies, including coal use through CCS, as the phasing out of all CO_2 generating plants by 2030 latest, is a clear target pursued by the EU. Therefore, we have a potentially explosive situation with wide ranging social implications if lignite- and coal-fired power plants start closing down en masse, sending thousands of people to early retirement and eventual unemployment.

As political factions in the EU and SE Europe tend to polarize over last few years, mainly fueled by refugees and poverty issues, potential conflicts arising by the forced closure of coal- and lignite-fired power plants and mines in many countries, it will certainly help to undermine further economic development and will most likely give rise to widespread social unrest. A similar but less disturbing situation may arise with oil and gas exploration and production activities as several countries in the SE European region are actively seeking to explore oil and gas deposits, despite the ongoing COVID-19 pandemic and the huge impact on oil demand and prices, since this region as a whole is a net hydrocarbon importer. Almost all countries in the region are reporting promising hydrocarbon deposits, with some of them, notably Albania, Croatia, Serbia and Romania, having developed extensive production

facilities and with Greece, Montenegro, Bulgaria, Cyprus and recently Turkey[4] having announced ambitious plans for oil and gas exportation and production.

A potentially conflicting situation may arise too in the benign field of renewables (RES) as many countries in SE Europe have abundant solar, wind, geothermal, biomass and hydro potential (see Table), which they will seek to develop further to the fullest possible extent. With the SE Europe as a whole possessing a huge excess capacity of RES, its further exploitation in the near future may lead to incompatible situations as the various countries will be seeking ways to export competitively priced RES generated electricity to central and northern Europe.

Table: Technical Potential for Utility-scale Solar PV, Wind and Hydropower in the Electricity Sector in SE Europe (TJ)

	Utility-scale solar PV	Onshore wind	Hydropower
Albania	13 342	49 154	56 059
Bosnia and Herzegovina	14 886	94 810	88 193
Bulgaria	36 468	190 264	48 071
Croatia	15 682	104 951	30 600
Kosovo*	3 006	13 860	4 853
Montenegro	3 874	23 332	18 079
North Macedonia	8 014	27 558	14 421
Republic of Moldova	21 758	180 450	12 099
Romania	92 902	554 522	136 800
Serbia	33 509	188 590	64 800
Slovenia	1 613	8 266	58 539
SEE	245 052	1 436 156	532 515

TJ = Terajoule

Source: IRENA[5]

Even if we were to overcome the present lack appropriate transmission infrastructure, at one point potential RES electricity sellers will be confronted with the need of offering prohibitively low tariffs or simply electricity market operators will decide not to accept Mediterranean electricity inputs as if it has already happened in the case of the ill-fated

[4] Bektas, C. (2020), "Turkey discovers 320bcm of natural gas reserves in Black Sea", https://www.icis.com/explore/resources/news/2020/08/21/10543949/turkey-discovers-320bcm-of-natural-gas-reserves-in-black-sea

[5] https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Dec/IRENA_Market_Analysis_SEE_2019.pdf

Helios project **(3)**. If we were to examine regional energy policies and prioritize them according to stated plans by national political leaderships, we shall soon realize that we end up with an inverted pyramid arrangement, compared to stated and pursued official Energy Union policies.

As analysed in IENE's "SE Europe Energy Outlook 2016-2017" study **(4)**, the energy policy priorities of most countries in the SE European region would then appear something like that:

1. Further large-scale development of coal and lignite resources without any recourse CCS/CCUS provisions and plans
2. Promotion of oil and gas exploration activities onshore and offshore aiming towards maximizing production in the mid- and long-term
3. Develop further renewables in all application areas – solar, wind, biomass, hydro and geothermal – without necessarily adhering to the specific ceiling targets set by the EU
4. Promote energy efficiency, focusing primarily in the building sector
5. Develop interconnectivity of electricity and gas systems
6. Diversify energy supply routes and supplies
7. Reduce CO_2 levels

The West Balkans have attractive assets for supporting Europe's energy transition: (a) large coal mining areas with excellent grid infrastructure that can be used for industrial solar, wind, geothermal and biomass activities, (b) lower labour costs, (c) engineering skills and (d) geographic proximity to advanced industrial economies with rising energy demand. With the right incentives, these assets could attract investments in the new wave of low-carbon industries and further contribute to the European industrial transition.

The EU could deploy several international cooperation initiatives so as to include Western Balkans in the European Green Deal. Among them are the Energy Community, the European Network of Transmission System Operators for Electricity, the Regional Cooperation Centre, Central and South Eastern Europe Energy Connectivity, the Berlin Process, and others. Each of these brings value and tools for achieving the required energy transformation, and for guiding the SEE region towards hosting modern low-carbon, high added-value industries.

International financial institutions, such as the EIB, the EBRD and the World Bank, are expected to play key role in the energy transformation of SE Europe. Most of these organisations follow strong climate-aligned policies. Recently, the EIB branded itself the "European climate bank", pulled out of investment in fossil fuel projects and announced that it "will align all financing activities with the goals of the Paris Agreement from the end of 2020". **(5)**

If the EU really wants to maximise the impact of the European Green Deal and make it economically more attractive to all governments, it should incorporate the Western Balkans as a party to it and ensure the countries there are part of the negotiation process. In this way, the EU will not only guide the region towards the 2030 and 2050 targets, but it would also be able to extract the maximum value the Western Balkans could offer. This will make the European Green Deal an all encompassing one, one based on a clear mutual interest in which the Balkans will not fall into the usual role of a policy taker and reluctant regulations follower, but will instead be an active contributor.

This transactional side of integrating Western Balkans into the European Green Deal will not only accelerate the region's transition, but it could also increase the chances of success of the EU climate-neutral agenda right across the continent. The EU should therefore negotiate such a deal with the Western Balkans on the basis of the contributions and the assets that the six aforementioned countries could bring into the deal and their existing cooperation with the EU country members of the region.

To achieve this, the West Balkans countries themselves should come together to form a government negotiating group. They should assemble an international technical assistance team that would help negotiators evaluate the clean economy assets of the region and identify the most economically beneficial paths towards rapid greenhouse gas reduction.

Discussion

The COVID-19 crisis, the EU energy system integration and hydrogen strategies, in line with the Next Generation EU recovery package and the European Green Deal, are creating huge opportunities for increasing RES penetration in both SE European energy and electricity mix. The green stimulus packages could accelerate the switch to renewable energy in SE Europe,

attracting numerous investments and creating new jobs, while new green technologies, such as green hydrogen, could be very important complements to renewable-based electricity.

To ensure sustained RES investment, it is essential to create an enabling environment by introducing appropriate and dedicated policies. The region has indeed proved that it can attract investment when supporting policies and measures are in place. These measures should go beyond mere direct RES support and include, in addition, system regulation and in step integration with the everyday life of energy consumers.

The transformation of the existing polluting SEE energy system into a sustainable one should be based on localized policies and differentiated energy sources of higher energy efficiency and with the view of tapping the potential for hydrogen generation. Energy cooperation between the various countries in the region is of paramount importance and necessary in order to introduce lasting changes aiming towards sustainability. Hydrogen produced from renewables, among others, could play a decisive role in achieving such sustainability and should be examined in great detail for each different country of the region.

However, energy sector regulations in the region have historically been favourable to fossil fuels, even providing subsidies to assist their deployment. Reversing such customary attitudes and line of thinking and creating favourable regulatory and licensing framework for RES require drastic reforms, some of which are already underway (e.g. Greece's aggressive decarbonization programme). International agreements, such as the Energy Community Treaty, the EU Renewable Energy Directives and the Paris Agreement, have provided some stimulus by emphasising decarbonisation of the energy sector and the larger RES deployment.

The combination of high RES potential, decreasing renewable energy costs (see Figure) and new policies and regulations in the energy sector makes SE Europe ideal for large-scale RES deployment. However, sound policies rooted in the recognition of the socio-economic impact of the energy sector are needed to fully achieve the energy transition in the region.

IRENA **(6)** estimates that shifting the regional energy system to RES would grow the economy of SE Europe by 2% until 2040 and 1% from then until 2050, compared to a business-as-usual (BAU) scenario, translating into a cumulative gain of more than $485 billion. With the creation of new jobs in the renewable energy sector, the energy transition

would also help tackle long-standing unemployment and brain drain issues. The inclusion of social welfare benefits, such as improvements in health and air quality, ensures that potential gains further outweigh additional costs.

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