A Race to the Top

2024

WESTERN BALKANS

Global Energy Monitor, REScoop.EU, CEE Bankwatch Network, Electra Energy

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Global Energy Monitor (GEM) develops and shares information in support of the worldwide movement for clean energy. By studying the evolving international energy landscape and creating databases, reports, and interactive tools that enhance understanding, GEM seeks to build an open guide to the world's energy system. Follow us at www.globalenergymonitor.org and on Twitter @GlobalEnergyMon.

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REScoop.eu, the European Federation of Citizen Energy Communities, is a network organization representing over 2,250 European energy cooperatives and their 1,500,000 citizens. The organization's vision centers around a clean energy transition, where energy is a democratic good, accessible to all. REScoop.eu's main areas of work include policy, capacity building, and networking.

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CEE Bankwatch Network is the largest network of grassroots environmental groups in central and eastern Europe and a leading force in preventing dubious public investments that harm the planet and people's well-being. The banks and funds we watch are often obscure but always important entities that function outside the realm of public scrutiny. Together with local communities and other NGOs we work to expose their influence and provide a counterbalance to their unchecked power. Follow us at www.bankwatch.org and on Twitter @ceebankwatch.

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Electra Energy is a social cooperative founded in 2016 aiming to facilitate the transition to a democratic energy system in Greece and South-East Europe. Through networking, advocacy, and capacity building it's assisting citizens, SMEs and Municipalities in the creation of community energy projects.

ABOUT THE GLOBAL SOLAR AND WIND POWER TRACKERS

The Global Wind Power Tracker is a worldwide dataset of utility-scale, on- and offshore wind facilities. It includes wind farm phases with capacities of 10 megawatts (MW) or more. The Global Solar Power Tracker is a worldwide dataset of utility-scale solar photovoltaic (PV) and solar thermal facilities. It covers all operating solar farm phases with capacities of 1 megawatt (MW) or more and all announced, pre-construction, construction, and shelved projects with capacities greater than 20 MW.

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ABOUT THE COVER

North Macedonia's first utility-scale solar plant, built at the site of the former Oslomej coal mine. Photo by Western Balkans Investment Framework via Climate Outreach's Climate Visuals project. Creative Commons, CC BY 2.0 (2022).

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FURTHER RESOURCES

For additional data on proposed and existing solar projects, see Summary Data of the Global Solar Power Tracker. For links to reports based on the Global Solar Power Tracker data, see Reports & Briefings. For more information on the Solar Asset Mapper, visit TransitionZero's website. To obtain primary data from the Global Solar Power Tracker, see Download Data.

For additional data on proposed and existing wind projects, see Summary Data of the Global Wind Power Tracker. For links to reports based on the Global Wind Power Tracker data, see Reports & Briefings. To obtain primary data from the Global Wind Power Tracker, see Download Data.

Supplementary information on the Methodology used for this report can be found on our Methodology wiki page.

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A Race to the Top 2024: Western Balkans

The Western Balkans have more than 23 GW of proposed utility-scale solar and wind projects—almost 70% more than a year ago. If these projects become operational, then they could replace all present and future gas power capacity in the region, avert 103 million tonnes in lifetime CO_2 emissions, and save over €9 billion in stranded assets.

INTRODUCTION

The Western Balkan states have intensified plans for clean energy development, with more than 23 GW of prospective utility-scale solar and wind—nearly 70% more than a year ago.[1]

The solar and wind buildout in Albania, Bosnia and Herzegovina (BiH), Kosovo, Montenegro, North Macedonia, and Serbia could render the region's proposed dash to gas obsolete. A frenzy of gas projects in the region threatens to challenge the coal-to-clean transition. But prospective solar and wind would generate four times more electricity than the proposed gas fleet over their lifetimes, according to Global Energy Monitor (GEM), even when accounting for generally lower capacity factors (the percentage of time a plant runs at maximum power).

A coal-to-clean transition that bypasses the false promise of gas could avert an estimated 103 million tonnes in lifetime CO_2 emissions, according to GEM analysis, equal to 87% of the region's CO_2 emissions in 2022. GEM's analysis shows it could further save the Western Balkans more than €9 billion in energy costs and stranded assets.[2]

The renewable transition would also keep the Western Balkans's carbon neutral goals within reach. As aspiring European Union members, the Western Balkan states have pledged to align their energy markets with the EU and achieve carbon neutrality by 2050 at the latest.

1. Prospective projects are any projects that are either announced, in pre-construction, or under construction. Additional terminology information can be found here.

2. See Methodology page.

Despite these pledges, the region's utility-scale solar and wind fleet comprises just 7% of the current electricity mix (1.5 GW), with an additional 1.3 GW under construction. The installed power capacity remains dominated by coal and hydropower, and rather than offering support and funding for renewables, the United States and EU interests continue to push for 2.6 GW of potential gas-powered capacity additions.

But the region's 90 announced utility-scale solar and wind phases harbor significant potential. The proposed scale of these new renewable projects compares to the prospective clean energy capacity of Germany, a country that already aims for net zero power by 2035.

To expand and accelerate the development of solar and wind projects in the Western Balkans in areas where there is no land-use conflict with biodiversity and community values, regional governments need to address barriers associated with planning and permitting, and develop supportive legal frameworks and complementary infrastructure to build up a clean and flexible grid. For their part, the EU and U.S. need to embrace solar and wind instead of gas as an energy security measure to help the Western Balkans reach their full clean energy potential.

Key findings

- Prospective utility-scale solar and wind capacity amounts to 23 GW in the Western Balkans, 70% more than a year ago, and comparable to prospective capacity in Germany.
- Only 6% (1.3 GW) of prospective capacity is under construction and very likely to become operational.
- The buildout of solar and wind projects has the potential to displace operating and prospective gas-fired power in the Western Balkans.
- A clean energy transition could avert 103 million tonnes in lifetime CO_2 emissions from the dash to gas, and save over €9 billion in energy costs over the same period.
- Operating utility-scale solar and wind capacity account for roughly 7% of the regional electricity mix (1.5 GW).
- Serbia has the largest share of operating (29%) and prospective (47%) utility-scale solar and wind capacity in the region.
- Political prioritization of solar and wind power over gas power by national governments, the EU, and the U.S. is required for a just energy transition in the Western Balkans.

I. REGIONAL BACKGROUND

Under the Energy Community Treaty, the Western Balkans adopted renewable energy consumption targets ranging from 23% to 40% by 2020. In order to achieve these goals, the region relied heavily on hydropower expansion and regarded solar and wind as too expensive and unpredictable. Before 2020, the Western Balkan countries chose to limit solar and wind investments and instead incentivize hydropower. This choice, together with a fleet of large hydropower plants from the previous century, has led to today's renewable energy mix of 89% hydropower and 11% wind and solar, according to a Bankwatch Network analysis.

However, in recent years, large utility-scale solar and wind power have increased sharply. Global Energy Monitor's (GEM) Global Solar Power Tracker recorded the greatest annual addition of large utility-scale solar power in the Western Balkan region in 2023.

Since the start of 2024, 118 MW of large utility-scale[3] solar capacity has gone into operation, while wind capacity saw no increase. GEM's Global Wind Power Tracker recorded the largest annual addition of wind capacity in 2019 with 414 MW, compared to 36 MW in 2023.

To meet the same carbon neutral goal as the EU, the region needs a much faster transition but lacks the investment capital and planning for a Just Transition. The Green Agenda, established in 2020, will help guide the region to attaining accession into the EU by adopting similar priorities with the largest focus on decarbonization. By signing the Sofia Declaration, the Western Balkans committed to the same 2050 carbon neutral target as the EU. In December 2022, they also set 2030 energy and climate targets to increase the share of energy from renewable sources, decrease and phase out coal, and support the Just Transition. Nevertheless, coal remains the mainstay of the region's energy mix, with a capacity of 8.9 GW. Some Western Balkan states are beginning to embrace the need for a transition from coal-fired power plants to renewables. As of 2023, at least 598 MW of coal-to-clean renewables projects located on existing or former coal mines and ash dump sites are already in the works, with the 100 MW Oslomej solar farm in North Macedonia being the first to reach the construction phase.

The false promise of gas as a "transition fuel" has been promoted in the region, especially after the onset of the war in Ukraine and subsequent energy crises in the EU. Despite lacking the necessary infrastructure to import gas, €3.5 billion worth of prospective gas-fired power plants, gas pipelines, and LNG terminals would further entrench these countries in the fossil fuel system. But the current prospective solar and wind capacity, if operationalized, would render the prospective gas power plants unnecessary and create opportunities for an energy transition from coal to clean that enhances energy security.

3. See Methodology page.

II. SERBIA AND BOSNIA AND HERZEGOVINA LEAD THE REGION IN TOTAL OPERATING SOLAR AND WIND CAPACITY

The Western Balkans currently rely on solar and wind for 7% of their electricity mix (20.4 GW) with 662 MW of utility-scale solar and 865 MW of wind capacity in operation. The lion's share of operating utility-scale solar capacity (38%) was added in 2023, and much of the operating wind capacity (48%) came online in 2019.

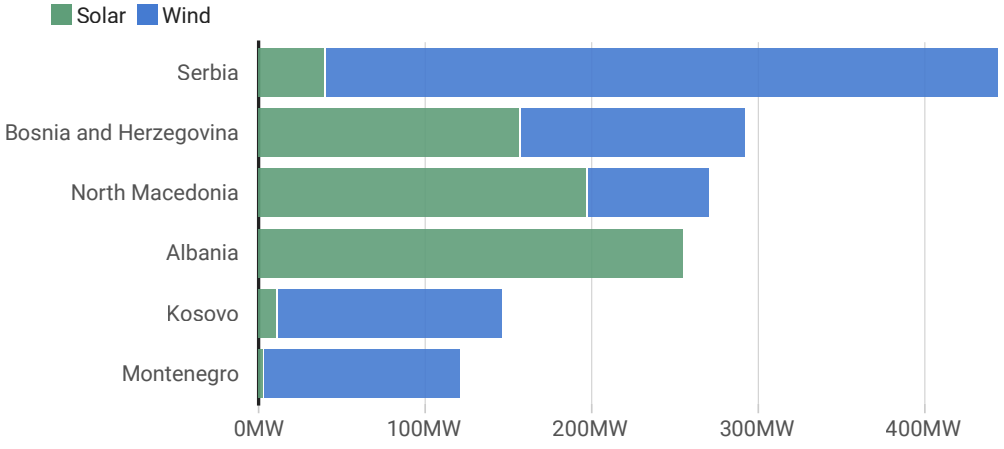
Of the 240 MW of large utility-scale solar added in the region in 2023, 140 MW came from the Karavasta solar farm in Albania. The solar farm is expected to provide the annual electricity consumption for 220,000 citizens and avoid more than 96,500 tonnes of CO_2 per year, the equivalent of 9.5% of current emissions from the country's industrial sector. Albania already leads the region in operating utility-scale solar capacity (255 MW) with an additional 58 MW that has already come online in 2024.

North Macedonia has the second largest operating utility-scale solar capacity. Its largest operating solar farm is the 55 MW Novaci solar farm. The solar farm was built near the Bitola thermal power plant to partly replace the energy produced by coal. Despite its large operating wind capacity, Serbia only hosts 40 MW of operating solar capacity.

By contrast, wind power capacity additions have slowed in recent years. The Western Balkans saw their greatest wind capacity additions in 2019 with 414 MW, compared to only 36 MW being added in 2023. Serbia accounted for 80% (332 MW) of 2019's capacity additions, the majority of which came from the 158 MW Cibuk wind farm. Since then, wind power development has slowed in Serbia with no additional capacity added after 2019. As of 2024, Serbia has 404 MW of operating wind capacity, almost half of the region's total operating capacity (865 MW).

Operating solar & wind power in the Western Balkans

Total operating utility-scale solar & wind power capacity by county, in megawatts (MW)



Note: Data includes only solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker, Solar Asset Mapper

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— A CASE STUDY —
SMALL SOLAR POWER PLANTS INSPIRING COMMUNITY-DRIVEN ENERGY TRANSITION

Piskova is a small village of about 2,000 inhabitants in southern Albania, along the ecologically-diverse Vjosa River. Due to strong opposition to hydropower projects on the river, particularly from environmentalists, scientists, and local communities, who cited concerns over potential impacts on the river's natural environment, habitat, and biodiversity, the Albanian government declared the Vjosa River as a national park to protect its unique ecological environment. This decision was hailed as a success for environmentalists but continued to highlight the challenge of balancing energy needs, energy independence, and economic development with other important factors.

In June 2023, the NGO Milieukontakt Albania initiated a small-scale community energy initiative in Piskova to harvest solar energy for local irrigation. The goal was to demonstrate that community-led initiatives play an important role in the transition towards a 100% renewable and just energy future. Initially envisioning an 8kWp PV system, the project faced funding challenges and launched a crowdfunding campaign. Despite falling short of the crowdfunding target, Milieukontakt proceeded with a smaller 3kWp installation, emphasizing community engagement and facilitating mentoring sessions and workshops to develop a concrete plan for a small grid-connected solar power plant. While the installation covers only 10% of the pump's electricity needs, it offers local farmers a discount on the high energy bills they incur for irrigating their land.

The full implementation of Law no. 24/2023 "On Promoting the Use of Energy from Renewable Sources" requires the adoption of secondary legislation regarding aspects such as the rights and responsibilities of self-producers, the application procedures, the relevant methodology and scheme of compensation, rules of electricity sale, etc. For this reason, Milieukontakt developed a memorandum of understanding outlining the roles and responsibilities of key stakeholders, the municipality of Përmet, and the farmers benefiting from the project. A committee representing each group was set up to manage the project.

Operating utility-scale solar & wind power in the Western Balkans

Country-level total operating utility-scale solar & wind power capacity, in megawatts (MW)

Country	Operating solar	Operating wind	Operating solar & wind
Albania	255	0	255
Bosnia and Herzegovina	157	135	292
Kosovo	11	135	146
Montenegro	3	118	121
North Macedonia	197	73	270
Serbia	40	404	444

Note: Data includes only solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker, Solar Asset Mapper

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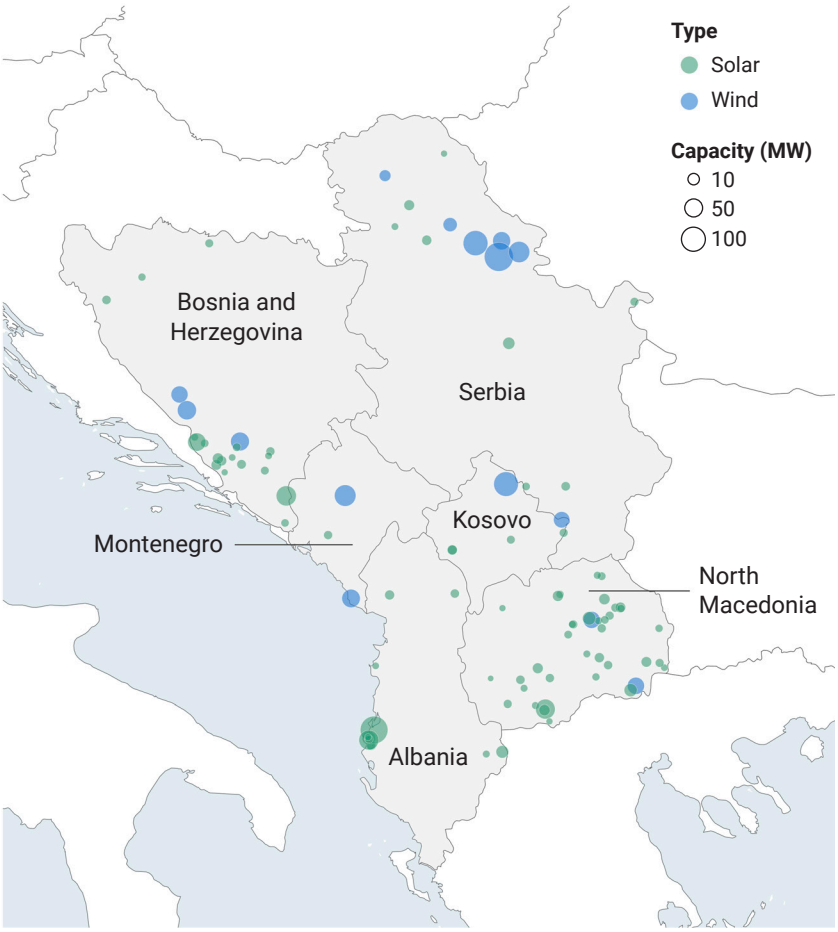
Bosnia and Herzegovina and Kosovo host the second most operating wind capacity with 135 MW each. The largest project in the two countries is the Bajgora wind farm in Kosovo with 103 MW, twice the capacity of the next largest. The project is a joint venture with investors from Germany and Israel and funded by the European Bank for Reconstruction and Development (EBRD). Bosnia and Herzegovina has a more evenly split distribution of operating utility-scale solar and wind capacity with 157 MW and 135 MW, respectively.

Bosnia and Herzegovina's draft National Energy and Climate Plan (NECP) envisions a wind power increase of 600 MW and a solar power increase of 1,492 MW, in line with the solar PV potential estimated by the International Renewable Energy Agency (IRENA).

Albania, a regional leader in solar, is currently the only country in the region to host no operating wind projects.

Operating solar & wind farms in the Western Balkans

Locations of operating utility-scale solar & wind power in the Western Balkans, circles sized by megawatt (MW) capacity



Note: Data includes solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker, Solar Asset Mapper

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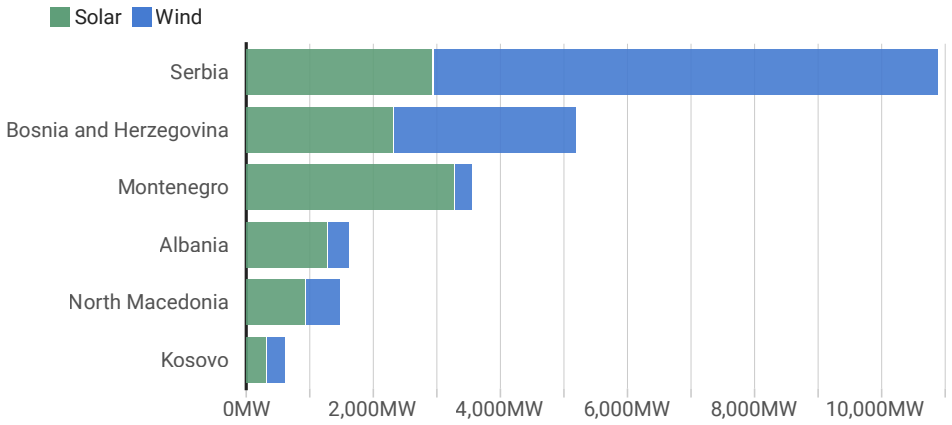
III. PROSPECTIVE SOLAR AND WIND CAPACITY INCREASED BY 70% SINCE LAST YEAR, PREDOMINANTLY IN EARLY STAGES OF DEVELOPMENT

As of March 2024, prospective utility-scale solar and wind capacity reached 23 GW in the Western Balkans, marking a 70% increase from the figures documented by GEM last year. Of these proposed projects, 7 GW (30%) are planned to commence operations by 2028, with 16.2 GW (70%) with no announced start year. 3.2 GW (29%) of prospective utility-scale solar and 6.4 GW (52%) of prospective wind capacity are in pre-construction and construction. The remaining 13.6 GW have been announced, but are yet to begin financing and permitting, allowing a window of opportunity for grid strengthening, rigorous spatial planning, environmental impact assessments, and public consultations to ensure equitable and just growth in solar and wind energy.

Serbia and BiH are linchpins in the region's solar and wind buildout. They account for nearly 70% of prospective solar and wind capacity in the region. Notably, there is a risk of a lower rate of construction and operations of the announced projects pipeline. Yet, there is more solar and wind capacity under

Prospective solar & wind power in the Western Balkans

Total prospective utility-scale solar & wind power capacity by country, in megawatts (MW)



Note: Data includes only solar project phases with a capacity of 20 megawatts (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker

Prospective utility-scale solar & wind power in the Western Balkans

Country-level total prospective utility-scale solar & wind power capacity, in megawatts (MW)

Country	Prospective solar	Prospective wind	Prospective solar & wind
Albania	1,283	334	1,617
Bosnia and Herzegovina	2,213	2,864	5,077
Kosovo	318	282	600
Montenegro	3,280	273	3,553
North Macedonia	935	545	1,480
Serbia	2,938	7,939	10,877

Note: Data includes only solar project phases with a capacity of 20 megawatts (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker

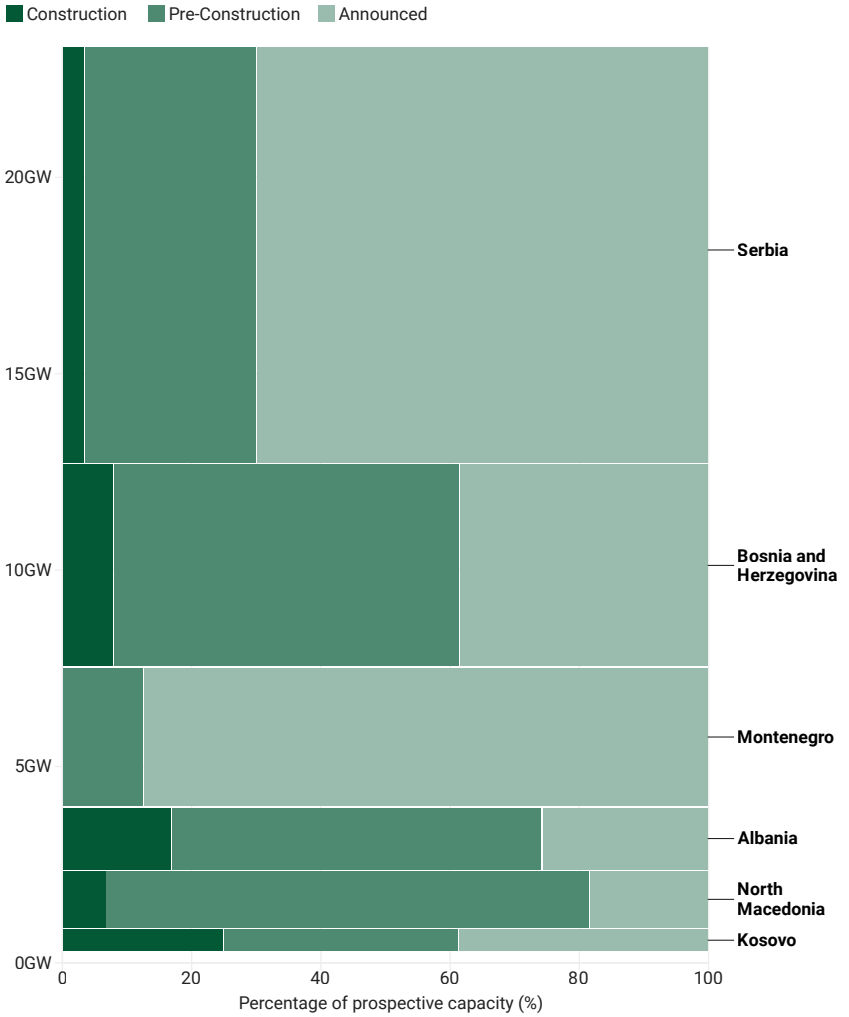
construction in these two countries than there is operating capacity in Albania, BiH, and Kosovo combined.

European companies are sponsoring a few solar and wind projects in the region, mirroring general EU support in regional clean energy development. However, China is the leading foreign investor with a 2.5 GW portfolio of solar and wind projects in the region, including the 2 GW Bor wind and solar farms in Serbia, intended to power a copper mine and smelter. The excess electricity is planned to produce 30,000 metric tons of hydrogen per year for export, as opposed to domestic public consumption. The project raises the concern about prioritizing investors' interests over a just and equitable decarbonization of the grid.

The majority of prospective solar & wind power in the Western Balkans is not yet in construction

Status of prospective utility-scale solar & wind power capacity, in gigawatts (GW)

How to read this chart:
→ % of prospective capacity by status
↓ height of bars = total capacity in development, in gigawatts (GW)



Note: Data includes only solar project phases with a capacity of 20 megawatts (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker

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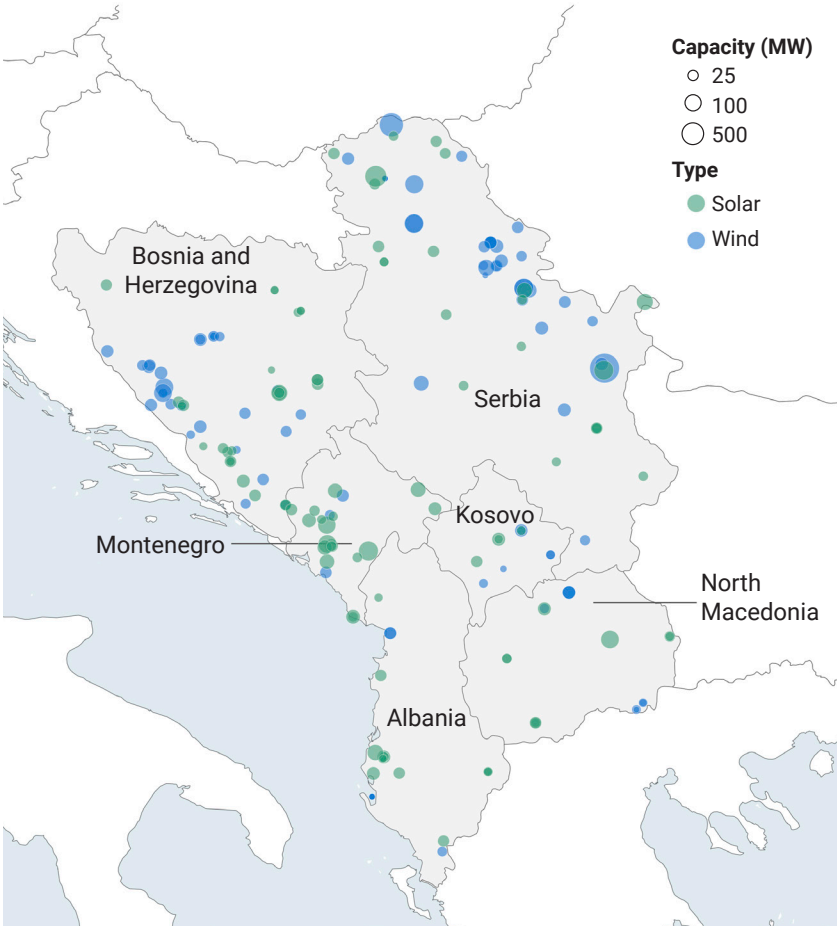
IV. SERBIA HAS THE LARGEST PROSPECTIVE SOLAR AND WIND POWER PIPELINE IN THE REGION, WHILE ITS CONSTRUCTION RATE IS SECOND TO LAST

Serbia accounts for 47% of the region's prospective utility-scale solar and wind capacity. The country has 7.9 GW of prospective wind capacity, 65% of the region's total, and 2.9 GW of prospective utility-scale solar capacity, 27% of the region's total. According to the latest GEM data, Serbia plans to connect 3 GW of wind and 1 GW of solar power to the grid by the end of 2028, which would exceed its 1.77 GW of wind power target but fall short of the 1.73 GW of solar target set in the draft National Energy and Climate Plan. The 27% target for renewable energy share in the draft is not yet in line with the 40.7% target adopted by the Energy Community.

Prospective solar & and wind farms in the Western Balkans

Locations of prospective utility-scale solar & wind power in the Western Balkans, circles sized by megawatt (MW) capacity



Note: Data includes solar project phases with a capacity of 20 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more.
Source: Global Solar Power Tracker, Global Wind Power Tracker

When comparing Serbia's share of projects in construction against total prospective capacity, it comes second to last in the region with just 3% (0.4 GW). The share is lower than the average construction rate in Europe (5%) and average global rate outside of China (7%). By contrast, the construction rate in the rest of the region (outside of Serbia and Montenegro) is 11%, far exceeding the global average for construction, barring China (7%).

Prospective wind capacity in Serbia (7.9 GW) accounts for over 400% of the country's cost-effective wind potential (1.8 GW) — cost-effective meaning economically viable and competitive with fossil fuels as per IRENA's REmap analysis (2020). Large utility-scale solar development (2.9 GW) alone could meet 82% of the country's cost-effective solar potential (3.6 GW). Looking at utility-scale solar and wind prospective capacity by the country's cost-effective potential, Serbia emerges third after Montenegro and BiH in the region. That is, despite the significant prospective capacities in Serbia, Montenegro and BiH appear to be more ambitious in renewable energy planning compared to IRENA's REmap potential.

Serbia's large share of announced solar and wind capacity (7.6 GW) is attributable to its immense potential and policy implementation. The cost-effective potential of solar and wind energy in Serbia accounts for 42% of the Western Balkans region, and Serbia has also been identified as a top performer in implementing the decarbonization cluster of the Energy Community acquis, while still falling short of Energy Community requirements. Notably, the inauguration and integration of 10.9 GW prospective capacity hinges upon multiple factors, including grid capacity and stability.

— A CASE STUDY — COMMUNITY ENERGY PROJECTS IN SERBIA

Elektropionir, one of the first community energy organizations in Serbia, installed the country's first community solar projects, 5 kWp each, in the villages of Temska and Dojkinci in southeastern Serbia. The project underscores Elektropionir's commitment to an energy transition that empowers local communities and demonstrates that Serbian citizens can take energy production into their own hands.

The villages, much like other areas in Serbia and across the Western Balkans, were threatened by proposed development of hydropower projects. Through a series of co-creation workshops with the local community, locals had the chance to collectively decide where and how the small solar installations would be positioned. The whole project also functioned as a strong political message: [Renewable] energy independence can be achieved without destroying natural habitats, while also directly benefiting local communities.

Elektropionir is now pressing ahead with a series of other projects, including the first agri-PV project in the country. It's important to note that community energy still faces multiple political, legal, and regulatory hurdles in the country, including bureaucratic complexities and long permitting timelines.

V. SOLAR AND WIND POWER ARE MORE COMPETITIVE THAN FOSSIL GAS IN ELECTRICITY SECURITY OF SUPPLY, ACCESS, AND EQUALITY

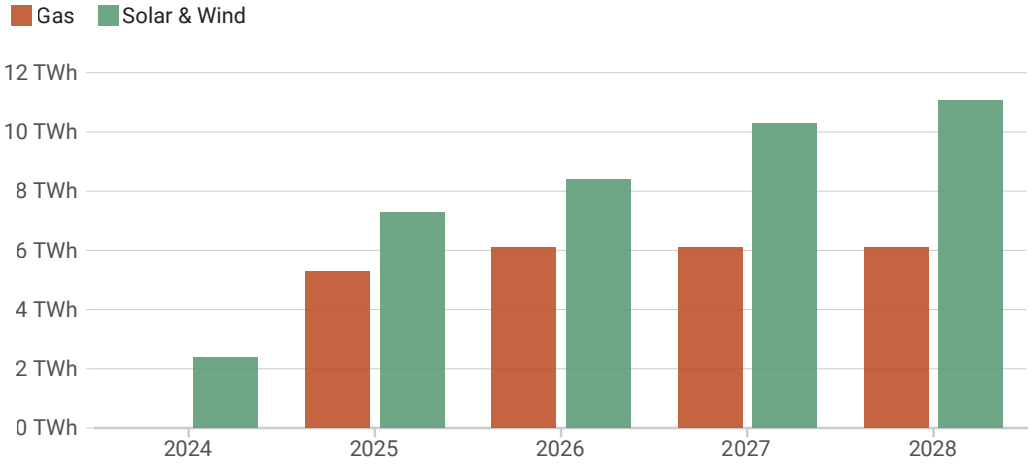
The concurrent proposed gas buildout in the region threatens the just energy transition, posing economic, social, and environmental costs. Serbia is the largest gas consumer in the Western Balkans, with 90% of gas imported from Russia, followed by North Macedonia and BiH. Albania, Kosovo, and Montenegro consume extremely low quantities of gas. Most of the gas used in the region is in heating. Only North Macedonia and Serbia consume gas for electricity production, predominantly in combined heat and power (CHP) plants with an average age of 30 years.

Meanwhile, Albania, BiH, Montenegro, and North Macedonia plan to add 2.6 GW of gas-fired power generation with associated infrastructure worth €3.5 billion. The gas lock-in would lead to regional gas import dependence, introducing the volatility risk of the gas market, hindering regional and global efforts in carbon neutrality, and creating a risk of stranded assets. Furthermore, gas-fired power will have health and environmental effects associated with emissions, land use, and water use — not accounting for effects down the gas supply chain.

Solar and wind energy can displace gas power in the Western Balkans. If all planned projects come to fruition by 2028, added cumulative utility-scale solar and wind generation (11 TWh) will substantially exceed[4] new gas power generation (6 TWh), rendering the gas buildout obsolete. Interconnectors, hydropower balancing, grid-scale battery storage, and demand side flexibility can tackle the intermittency of solar and wind power, backed up by policies such as market coupling — providing the same touted grid reliability and flexibility of gas. The planned investments in gas (€3.5 billion) can be redirected into developing clean flexibility, integrating solar and wind power

Planned additions to solar & wind power generation could exceed new gas for the Western Balkans

Potential cumulative added power generation in the Western Balkans based on when planned projects are expected to come online, in terrawatt hours per year (TWh/year)



Note: Data only includes projects with a known and available start year. The total cumulative additional power generation including proposed capacity without available start year would be 8.58 Twh/year for gas power and 35.65 TWh/year for solar and wind. The earliest gas plant currently in development is planned to start operations in 2025, with no gas plants expected to start in 2024, in contrast to over 1.7 GW of solar and wind expected to start operations in 2024.
Source: Global Solar Power Tracker, Global Wind Power Tracker, Global Oil & Gas Plant Tracker

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4. See Methodology page.

generation, decarbonizing the grid, and avoiding gas lock-in of the electricity supply.

Unlike gas power plants, solar and wind power do not require exclusive ownership to function and can be managed by communities for communities. The modular technologies of solar and wind power allow for an affordable small-scale implementation as opposed to the required economies of scale for the commercial viability of gas. With rising carbon costs and wind and solar costs lower than coal and gas across the EU and neighboring Central and Eastern Europe — solar and wind power emerge more cost-effective than gas. Compared to gas imports, solar and wind power are renewable, abundant, secure, and accessible.

Based on comparative affordability and accessibility,[5] solar and wind power can drive equal access to electricity, most prominently through community energy projects. Community energy models distribute the benefits of renewable energy and engage locals in the energy transition. Holding the decision-making power, including in land use, local population ensures the sustainability of the projects with minimal impact on the environment. Community energy projects secure access to clean energy and provide revenue generation models through the sales of excess electricity while avoiding the economic, environmental, and social costs associated with gas power.

— A CASE STUDY —
COMMUNITY ENERGY PROJECTS IN NORTH MACEDONIA

Community energy projects in the Balkans have been progressing in recent years, driven by factors such as increasing awareness of environmental issues, desire for energy independence and resilience, and the availability of renewable energy resources. These trends show the emergence of several community-owned solar projects in countries like Croatia, Serbia, and Bulgaria. Following the model of energy cooperatives, they allow members of local communities to collectively invest in solar panels installed on rooftops or on community-owned buildings and land. Members then benefit from the generated electricity or receive dividends from the sale of excess power to the grid. In Albania and Montenegro there are initiatives for community wind farms due to the suitable availability of wind resources in their regions. These projects involve local communities pooling resources to develop and operate wind turbines, providing clean energy to the region while generating revenue for the community.

ASSED Sunrise has been one of the pioneering organizations in North Macedonia working to implement the concept of energy communities in the country. It is fostering networking with other communities through a country-wide federation, capacity building programs, and advocacy. Sunrise calls for the concept of energy communities to be integrated within the broader framework of the Green Agenda for the Western Balkans as a pandan to the European Green Deal for the region.

In Greece and North Macedonia, the "Community Solar Garden" project is developing two community-led agri-PV projects. These will combine solar energy production with small urban agricultural plots, with all resources being recycled back to the local community. These small pilot projects will hopefully be used as guiding examples, both to promote the community energy model in North Macedonia, and to indicate the socio-technological potential of energy communities.

5. See Methodology page.

VI. THE WESTERN BALKANS SHOULD PRIORITIZE A JUST ENERGY TRANSITION OVER A MISGUIDED PREFERENCE FOR GAS, PUSHED BY THE U.S., EU, AND RUSSIA

EU and U.S. interests have lobbied and supported creating a fossil gas dependence in Western Balkans, including the U.S. Ambassador to BiH and the EU Enlargement Commissioner, international banks such as the EBRD and European Investment Bank (EIB), development programs such as the EU's Western Balkans Investment Framework (WBIF), as well as EU and U.S. companies. They have variably sought the development of extensive fossil gas infrastructure—in direct contradiction to the decarbonization efforts and carbon neutrality goals by 2050, as well as energy security concerns over gas import volatility. The national governments are interested in a "quick and affordable replacement for coal" while diversifying gas supplies to wean off Russian gas. Current gas infrastructure development is likely to introduce gas import dependence in this region with low gas consumption, as opposed to diversification or energy security. But a just energy transition would render gas imports moot, reducing the geopolitical influence of gas, providing greater energy security, and avoiding stranded assets and negative environmental impacts.

With aging and inefficient power systems, the Western Balkans share common barriers to renewable energy development and a just transition. The technical barriers include insufficient grid capacity and storage mechanisms to integrate and balance growing solar and wind power. Administrative challenges include the lack of methodological and technological solutions among the electricity market operators, and complex and opaque administrative processes (e.g., permit granting and spatial planning). Legislative hurdles present as inconsistent and uncertain laws, regulations, and incentive schemes, including lacking legislative support for community energy.

However, a just energy transition hinges on intentional strategic planning, including but not limited to a plan for coal industry employees in the face of the coal phaseout plans, engaging local communities, and rigorous environmental impact assessments. Across the region, there are existing programs such as the Accelerating Coal Transition Investment Program as part of the Just Energy Transition Investment Platform in North Macedonia and individual cases such as the Bitola solar farm developed in partial replacement of the Bitola coal power plant. Territorial just transition programs should promote community energy to garner support for the energy transition in a coal-dominated region—for example, offering shares in large renewable energy projects to local households affected by the coal phase-out and setting up 100% community-owned projects to cover energy needs and thus reduce bills. Yet, more concerted action is required as a part of a reevaluation of energy transition strategies and prioritization of a just energy transition over a misguided preference for gas among the local, regional, and global actors.

VII. COUNTRY HIGHLIGHTS

Albania

Currently, Albania has 375 MW of operating solar capacity, 255 MW at the utility scale, but no operating wind capacity. Albania relies almost exclusively on hydropower. While beneficial for decarbonization, hydropower has strong environmental impacts and makes the energy sector vulnerable to the changing climate. In 2020, this vulnerability led to the country importing 30% of its electricity needs. In response, Albania approved an update to the existing Law on the Promotion of Use of Energy from Renewable Sources. This legislation aims to boost energy production from non-hydropower renewable sources and moves away from the development of hydropower as the singular renewable energy source. Of the 1.6 GW of Albania's prospective large utility-scale solar and wind capacity additions, 334 MW is earmarked for wind. Support for solar power development has been provided by the 2018, 2020, and 2021 auctions with another auction round planned for 2024. So far, the solar auctions have produced two PV projects with a total of 240 MW. The first wind auction was held in July 2023 and resulted in the announcement of three projects totaling 222 MW—a huge step forward for a country with no wind farms in operation. Albania has started construction on its section of an electricity interconnection project with North Macedonia to foster an open energy market and regional cooperation, as well as align with EU climate goals. Albania is one of two countries in the region to reach the 2020 renewables target set by the Energy Community Treaty. The country also reported 7 GW of wind and solar potential and is looking into developing offshore wind in the Adriatic Sea.

Bosnia and Herzegovina

Bosnia and Herzegovina has 157 MW of operating utility-scale solar capacity, and 135 MW of wind capacity. Of the prospective 5.1 GW of utility-scale solar and wind, roughly half is planned for solar (2.2 GW) and the other half (2.9 GW) is planned for wind. Notably, the country is the only electricity exporter in the region, even though 60% of its electricity comes from coal, with most of the remainder from hydropower. In an effort to pivot from coal to cleaner energy sources, the country has at least 121 MW of planned coal-to-renewables projects, the largest of which is the Divkovići solar farm. The Federation of Bosnia and Herzegovina's new Law on the Use of Renewable Energy Sources and Efficient Cogeneration of 2023 promotes the role of prosumers and energy communities and introduces auctions tailored to both large-scale and small-scale generation. The law also simplifies administrative procedures for the construction of renewable energy facilities. The country's draft National Energy and Climate Plan proposes to install renewable energy plants totaling 2 GW by 2030, with solar making up 1.5 GW of that capacity.

Kosovo

Kosovo has 11 MW of operating utility-scale solar capacity, and 135 MW of wind capacity. Of the prospective 600 MW of utility-scale solar and wind, 318 MW is planned for solar, and 282 MW is planned for wind. Kosovo's electricity sector remains dominated by coal, almost entirely from two aging coal power plants, the Kosovo A and Kosovo B power stations. 83% of its current capacity is coal based, with 7% of hydro and 10% from wind and solar. Kosovo contains no gas infrastructure and does not extract oil or gas, providing an opportunity to sidestep the myth of gas as a transition fuel and fully decarbonize. The 100 MW Kosovo A solar farm is the largest coal-to-renewables project in the country. Kosovo is the first Western Balkan country to adopt an energy strategy that does not favor hydropower. Launched in March 2023, the strategy is aiming to add 1.6 GW of renewables capacity by 2031 and stated the need for investment in the grid and strengthening links to Albania and Serbia.

Montenegro

Montenegro has the lowest operating utility-scale solar capacity in the Western Balkans at 3 MW, with an additional 25 MW of distributed solar. It has the highest prospective solar capacity in the region with more than 3,280 MW in development, although nearly 3,000 MW consists of announced projects with no government approvals, land rights, or power purchase agreements. Montenegro has 118 MW of operating wind capacity, but only 273 MW of prospective capacity. Montenegro still relies heavily on its hydropower plants, which produce around 40–60% of its electricity. In 2021, the country announced a coal phaseout by 2035. In 2021, state utility Elektroprivreda Crne Gore (EPCG) launched the Solari 3000+ and 500+ programmes, which provide PV panels, financing, and installation for households and businesses throughout the country. By April 2023, 17 MW had been installed on more than 1,500 rooftops. Despite several large-scale solar projects being in the pipeline, their implementation has been slow. Even without major investments, the grid could integrate renewable energy facilities with a total capacity of 1,500 MW. Despite the potential for a renewable energy expansion, Montenegro is planning to build an LNG terminal and three new gas-fired power plants with a total capacity of 400 MW. Montenegro is one of two countries in the Western Balkans to reach the 2020 renewables target set by the Energy Community Treaty.

North Macedonia

North Macedonia has 197 MW of operating utility-scale solar capacity, an additional 309 MW of distributed solar capacity, and 73 MW of wind capacity. North Macedonia was the first country in the region to install a wind farm, but solar and wind development stalled between 2015–2020. In recent years, there has been a renewed focus on solar, with the majority of the current utility-scale solar capacity coming online in 2022 and 2023. Of the prospective 1.5 GW of utility-scale solar and wind capacity, 935 MW is planned for solar and 545 MW is for wind. In support of the energy transition, the country has 280 MW of planned coal-to-renewables projects, including the 100 MW Oslomej solar farm, the first of its kind in the region to begin construction. Although North Macedonia remains reliant on coal and hydropower, it has decreased its consumption rate of imported electricity to 2.75% for the year 2023, compared to 30% registered in 2021. The country has joined the Powering Past Coal Alliance and is committed to a phaseout by 2027. North Macedonia launched its Just Energy Transition Investment Platform at COP28, targeting 1.7 GW of renewable energy (likely including hydropower) and grid strengthening by 2030.

Serbia

Serbia has 40 MW of operating utility-scale solar and 404 MW of wind capacity. It has ambitious plans to expand its wind and solar footprint with 10.9 GW of projects in various stages of development, including 2.9 GW of utility-scale solar and 7.9 GW of wind. The country plans to tender 1.3 GW of solar capacity in the next three years, and plans to add 3 GW of the prospective wind by 2030. Two-thirds of Serbia's energy is generated by coal, complemented by hydropower. Among the notable renewable projects is the 97 MW Srednje Kostolačko Ostrvo solar farm, a coal-to-renewables initiative. A consortium between Hyundai Engineering and UGT Renewables plans to build 1.2 GW of PV capacity with at least 200 MW of battery storage by 2028. The consortium plans to hand the projects over to the state utility Elektroprivreda Srbije (EPS). The Plan for the Development of Energy Infrastructure and Energy Efficiency Measures for the period up to 2028 will prioritize the 250 MW Klenovnik solar farm and the 73 MW Kostolac wind farm. Additionally, it includes the 1.5 GW wind project and 0.5 GW solar project sponsored by China to support copper mining and produce hydrogen, potentially for export. The plan also features the first agrosolar project in the Balkans, which will be the largest in Europe.

VIII. CONCLUSION

The Western Balkans have the opportunity to leapfrog from coal to renewables and redirect resources away from gas towards clean flexibility. Solar and wind power have economic, social, environmental, and political benefits, whereas gas risks stranded assets and carbon lock-in from gas infrastructure. Notably, integration of prospective solar and wind capacity requires technical capacity-building in grid strengthening and balancing to achieve clean flexibility as well as administrative capacity necessary for rigorous environmental impact assessments and public consultations and to reduce the negative footprint of the projects and maximize the social benefits.

Doubling down on prioritizing bringing the current prospective solar and wind capacity into operation would allow for a just energy transition without gas. However, the attainability of the just energy transition hinges on prioritization and resource allocation. Development of gas-fired power and infrastructure would lead to a gas lock-in, and governments must rethink their plans. Similarly, coal phaseout requires political determination and a comprehensive just energy transition strategy at the national and regional levels. The EU and the U.S. need to rein in their gas interests in the region, prioritizing support for a just energy transition to facilitate energy security in the Western Balkans.

IX. DATA GAPS AND FUTURE RESEARCH

For additional information on the methodology used in this report, please refer to the Methodology page. The Global Solar Power Tracker and Global Wind Power Tracker are updated annually. However, due to potential lags or gaps in project-level, publicly-available data sources, as well as data collection timing compared to data publication date, both trackers may be missing some projects that meet the inclusion criteria. Distributed solar, off-grid installations, and grid-connected solar projects below the Global Solar Power Tracker's 1 MW threshold for inclusion account for 43% of the Western Balkans' total operating solar capacity. Furthermore, the Global Solar Power Tracker is missing start years for many operational projects between 1–20 MW in the region and also only comprehensively covers prospective projects that are over 20 MW. While it is rare for wind projects to be below Global Energy Monitor's 10 MW wind threshold, we estimate such projects constitute 5–10% of global capacity. For more information on the data collection process, please refer to the Global Wind Power Tracker's Methodology page and the Global Solar Power Tracker's Methodology page.