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BULGARIAN WIND ENERGY ASSOCIATION



Wind can deliver structural stability for Bulgaria

Miglena Stoilova
Chair of the BGWEA

The Bulgarian Wind Energy Association (BGWEA) is represents the wind energy sector in Bulgaria, uniting most wind power companies across the value chain and accounting for a significant share of the country's installed wind capacity. BGWEA advocates for the sustainable and economically viable development of wind energy, working to improve the legislative, regulatory and policy framework while promoting research, knowledge-sharing and broader renewable energy advancement in support of Bulgaria's energy transition.

Miglena Stoilova is a leading renewable energy expert in Bulgaria, with a recognised authority in the sector. As Chair of the BGWEA and a member of the Management Board of the National Energy Chamber, she actively shapes the direction of sustainable energy development in the country. For the past 17 years, she has led the activities of major international companies (Enel and Public Power Corporation), supporting market liberalisation and the decarbonisation of the electricity sector.

Bulgaria has strong wind resources but comparatively modest installed capacity relative to some of its regional peers. What has driven deployment so far, and what do you see as the main hurdles causing stagnation?

Wind projects are inherently more complex and slower to develop than some other technologies. They require extensive upfront studies, environmental assessments, spatial planning procedures, grid coordination and multiple permits. This means longer development timelines, higher regulatory scrutiny, as well as public exposure. At the EU level, this has already been acknowledged. The revised Renewable Energy Directive (RED III) introduces shorter and simplified permitting procedures and requires Member States to designate so-called "acceleration areas" where projects can be developed under streamlined rules. Additional EU legislation has established renewables as being of overriding public interest and has put special emphasis on faster procedures, including for repowering, precisely because wind permitting is traditionally lengthy.

In Bulgaria, however, the transposition and practical implementation of these EU provisions has often been delayed or only partial. As a result, investors do not experience the acceleration that EU legislation intends to deliver. This creates uncertainty and slows down projects. The issue is visible at the European level as well - in July 2025, the European Commission sent Bulgaria a formal letter of notice launching infringement procedure No. 2025/0198 under Article 258 TFEU for failing to notify the full transposition measures of Directive (EU) 2023/2413 on renewable energy promotion within the required deadline. That kind of development signals a lack of regulatory predictability.

At the national level, one of the most significant hurdles is the lack of genuine market predictability. Long-term power purchase agreements (PPAs) between generators and corporate consumers are the real mechanism that can provide stability for businesses and investors and unlock new projects. However, existing legal restrictions – notably Article 100(4) of the Energy Act – effectively restrict operating wind farms from freely offering long-term products. This constrains the development of the market instruments that industry is actively seeking.

In addition, Contracts for Differences, which can facilitate the introduction of more wind power, are widely neglected by policymakers. This deprives the Bulgarian economy of a clean, competitive energy source that would also strengthen the energy independence of the country.

A second major problem is the distortion of price signals. While many EU markets are restoring the healthy balance between long-term contracts and short-term "day-ahead" trading, Bulgaria still relies heavily on short-term markets. Administratively set prices and compensation schemes for non-household consumers reduce incentives for customers to secure long-term stability. Short-term markets are, by definition, volatile. In addition, the revenue cap on generators creates further uncertainty: revenues are clawed back when prices are high, but there is no symmetrical compensation mechanism when prices fall below the cap. This makes it impossible to structure any long-term offers to the consumers. At the same time, income is taken from the producer in a way that contradicts any legitimate market principle.

In short, Bulgaria's modest wind deployment is not due to a lack of resources or investor interest. The country has strong wind resource potential, suitable terrains and a significant project pipeline. The stagnation is primarily linked to slow and incomplete regulatory alignment, lengthy permitting, limited market predictability and distorted price incentives. If these structural issues are addressed, the sector has the capacity to accelerate and contribute meaningfully to price stability, energy security and economic competitiveness.

Are Bulgaria's wind power capacity targets outlined in its Integrated Energy and Climate Plan (INECP) achievable?

Under Bulgaria's INECP, the country would need to roughly triple its wind capacity over the next four years to stay on track with the targets. The Plan foresees wind capacity rising to close to 2 GW by 2030 and, in the longer term, to around

5.5 GW onshore and 3.3 GW offshore by 2050. From an industry perspective, the pipeline and investor interest are clearly there: BGWEA members are currently developing projects totalling around 4 GW, with a share of them already at an advanced stage. This suggests that, with clear rules and a predictable investment framework, wind deployment can happen quickly and sustainably. Thus, I do not see the targets in NECP as a challenge, but rather modest.

We believe the Plan's wind targets should be increased in the upcoming update. Bulgaria's current 2030 renewables share target is 34.96% of gross final energy consumption, while the EU has raised its overall target to at least 42.5% (with an indicative 45% ambition). In this context, technology-specific capacity figures in the Plan should be treated as indicative rather than fixed, and Bulgaria has strong reasons to rely more on wind, leveraging on its resource potential, the demonstrated investor interest, the robust pipeline of advanced stage development projects, and the power system's need for a more balanced generation mix. A higher wind ambition would remain fully realistic—provided Bulgaria delivers a stable and predictable regulatory framework, a bankable investment environment and a long-term strategy for timely grid integration of new capacity.

What do current grid connection approvals signal and how much of the pipeline could be commissioned before 2030? Are any specific reforms needed to develop the sector?

As previously mentioned, BGWEA members are currently developing projects totalling over 4 GW. It can be expected that at least 3 GW of these could be commissioned by 2030.

To secure grid connection capacity, ESO should engage early in the project with a binding position. This would allow them, on the one hand, to have timely information on planned investments and plan network development accordingly, and on the other hand, to provide investors with certainty regarding project implementation.

We expect the 10-year ESO Development Plan 2026–2035 to include investments in the transmission grid in the North and Northeastern region of Bulgaria, where the majority of wind projects are concentrated. For the wind sector to scale up, grid development must go hand in hand with resource potential—network capacity needs to be strengthened precisely in the regions where wind conditions are strongest. In this context, a positive signal is the European Commission's approval at the end of January of nearly EUR 104 mln in grant funding for the joint Bulgaria–Romania project CARMEN, which targets modernisation and increased transmission capacity in North-Eastern Bulgaria—the country's key wind region—and improved cross-border connectivity along the North–South corridor, including automation upgrades in five substations and major telecom and optical infrastructure investments that directly support higher renewable integration.

As in the wider region, solar power has driven Bulgaria's renewable capacity expansion. Does the system risk becoming imbalanced without diversification and storage?

Yes, there is a risk of imbalance if renewable capacity growth continues to be concentrated predominantly in solar, without parallel diversification of renewable technologies and system flexibility.

The Bulgarian data clearly illustrate the lack of technology diversification. According to ESO figures, between the end of 2024 and the end of 2025, solar capacity increased from 4,568 MW to 5,984 MW – a growth of around 31%. Battery capacity expanded from 86 MW to 1,181 MW, representing more than 1,280% growth. In contrast, wind capacity rose marginally from 711 MW to 716 MW – approximately 0.7%. This shows a structural imbalance: the system is evolving rapidly in terms of solar and storage, while wind remains virtually stagnant.

From a system perspective, this matters. Wind and solar have complementary production profiles. Wind generation in Bulgaria and across Southeast Europe is typically stronger in winter and during night hours, when solar output is low or zero. Without sufficient wind capacity, higher solar penetration increases the risk of price cannibalisation and volatility, production curtailment, and dependence of non-renewable electricity generation.

The European context highlights this even more clearly. At EU level, installed solar capacity is roughly 330 GW, while wind stands at about 230 GW. This means solar-to-wind capacity is approximately 1.4:1 – not 8:1 or 9:1 as is effectively the case in Bulgaria today. In neighbouring countries, the picture is also more balanced. Turkey has around 20 GW of solar and over 13 GW of wind (ratio ~1.5:1). Greece stands at roughly 9.6 GW solar and 5.3 GW wind (~1.8:1). Romania has about 5 GW solar and over 3 GW wind (~1.6:1). On average across the region, solar capacity is about 1.5–1.7 times wind capacity – far more balanced than in Bulgaria. It's worth adding that due to the much higher inherent capacity factor of wind, the ratio is in favour of wind in terms of the energy productivity of the respective MWs installed.

Storage is undoubtedly part of the solution, but it cannot substitute technological diversification. Batteries provide short-term flexibility; wind provides structural, seasonal and hourly complementarity. If Bulgaria continues to add mainly solar capacity without meaningful wind expansion, the system risks becoming increasingly dependent on storage and redispatch, with higher overall system costs. Diversification is therefore not a matter of technology preference, but of system stability, economic efficiency and long-term competitiveness. The well-balanced generation mix is also instrumental for the overall lower electricity price to the consumers.

Wind power deployment is often framed as being in tension with agriculture. How do you view the land occupation debate?

The "wind vs agriculture" narrative is often based on disinformation when it comes to land occupation. In practice, wind and farming are highly compatible, which is why across Europe—including Bulgaria—wind turbines are often situated on agricultural land. There are no EU-level rules treating wind as inherently conflicting with farmland, and Bulgaria's Agricultural Land Protection Act does not introduce specific prohibitions for wind, largely because the permanently occupied footprint is very small.

What matters is the distinction between the wind farm area and the land actually taken out of agricultural use. European Commission figures indicate that roughly 97–98% of the area within a typical wind farm can still be used for other purposes, primarily agriculture. A modern 5–8 MW turbine typically requires around 1–2 decares for the foundation and operational hardstanding, while the land between turbines remains available for cultivation or grazing. In Bulgaria, the total footprint of the existing wind fleet, including related infrastructure, is estimated at approximately 0.004% of agricultural land—effectively negligible at the national scale.

Finally, projects are subject to EIA procedures and soil protection requirements. Under Ordinance No. 26, the topsoil (humus layer) must be stripped, stored, and reinstated after construction so land quality is preserved. From a broader land-use perspective, agricultural areas are already human-shaped landscapes, and are widely used across Europe to scale wind responsibly without added pressure on high-value natural habitats. Wind turbines do not displace agriculture; they can complement it. Farmers and land users benefit from additional, stable lease income, while shared infrastructure, such as access roads, can improve overall farm logistics. In some cases, proximity to electricity generation can also support energy-intensive activities like irrigation through long-term contracts and more predictable energy costs.