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ENERGY READ

WIND LAB 1

REGIONALLY TESTED GUIDELINES FOR FOSTERING WIND ENERGY CITIZENSHIP IN BULGARIA

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Funded by the European Union

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REGIONALLY TESTED GUIDELINES FOR FOSTERING WIND ENERGY CITIZENSHIP IN BULGARIA

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Picture: Bulgarian Wind Energy Association

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Description	This energy read presents regionally tested participatory guidelines developed from 5 co-creation sessions conducted in Bulgaria over 2.5 years within the *JustWInd4All* project. It examines the design and practice of participation with a focus on the emerging offshore wind industry, while addressing common challenges shared by both onshore and offshore wind development.
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EXECUTIVE SUMMARY

In 2025, Bulgaria marks twenty years since launching its wind sector—but despite strong natural resources[1] and a 2 GW onshore pipeline, no new wind capacity has been connected since 2014. The country's wind energy transition sits in a paradox: abundant onshore and offshore resource, but a decade of stalled deployment and fragile public legitimacy. A draft Law on Energy from Renewable Sources in Maritime Spaces (introduced in 2022) was frozen after its first reading in early 2024, following opposition from fisheries and tourism and amplified disinformation on biodiversity, fish stocks, and visual impacts. The pattern echoes onshore controversies of the mid-2010s: technical and economic feasibility is not in doubt; social and political legitimacy is.[2]

The JustWInd4All project addresses this gap by prototyping participatory practices in the North East Region of Bulgaria, covering emerging topics such as spatial planning, shared experience of visual impacts, transparent assessment of environmental trade-offs, and mechanisms for local value creation. These co-creation workshops, called Wind Labs, convene citizens, students, municipalities, and actors from sectoral such as agriculture, fisheries, and tourism to articulate concerns, co-design solutions, and rebuild trust. The outcome is a practical pathway to energy citizenship, formulated as a set of regionally tested guidelines that translate technical feasibility into social legitimacy and durable trust.

One key lesson is that participation must begin early. When acceleration zones or siting decisions are defined only at the national level, resistance is inevitable. The Wind Labs showed that blending centralized targets with local knowledge helps anticipate conflicts, strengthens biodiversity safeguards, and links projects to wider regional development strategies. Making projects tangible also proved crucial. Photographs and renderings of offshore wind farms allowed participants to judge visual impacts under different conditions, shifting debates away from abstract fears and countering disinformation with concrete evidence.

Equally important is transparent communication of environmental trade-offs. Lifecycle assessments presented during the Labs revealed that wind power has among the lowest greenhouse gas emissions, water use, and land footprint of any energy source. For students and media, these findings directly challenged myths that turbine manufacturing cancels out climate benefits, demonstrating how science-based storytelling can build legitimacy.

The discussions further underscored that wind projects gain traction when they create visible value for communities. Local stakeholders emphasized jobs, training, infrastructure, and reinvested revenues as measures of fairness—national arguments about "cheap power for the grid" resonate less without concrete local benefits. Multi-use approaches reinforced this point: onshore turbines leave most farmland usable, while offshore sites can support aquaculture or even floating solar, reframing wind as part of a broader economic fabric rather than an imposed intrusion.

Given the Black Sea's unique conditions, participants stressed that offshore wind must be developed as a phased major capital project. Independent oversight, staged risk assessment, and fit-for-purpose technology choices are essential both for cost control and for maintaining public trust.

Above all, the Wind Labs demonstrated that participation cannot remain a one-off exercise. Bulgaria's public hearings have too often been tokenistic or disrupted. Sustained forums, youth

[1] Center for the Study of Democracy. (2023). *Wind energy potential in Bulgaria* (CSD Policy Brief No. 138).

[2] Uzunov, K., & Trifonova, M. (2023*). T3.2 North-East Region (BG) regional report*. JustWind4All .

involvement, and partnerships with media can transform participation into ongoing monitoring and shared responsibility. Even opposition, when acknowledged as a form of engagement, can push projects toward fairer and more inclusive practices.

Together, these regionally tested guidelines show that wind energy in Bulgaria cannot advance through technical planning alone. By embedding early and continuous participation, making impacts visible, ensuring fair distribution of benefits, and strengthening dialogue across the lifecycle of projects, the pathway toward energy citizenship becomes not just aspirational but actionable.

1 BACKGROUND AND CONTEXT

In 2025, Bulgaria marks two decades since the launch of its wind energy sector—yet this milestone is overshadowed by the fact that **no new wind installations have been connected to the grid for more than a decade**. What began as a promising field, fueled by EU-aligned incentives and a brief investment "boom" between 2008 and 2014, has since stalled. Despite a development pipeline of roughly 2 GW of projects[3] and outstanding natural resources both onshore and offshore, Bulgaria remains one of the few European countries where the wind sector has not advanced in recent years. This stagnation is particularly paradoxical given the abundance of resources: modeling by the Austrian Institute for Technology has identified high onshore potential in the northeast of the country, while Bulgaria's Exclusive Economic Zone in the Black Sea holds an estimated **116 GW of offshore potential**, with about 26 GW suitable for bottom-fixed installations. The northernmost zone, near the Romanian border, stands out with wind speeds exceeding 7.5 m/s at 150 meters and depths favorable for bottom-fixed turbines.[4]

The **policy debate around offshore wind** reflects many of the same challenges that undermined onshore development. A draft Law on Energy from Renewable Sources in Maritime Spaces was introduced to Parliament in 2022 but was frozen in early 2024 after its first reading, following pressure from the fishing and tourism sectors. These groups raised concerns over biodiversity, fish stocks, and visual impacts—concerns that were magnified by disinformation campaigns and sensational claims in the public domain.[5] This echoes the controversies of the mid-2010s, when retroactive policy changes, local protests, and legal disputes halted onshore expansion. Once again, Bulgaria finds itself at an impasse: the technical and economic potential of wind energy is undisputed, but its social and political legitimacy is fragile.

This is precisely the gap that the **JustWind4All project** seeks to address. Rather than treating acceptance as a secondary issue, the project recognizes that trust, legitimacy, and public engagement are prerequisites for renewable deployment. Through six co-creation "wind labs," JustWind4All explores participatory approaches to spatial planning, visualization of visual impacts, assessment of environmental trade-offs, and mechanisms for creating local value. These activities provide structured opportunities for citizens, students, municipalities, and stakeholders from agriculture, fisheries, and tourism to articulate their concerns, test solutions, and shape the narrative of wind energy development. By moving away from Bulgaria's traditional top-down planning culture and toward a more dialogic and participatory model, the project aims to operationalize **energy citizenship** as a practical tool for overcoming mistrust.

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[3] BSERC. (2025, January 29). *Analysis: Is Bulgaria's decade of dormancy giving way to a wind revival?*

[4] Trifonova, M. and Vladimirov, M. (2022). *Wind Power Generation in Bulgaria: Assessment of the Black Sea Offshore Potential*, Sofia: Center for the Study of Democracy.

[5] Vladimirov, M., Georgiev, G., Aleksieva, R., & Nikolov, T. (2025). *The Kremlin Playbook against Offshore Wind Energy in Bulgaria* , Sofia: Center for the Study of Democracy.

The **importance of energy citizenship** in the Bulgarian transition cannot be overstated. Technical evidence and modeling alone have proven insufficient in countering opposition or disinformation. Studies show that models can be reinterpreted, strategically reframed, or contested to fit opposing agendas[6], and Bulgaria's polarized debates on wind energy reflect this dynamic. Energy citizenship provides a way forward: it emphasizes active citizen participation in decision-making, benefit-sharing, and monitoring[7]. Positive examples already exist. In Kavarna, a coalition of twelve operators created an integrated bird protection system, working with ornithologists to shut down turbines during migration seasons—a participatory solution that combined ecological integrity with continued wind operation.[8] Similarly, the involvement of stakeholders in the legislative debate on offshore renewables, though incomplete, illustrates the need for institutionalized dialogue. When citizens become co-creators rather than passive recipients of policy, projects gain both legitimacy and resilience.

Placing Bulgaria in the **European and regional context** highlights the urgency of change. Across the EU, wind energy is accelerating, with the European Offshore Renewable Energy Strategy[9] setting targets of 300 GW of offshore capacity by 2050. The Black Sea has been designated a strategic offshore corridor under the TEN-E regulation, with Bulgaria and Romania encouraged to cooperate on joint infrastructure such as a regional energy island.[10] Romania has already taken decisive steps: its 2024 offshore wind roadmap identifies pathways toward 3–7 GW of capacity in the 2030s, backed by a new Offshore Wind Energy Law.[11] Greece, meanwhile, has continued to expand its onshore wind sector, with wind generating more than 20% of its electricity in 2024, while Serbia—outside the EU—added over 100 MW of new capacity in the same year.[12] Against this backdrop, Bulgaria stands out as a laggard: no new capacity in over ten years, stalled offshore legislation, and an ongoing vulnerability to disinformation campaigns.

The paradox is stark. Bulgaria possesses abundant wind resources and sits at the center of a strategic regional corridor, yet its sector is paralyzed by mistrust, political instability, and weak narratives around socio-economic benefits. Neighbors are moving forward with deployment and legislation, while Bulgaria risks being left behind. Overcoming this impasse will require more than technical

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[6] Saltelli, A., & Giampietro, M. (2017). What is wrong with evidence based policy, and how can it be improved? *Futures, 91,* 62–71.

[7] Ryghaug, M., Skjølsvold, T. M., & Heidenreich, S. (2018). Creating energy citizenship through material participation. *Social Studies of Science, 48*(2), 283–303.

[8] Zehtindjiev, P., & Whitfield, D. P. (2023). *Annual summary report 2023: Saint Nikola Wind Farm – Ornithological monitoring and integrated bird protection system.* AES Geo Energy

[9] European Commission. (2020, November 19). *An EU strategy to harness the potential of offshore renewable energy for a climate-neutral future* (COM/2020/741 final)

[10] ENTSO-E. (2024). *TYNDP 2024: Sea-Basin Offshore Network Development Plan — South and East Offshore Grids* (ONDP SE).

[11] World Bank. (2024). *Offshore Wind Roadmap for Romania* (Offshore Wind Development Program).

[12] WindEurope. (2025). *Wind energy in Europe: 2024 statistics and the outlook for 2025–2030.*

planning—it will require building **energy citizenship**, embedding participatory practices, and creating a social contract around wind energy that restores legitimacy and trust.

This energy read builds on that paradox and directs attention to a crucial but often overlooked dimension of renewable energy development: **participatory practices**. The aim is not to revisit purely technical or economic debates, but to explore how inclusive processes—ranging from spatial planning and visualization to environmental monitoring and local value-sharing—can foster **energy citizenship** and unlock social legitimacy for wind energy in Bulgaria. By synthesizing the results of six co-creation activities organized within the *JustWInd4All* project, the document provides **regionally tested guidelines** that highlight both challenges and opportunities for participatory engagement. In doing so, it seeks to offer policymakers, practitioners, and communities a practical toolkit for bridging the gap between abundant natural potential and contested social acceptance, ensuring that Bulgaria's energy transition is not only technologically feasible but also socially grounded.

2 PARTICIPATORY PRACTICES IN THE WIND ENERGY SECTOR

Participatory practices in wind energy have become a central concern in Europe and globally, not only because they shape the pace of deployment, but because they determine whether energy transitions can be considered fair and just. Where participation is meaningful, it provides legitimacy to decisions, builds trust between developers and communities, and ensures that projects are not only technically viable but socially grounded.[13] Beyond acceptance, participation can also improve the quality of decision-making itself. Local communities often hold knowledge about land use, biodiversity patterns, or cultural sensitivities that may not be visible in top-down planning. Integrating this knowledge early helps avoid costly redesigns, enhances environmental stewardship, and strengthens the long-term resilience of projects. Participation also plays a critical role in **combating disinformation**, which has become a significant barrier across Europe. Transparent, inclusive forums give citizens access to reliable information and help counter sensational claims that undermine support for renewables. Finally, participation can help create **local value**, whether through direct co-ownership, community benefit-sharing, or social investments that improve quality of life. Without these mechanisms, communities often see projects as imposed from outside, fueling resistance rather than cooperation.

Across Europe, a rich variety of participatory models has emerged. **North Sea offshore wind forums**, for instance, involve multiple stakeholders in marine spatial planning, balancing energy development with fisheries, tourism, and biodiversity protection.[14] In Denmark, legislation requires that citizens be offered at least a 20% stake in new wind projects, embedding financial participation into law and strengthening local support.[15] Other countries experiment with **participatory spatial planning**, in which siting decisions incorporate not only technical and environmental criteria but also social and cultural dimensions. These experiences confirm that participation is most effective when it is institutionalized and continuous, spanning from early planning through to operation and decommissioning.

A global review of over 300 wind energy case studies, prepared in the framework of JustWind4All project[16] shows that higher levels of participation—where citizens move beyond passive consultation and become active co-owners or co-decision-makers—tend to produce more inclusive,

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[13] Devine-Wright, P. (2011). Public engagement with large-scale renewable energy technologies: Breaking the cycle of NIMBYism. *Wiley Interdisciplinary Reviews: Climate Change, 2*(1), 19–26

[14] Miljanović Rusan, A., Schibline, A., & Ceglarz, A. (2025). *Maritime sustainable planning for offshore wind & energy infrastructure* (JustWind4All project deliverable). JustWind4All Project.

[15] Dimitropoulos, A., Kontoleon, A., & Golembiewski, B. (2019). Community choice in renewable energy: Insights from Denmark. *Energy Policy, 129,* 1092–1102. https://doi.org/10.1016/j.enpol.2019.03.031

[16] Campos, I, Wittmayer, J.M., Hielscher, S., Oliveira, F., Moreira Alves, F., Progscha, S., Wientjes, A. (2025) Just Participation in Wind Energy: the role of social innovations. Renewable and Sustainable Energy Reviews 209, 115146. https://doi.org/10.1016/j.rser.2024.115146

transparent, and trusted projects. Conversely, **"pseudo-participation"** or tokenistic consultation often fuels opposition, especially when communities perceive that their input is disregarded or when benefits are narrowly distributed to a few stakeholders, such as landowners. Even in advanced renewable markets, participation is often limited to **tokenistic or "pseudo" practices**. Research identifies common barriers such as **NIMBYism**, distributional disputes, and lack of transparency. Studies show that mere information provision does little to prevent opposition, while genuine consultation, financial participation, or cooperative decision-making can reduce conflict and foster trust.

To capture this diversity, researchers classify participatory practices into six levels:

- **Alibi participation**, where citizens are formally invited but their concerns have no impact.
- **Informational participation**, where communication is one-way and offers little influence.
- **Opposition**, where communities mobilize through petitions, legal actions, or protests to exert pressure.
- **Consultative participation**, where citizens can express views that may shape outcomes.
- **Financial participation**, such as community funds or local shareholding.
- **Cooperation**, where decisions are taken jointly, often through cooperative models, municipal partnerships, or structured co-design processes.

The higher rungs of this ladder—financial participation and cooperation—are less common but provide the most tangible opportunities for building **energy citizenship**. For example, cooperatives not only allow citizens to invest in projects but also embody procedural justice through "one member, one vote" governance.[17] Similarly, community funds can distribute benefits broadly rather than concentrating them in the hands of a few. These practices embed distributive and recognition justice: they ensure that both material benefits and symbolic recognition of communities' concerns are integrated into the project lifecycle.

The review also highlights the role of **social innovation (SI)** initiatives as catalysts of more transparent and inclusive practices.[18] Grassroots projects, municipal partnerships, and hybrid public-private models often create "wider spaces of participation" that extend beyond the project itself. For instance, grassroots energy cooperatives or citizen monitoring groups can influence regulatory debates, foster new institutions, and normalize inclusive practices across the sector.[19] Yet, social innovations are not uniform: while some cooperatives achieve high inclusiveness, others

[17] REScoop.eu. (2019). *The REScoop model: Energy cooperatives and the energy transition in Europe.* REScoop.eu

[18] Haxeltine, A., Pel, B., Dumitru, A., Avelino, F., Kemp, R., Bauler, T., Kunze, I., Dorland, J., Wittmayer, J., & Jørgensen, M. S. (2017). *Towards a TSI theory: A relational framework and 12 propositions.*

[19] Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics, 16*(4), 584–603.

face barriers related to investment requirements or limited local representativeness. Similarly, partnerships with private companies may be highly transparent but not always inclusive.

A critical finding is that **participation usually occurs at the planning stage**, but rarely throughout the full lifecycle of projects.[20] This is a missed opportunity, as ongoing cooperation—during construction, operation, and even decommissioning—can sustain trust and prevent conflicts. Importantly, the study shows that opposition movements should also be understood as forms of participation. Protests, legal challenges, and resistance networks often emerge in response to perceived injustices and can play a constructive role in pushing developers and governments toward fairer practices.

However, the **Bulgarian case diverges significantly from this model**. The Bulgarian case illustrates both the urgency of participatory practices and the difficulty of directly transplanting European models.

Financial participation is not feasible in most Bulgarian contexts. Wind farms are located in rural regions where the majority of residents face limited financial capacity. Wealthier stakeholders—large agricultural enterprises owning vast tracts of land—have little incentive to invest in wind farms, as they already enjoy stable income streams. Meanwhile, poorer rural households lack the resources to buy cooperative shares. In practice, **ownership and co-financing models remain out of reach**. Instead, developers implement *social investment programs*: financing playgrounds, kindergartens, school materials, supporting the local municipality in renovating public buikding or maintaining rural roads and agricultural pathways. These contributions provide visible community benefits but fall closer to *compensation payments* than to genuine participatory ownership. As such, they may improve local infrastructure but do not empower citizens with decision-making influence.

Similarly, the **consultative and oppositional levels of participation** observed in other contexts take on distorted forms in Bulgaria. Public hearings are often disrupted by organized groups external to the affected communities, who arrive to sabotage the process or spread misinformation. Claims that wind farms kill bees or cause cancer illustrate how disinformation campaigns undermine deliberation. This dynamic blocks meaningful citizen input and reinforces mistrust. Opposition itself rarely emerges organically from local communities—instead, anxieties are incentivized by outside actors with political or economic motives. This creates a paradox: while Bulgaria formally offers consultative participation through environmental hearings, in practice these spaces are **captured by external interests**, leaving genuine local voices marginalized.

Importantly, opposition in Bulgaria is not always rooted in concerns about direct negative impacts. In some regions, powerful local players—such as large agricultural enterprises or dominant employers—mobilize resistance not because their income, health, or well-being are threatened, but because they fear losing their entrenched position as informal rulers of the local economy. For decades, many of these areas have been bypassed by other large-scale investments, leaving

[20] Campos, I, Wittmayer, J.M., Hielscher, S., Oliveira, F., Moreira Alves, F., Progscha, S., Wientjes, A. (2025) Just Participation in Wind Energy: the role of social innovations. Renewable and Sustainable Energy Reviews 209, 115146. https://doi.org/10.1016/j.rser.2024.115146

incumbents with disproportionate influence. The arrival of a new investor in the form of a wind project can shift local power relations, introducing alternative sources of employment, infrastructure, or political leverage. Even where agricultural owners stand to gain a **double dividend**—earning from both farming and land leasing for wind turbines—some still resist projects to avoid weakening their standing in the community. This dynamic complicates participation, as opposition is not always about genuine social or environmental concerns, but about protecting established hierarchies.

In this sense, Bulgaria sits somewhere between **alibi participation** (where input has little real effect) and **informational/consultative participation**, but in a distorted form where the credibility of dialogue is systematically undermined. The lack of institutional safeguards against misinformation further exacerbates this weakness. Unlike in other European countries where opposition movements emerge from substantive justice concerns (distribution of benefits, recognition of vulnerable groups), in Bulgaria opposition is often externally orchestrated, diluting the legitimacy of protest as a participatory mechanism.

The Bulgarian experience therefore illustrates a structural barrier: **participatory practices cannot simply be imported from international typologies without adjustment to local socio-economic realities**. Social investment programs provide community benefits but lack empowerment; financial participation is excluded by rural poverty; and public consultations are vulnerable to disinformation capture. This creates a striking paradox: while Bulgaria possesses large untapped wind resource potential, both onshore and offshore, it remains among the weakest in institutionalizing effective participation. The gap between natural potential and participatory capacity has become a bottleneck for deployment, showing that technical feasibility alone cannot unlock projects without parallel innovations in governance and citizen engagement. These realities highlight the need for **alternative participatory pathways**—for example, visualization workshops, co-siting initiatives with agriculture, student-led environmental assessments, and other forms of social innovation. These realities highlight the need for alternative participatory pathways—for example, visualization workshops, co-siting initiatives with agriculture, student-led environmental assessments, and other forms of social innovation that foster dialogue and help communities understand the broader systemic value of wind energy, including synergies with hydrogen, aquaculture, and regional development, without relying on unattainable financial models.

3 FINDINGS FROM JUSTWIND4ALL WIND LABS

Against this backdrop, the Wind Labs in Bulgaria, organized within the JustWind4All project, were conceived as practical spaces to test alternative participatory pathways. Between June 2023 and September 2025, six Wind Labs took place with Bulgarian stakeholders in Kaliakra (North-East Bulgaria), Burgas (South-East Bulgaria), Sofia (Western Bulgaria). Instead of focusing on financial participation—which remains largely unfeasible in many Bulgarian contexts due to limited local financial capacity—the Labs prioritized dialogue, visualization, and knowledge exchange. They also deliberately incorporated the search for potential local value-added, exploring not only jobs or revenue sharing but also synergies with agriculture, fisheries, aquaculture, tourism, hydrogen development, and other regional economic plans. Participants were encouraged to think beyond the boundaries of individual projects and to consider how wind energy could become part of an integrated regional development model, thereby enhancing both its technical feasibility and social legitimacy.

Although the initial concept of the Wind Labs targeted offshore wind development, many of the themes addressed proved to be common for both offshore and onshore wind. Moreover, the discussions exposed the tension between national and regional justice dimensions. Bulgaria has a highly centralized decision-making system, where major energy policies and investment frameworks are shaped in Sofia, while regional and municipal actors often lack the mandate or empowerment to co-decide. This structural asymmetry means that regional stakeholders sometimes see little purpose in participatory exercises, knowing that decisions will ultimately be taken at the national level. At the same time, it highlights a deeper conflict: the justice perceptions of local communities differ sharply from those at the national scale.

At the national level, wind energy is viewed as a strategic enabler. It is one of the cheapest sources of zero-carbon electricity, and its better integration into the energy mix would reduce electricity prices for all consumers. In system terms, wind also complements solar generation, enhancing flexibility and reducing reliance on expensive balancing resources. Offshore wind, in particular, is increasingly recognized as a potential “unlocker” for green hydrogen production. With stable, large-scale generation close to coastal industrial clusters, offshore wind could provide nearly continuous supplies of low-cost renewable electricity, a prerequisite for producing green hydrogen at scale. This prospect is critical for Bulgaria’s industrial decarbonization, particularly in energy-intensive sectors such as chemicals, metallurgy, and fertilizers, where hydrogen is likely to play a central role. Hydrogen production is also high on the political agenda, framed as an opportunity to reposition Bulgaria as a strategic energy hub in the region.

For local communities, however, these systemic and national-level priorities often appear remote and abstract. The justice dimensions are not framed in terms of hydrogen corridors, market integration, or industrial competitiveness, but rather in tangible, everyday concerns. Residents in North-East Bulgaria are more likely to ask: What will this mean for our livelihoods? Will it disrupt agriculture or fisheries? Will the turbines affect tourism and the landscape? Who will repair our local roads or invest in schools and kindergartens? Will decisions be made with us, or imposed on us? In other words, justice for local populations is measured not by the macroeconomic or systemic benefits of wind power, but by whether they perceive fair treatment, inclusion in decisions, respect for their environment, and visible improvements in their communities.

The Wind Labs thus revealed a critical gap: while wind energy carries profound systemic value at the national and European levels, its local legitimacy depends on how well projects address community-centered justice concerns. Bridging this gap requires participatory practices that

translate large-scale priorities like hydrogen and system flexibility into local value narratives — ensuring that communities feel both heard and benefited in the transition.

3.1 PARTICIPATORY APPROACHES TO PLANNING DEVELOPMENT AREAS

The first topic selected for co-creation was dedicated to the fair development of wind energy in North-Eastern Bulgaria, a region recognized for its strong wind resource potential but also for entrenched barriers to deployment. The overarching goal was to create a shared framework for spatial planning of renewable acceleration zones, in line with the EU's new provisions under the Renewable Energy Directive (RED III) and the reforms that Bulgaria committed to under its National Recovery and Resilience Plan (NRRP).

The NRRP, adopted in 2021 as part of Bulgaria's access to the EU Recovery and Resilience Facility, placed a strong emphasis on accelerating renewable energy deployment and modernizing the electricity system. Within this framework, the country pledged to reform the permitting process for renewable projects by streamlining procedures and introducing a centralized "one-stop shop" model. It also committed to zoning offshore wind areas suitable for future exploration and energy infrastructure development, as well as designating areas for accelerated renewables deployment, including onshore wind.

Findings from the co-creation exercise highlighted several critical points:

- Data and transparency gaps: While EU and international datasets exist (e.g., BirdLife, EEA), stakeholders stressed the need for Bulgaria-specific data and methodologies, developed jointly by state institutions, NGOs, and the Academy, to ensure legitimacy and avoid reliance on contested foreign models.
- Governance and participation: Participants agreed that acceleration zones cannot be identified through a purely "top-down" approach. A mixed model is needed, combining centralized national planning with local-level knowledge where investor interest and community concerns intersect.
- Environmental safeguards: There was consensus that current projects are mostly outside Natura 2000 areas, but the definition of "environmental sensitivity" must be evidence-based and regularly updated, particularly with regard to bird migration and marine biodiversity.
- Institutional coordination: Effective planning requires cooperation between ministries, municipalities, and environmental agencies, as well as interdisciplinary working groups. Without such coordination, permitting delays and conflicts will persist.
- Local development linkages: Participants noted that renewable acceleration zones should not only be mapped technically but also embedded in broader regional development strategies, ensuring synergies with agriculture, fisheries, tourism, and port modernization.

A key takeaway was that two complementary approaches need to be developed:

1. A top-down, centralized approach, where the state defines priority zones in line with EU targets and environmental data.
2. A bottom-up, interest-driven approach, where zones are identified in areas with proven wind resource and active investor interest, then validated through risk assessments and public dialogue.

By testing these approaches, WindLab 1 helped to clarify both the opportunities and the limitations of applying the EU acceleration zone concept in the Bulgarian context, underlining the importance of trust, transparency, and co-creation in spatial planning.

3.2 VISUAL IMPACT AND VISUALIZATION WORKSHOP

The second WindLab focused on the **visual impact of offshore wind energy**, a theme that lies at the heart of public debates and policymaking in Bulgaria. Using visual artefacts it served as a platform for stakeholders to engage in dialogue on one of the most debated aspects of offshore wind development in Bulgaria—the issue of visual impact. Visualization workshops are widely recognized as an important participatory practice because they translate technical concepts into tangible images that citizens and decision-makers can engage with. While modeling data or spatial maps often remain abstract, visual tools allow participants to directly perceive how offshore wind farms might appear under different conditions. This helps to ground discussions in evidence, reduces the space for disinformation, and enables more informed judgments about trade-offs between energy benefits and landscape values.

The design of the workshop was particularly timely. It took place at a critical political moment, when the draft Law on Offshore Renewable Energy was moving between its first and second readings in Parliament. One of the most contested provisions concerned whether to restrict projects to beyond 12 nautical miles, excluding territorial waters. Such a restriction would limit Bulgaria's access to lower-cost, bottom-fixed wind technology and force a premature reliance on floating platforms without properly evaluating whether certain nearshore areas—especially those facing industrial zones—might be both suitable and socially acceptable.

To facilitate this discussion, the WindLab employed a carefully curated set of images. These included photographs of offshore wind farms from around the world, captured at different distances from shore and under varying conditions—daytime and nighttime, sunny and stormy weather. This comparative visual material helped participants reflect on how perception shifts with context and distance. Additionally, the workshop presented images taken from high-rise buildings in Varna, showing existing coastal infrastructure at Galata, located precisely at the boundary between territorial waters and the Exclusive Economic Zone. This real-life reference point allowed participants to connect global examples with the local geography of the Bulgarian Black Sea coast.

View of a 100-meter energy infrastructure facility at the boundary between territorial waters and the EEZ, as seen from high-rise buildings in Varna. Illustration used in Wind Lab on vusial impact.

The method was deliberately participatory: rather than presenting visuals as neutral facts, the workshop invited stakeholders to discuss and interpret them together. This created space to explore questions such as: How far is "far enough" to reduce visual concerns? Should industrialized coastal zones be prioritized for development? How can visualizations help weigh the costs and benefits of bottom-fixed versus floating technologies? By embedding visual evidence into dialogue, the WindLab highlighted both the subjective and contextual nature of visual impact and demonstrated how participatory visualization can guide more balanced policy choices.

The discussion highlighted several key insights:

- **Stakeholder engagement:** Visualization is a powerful way to bring citizens, municipalities, NGOs, businesses, and state representatives into a shared discussion on offshore wind siting.
- **Visual factors are multidimensional:** Distance from shore is important, but not decisive on its own. Lighting, reflections at sunrise and sunset, turbine positioning and layout, and the observer's altitude all shape visual perception.
- **Role of technology and design:** Turbine technology and architectural solutions can significantly influence the scale of visual disturbance.
- **Legislative implications:** Setting a minimum legal distance from shore could be a workable solution, but it must strike a balance. Excessive distance would raise infrastructure and grid connection costs, increasing the final price of electricity. Conversely, areas near industrial coastal zones with significant wind potential may be better suited for projects without affecting recreation or tourism.

- **Tools for planning:** Both photographic evidence and digital visualization software can serve as valuable tools to anticipate and minimize visual impacts by testing different siting and layout scenarios.

Key perceptions from citizens and stakeholders showed that when participants were presented with concrete visual material, they tended to move away from abstract fears and toward more nuanced reflections. Many acknowledged that visual impact is relative—while some expressed concerns about proximity to tourist beaches, others pointed out that industrial areas or already urbanized coastlines could accommodate offshore wind with little social disruption.

The effectiveness of visualization in countering disinformation was also evident. Claims frequently circulated in the public sphere—that turbines would "dominate the horizon" or "ruin the view"—were contrasted with international images showing that at distances over 15 km, wind farms appear only as small dots on the horizon. Local photographs from Varna further reinforced this point by showing that similar large-scale infrastructure in the Black Sea is barely visible. This visual evidence helped participants separate realistic concerns from exaggerated or false narratives, thereby strengthening trust in the deliberation process.

A key conclusion was that the **visual effect of offshore wind farms must be integrated into planning and design processes from the outset**. If legal requirements and careful siting principles are respected, the consequences of visual impact for residents and tourists will be minimal, and for projects sited outside territorial waters, practically nonexistent.

3.3 LOCAL VALUE ADDED

The sustainability of offshore wind in Bulgaria hinges not only on technical feasibility but on whether projects can deliver tangible value to national and regional economies. A central insight is that value is only created once projects move beyond early-stage ambitions and reach successful operation. Offshore wind is a major capital project (MCP), and in the Black Sea context, this brings a unique set of challenges. Typical water depths of 50–200 meters, just 20 km from shore, exclude monopile foundations and push most of Bulgaria's offshore wind potential into floating technologies. Jackets may work up to 60 meters, but the deeper areas require floating platforms designed to withstand Black Sea metocean conditions, including extreme 50-year design waves of up to 21 meters. These realities shape both costs and structural design requirements.

Comparative analysis with the Baltic Sea illustrates a structural competitiveness gap: mean wind speeds in Bulgaria are about 8 m/s at 100 meters, compared to 9–9.6 m/s in the Baltic. This might translate into up to 60% lower power output, further stressing the economics. This makes the economics more challenging. To deliver the same amount of power, Black Sea projects would either need **larger turbines, more turbines, or more advanced technology**—all of which increase costs.

At the same time, **technological innovation is changing the equation**. Modern offshore wind turbines are being designed to operate efficiently at lower wind speeds. For example, next-generation turbines feature:

- **Larger rotor diameters**, which capture more energy from weaker winds.
- **Optimized blade designs**, reducing drag and improving performance in medium-wind regimes.
- **Smarter control systems**, allowing turbines to adapt to fluctuating wind conditions and maintain steady power output.

These innovations mean that Bulgaria's "medium wind" conditions are less of a barrier than they might have been a decade ago. However, the advantage of the Baltic and North Sea regions—where turbines can run closer to their maximum capacity—remains significant.

Beyond wind speed, the **depth of the sea** is a defining factor. Around 20 km from the Bulgarian coast, depths range from 50 to 200 meters. This makes the **cheapest and most mature foundation technology—monopiles—unfeasible**. Jackets (lattice structures) may work up to 60 meters, but most of Bulgaria's viable offshore wind areas are deeper, which shifts attention to **floating platforms**.

Floating technologies offer flexibility but also bring trade-offs:

- **Barges** are the simplest and cheapest floating option, but their stability is poor in the Black Sea, where high wave accelerations can stress both the structure and the turbine.
- **Tension-leg platforms** are anchored tightly to the seabed, offering stability in shallower floating ranges (50–200 m). They may be well-suited for the Black Sea, but their complex mooring and installation requirements increase costs.
- **Semisubmersibles and spars** are proven in very deep waters, such as off Norway or Portugal. However, in the relatively shallower Black Sea they can be overengineered, with high fabrication and maintenance costs that undermine competitiveness.

The **risk of locking into the wrong technology** is substantial. If Bulgaria leases sites without first identifying the most cost-efficient concepts for its specific conditions, investors may choose designs that fit their global portfolios rather than what works best locally. This could result in unnecessarily high costs, reduced output, and risks shifted onto taxpayers if projects rely on state-backed Contracts for Difference (CfDs) or feed-in premiums.

Bulgaria faces a delicate balance. On the one hand, **natural conditions are less favorable** than in other parts of Europe. On the other, **new turbine designs** are increasingly capable of harnessing lower wind speeds effectively, offering hope for competitiveness. The challenge is to combine the right technology with the right planning and oversight, ensuring that offshore wind can become a realistic and valuable part of Bulgaria's energy transition.

These risks underscore the importance of treating offshore wind as a phased MCP, with progressively higher precision in cost and risk estimation: ±50% at concept screening (Phase 1), ±30% during evaluation of alternatives (Phase 2), and ±10% only after detailed design and expert review (Phase 3). Independent oversight at each decision gate is essential. International classification societies (DNV, ABS, BV), third-party verifiers, and Bulgarian academic expertise in naval architecture and

energy systems should be involved to reduce uncertainty. Without this, Bulgaria risks replicating the global pattern where over 80% of MCPs end up over budget and behind schedule.

The question of local value added adds another dimension. Manufacturing floating structures in Bulgaria, Romania, or Turkey could significantly reduce costs while supporting regional industries. Similarly, relying on locally available vessels for transport, installation, and decommissioning could help offset the current global shortage of specialized offshore installation ships. Redistribution mechanisms were also highlighted as critical. While Contracts for Difference (CfDs) or feed-in premiums can lower investor risks, they effectively shift costs onto taxpayers. A fairer balance would involve stricter state oversight and requirements for local economic benefits in exchange for such support.

Perhaps most importantly, the narratives of fairness matter as much as the technical design. Citizens and local stakeholders consistently favor framings that emphasize jobs, port modernization, and regional business growth. The abstract promise of "cheap clean electricity for the nation" is insufficient when host regions see no direct benefit. For legitimacy and trust, offshore wind must be embedded into broader regional development strategies rather than positioned as isolated infrastructure.

The overarching conclusion is that Bulgaria must define the most cost-efficient offshore wind concept for its Black Sea conditions before leasing sites to developers. Otherwise, developers may promote technologies that serve their portfolios rather than local realities, leaving technical and financial risks to taxpayers. Independent feasibility studies—contracted to neutral, non-technology providers—should therefore be a prerequisite for field leasing.

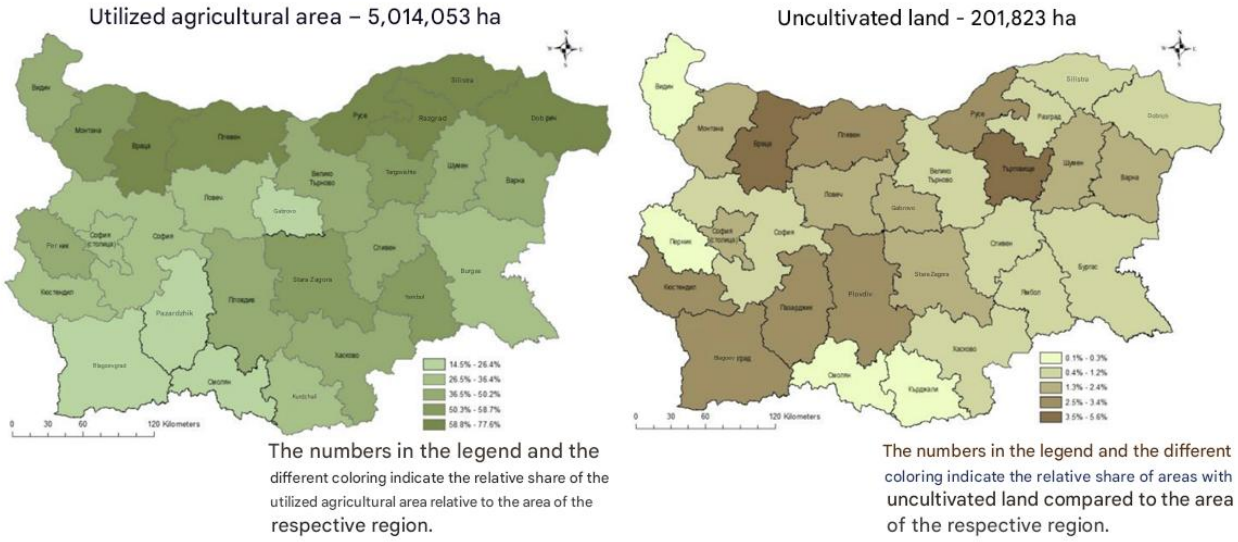
This knowledge insight shows that offshore wind in Bulgaria is both an opportunity and a systemic challenge. It can deliver industrial growth and clean power, but only if addressed as a phased, high-risk MCP with strong governance, transparent redistribution, and locally visible benefits.

3.4 MULTI-USE AND SYNERGIES WITH AGRI/ AQUACULTURE

The question of how wind energy can coexist with and even strengthen traditional land and sea-based livelihoods has become central to the debate about social sustainability in Bulgaria. For regions like North-Eastern Bulgaria, where agriculture dominates the landscape and fishing is a vital coastal activity, the integration of wind power with existing practices is not simply a technical challenge—it is a matter of legitimacy, perception, and long-term community benefit. Exploring synergies between wind and agriculture (onshore) or wind and aquaculture (offshore) provides a pathway to balance energy transition goals with local economic stability.

Bulgaria's land use patterns highlight the scale of this opportunity. Approximately **45% of the national territory is arable farmland**, making agriculture one of the country's defining economic activities. At the same time, about **202,000 hectares remain uncultivated**, including more than **33,000 hectares in North-Eastern Bulgaria**. Such figures show that while land is under pressure from

farming, there is scope to host wind projects without undermining food production. The challenge is to do so in a way that strengthens rather than disrupts rural economies.



Source: Bulgarian Atlas of National Statistics and Information Cartography, Employment and land use in 2024

For comparison, installing an onshore wind capacity of **10.23 GW**—a scale aligned with long-term EU renewable targets—would require between **20,460 and 30,690 hectares of land**. While this seems significant, it is important to stress that wind turbines use only a fraction of the land they are sited on. More than **99% of farmland remains usable** for crops or grazing even within a wind park. The turbine footprint itself is minimal: a 200-meter turbine requires around **100 m² for the base** and about **2,400 m² for infrastructure**, equivalent to less than half a percent of the average farm in Germany.

This opens multiple possibilities for **integrated land use**:

- **Crop cultivation**: Cereals such as wheat, corn, and barley adapt well to wind park environments, and some farmers benefit from improved ventilation that reduces frost risk.
- **Forage crops**: Alfalfa and clover grow easily around turbine bases, supporting livestock feed systems.
- **Aquaculture synergies**: Offshore wind farms can serve as multi-use spaces. Studies show that using just **30% of the area inside a 100-turbine wind farm** could produce **360 tons of mussels or 90 tons of seaweed annually**, while still leaving operational corridors free. This is equivalent to **225 hectares—about 300 football fields—of co-located aquaculture**, taking advantage of existing grid infrastructure and shared marine space. Beyond food production, offshore platforms can be adapted for **wave energy, floating solar, or ocean restoration practices** such as oyster reefs. These innovations suggest that offshore wind can anchor new "blue economy" value chains, though challenges remain regarding viability at **40–50 km offshore**, where distance complicates logistics and market access.

The economic effects are equally important. Farmers benefit from **long-term land lease revenues**, often in the range of **€20,000–40,000 per turbine annually** in countries like Germany. Such rents create stability in an otherwise volatile sector. Beyond individual farms, wind deployment stimulates local economies through construction jobs, infrastructure upgrades, and port development. At the EU level, the offshore and onshore wind sectors combined are projected to employ **nearly 1 million people by 2030**. For Bulgaria, this could translate into much-needed rural employment and modernization of grid and road infrastructure.

However, social acceptance cannot be taken for granted. Stakeholders in North-Eastern Bulgaria stress that **perceptions of fairness and distribution matter** as much as raw economic benefits. If projects are seen as imposed from above, with revenues flowing out of the region, resistance grows. Narratives around "cheap, clean electricity for the nation" resonate poorly unless they are matched by **visible local benefits**—better schools, improved roads, or direct income streams to farming families.

Technological innovation is also reshaping possibilities. New turbine designs are quieter, more efficient at lower wind speeds, and equipped with monitoring systems that minimize ecological impacts such as bird collisions. Offshore, the ability to combine turbines with aquaculture, floating solar, or habitat restoration reflects a broader shift toward **multi-purpose marine infrastructure**. These advances not only improve the economics of projects in medium-wind regions like Bulgaria but also help **address environmental concerns**, which are often mobilized by opponents of wind development.

Finally, the regulatory and market frameworks will play a decisive role. Mechanisms such as **community funds, cooperative ownership, or fair leasing arrangements** can ensure redistribution of benefits. At the same time, **transparent permitting procedures and participatory planning** are essential to prevent disinformation and build trust.

In summary, the insights from the WindLabs confirm that agricultural and aquacultural co-siting is not simply about "fitting turbines into fields or seas." It is about reimagining land and marine use in a way that enhances social sustainability, secures local value-added, and integrates wind power into the broader regional economy. Where these synergies are realized—whether through co-farmed mussels, seaweed, cereals, or community income streams—wind energy can transform from a source of conflict into a driver of regional resilience and prosperity.

3.5 ENVIRONMENTAL TRADE-OFFS: STUDENT & MEDIA TESTING

One of the persistent barriers to wind energy acceptance in Bulgaria is the dominance of myths and misleading narratives around its environmental footprint. To test how values and perceptions are shaped by evidence-based information, the JustWind4All project conducted an experimental activity with two key groups: students and media representatives. The aim was to explore how holistic impact assessments and co-produced modeling formats can reframe wind energy governance as more just, transparent, and effective. The exercise was guided by the **Quantitative Storytelling (QST) methodology**, which integrates qualitative narratives with quantitative data to assess the feasibility and desirability of energy transition pathways.

For the exercise, participants were introduced to the **ReCiPe Life Cycle Assessment (LCA) framework**, one of the most widely used methodologies for measuring environmental impacts across multiple categories. Importantly, the results were presented as **normalized indicators per 1 kWh of electricity produced**, making different technologies directly comparable. This allowed participants to assess not only the climate benefits of wind power but also its wider footprint across issues such as land occupation, mineral use, human toxicity, and water consumption.

Findings of holistic impact assessment, performed in implementation of JustWind4All project. [21]

[21] Madrid López C, Sierra Montoya M, Pérez-Sánchez L, Cobacho M, Marot S, Kisyova Y. (2025***) Holistic impact assessments in three European regions plus co-produced fit-for-purpose formats for decision-making for wind energy governance***. (2025). Deliverable 1.3. JustWind4All project

The findings presented were striking:

- **Global warming potential**: Onshore wind showed practically zero contribution to greenhouse gas emissions per kWh, while offshore wind was also extremely low (0.000024), thousands of times smaller than fossil fuels or even biomass.
- **Human health impacts**: Wind power scored near-zero on both carcinogenic and non-carcinogenic toxicity indicators, compared to much higher impacts from biomass and fossil fuels.
- **Land use**: Wind projects barely occupy land compared to biomass, which has almost total dependency on farmland.
- **Water consumption**: Wind energy requires almost no water, unlike nuclear and fossil fuels which are highly water-intensive.
- **Mineral depletion**: Offshore wind showed a relatively higher score due to the steel, copper, and rare earths needed for construction—yet this impact remains a one-time upfront investment, offset by decades of clean generation.

When presented with these results, both groups reacted with **surprise and reconsideration of prior assumptions**. Among Bulgarian students, there was widespread belief that the production of wind turbines emits so much CO_2 that it cancels out the climate benefits of the energy they produce. Seeing quantified data showing that wind has **the lowest lifecycle impact of all major generation technologies** challenged this myth directly. Many expressed that they had never been exposed to comparative data, and that most of their knowledge came from second-hand opinions or unverified media claims.

Media participants showed a similar pattern: many were unaware that **offshore and onshore wind rank among the cleanest technologies across nearly all environmental categories**. Several admitted that their reporting often repeated common narratives about “dirty production” or “large land and resource use” without cross-checking against scientific evidence. For them, the LCA visualizations served as a **fact-based anchor** that could improve how environmental impacts are communicated to the wider public.

The exercise demonstrated two important insights. First, **narratives matter**: when presented abstractly, environmental arguments are vulnerable to disinformation; when grounded in comparative, science-based evidence, they can shift perceptions toward acceptance. Second, trust in data depends on **who communicates it**. Students responded more positively when results were explained interactively, while media representatives emphasized the need for credible, accessible formats to support balanced journalism.

The overarching conclusion was clear: wind energy is among the most environmentally benign technologies, but this reality remains poorly known in bulgaria. Holistic impact assessments and qst-based storytelling can play a decisive role in building legitimacy, countering disinformation, and aligning both expert and public understanding of wind’s role in the energy transition.

4 REGIONALLY TESTED PARTICIPATORY GUIDELINES FOR FOSTERING ENERGY CITIZENSHIP

The co-creation exercises, carried out through regional Wind Labs in Bulgaria, showed that the success of wind energy depends not only on technology or economics, but equally on governance, participation, and legitimacy. Both offshore and onshore projects have the potential to become engines of prosperity, ecological innovation, and national decarbonization—but only if they are designed with procedural fairness, transparent evidence, and visible benefits for local communities. The insights generated in these collaborative workshops with citizens, municipalities, businesses, and experts have been distilled into seven participatory guidelines. Far from abstract principles, these are regionally tested approaches that directly address the barriers and opportunities faced in Bulgaria. Together, they provide a foundation for embedding energy citizenship in wind development, bridging the gap between national ambitions and regional realities, and ensuring that the energy transition is not only effective but also just.

GUIDELINE 1: INTEGRATE PARTICIPATORY SPATIAL PLANNING EARLY IN OFFSHORE WIND STRATEGIES

Early involvement of stakeholders is essential to avoid late-stage objections and mistrust. In the Bulgarian context, acceleration zones under RED III and the NRRP cannot be defined only through top-down planning. Transparent access to GIS data, joint state–NGO–academic methodologies, and structured co-creation at regional level are prerequisites. Findings from WindLab 1 confirmed that local actors want a say not only on "where turbines go" but also on how these zones link to broader regional development strategies (agriculture, fisheries, ports, tourism). Effective participatory planning means balancing national targets with local knowledge and ensuring biodiversity safeguards are evidence-based, up-to-date, and co-validated.

GUIDELINE 2: USE VISUAL TOOLS TO MAKE PROJECTS TANGIBLE AND COUNTER MISINFORMATION

Visualization workshops proved decisive in shifting public debates from abstract fears to evidence-based judgments. In WindLab 2, images of offshore farms from around the world, combined with photos from the Varna coastline, allowed participants to compare distances, lighting, and weather effects. The results were clear: turbines at >15 km appear as dots on the horizon, while industrial coastlines could accommodate projects with minimal disruption. Such tools not only help citizens form nuanced views but also **counter disinformation narratives** that dominate Bulgarian media ("turbines ruin the view," "they will dominate the horizon"). Photographic and digital simulations should become standard in planning, permitting, and communication processes.

GUIDELINE 3: ENSURE LOCAL VALUE CREATION (JOBS, REVENUES, CO-OWNERSHIP MODELS)

National narratives of "cheap, clean power for Bulgaria" do not resonate with host regions unless tangible benefits are visible locally. The Wind Labs showed that citizens and municipalities want to see revenues reinvested in schools, roads, and services, as well as jobs created through fabrication, port upgrades, or logistics. Lease models in Germany pay farmers €20,000–40,000 per turbine annually; similar arrangements could stabilize Bulgarian agriculture. For offshore, fabrication in Bulgaria, Romania, or Turkey and use of regional vessels can reduce costs while supporting local industry. Contracts for Difference or feed-in premiums should be conditioned on demonstrable regional value creation to avoid the perception that risks are socialized while benefits flow abroad.

GUIDELINE 4: PROMOTE MULTI-USE OF LAND AND SEA (CO-SITING SYNERGIES)

Wind energy can coexist with—and even enhance—traditional livelihoods. Onshore, turbines occupy <1% of farmland, leaving 99% usable for crops or grazing. Offshore, multi-use opens a "blue economy" frontier: mussel or seaweed farming inside wind farms, floating solar, wave energy, or even oyster reefs for marine restoration. Using only 30% of the space in a 100-turbine farm could yield ~360 tons of mussels or 90 tons of seaweed annually, while sharing infrastructure. Farmers, too, gain security from long-term leases. Such co-siting reduces perceptions of land/sea-use conflict and reframes wind as part of an **integrated regional economy**, not an imposed external project.

GUIDELINE 5: ADDRESS ENVIRONMENTAL TRADE-OFFS TRANSPARENTLY AND INCLUSIVELY

Holistic impact assessments must be central to decision-making. The ReCiPe LCA data presented in WindLab 5 showed that wind has the lowest lifecycle environmental footprint of all energy technologies: near-zero CO_2 emissions, negligible water use, minimal land occupation. The only higher score—mineral depletion—reflects upfront steel and copper needs, offset over decades of operation. Communicating these findings openly helps counter myths ("turbines emit more CO_2 than they save") and ensures citizens see trade-offs in context. Environmental safeguards must also be co-designed: bird migration monitoring, Natura 2000 sensitivity mapping, and marine biodiversity assessments are best done in partnership with NGOs, scientists, and local users.

GUIDELINE 6: EMPOWER YOUTH, STUDENTS, AND MEDIA ACTORS IN SHAPING THE NARRATIVE

The experimental Quantitative Storytelling exercise revealed that both students and media professionals in Bulgaria were largely unaware of wind's minimal environmental footprint. Many carried the misconception that turbine manufacturing cancels out its climate benefits. Presenting comparative, science-based evidence reshaped perceptions dramatically. For youth, interactive formats foster ownership and critical thinking; for media, credible datasets support balanced

reporting and reduce reliance on disinformation. Empowering these groups ensures that narratives around wind energy reflect facts rather than myths, and creates multipliers who can disseminate informed perspectives within their communities and audiences.

GUIDELINE 7: DEVELOP LONG-TERM PARTICIPATORY GOVERNANCE MECHANISMS (FORUMS, COUNCILS)

One-off consultations are insufficient in a centralized governance system like Bulgaria's, where regional actors often feel sidelined. Sustained participatory structures—regional energy forums, municipal councils, or online platforms—are needed to provide continuous feedback, monitoring, and conflict resolution. Such mechanisms ensure that planning adapts as projects evolve, and that justice concerns (from visual impact to revenue sharing) remain addressed over time. The Wind Labs showed the appetite for such ongoing spaces: citizens, municipalities, and businesses are willing to engage, but only if dialogue is structured, recurrent, and tied to real decision-making authority.