MULTILATERAL
COOPERATION CENTER
FOR DEVELOPMENT FINANCE

WIND POWER PROJECTS: ENVIRONMENTAL AND SOCIAL CHALLENGES AND GOOD PRACTICES

ENVIRONMENT AND SOCIAL SAFEGUARDS COMMUNITY OF PRACTICE EVENT REPORT

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Bruce Dunn, Director, Safeguards Division, ADB

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Bruce Gosper, Vice President for Administration and Corporate Services, ADB

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Abbreviations

ADB	Asian Development Bank
AIFFP	Australian Infrastructure Financing Facility for the Pacific
AIIB	Asian Infrastructure Investment Bank
AVISTEP	Avian Sensitivity Tool for Energy Planning
CoP	Community of Practice
DFAT	Department of Foreign Affairs and Trade
E&S	Environmental and Social
EIA	Environmental Impact Assessment
GW	Gigawatt
GRM	Grievance Redress Mechanism
GWEC	Global Wind Energy Council
IBAT	Integrated Biodiversity Assessment Tool
IFI	International Financial Institution
IRENA	International Renewable Energy Agency
JICA	Japan International Cooperation Agency
MCDF	Multilateral Cooperation Center for Development Finance
MNRE	Ministry of New and Renewable Energy
SEA	Strategic Environmental Assessment
PICS	Pacific Island Countries
PPP	Public-Private Partnership
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank

1. Introduction and Context

Wind energy is one of the key green technologies driving the decarbonization of power generation worldwide, including in Asia.

According to IRENA, "*Asia is poised to become the world's dominant wind market, accounting for more than 50% of onshore and 60% of offshore wind installations by 2050.*"[1] However, wind power projects come with a set of environmental and social (E&S) challenges that require thorough assessment, mitigation, and management.

While offshore wind farms offer technical advantages such as higher and more consistent wind speeds and fewer impacts on terrestrial ecosystems compared to onshore wind farms, they pose risks to marine fauna, particularly marine mammals, due to potential noise and vibrations. They also reduce community access to fisheries.

On the other hand, onshore wind farms often benefit from easier accessibility and maintenance but can disrupt local ecosystems, particularly bird populations. They may cause land use conflicts with communities, as well as auditory and visual disturbances from noise emissions, shadow flicker and the turbines themselves.

Therefore, stringent E&S standards in wind energy investments are crucial to ensure these investments do not cause substantial social or environmental harm.

The Environmental and Social Safeguards Community of Practice (COP comprises of E&S practitioners from international financial institutions (IFI) and other development partners. AIIB is chairing the COP for the period 2023-2025. With the support of AIIB's and MCDF's *Capacity Building and Knowledge Sharing: Environmental and Social Safeguards* project, the COP convened a two-day seminar to present and discuss good practices for managing environmental and social risks on wind power projects that can be applied in Asia.

The event, titled "Environment and Social Safeguards Community of Practice (CoP) Seminar on Wind Power Projects: Challenges and Good Practices," was organized by the AIIB, in partnership with the MCDF and ADB. It took place on 27 – 28 June 2023 at ADB Headquarters, Manila, Philippines, and online via Zoom. A total of 67 in-person participants and 108 online participants attended the CoP event.

[1] IRENA (2019), *Future of wind: Deployment, investment, technology, grid integration and socio-economic aspects (A Global Energy Transformation paper)*, International Renewable Energy Agency, Abu Dhabi.

2. Program of Activities

The two-day E&S CoP seminar was structured into five technical sessions, beginning with a welcome address by ADB's Vice-President for Administration and Corporate Management, Bruce Gosper. Opening remarks were delivered by Mark Dennis Y.C. Joven, Alternate Governor of AIIB and Undersecretary of the Department of Finance, Republic of the Philippines; Zhongjing Wang, Chief Executive Officer of MCDF; and Yanning Wang, Director General of the Operational Services Department at AIIB.

Ede Ijjasz, Senior Adviser to the CEO of MCDF, gave the keynote speech on the paramount significance of E&S requirements for wind power investments, stating "I am convinced that it is this community of environmental and social specialists who will either make or break the opportunity of wind energy to achieve the net zero transitions that many countries have in place."

The second day of the seminar closed with Ines Fejzic, Senior Environment and Social Safeguards Specialist at MCDF, who led the seminar wrap-up with key takeaways and reflections, along with Panel Rapporteurs. Finally, closing remarks were delivered jointly by Nianshan Zhang, Head-Designate, Office of Safeguards at ADB and Alex Hadzhiivanov, Senior Environment Specialist at AIIB.

The technical sessions covered the following topics:

Panel Session 1: Wind Power – Past, Present, and Future

Panel Session 2: Wind Farms – Community Health and Safety

Panel Session 3: Offshore Wind Farms – Environmental Risks and Impacts

Panel Session 4: Onshore Wind Farms – Social Risks, Challenges, and Opportunities

Panel Session 5: IFIs Sharing Experiences on Managing the Environmental and Social Risks of Wind Power Projects

3. Sessions

The panel sessions were designed to include an introductory presentation to set the context, followed by a moderated discussion with the panelists and a question-and-answer segment from the audience, both in person and online.

The following sections provide key highlights from each presentation, outline the main challenges identified, and the best practices derived from the discussions and issues raised by seminar participants. Full presentations are available on MCDF's JIGSAW platform.[2]

3.1. Panel 1 — Wind Power: Past, Present, Future

This session aimed to present the role of renewable energy and wind power in decarbonizing Asian economies. **Vladimir Hecl**, Programme Officer, Means of Implementation Division, United Nations Framework Convention on Climate Change (UNFCCC), was the presenter for the first panel session. The panel discussion was moderated by Ede Ijjasz, Senior Advisor to the Chief Executive Officer of MCDF. The panelists were:

Gergely Bognár, Chief of Staff, State Secretariat for Economic Development and National Financial Services, Ministry for Economic Development, Hungary

Roberta Cox, Project Director, Global Wind Energy Council (GWEC)

Beatrice Yulo Gomez, Principal Safeguards Specialist, Private Sector Transaction Support Division, Asian Development Bank (ADB)

PRESENTATION HIGHLIGHTS

Role of Renewable Energy and Wind in the Decarbonization of Asian Countries

by Vladimir Hecl (Programme Officer, Means of Implementation Division, United Nations Framework Convention on Climate Change)

To reach global renewable energy targets, there is a need for rapid scaling-up of wind power projects. A key challenge is increasing financing from both private and public sources.

The evolving landscape of wind power technology also brings its challenges. To navigate these, it is essential to develop supportive policies, incentives, and regulatory frameworks. Strengthening public-private partnerships and enhancing technical skills and capacities are also pivotal.

On a national level, case studies offer valuable insights. One such example is Bangladesh's effort to increase wind power energy generation by providing incentives to foreign investors in its energy sector. This is part of the push to increase the country's renewable energy contribution to 10% of the total power supply by 2025.

[2] JIGSAW is MCDF's digital solution for sustainable, high-quality connectivity infrastructure investment.

Lastly, to realize net-zero ambitions, wind energy must see a significant surge, especially in Asia, where the sector promises immense potential coupled with declining costs. According to a 2019 IRENA report[3], Asia is expected to dominate both onshore and offshore global wind power installations, with a total capacity exceeding 100 GW by 2030 and 600 GW by 2050 for offshore and 1,067 GW by 2030 and 2,646 GW by 2050 for onshore wind.

CHALLENGES

- Asia has significant potential for wind energy, contributing to achieving net-zero goals. However, the region grapples with regulatory inconsistencies and gaps in decision-making capacities related to environmental and social risk management. These challenges act as roadblocks to the growth of wind energy.
- IFIs face challenges in ensuring that renewable energy is both financially viable and environmentally sustainable. This is exacerbated by jurisdictions lacking standardized environmental impact assessment (EIA) requirements and the presence of non-compliant investors.
- Wind power technology in Asia faces multiple barriers:
    - Financial constraints, including limited access to funds and high capital costs.
    - An underdeveloped legal and regulatory framework, coupled with insufficient enforcement and bureaucratic hurdles.
    - Challenges such as limited access to cutting-edge technology, a constantly evolving regulatory landscape, capacity shortfalls and varied levels of expertise.

GOOD PRACTICES

- **Collaboration and consultation** stand at the forefront of addressing the challenges inherent to wind power projects. There is potential for collaboration between IFIs and national governments to align financial strategies and develop cohesive regional technology action blueprints.
- **PPPs and capacity development** are pivotal strategies in promoting renewable energy IFIs emphasize grassroots community engagement, proactive civil society involvement, and attention to environmental impacts in their approach to energy projects.

[3]IRENA (2019), *Future of wind: Deployment, investment, technology, grid integration and socio-economic aspects (A Global Energy Transformation paper)*, International Renewable Energy Agency, Abu Dhabi.

CONCLUSION

The development of wind power projects in Asia requires countries, developers, and financiers to undertake a variety of actions, including regulatory reform (licensing, land use permissions, grid connectivity, and safety standards, among others), stakeholder engagement, and technological innovations in incentives, funding mechanisms and the complexities of green finance.

To fully harness the potential of wind power, it is crucial to establish supportive policies, incentives, and regulatory frameworks that not only address barriers but also prioritize affordability. This ensures that marginalized communities benefit, thereby gaining broader civil society support.

Collaboration is fundamental to support the rapid expansion of wind power in Asia. On the financial front, tapping into both private and public financial sources is vital. To incentivize private sector investments in green energy, a blend of regulatory adaptations and long-term, low-interest financing options is indispensable. Instruments like green bonds, green loans, and environmental, social, and governance (ESG) investing will play a significant role in shaping the future of wind power energy in Asia and worldwide.

3.2. Panel 2 — Wind Farms: Community Health & Safety

This session aimed to explore the social and environmental impacts of wind energy investment on communities; including engagement with project-affected stakeholders; and to share good practices and lessons learned on stakeholder engagement and the development of mitigation measures. **Prasad Modak**, Managing Director of the Environmental Management Center, served as the presenter and moderator for this panel session, and the panelists were:

Emma Marsden, Senior Environment Specialist, Energy Division, South Asia Department, ADB (online)

Mark Barnard, Associate, International Environmental and Social Consultancy, Arup

Alexey Akulov, Principal Professional, ESG Department, NDB

PRESENTATION HIGHLIGHTS

Community Health and Safety

By Prasad Modak (Managing Director of the Environmental Management Center)

Community health and safety are paramount in wind farm projects. A foundational step is the early identification and engagement of key stakeholders such as landowners and the neighboring community (including women, children, landless individuals, squatters, and livestock owners), to ensure that their insights are integrated from the project's outset.

While IFI E&S standards provide a framework to address and mitigate potential E&S risks, there are areas that require closer scrutiny at individual project level.

In the context of onshore wind farms, one notable concern is the phenomenon known as wind turbine syndrome, attributed to the continuous noise and shadow flicker from turbines.

Many countries have established specific buffer zones or setback distances for wind turbines from residences, public roads, and other infrastructure to mitigate noise, shadow flicker, and other potential disturbances. These zones ensure a safe distance between turbines and populated areas.

For example, the micro-siting criteria outlined by the Ministry of New and Renewable Energy (MNRE), India, mandates optimized turbine placements based on wind flow modeling. It stipulates specific distances between turbines and boundaries of adjoining developers, requires turbines to be sited at least 500 meters away from dwellings to mitigate noise, ensuring both safety and efficient land utilization.

Utilizing advanced modeling for noise and shadow flicker is another proactive measure. For onshore wind farms, these techniques are especially vital to anticipate and mitigate potential disturbances to nearby residential areas and affected wildlife. This approach ensures community well-being and wildlife species protection while optimizing turbine placement.

Location sensitivity should be a cornerstone of all mitigation efforts. This involves not only measures like noise and shadow flicker modeling but also includes archaeological assessments, topographical analysis, bird and bat studies, community engagement, hydrological studies, and vegetation and soil analysis to ensure a holistic approach to project design.

Offshore wind farms present unique challenges throughout their pre-construction, construction, and operational phases. Vibrations from these turbines can significantly impact marine life. To mitigate these impacts, it is crucial to employ strategies such as micro-siting. This involves optimizing turbine layouts based on wind patterns, water depth, seabed conditions, and potential environmental impacts to optimize energy production and minimize negative effects.

Advanced modeling tools can predict turbine noise levels and their underwater propagation, aiding in understanding potential impacts on marine life and in designing mitigation measures.

Beyond technical solutions, the human aspect is crucial. Active engagement with local communities, providing employment opportunities, and promoting initiatives like wind energy tourism can foster genuine community support. This approach ensures not only the sustainability of the wind farm projects but also strikes a harmonious balance between energy generation and the well-being of the community.

CHALLENGES

- A significant challenge lies in the limited understanding of community health and safety impacts, particularly regarding shadow flicker and noise. This issue is compounded when local contractors, who may lack the same expertise in environmental impact assessments as their international counterparts, take the lead in project development. Handing over wind farm projects to borrowers with minimal experience in operation and maintenance amplifies these risks.
- Collecting comprehensive baseline data for environmental impact assessments remains a hurdle in Asia. Moreover, there's a pressing need for in-depth studies to delineate the relationship between wind power and potential health effects.
- For local communities, concerns about livelihood often overshadow other issues like noise and shadow flicker. While addressing environmental concerns is crucial, it is equally important to address social issues. Developing robust livelihood restoration plans can provide viable solutions to meet demands for job opportunities.
- Regulatory disparities across countries present another challenge. In some regions, the lack of standardized regulations and requirements for aspects like shadow flicker leads to inadequate monitoring and potential oversights.
- Financial constraints also play a role. While implementing mitigation measures incurs costs, the absence of effective avoidance strategies makes it challenging to fully eliminate risks and impacts.

GOOD PRACTICES

- **Community Engagement**: Recognizing the community as a pivotal stakeholder is paramount. Effective practices encompass not only implementing safeguards that benefit communities impacted by wind power projects but also viewing wind farms as avenues for holistic community development.
- **IFI Support**: IFIs play a crucial role by providing technical, financial, and E&S expertise to borrowers. This assistance ensures accurate identification of E&S risks and alignment of projects with international standards and best practices.
- **Facility Maintenance**: Regular maintenance of wind power facilities is essential for operational efficiency and safety. Incorporating maintenance protocols into the project's environmental management plans is essential.
- **Consideration of Associated Facilities**: The impact of a wind farm extends beyond turbines to associated infrastructures like substations, which can have significant environmental and social footprints. Comprehensive Environmental Impact Assessments (EIAs) should encompass these facilities. Moreover, integrating robust disaster risk management plans enhances emergency preparedness.

- **Training and Capacity Building**: Ensuring that onsite staff, security personnel, and other workers are well-trained is pivotal. This ensures adherence to safety protocols and enhances the overall safety profile of the project.
- **Preemptive Mitigation**: Before project approval, identifying and addressing any critical gaps through cumulative impact assessments is essential. Implementing mitigation measures at this stage can significantly reduce future risks.

CONCLUSIONS

The full extent of challenges related to community health and safety in wind power projects remains inadequately explored due to limited data and comprehensive studies. However, significant gaps include regulatory inconsistencies, livelihood concerns and inadequate mitigation measures.

Capacity building of local developers, diligent maintenance of operational wind farms, and well-structured risk management plans further emphasize the path to responsible wind power development in the region.

As a central stakeholder, community buy-in is vital not only for reducing risks but also for fostering genuine community development.

3.3. Panel 3 — Offshore Wind Farms: Environmental Risks and Impacts

This session aimed to explore the environmental impacts and risks to marine life and biodiversity during the construction and operation of offshore wind farms. Additionally, it sought to introduce and discuss lessons learned from global best practices and reflect on existing safeguard policies and standards, with a specific focus on Brazil. **Roberta Cox**, Project Director, Global Wind Energy Council presented, while **Mark Kunzer**, Director of the Private Sector Transaction Support Division at ADB, moderated the discussion with the following panel members:

Tram Le, Associate Partner, Environmental Resources Management

David Nicholson, Biodiversity Specialist, International Finance Corporation (IFC)

Joe Green, Associate Director, International Projects Group, RS

PRESENTATION HIGHLIGHTS

Offshore Wind & Environmental Impact Assessment—Brazilian Case

By Roberta Cox (Project Director, Global Wind Energy Council)

The Global Wind Energy Council (GWEC) is a pivotal voice in the global wind energy industry, comprising members from leading wind energy associations, developers, equipment suppliers, service providers and more. Recognizing the urgent need to address the lack of marine space planning and comprehensive environmental and social assessments, GWEC has proposed the Declaration of Prior Interference (DPI). This strategic remedy is a response to the absence of Marine Space Planning or Strategic Environmental Assessment (SEA) in Brazil.

In Brazil, environmental licensing falls under the purview of the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA). For offshore wind projects, IBAMA provides clear terms of reference that guide the formulation of both the Environmental Impact Assessment (EIA) and the environmental impact report (Rima). These documents are instrumental in navigating the environmental licensing process under IBAMA's jurisdiction.

When evaluating alternative locations for wind projects, numerous factors must be considered. These include visual impacts, interactions with oil and gas activities, migratory bird pathways, fishing zones, conservation territories, marine transit routes, and proximity to port areas. The potential impacts of offshore wind projects are categorized into planning, installation, and operational phase impacts. A comprehensive understanding of these environmental consequences requires in-depth research.

Furthermore, mitigation of the identified impacts necessitates a range of measures. Temporary turbine shutdowns, for instance, can help curtail adverse effects. It is also crucial to minimize both the intensity and geographical spread of disturbances, ensuring a harmonious coexistence between wind projects and the environment. For example, during the offshore installation phase, planning should consider periods of low abundance or sensitivity of vulnerable species. Temporary shutdowns of turbines can be implemented to reduce potential negative effects, such as during migratory bird departures or periods of high bat activity. Studies have indicated specific noise levels that marine species, like porpoises, can tolerate during the staking phase. Implementing these mitigation measures can reduce the amplitude and spatial extent of disturbances. However, further research and monitoring are essential to fully understand the significant environmental impacts associated with offshore wind farms. Some impacts, such as the formation of electromagnetic fields and the cumulative effects of multiple marine developments in the same area, still lack consensus.

CHALLENGES

- One of the primary challenges in offshore wind farms is determining the optimal project location. This challenge is exacerbated by the absence of comprehensive spatial planning, which is crucial for optimal wind farm siting within marine environments.

- There is a significant experience gap exists among various stakeholders, including those from IFIs, project developers and borrowers. This disparity often results in inefficiencies during the project development phase.

- The legislative landscape presents its own set of challenges. Many existing laws and regulations are outdated and require a thorough review to ensure they align with current industry needs and best practices. Integrating maritime and terrestrial legislations across different jurisdictions is particularly challenging. This highlights the importance of capacity-building initiatives, especially at the governmental level, to ensure that policies are both up-to-date and effective.

GOOD PRACTICES

- **Collaborative Planning**: Effective long-term management planning is rooted in collaboration among industry stakeholders and government bodies. These networks not only address E&S impacts but also play a pivotal role in overcoming challenges and endorsing best practices. Their collective resources and expertise bolster Environmental Impact Assessments (EIAs), ensuring robust mitigation, monitoring, and evaluation strategies.

- **Stakeholder Collaboration in Licensing**: Actively involving industry stakeholders in the environmental licensing process enriches the project's foundation. This approach ensures that their insights and concerns are integrated from the very beginning.

- **Temporal Restrictions**: Implementing temporal restrictions during activities identified as potentially hazardous has proven effective. This practice safeguards both the environment and local communities from unforeseen risks.

CONCLUSIONS

Addressing challenges in project design and planning, experience gaps, and legislation necessitates a holistic approach that maximizes the benefits of wind power projects while minimizing potential drawbacks. A more inclusive strategy—focused on fostering collaboration and flexibility, rather than imposing rigid systems on industry developers—can lead to stronger stakeholder engagement among key players.

There's a pressing need for capacity-building initiatives targeted at governments to strengthen regulatory frameworks. Establishing a technical working group among regulators could further streamline processes and ensure adherence to best practices.

Environmental licensing must consider cumulative impacts and incorporate comprehensive management plans. As we look to the future, investing in projects becomes even more crucial, paving the way for innovative solutions like technology-infrastructure integration, cutting-edge research and development, and more.

3.4. Panel 4 — Onshore Wind Farms – Social Risks, Challenges, and Opportunities

This session focused on introducing and discussing key impacts and risks related to land acquisition, physical displacement, customary ownership of land occupied by Indigenous Peoples (IP), livelihood restoration of affected people, grievance redress mechanisms, and stakeholder engagement throughout the preparation and operation of wind power projects. **Sheikh Naveed Ahmed**, Social Development Specialist at AIIB, was the presenter for this panel session. The discussion was moderated by **Prasad Modak**, Managing Director of the Environmental Management Center with the following panel members:

Carlos Perez-Brito, Social Development Specialist, World Bank

Ines Fejzic, Senior Environment and Social Development Specialist, MCDF

Jocelyn Erlinda S. Munsayac, Principal Safeguards Specialist, Private Sector Transaction Support Division, ADB

PRESENTATION HIGHLIGHTS

Social Challenges and Opportunities in On-Shore Wind Power Projects

By Sheikh Naveed Ahmed, Social Development Specialist of AIIB

Wind farms present a myriad of social challenges, from health and safety concerns to complex land acquisition issues. A crucial aspect of these projects is stakeholder engagement, particularly as communities often struggle with misconceptions or a lack of understandable information about wind power initiatives. This is especially true for Indigenous Peoples (IP) whose deep-rooted connection to the land, makes these projects particularly sensitive.

Aggregators sometimes overlook the importance of local language and cultural sensitivities, unintentionally heightening community tensions and amplifying risks. These oversights can escalate into more serious issues, including land acquisition disputes and involuntary resettlement.

Residents living near wind farms often face challenges associated with setback areas, such as noise disturbances and shadow flicker. Thoughtful civil works planning can significantly reduce these concerns.

When evaluating and mitigating social impacts, it is essential to distinguish between greenfield (new) and brownfield (existing) projects, as each presents unique challenges and considerations.

Grievance redress mechanisms (GRM) are instrumental in ensuring smooth project implementation, offering stakeholders a platform to voice concerns and seek resolution. Furthermore, developing and implementing livelihood restoration plans, alongside broader community development initiatives, can significantly benefit affected communities, ensuring they are active participants in—and beneficiaries of —the wind power project.

CHALLENGES

- Early and meaningful engagement with affected communities is often overlooked, leading to unrealistic expectations and heightened concerns. This is particularly problematic when consultations are conducted exclusively by government officials and local authorities, sidelining the actual affected communities and using the "one size fits all" approach. Ignoring the unique connection IP have with their land and culture, along with a lack of sensitivity to local customs and languages during land transactions, can escalate risks and tensions within the community, ultimately weakening the project's "Social License to Operate."
- Regulations governing setback areas—which address concerns like noise, shadow flicker, and blade throw, often lag behind the rapid growth of the wind farm industry. This creates ambiguities, especially in countries where the industry is still developing. Implementing these regulations may lead to physical displacement, and developing appropriate compensation strategies can be challenging.
- The rapid pace of wind farm development can sometimes sideline environmental and social considerations. While greenfield projects offer opportunities for early engagement and mitigation planning, brownfield projects present significant challenges, especially when trying to retrofit safeguards and address legacy issues. Assessing compensation and managing expectations can be particularly complex in such scenarios.

GOOD PRACTICES

- **Stakeholder Consultation**: Transparent and consistent engagement with affected communities is essential, particularly in the context of IP. Consultations need to be meaningful, culturally appropriate, and tailored to local contexts to be effective. This not only mitigates environmental and social (E&S) risks but also ensures the project's longevity. Modern tools like app-based grievance redress mechanisms and social media platforms can enhance these consultations, but a careful balance between traditional and modern methods is needed.
- **Sound Planning**: Early involvement of E&S specialists in wind power projects is crucial. A proactive approach helps manage affected communities' expectations and provides an opportunity to minimize economic and physical displacement during the design phase.
- **Livelihood Restoration**: Livelihood restoration plans should be comprehensive, addressing both economic and social vulnerabilities. By incorporating project-level baseline data on socio-economic conditions, these plans can be more effective. Importantly, they should be finalized before any displacement or livelihood loss occurs, ensuring a smooth transition for affected communities.
- **Benefit Sharing**: Introducing profit-sharing measures such as allocating a portion of the project's royalties to the communities, not only promotes the "social license to operate" but also strengthens communities' socioeconomic resilience.

CONCLUSIONS

Social challenges such as displacement, livelihood risks, resettlement, and regulatory hurdles highlight the complexity of wind power projects. For successful project implementation, it is crucial to tailor and contextualize approaches to meet the unique needs of each community. Project assessments and plans should be deeply rooted in the social contexts, ensuring they not only comply with the legal standards but also maintain community legitimacy.

Comprehensive baseline data provides a critical foundation for determining the scope of interventions required. Land aggregators, who play a key role in communicating project details to communities, can also facilitate fair compensation for affected individuals, address construction-related impacts, and provide support for any loss of livelihood or equipment. Target training to enhance the skills of these aggregators can significantly elevate project outcomes.

At the heart of these efforts is the principle of early and continuous consultation. This is essential for managing community expectations, fostering engagement, and refining project designs to align with on-ground realities.

3.5. Panel 5 — IFIs Sharing Experiences on Managing the Environmental and Social Risks of Wind Power Projects

This session aimed to share insights and good practices in managing E&S risks and impacts associated with wind farms. Moderated by **Bruce Dunn**, Director of the Safeguards Division at ADB, the session comprised five presenters who also served as panelists:

Duncan Lang, Senior Environment Specialist, Safeguards Division, ADB

Philip Martin, Head of Impact & Safeguards, Australian Infrastructure Financing Facility for the Pacific (DFAT)

Pedro Ferraz, Environment Specialist, AIIB, and **Sheikh Naveed Ahmed**, Social Development Specialist, AIIB

Rahul Srivastava, Senior Environment Specialist, AIIB

PRESENTATION HIGHLIGHTS

Using Sensitivity Mapping to Avoid Conflict Between Birds and Renewable Energy in Emerging Markets

By Duncan Lang, Senior Environment Specialist, Safeguards Division, ADB

ADB remains steadfast in its commitment to climate financing, aligning its objectives with the Paris Agreement and setting ambitious green energy targets

for 2025. However, the development of renewable energy projects faces significant challenges, such as navigating high biodiversity zones within "development blocks"[4] and dealing with tight timelines that often don't allow for comprehensive assessments. Additionally, the dynamics of feed-in tariffs can sometimes overshadow the importance of thorough due diligence, while national benchmarks for renewables and transmission can fall short of expectations.

Despite these challenges, there are opportunities and solutions. Adopting a landscape-scale approach, supported by strategic environmental assessments (SEA) at the sectoral level, can pave the way for more sustainable outcomes. Proactive engagement with governmental bodies is paramount. Tools such as the Avian Sensitivity Tool for Energy Planning (AVISTEP) have proven valuable in steering renewable energy projects towards success. Collaborative platforms such as the Energy Task Force also play a key role in aligning renewable energy goals with the conservation needs of migratory birds.

Emerging renewable markets present their own set of unique challenges, often characterized by rich biodiversity, lax regulations, and a subpar environmental performance index. The expansive nature of certain renewables can damage their green reputation if poorly sited. In regions with weak nature legislation, projects might gravitate towards the "path of least resistance," endangering avian species.

To overcome these obstacles, it is essential to avoid ecologically sensitive areas and integrate renewable technologies into urban and agricultural landscapes. Access to bird spatial data and leveraging tools like AVISTEP (currently covering India, Nepal, Thailand, and Viet Nam) can further enhance project success while protecting biodiversity.

Safeguards & Renewable Energy - Lessons learned by the Australian Infrastructure Financing Facility for the Pacific (AIFFP)

By Philip Martin, Head of Impact & Safeguards, Australian Infrastructure Financing Facility for the Pacific (DFAT)

The Australian Infrastructure Financing Facility for the Pacific (AIFFP) is dedicated to supporting the Pacific region in advancing its renewable energy efforts. However, the region presents a unique set of challenges, often referred to as the 'Pacific paradox'. This paradox underscores the challenges of financing and delivering large-scale infrastructure in the Pacific, often resulting in low project success rates.

To navigate these challenges, the AIFFP has adopted an "integration frontier" approach. This approach emphasizes the importance of meeting the highest international E&S standards while empowering borrower country systems to lead. It promotes adaptive management, ensuring that investment designs evolve in response to institutional, capacity, and technical needs that arise or become apparent.

One of the outcomes of this approach is the Pacific Region Infrastructure Facility (PRIF): Shared Approach on Managing E&S Risks, which guides the application of policies used by PRIF development partners—ADB, DFAT, EU, WB, JICA and others—across Pacific Island Countries (PICS).

[4] A "development block" refers to a designated area or parcel of land earmarked for the establishment and operation of energy infrastructure, such as wind or solar farms.

A standout AIFFP project is the Palau Solar Plant Investment which demonstrated commercial viability for the development of renewable energy projects in the Pacific. While not without its challenges, the project showed the important 'stewardship' role investors play in driving change. It also underscored the need for stronger policy signals from governments, coordinated efforts, and broad stakeholder engagement, including manufacturers, investors, major renewable energy buyers, governments, affected communities, and workers.

Managing E&S Risks in Refinanced Wind Power Projects: Lessons Learned

By Pedro Ferraz, Environment Specialist, AIIB, and Dr. Sheikh Naveed Ahmed, Social Development Specialist, AIIB

The development of wind power projects, whether through greenfield financing or refinancing, presents distinct E&S challenges, as outlined below.

	Approach	Potential Risks	Assessments	Mitigation Measures
Greenfield Financing	- Permits - Mitigation hierarchy	Includes construction-related impacts	Assess E&S potential impacts	Defined by assessments
Refinancing	- Legacy issues assessments - Corrective actions	Brings risks such as legacy issues	Costly and require more time	Requires corrective actions based on precautionary

Retrofitting mitigation measures in refinanced projects can be complex. Proper project design is crucial in minimizing adverse impacts related to biodiversity, noise, and shadow flicker. In refinancing scenarios, management plans often require additional costs and time to address pre-existing issues.

Biodiversity assessments for constructed wind farms, while challenging, are essential to ensure compliance with IFI requirements. Sometimes, the impacts of associated facilities, such as infrastructure, can outweigh those of the wind farm itself.

Assessing past land acquisition processes, especially in willing seller-willing buyer transactions, is complex and requires careful consideration to manage IFI and client reputational risks.

Stakeholder engagement is critical. Often, meaningful consultations do not take place in the early stages, resulting in a top-down approach where information is disseminated from authorities or project companies to the affected communities without a proper feedback mechanism.

Refinancing wind power projects requires greater E&S resources in terms of both time and money. Legacy issues in wind power projects are intricate and sensitive, emphasizing the need for IFIs to establish a standardized E&S approach for refinancing these projects.

Onshore Wind Farms - Impacts on Biodiversity

By Rahul Srivastava, Senior Environment Specialist, AIIB

Onshore wind farms, while crucial for sustainable energy generation, pose significant challenges to biodiversity. Key impacts include habitat loss, disturbance, fragmentation, and direct threats to wildlife from collisions with turbines and power lines. To address these concerns, IFIs require a structured biodiversity mitigation hierarchy, which includes avoidance, followed by minimization, then rehabilitation or restoration, and finally, offset.

At the avoidance stage, pre-screening wind farm sites are crucial. Tools such as the Integrated Biodiversity Assessment Tool (IBAT) and the Avian Sensitivity Mapping Tool for Energy Planning (AVISTEP) help ensure wind farms are located away from areas of high biodiversity value. The minimization stage then focuses on reducing habitat disturbance and fragmentation by implementing measures like establishing buffer zones around sensitive areas and ensuring that infrastructure like storage yards and labor camps, does not interfere with wildlife habitats.

Collision risks, both from wind turbines and transmission lines, affecting birds of prey, large waterbirds, and bats are another major concern. To minimize these risks, strategies like painting turbine blades to increase visibility, using acoustic deterrence for bats, and employing real-time shutdowns based on bird activity are implemented. For transmission and collector lines, options like laying underground conductors and using bird flight diverters can significantly reduce avian mortality.

Post-construction efforts include restoration and rehabilitation activities such as clearing construction debris, re-vegetating temporary areas, and reinstating topsoil and subsoil.

Offsets, considered a last resort, ensure no net loss to biodiversity. They can involve creating new habitats, planting native species, and controlling invasive species.

CHALLENGES

- Biodiversity Conservation and Environmental Impact:
    - The development of renewable energy projects often faces the challenge of limited flexibility in avoiding areas of high biodiversity significance.
    - Space-intensive renewables, if poorly cared for, can compromise their green credentials.
    - Onshore wind farms can lead to habitat loss, disturbance, fragmentation, and direct threats to wildlife through collisions with turbines and power lines.
    - Associated facilities, such as infrastructure and transmission lines, can significantly harm biodiversity.
    - Comprehensive biodiversity assessments are often constrained by time and resources, potentially leading to oversights in environmental evaluations.

- Regulation and Legislation:
    - Weak or outdated environmental laws can inadvertently direct projects towards ecologically sensitive areas.
    - In some regions, national requirements for renewables and transmission infrastructure are minimal, leaving potential gaps in oversight.
    - Emerging markets, with their unique challenges, often struggle with low regulation and a poor environmental performance index, making them particularly vulnerable.
- Stakeholder Engagement and Social License:
    - Strengthening the social license to operate remains a challenge, particularly in regions where local tensions arise from inadequate stakeholder engagement and transparency.
    - Effective communication and engagement strategies are essential to build trust and ensure the smooth progression of projects.
- Financing and Infrastructure Development:
    - The 'Pacific paradox' highlights the unique challenges faced in financing and delivering large-scale infrastructure projects in the Pacific region.
    - Different financing approaches, such as greenfield financing and refinancing, each come with their set of risks, assessments, and required mitigation measures.
    - Poorly planned infrastructure development can exacerbate negative impacts on biodiversity and local communities.

GOOD PRACTICES

- **Adaptive Management and Financing:**
    - Institutions like AIFFP and other multilateral development organizations and IFIs, may employ adaptive management strategies and the “integration frontier” approach to navigate the complexities of financing renewable energy projects.
    - Prioritizing support to quality contractors ensures value-for-money outcomes while maintaining adherence to international standards.
- **Environmental and Biodiversity Assessments:**
    - Comprehensive environmental assessments, including Strategic Environmental Assessments (SEA) at a sector level, provide a holistic view of potential impacts and opportunities.
    - A structured mitigation hierarchy—encompassing avoidance, minimization, rehabilitation, and offset stages—effectively addresses biodiversity impacts, particularly in onshore wind farms.

- **Government Engagement and Regulatory Alignment:**
    - Proactive engagement with government bodies ensures that renewable energy projects align seamlessly with regional regulations, policies, and conservation goals.
- **Leveraging Tools and Collaborative Platforms:**
    - Tools like the Avian Sensitivity Tool for Energy Planning (AVISTEP) provide invaluable insights for the development and planning of renewable energy projects.
    - Collaborative platforms, such as the Energy Task Force, bridge the gap between renewable energy development and conservation efforts, promoting a balanced approach.
- **Strategic Project Siting:**
    - Prioritizing development in areas with lower biodiversity sensitivity helps minimizes ecological impacts.
    - Integrating renewable energy infrastructures within existing urban and agricultural landscapes reduces habitat fragmentation and other environmental disturbances.
- **Stakeholder Engagement:**
    - Effective stakeholder engagement, coupled with transparent information dissemination, builds trust, manages expectations, and ensures that projects are well-received by local communities and other key stakeholders.

CONCLUSION

The rise and expansion of renewable energy projects in Asia, particularly wind farms, highlights a multifaceted landscape of both challenges and opportunities. Biodiversity conservation emerges as a central concern, with onshore wind farms posing risks of habitat loss, disturbance, and collisions. However, having a robust response from the industry—marked by comprehensive environmental assessments and strategic project siting—shows that energy needs can be harmonized with ecological imperatives.

Regulatory challenges, particularly in emerging markets with low environmental oversight, underscore the importance of proactive government-developer engagement and the alignment of projects with national and regional policies. Tools like AVISTEP and collaborative platforms such as the Energy Task Force can contribute to reconciling development with conservation.

Stakeholder engagement remains pivotal, not just as a best practice but as a cornerstone for project success. Transparent communication and community involvement ensure that projects resonate with local values and aspirations.

While the path to sustainable renewable energy is complex, a balanced approach—infused with adaptive management, strategic planning, and robust stakeholder engagement—can pave the way for a future where energy generation and environmental stewardship coexist in harmony.

4. Seminar Closing

The seminar closed with key takeaways and reflections provided by **Ines Fejzic,** Senior Environment and Social Safeguards Specialist, MCDF, and Panel Rapporteurs:

Winnie Weini Li, Environment Associate, AIIB

Rahul Srivastava, Senior Environment Specialist, AIIB

Pedro Ferraz, Environment Specialist, AIIB

Sheikh Naveed Ahmed, Social Development Specialist, AIIB

Hira Usman, Environmental Analyst, AIIB

The key takeaways of the seminar panels were:

1. The seminar emphasized the importance of learning from existing wind power projects and experiences beyond the Asia Pacific region, emphasizing the need for greater collaboration among stakeholders in the future.

2. Stakeholder engagement was recognized as crucial, especially at the early stages of project development. The seminar recognized the potential of IFIs to support inexperienced developers and ensure IFI-compliant projects and emphasized the importance of effective community communication from the onset of projects.

3. Global experiences with offshore wind power were highlighted, including Brazil's emerging offshore wind power legislation, with a focus on best practices to mitigate E&S impacts from offshore wind power. The need for interconnectivity of wind power projects in Southeast Asia was also underscored.

4. It was acknowledged that stakeholder engagement and livelihood restoration should be tailored to each project, with no single 'right' approach. The seminar stressed the need to find better ways to manage setbacks and noted that while land acquisition can be challenging, there are effective systems in place to manage it adequately.

5. The seminar highlighted the importance of tools like the Avian Sensitivity Tool for Energy Planning (AVISTEP) in assessing risks to avian fauna, shared Pacific perspectives on managing E&S issues, and emphasized the importance of the mitigation hierarchy in biodiversity conservation, drawing from AIIB's good practices.

The Multilateral Cooperation Center for Development Finance (MCDF)

The Multilateral Cooperation Center for Development Finance (MCDF) is a multilateral initiative designed to increase high-quality infrastructure and connectivity investments in developing countries through partnerships. With a central goal of encouraging the adoption of IFI standards, it is designed to reinforce the numerous existing global, regional, and sectoral initiatives established in response to the worldwide need for more connectivity infrastructure. This includes supporting the implementation of the G20 Quality Infrastructure Principles, the UN Agenda 2030 and its Sustainable Development Goals, and the Paris Climate Agreement.

MCDF is unique in the way it pursues its goals by acting as a 'one-stop shop' for both developing country governments and new partners – sharing information, building capacity and assisting with project preparation.

For more information, please visit our website: www.themcdf.org.