

Comments and Suggestions on the *Concept Note on Development of Wind Parks/Wind-Solar Hybrid Park*

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Dated 2nd December 2020

Based on the concept note published by the Ministry of New and Renewable Energy on 13th November seeking public comments¹.

In this context, Prayas (Energy Group)'s (PEG) comments and suggestions on the concept note are given below.

1 Welcome and much needed initiative to develop wind/wind-solar hybrid parks.

The generation price of new wind and solar power projects is extremely competitive and reliably integrating and maximising the share of such low cost resources is key to reduce the ever growing cost of power procurement. With the national target of 450 GW of RE by 2030, we need to add close to 360 GW in the coming nine years, or close to 40 GW/year on average. This is certainly a very ambitious and challenging prospect, but a much needed pathway for a variety of well documented reasons.

One of the reasons for the success of solar power, apart from the sharp fall in prices, has been the development of solar parks. This significantly reduced the various risks for project development, especially with regard to land, transmission and connectivity and thus speeded up project development.

Considering these aspects, the MNRE's proposal to develop wind/wind-solar hybrid parks is a much needed and welcome initiative and we strongly support this proposal.

2 Include more states for Wind Park/Wind-Solar Hybrid Park Development

The note identifies a wind potential of 53.9 GW, with a CUF > 35% in seven states. As the note mentions, this list is only indicative and a starting point for states to consider for development. States can always propose new areas/sites for development.

It would be good to supplement this list by including at least three more states. The [NIWE's Wind Potential Atlas at 120 m](#) includes the states of Maharashtra and Kerala which should be included in the list of proposed sites. Further as per NIWE, [Ladakh too is a great candidate for wind and solar development](#). Specifically, as per NIWE, 'With right mix of hybrid of wind and solar, the combined CUF could be more than 45% and this would optimize the transmission system also'. Further, 'At 120m hub height, by removing slopes, high altitudes and other land constraints, the potential is more than 100,000

¹ https://mnre.gov.in/img/documents/uploads/file_f-1605265655087.PDF

MW.' Therefore, Leh-Ladakh UT should also be included in the list of potential wind/wind-solar hybrid park development.

3 Expand the scope of the concept note to include offshore wind and energy storage

While the cost of off-shore wind power is still much higher than onshore wind power, the MNRE could start exploring the actual sites and develop offshore wind parks on similar lines to the onshore wind parks. This is critical to achieve the [target of 5 GW by 2022 and 30 GW by 2030](#).

Further, with [the prices of energy storage declining with each passing year](#), future solar/wind/wind-solar hybrid projects are likely to integrate energy storage in their project design. This aspect should also be considered during the development of wind/wind-solar hybrid parks.

MNRE should also direct the NISE to provide solar resource assessment for all the identified potential wind parks, so as to assess the feasibility of wind-solar hybrids including energy storage.

4 Selection of Park Developer

Section 7 of the note mentions that if the park developer is an agency of the state govt, central govt or a JV/SPV between them, then the state can nominate the park developer. However, if it is a private developer, then the selection should be done based on competitive bidding based on transparent technical and financial criteria.

Wind/wind-solar park development has various aspects (buying of land/land lease, transmission, resource potential assessment, roads and site development, provision of water, IT connectivity, security etc.). One agency (public or private) may not have all these requisite skills/expertise and thus JV/SPV are likely to come to fruition.

The final discovered electricity price from wind/wind-solar hybrid projects in any of these parks would depend on the quality of the wind/solar resource and the cost of the park development, with the former having a significantly higher weightage. Thus not only should be park be developed at the least possible cost, the quality of the wind/solar resource is critical to the final outcome (least cost of generation) of this whole process.

States could nominate state/central agencies as park developers to take on some of the risks of development and accelerate the process. However ideally park developers should be selected through the process of competitive bidding. Govt agencies (independently, through JVs/SPVs with other govt or private agencies) should also be allowed to participate in this process. The note has mentioned that the GoI will come out with model guidelines for this bidding process. Two of the most important criteria for selection of the park developer should be weighted combination of a) minimum certified CUF (with a high weight) and least cost of park infrastructure development. The CUF criteria will come into play if it is the park developer's responsibility of selecting sites with high CUF and his responsibility to do detailed wind resource assessment as noted in the scope of the DPR.

To reduce the risks of developing low CUF wind parks, states should ideally invest in setting up 80/100/120 m wind masts on all NIWE identified potential high CUF wind zones. With comprehensive wind resource assessment for 1-2 years, states can proceed with selecting only those zones for park development which have high CUF. States should also bring in other criteria like capacity value of the wind/wind-solar hybrid profile for the procurer's load profile or ease of transmission access in selecting potential sites for park development.

5 Clarification needed on risk sharing framework

The model guidelines for park developer selection through competitive bidding will also need to address some critical issues such as

- a. Who bears the risk if a wind/wind-solar park is developed but there is no or very little participation by IPPs to develop projects once bidding is initiated?
- b. While sites have been tentatively identified based on NIWE resource assessment, who bears the risk if the actual wind resource is much lower than stated initially, resulting in higher discovered wind prices?
 1. It would be better for sites to be 'certified' for minimum CUF by 2-3 independent wind resource agencies before park development begins.
- c. Would DISCOMs/SECI only have bidding/tenders linked to such particular parks or would the bidding be open to development of wind/wind-solar projects anywhere in the country, subject to the lowest overall cost of generation?
 1. We strongly believe that tenders should always be open and not limited to specific wind/wind-solar parks since the procurer should always be open to buy the least landed cost of power from anywhere in the country.
- d. Further, are such parks to be developed only for DISCOM procurement or can projects for sale in power exchange, Open Access and Captive use be also set up in such parks?
 1. We don't see any issue with projects being set up for any procurer/consumer, be it DISCOMs, Captive use, Open Access or for sale in Power Exchange.
- e. Presently, in most cases wind resource assessment is done by wind turbine manufacturers/wind IPPs. Are there possibilities of conflict of interest between private/public wind park developers and potential private/public wind IPPs. If so, how can such conflict of interest be avoided?
- f. In the past, there have been cases of land squatting, especially with regard to wind power sites in some states. Hence there is a need for some framework to ensure (with appropriate penalties) that the land bought/leased for this purpose is only utilised for wind/wind-solar park development in a maximum of 2/3 years to avoid land squatting.

6 Scope of the DPR

The scope of the DPR, among other things, covers these three points, namely,

- a. *Resource assessment*
- b. *Micrositing of wind turbines (and solar plant in case of hybrid)*

c. Capacity of park

With regard to wind power, investment grade resource assessment usually takes one, if not at least two years of actual 100m mast data analysis. Hence it is unclear if selected park developers are expected to do resource assessment at various potential sites identified by NIWE analysis and then pick only those for development, wherein actual measurements hold up to the initial NIWE criteria or say 30/35% CUF. Also, it is unclear who bears the cost/risk of resource assessment studies if they finally are not converted into wind/wind-solar hybrid parks.

Further, micrositing and estimating the capacity of a park can be only done for specific wind turbine models (considering their size, spacing, power curve, power rating etc.) and would be difficult to estimate accurately based on generic turbine models.

Similarly, section 13 of the note mentions that the CFA can be used for internal as well as external transmission system development as well as for setting up pooling sub-stations. Similar to micro-siting, internal sub-stations and transmission systems and connectivity requirements will become clear, only once bidding is completed and specific turbine models are selected.

The concept note should bring in more clarity on these aspects of the park development.

7 CFA

The note mentions a proposed CFA of Rs 25 lakhs per park for DPR preparation. While park sizes are expected to be around 500 MW, smaller or larger sizes are also possible. It would be more appropriate to have a minimum fixed amount for DPR preparation (say Rs 15 lakhs/Park) along with a variable incremental amount of few lakhs/100 MW to account for the size of the park. There should be a ceiling on the amount for the DPR as well.

Further, the note mentions a *CFA @Rs 20 Lakh per MW or 30% of the park development cost to park developer, whichever is lower*. If the park developer is to be selected based on competitive bidding, then ideally park development costs should be one of the bidding parameters, in which case calculating 30% of the development cost is straight forward. However, it is unclear how 20 lakhs / MW would be calculated in case it is a wind-solar hybrid park. Would be it 20 lakhs per MW of solar and wind capacity combined or some other combination?

Finally, in order to incentivise early development of the wind/wind-solar hybrid parks, the CFA could have the added conditionality that it would be available only if such parks are developed within a certain time frame, say by 2023/24. Alternatively, the MNRE may also consider allocating a slightly higher CFA only for the first 10/20 GW of park development to incentivise early adoption.

Rs 20 lakhs/MW being considered for ~50,000 MW of wind capacity would require a resource on the order of Rs 10,000 crore. Considering a cost of Rs 6.5 crore/MW of wind power, this would work to supporting ~3% of the project cost through the CFA.

8 Financial Model

In the section on Financial Model, the note proposes that,

Both the estimated registration (Rs/MW) and per unit (Rs/ unit) charges shall be declared by park developer on the basis of estimated cost as per DPR. The actual total project cost is to be authenticated by a joint committee of central and state government after completion of park development. Based on the project cost, the same committee will also declare actual registration (Rs/ MW) and per unit (Rs/unit) charges.

As noted in earlier sections, we believe that the cost of the park development should be a bidding parameter while selecting the developer and hence there should be no case for estimated/actual project cost which is authenticated by a Govt committee. Authenticating the project cost after project completion would hardly allow for innovation and optimisation on the part of the developer if all costs are to be recovered in a manner akin to a cost-plus project and may in fact lead to gold-plating of project costs.

9 Multiple Criteria for Identifying potential park zones/areas

Apart from the quality of the wind/solar resource and availability of land, there are several other parameters which should be considered while identifying potential wind/wind-solar park zones. There are already tools available which can help decision makers consider these multiple criteria. Two of such tools are noted below.

- a. According to the [Multi-criteria Analysis for Planning Renewable Energy](#) (MapRE) initiative, *The India Renewable Energy Zones study identifies cost-effective, equitable, and environmentally sustainable wind, solar PV, and concentrated solar power (CSP) zones across India. Identification of high-quality RE zones can reduce the risk to project developers and facilitate preemptive transmission planning by utilities and government agencies to encourage cost-effective and, socially and environmentally responsible development.*
Attributes of zones include levelized cost of energy for generation (using Central Electricity Regulatory Commission norms), for transmission, and for road, distances to nearest substation and road, human impact score, capacity value (for wind), number of project opportunity areas within 10 km of a surface water body, potential for co-location with another RE technology, population density, and slope.
In the study – “Geospatial and techno-economic analysis of wind and solar resources in India” Renewable Energy Vol 134 – we apply MapRE methods to identify wind and solar resources in India. Spatially-disaggregated estimates of levelized costs based on 2017-18 auction prices show cost competitiveness with coal-based generation. In addition, more than 80% wind resources coincide with agricultural lands and 80-90% solar resources lie in water stressed areas, both likely barriers for renewable energy deployment in India. Finally, opportunities for co-location abound that could meet a third of India’s 2030 demand.
- b. According to the [SiteRight tool](#),

Without careful planning, RE's relatively larger footprint – typically 3 to 12 times that of coal powered energy generation – can adversely impact people and biodiversity, creating land conflicts that will jeopardise investments and slow RE expansion. India can meet its renewable energy target of 175 GW by 2022 by more than 10 times by placing RE infrastructure on lower impact lands. However, if maximizing energy production is the singular aim for RE projects, more than 11,900 km² of forest and 55,700 km² of agricultural land could be impacted. RE projects need to be sited responsibly and smartly to avoid land conflicts, associated project delays, higher risks and costs. The SiteRight tool is created to identify areas where solar and wind development is less likely to encounter socio-ecological conflicts, thereby helping to reduce project delays and cost overruns.

10 No need to cap facilitation charge on export to other states

Section 6 of the note proposes that, *'If the power generated in the park (full or partial) is exported to other state, then the state government or its designated agency will be entitled for a facilitation charge @ 5 paisa per unit of electricity exported to other state from project developer'.*

The rationale for 5 paise/kWh is not stated in the noted and hence is unclear. The boarder objective should be to quickly develop high CUF wind sites. Given that the wind resource quality and land availability varies across states, it should be best left to states to decide on what facilitation charges they would like to levy. Just considering the cost, as long as the final landed cost of the wind power from another state (incl. the said facilitation charges) is lower than the cost of wind power development in the state, it may be prudent to procure wind from the other state. The state determined facilitation charge would also incentivise states to develop more wind parks if there is a demand for the same. Hence there should be no cap on such facilitation charges.

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