



MODEL GUIDELINES

For

Land Procurement

Grid Connected Solar PV and Wind Energy Projects



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About the Document

The Government of India has set large scale capacity addition targets for renewable energy deployment as part of its commitment to meet global climate goals as well as enhance the energy security of the country. A target of 175 GW capacity renewable energy capacity have been set to be achieved by 2022.

Land procurement has been identified as a key issue in timely execution of solar and wind energy projects by the project developers and the investors. Reasons include limited availability of land, high population density, multiple approvals and competing use of land. Moreover, land is a state subject under the Indian constitution, leading to different sets of regulations across states. These issues may stymie the pace of deployment of renewable energy projects across the country.

The “Model Guidelines for Land Procurement” have been developed as part of the study titled ‘Addressing Land Issues for Utility Scale Renewable Energy Deployment in India’, with an objective to facilitate timely allotment of land to project developers with minimal socio-economic impacts upon the local community. These Guidelines are based upon existing land related policies, regulations, procedures and field practices.

The Guidelines have been categorized separately for Revenue Land and Private land. It includes land identification procedure, allotment criteria and application procedure, land leasing terms besides mechanism to address social concerns.

The “Model Guidelines for Land Procurement” can be adopted / adapted by the appropriate government agencies as well as project developers in order to enable expeditious procurement of land in a prudential manner, while taking into consideration the concerns of the local community.

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1.0 Introduction

The Government of India has set large scale capacity addition targets for renewable energy deployment as part of its commitment to meet global climate goals as well as enhance the energy security of the country. Under the 'Nationally Determined Contributions' submitted by the Indian government to the United Nations Framework Convention on Climate Change (UNFCCC), it has committed to increase the share of non-fossil fuel based power capacity to 40 percent by the year 2030. The interim targets for renewable energy capacity have been set at 175 GW, to be achieved by the year 2022; this includes 100 GW of solar and 60 GW of wind energy installations.

India is the second most populous nation globally, supporting 17% of the global population within 2.4% of the total land area, making it imperative to manage the use of this finite resource. The issue related to the limited availability of land is expected to snowball into a major challenge in the coming years, considering the competing requirements of land from different sectors of the economy. Land, being a state subject under the Indian constitution, falls under the legislative and administrative jurisdiction of the state governments. Each state has its own set of regulations and procedure pertaining to land leasing and procurement.

Among the key issues identified towards accelerating the pace of implementation of renewable energy projects in the country is the availability of land, at affordable rates, and within certain timelines. Both the solar and wind energy technologies are land intensive in nature, requiring about 2 hectares and 1.5 hectares of land on a MW basis respectively. As per existing usage trends, the 2022 targets would require about 1.5 lakh hectares of land to support 50 GW of ground mounted solar photovoltaic and 30 GW of wind capacity. Land use changes brought about by solar and wind projects may have socio-economic impacts upon the local community.

Land is one of the key parameters impacting the location of a renewable project and eventually its returns. The choice of a particular location for a project depends upon the availability of resource (solar radiation and wind velocity), its topography and terrain, soil strength, site accessibility, its market value (which depends upon ownership and its arability) and the returns it is generating currently. Other parameters include power evacuation infrastructure, availability of water and ease of land procurement.

Land is categorized as revenue land (owned by government agencies), private land (ownership title held by individuals), forest land (under jurisdiction of Forest Department) and Community Land (with the Panchayat). Land can also be categorized based on its usage like forests, arable, fallow land and wasteland, etc. Revenue land is allotted on lease basis to project developers, whereas private land needs to be purchased from the landowners on commercial terms. Leasing of private land to solar project developers has also been initiated in few states. Conversion of land-use status to non- agricultural category is a prerequisite.

In order to facilitate timely allotment of land to solar and wind energy project developers with minimal socio-economic impacts upon the local community, “**Model Guidelines for Land Procurement**” have been developed, based upon existing policies, procedures and field practices. These **Guidelines** can be perused by the concerned stakeholders – land and revenue department, state nodal agency, project developers, investor groups and financial institutions besides the local community.

A “**Checklist**” has been designed to capture the essential elements of the project with regard to land. This consists of several parameters including land type and its ownership, quantum of land required, existing usage, nature of RE technology used and the expected energy generation, besides aspects on community welfare. The State Nodal Agencies may seek information about the project from the developer as per the **Checklist** and process their application using the **Model Guidelines** accordingly.

2.0 Guidelines for Procurement of Revenue Land

2.1 Identification of Project Sites

- a) The respective state nodal agency (SNA) may develop a long-term growth plan for the RE sector taking into account the resource potential, techno-economic feasibility, renewable purchase obligations and energy market
- b) SNA may identify / earmark amenable sites for putting up solar and wind energy projects. This may require use of the Solar and Wind Atlases, as developed by NIWE/ NISE, in conjunction with the land usage and ownership data as provided by the concerned revenue departments
- c) Ground truthing may be undertaken with respect to existing use and type of land including squatting and possible use by other departments, facilitated by Revenue Department/ Office of District Collector
- d) Based on the above, the Land and Revenue department may allot/lease the revenue land to the SNA
- e) Revenue lands assigned to poor people for agriculture purpose should not be resumed. In case of inevitable resumption, alternate land should be provided to the said assignees apart from the rehabilitation support
- f) Use of multi-cropped land should be avoided for project development activities. In case the identified site for the project has a certain portion of land deemed as fertile, its share may be restricted to a certain limit of the total land
- g) Land categorized as wasteland should ideally be proposed for alienation. For this activity, information may be obtained from the Indian Wasteland Atlas as developed by NRSC/ ISRO
- h) Provisions in the mining reclamation policy may be made for using it for solar/ wind energy projects based on techno-commercial viability
- i) Environmentally sensitive and fragile areas, including areas earmarked as forests, should not be considered for project development

2.2 Allotment Criteria

- a) The SNA, in consultation with MNRE, may determine land requirements for different RE technologies with provision of periodic revisions
- b) The criteria can include resource availability, efficiency of equipment, location (latitude and altitude) and the topography of the site

- c) For wind energy projects, land size may be limited to turbine footprint area which can include land required for putting up ancillary equipment, power evacuation system and access roads, etc.
- d) For solar PV projects, ratio of AC: DC capacity may be mentioned, with provision of repowering at a later stage to compensate for loss of generation due to degradation of modules
- e) To ensure equitable development across the state, the total capacity of solar and wind projects in a district may be earmarked, with provisions of periodic revision. Suitable relaxation may be provided in case a district has a significant share of wasteland
- f) The SNA may undertake independent assessment of large and complex projects to justify the extent of land sought, taking into consideration the environmental and social regulations and impact assessment

2.3 Transfer of Land to SNA

- a) The SNA can identify suitable sites, preferably using wasteland, as enunciated in Clause 2.1
- b) Envisaged project capacity on such identified sites may be estimated using the help of sector experts
- c) SNA may approach Land and Revenue Department of the respective state government to earmark such lands for solar and wind energy projects
- d) Based on prevalent policy, such lands may be leased by the State Revenue Department to the SNA at a nominal lease rent¹
- e) The above exercise may involve consultation with the Office of the respective District Collector
- f) Details (coordinates) of such land banks/ sites may be provided on the public domain to enable transparency and informed investment grade decisions by the project developers

2.4 Application Procedure

- a) Using the information about prospective sites as made available by the respective SNA, project developers may submit their request for allotment of revenue land along with the project DPR and the registration fee to the SNA, preferably through an electronic mode/ portal

¹ It has been observed that state governments provide land on lease basis to the Solar Power Park Developers, which is subsequently sub-leased to solar project developers

- b) To ensure filtering out of non-serious investors, the project developers may be asked to deposit registration fee, besides suitable bank guarantee in proportion to the project capacity, capital investment and the size of land
- c) Upon receipt of application and fee, SNA may assess the genuineness of the land use requirement as per the norms prescribed in Clause 2.2 and based on a thorough techno-commercial assessment of the application before forwarding the request to the Collector
- d) The Collector may provide its observations on the proposal to the Competent Authority for land alienation
- e) After obtaining an in-principle sanction from the Collector, the SNA may provide its approval to the investor in terms of project capacity
- f) At this stage, simultaneous requests may be floated to the concerned departments for obtaining necessary approvals. This may include electrical utilities for providing evacuation facilities and power purchase agreement, state pollution control board, labor department, etc.
- g) The Collector may initiate the land lease/ sub-lease proceedings as per the recommendations made by SNA within certain timelines
- h) In case the land is leased to the SNA, it can be sub-leased to the project developers within certain timelines
- i) In case of multiple applications for the same piece of land, sub-leasing of land may be made by the SNA on certain criteria. This may include energy generation per sqm, lease rentals, revenue sharing with the government and benefits for the local community, etc.
- j) While allotment of revenue land, preference may be accorded to government owned entities, public private partnership and community energy projects

2.5 Digitization Process

- a) The Land and Revenue Department may undertake digitization of land records for ease of locating coordinates, existing usage trends and establishing ownership titles
- b) The SNA may provide comprehensive information on availability of suitable sites, along with accurate survey maps thereof
- c) The SNA may provide a 'Single Window facility' for providing necessary approvals with respect to leasing/ sub-leasing of revenue land, duly supported by the Land and Revenue Department

- d) Facility for online submission of applications may be provided to the developers along with provision to track the status
- e) Portals of the concerned government agencies may be linked for swifter execution of approvals - SNA, district land and revenue office, DC Office, transmission/ distribution utility, state pollution control board, etc.

2.6 Lease Procedure & Terms

- a) Revenue land should be preferably leased/ sub-leased by the SNA to project developers on a long-term basis. The period can be co-terminus with the effective lifetime of the project, or, the duration of its PPA
- b) Allotment of land may be made jointly in the name of the SNA and the project developer upto the time the project gets commissioned
- c) Upon successful commissioning of the project within stipulated timelines, SNA may withdraw its rights on the land
- d) Lease rentals may be fixed based on the recommendation of the District Level Negotiation Committee, or as per the prevalent norms of the respective state government. The rental determination criteria may include size of land, its prevalent market value and the existing land-use
- e) Lease rental may be revised periodically
- f) Proceeds of lease rental may be utilized in accordance with the local developmental plans, taking into consideration the requirements of the local community, under discussions with the Panchayat
- g) Lenders may be provided transferable/ substitution rights on the revenue land in lieu of mortgage creation within a certain timeline

2.7 Social Impact Assessment

- a) Besides commercial considerations, the land allotment criteria may include socio-economic parameters like livelihood generation potential, infrastructure development and skill up-gradation for the local community
- b) For this purpose, the term 'Local Community' means the members of the project affected families, residing within a certain distance of the project
- c) Social Impact Assessment studies may be carried out for solar and wind energy projects above a certain threshold capacity to circumvent any impacts on the community. The limit may be ascertained by the Empowered Committee
- d) In cases involving land size above the threshold limit, a certain portion of the project land may be earmarked for skill development activities

- e) Compensation, including solatium, may be paid to the existing users of the land (non-title holders) as per the prevailing policies and regulations
- f) Lease deed may have provisions for providing access to common resources for the local people

2.8 Timelines & Penal Provisions

- a) SNA may monitor the utilization of revenue land allotted to the project developer as per the lease / sub-lease agreement
- b) The lessee (solar/ wind project developer) may be required to commission the project within a fixed timeline from the date of obtaining all necessary approvals, or, as per the allotment letter. The period can be determined based on the technology and capacity of the project, site accessibility, topography, signing of PPA, besides availability of transmission & evacuation infrastructure
- c) Any deviation from the timelines may attract penal provisions. This may include penalty and penal interest as per the land allotment regulations, invoking of bank guarantee, besides resumption of land
- d) The lands to be resumed from the original lessees may be treated as part of SNA land bank, and considered for fresh allotment
- e) In case of delay in land leasing/ allotment beyond the stipulated timelines for no fault on the part of the project developer, all fee and charges (registration charges, bank guarantee, etc.,) deposited by the applicant may be returned upon request

2.9 Empowered Committee

- a) An Empowered Committee may be created to determine land limits, timelines for allocation, lease rentals, allotment criteria, penal provisions and monitoring
- b) The Committee may be headed by the Principal Secretary (Energy), with Members from Land and Revenue Department, SNA, Rural Development Department, State Transmission Utility, Distribution Utility, Industries Department and the State Pollution Control Board

3.0 Guidelines for Procurement of Private Land

3.1 Identification of Project Sites

- a) Project developer would be responsible for identification of amenable sites for putting up projects
- b) Project developer may check for the existing land usage pattern and ownership details based on records available at the office of Revenue department.
- c) The land and the Revenue Department may provide all information about the land on public domain. This can include land ownership, circle rates and the type of land
- d) Priority may be accorded for using wasteland/ fallow/ mono-crop land to avoid use of multi-crop land
- e) Larger capacity solar parks and wind farms might entail certain pockets of privately owned land within the overall revenue land. In this case, mechanism of land pooling system (aggregation) may be employed for procurement of land from private entities and accorded compensation as per Clause 3.5

3.2 Allotment Criteria

- a) The SNA, in consultation with MNRE, may determine land requirements for different RE technologies with provision of periodic revisions
- b) The criteria can include resource availability, efficiency of equipment, location (latitude and altitude) and the topography of the site
- c) For wind energy projects, land size may be limited to turbine footprint area which can include land required for putting up ancillary equipment, power evacuation system and access roads, etc.
- d) For solar PV projects, ratio of AC: DC capacity may be mentioned, with provision of repowering at a later stage to compensate for loss of generation due to degradation of modules
- e) To ensure equitable development across the state, the total capacity of solar and wind projects in a district may be earmarked, with provisions of periodic revision. Suitable relaxation may be provided in case a district has a significant share of wasteland

3.3 Application Procedure

- a) After conducting resource assessment and ascertaining land usage and ownership patterns, the project developer may submit request for allotment of project capacity to the SNA with the project DPR and the registration fee, preferably through an electronic mode/ portal
- b) Based on techno-commercial assessment of the application, SNA may issue capacity allocation letter to the project developer
- c) The office of the District Collector may check for existing status of land use and its usage pattern
- d) After the issue of sanction letter by the SNA, simultaneous requests may be floated to the concerned departments for obtaining necessary approvals. This may include revenue department for change of land use, electrical utilities for providing evacuation facilities and power purchase agreement, state pollution control board, labor department, etc.
- e) Deemed approval for change of land use to Non-Agriculture may be restricted to projects proposed on infertile/ semi-fertile land

3.4 Digitization Process

- a) The Land and Revenue Department may undertake digitization of land records for ease of locating coordinates, existing usage trends and establishing ownership titles. It may facilitate provision of updated information on land use category, land users along with prevalent circle rates on public domain
- b) The SNA may provide a 'Single Window facility' for providing necessary approvals including capacity allotment, evacuation, land use change, etc.
- c) Facility for online submission of applications may be provided to the developers along with provision to track the status
- d) Portals of the concerned government agencies may be linked for swifter execution of approvals - SNA, district land and revenue office, DC Office, transmission/ distribution utility, state pollution control board, etc.

3.5 Compensation Norms

- a) Land and Revenue Department may ensure that the sale price of land is in line with the prevailing market value of the land, in sync with circle rates
- b) Land and Revenue Department may provide information pertaining to village wise land rates for both irrigated (both multi and mono-crop land) and un-irrigated types of land on public domain

- c) Compensation may be paid to the existing users of land, both land owners and non-title holders, as per the prevailing policies and regulations
- d) Provision to take private land on lease may be provided. This may require developing 'Model Land Lease Agreement' taking into consideration concerns of the project developers, land owners and land users besides financial institutions
- e) Lease rentals may be determined as suggested in the 'Model Land Lease Agreement' or as per the prevalent market value of the land

3.6 Social Impact Assessment

- a) Social Impact Assessment studies may be carried out for solar and wind energy projects above a certain threshold capacity to circumvent any impacts on the community. The threshold limit may be ascertained by the Empowered Committee
- b) In cases involving land size above the threshold limit, a certain portion of the project land may be earmarked for skill development activities
- c) The project allocation letter may have provisions for providing access to common resources to the local people. This may include cultivable rights in case of arable land, with the consent of the project developer
- d) Energy cooperatives, with participation of the local community members, may be encouraged by way of enabling policies

3.7 Timelines & Penal Provisions

- a) The project developer may be required to commission the project within a fixed timeline from the date of obtaining all necessary approvals. The period can be determined based on the technology and capacity of the project, site accessibility, topography, signing of PPA, besides availability of transmission & evacuation infrastructure
- b) Non-adherence to the time lines may attract penal provisions. This may include financial penalty besides reneging back the land use status
- c) In case of use of land for any purpose other than the stipulated one, strict action may be taken against the developer which may include cancellation of the project allocation and imposing a financial penalty
- d) The Empowered Committee, as mentioned in Clause 2.9, may be tasked with similar roles in case of use of private land by project developers

Annexure-I: Application Checklist

Sl.No	Parameter	Remarks
1	Company Details <ul style="list-style-type: none"> Name of Applicant Company Contact Details 	
2	Type of Company (Public Ltd/ Private Ltd/ LLP/ Proprietorship/ PSU/ Govt Agency/ Community Project)	
3	Proposed Technology <ul style="list-style-type: none"> Wind - Turbine Capacity, Hub-Height Solar PV- Module Type & Efficiency Capacity of Project (MW) and Expected Generation (MWh) Any Special Technology (Trackers, Hybrid Mode, Others) 	
4	End User (Utility/ Captive/ Third Party/ REC)	
5	Project Location (Village/ Tehsil/ District/ State)	
6	Project Development Timelines (Pert Chart)	
7	Land Aspects <ul style="list-style-type: none"> Land Area (Acres/ MW & Acres/ MWh) Type (Private/ Revenue/ Forest/ Community/ Mixed) Category (Multi-Crop/ Mono-Crop/ Arid/ Salt/ Barren/ Wasteland/ Others) Ownership (Private Purchase/ Private Lease/ Government Lease/ Pooling/ Others) Existing Usage Trends Terms of Land Procurement (Purchase Cost/Lease Rentals) 	
8	Social Aspects <ul style="list-style-type: none"> Number and Profile of Project Affected Families Employment Generation Skill Development Plans Local Area Development Plan Accessibility Rights to Common Resources Cultivation Rights for Local Community 	
9	Legal Aspects <ul style="list-style-type: none"> Applicability of Land Acts & Regulations Status of Clearances (SNA/ Transco/ Discom/ SPCB) Competent Authority for Approval (Empowered Committee) 	

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