SUPREME AUDIT INSTITUTION OF INDIA
लोकहितार्थ सत्यनिष्ठा
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Report of the Comptroller and Auditor General of India on Solar Parks and Ultra Mega Solar Power Projects

Union Government
Ministry of New and Renewable Energy
Report No. 13 of 2025
(Performance Audit)

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Preface

This Report for the year ended March 2024 has been prepared for submission to the President of India under Article 151 of the Constitution of India.

This Report of the Comptroller and Auditor General of India contains the observations of Performance Audit on Solar Parks and Ultra Mega Solar Power Projects for the year 2017-2022. These observations have been updated up to 31 March 2024.

The instances mentioned in this Report are those which came to notice during test audit for the period 2017-22 as well as those which came to notice in earlier years but could not be reported in previous Audit Reports; matters relating to the period subsequent to 2021-22 have also been included, wherever necessary.

The Audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Executive Summary

Introduction and Background

India's rapid economic growth and commitment to climate action have driven its ambitious clean energy goals, aiming to ensure affordable, sustainable and reliable energy for all. Under the Paris Agreement of 2015, India committed to producing 40 *per cent* of its electricity from clean energy sources by 2030, which having been achieved in 2021, now stands revised to 50 *per cent.* India also aims to reduce the emissions intensity of its GDP by 45 *per cent* from 2005 level by 2030.

Solar power plays a crucial role in India's renewable energy sector, serving as one of the most important and rapidly growing sources of clean energy. India's abundant sunlight availability and vast geographical area make it an ideal location for solar energy generation. Solar energy holds a pivotal place in India's National Action Plan on Climate Change with the National Solar Mission being one of the key Missions, launched by the Ministry of New and Renewable Energy (MNRE) in January 2010. National Solar Mission's initial goal was to deploy 20,000 MW of solar power by 2022, which was subsequently increased to 1,00,000 MW in July 2015.

'Solar Parks and Ultra Mega Solar Power Projects' was one of the Schemes launched to achieve the targets of National Solar Mission. Phase I of the Solar Parks Scheme began in 2014 with a target of achieving 20,000 MW by 2018-19, while Phase II followed in 2017, aiming for an additional 20,000 MW by 2019-20. However, due to various implementation challenges, the deadline has been extended to March 2026.

By centralising infrastructure and streamlining processes, the Scheme was critical for addressing the inefficiencies associated with scattered individual solar projects, which often resulted in higher costs per MW, increased transmission losses and significant delays due to land and regulatory clearances. Moreover, the Scheme was important for India's sustainable growth led by clean energy. Considering the Scheme's criticality in achieving India's ambitious clean energy goals and given the shortfall in achievement of targets under the Scheme, it was decided to take up a Performance Audit on 'Solar Parks and Ultra Mega Solar Power Projects'.

MNRE has been rendering valuable service towards implementation of renewable energy programmes in the country. As a result of its policy initiatives, India has largely achieved its targets for Ground Mounted Solar projects and Off-Grid Solar applications[1].

However, under MNRE's 'Solar Parks and Ultra Mega Solar Power Projects' Scheme, overall achievement of establishment of solar parks and generation of solar energy fell short of the targets. The in-principle approval for establishment of Solar Parks was provided without conducting feasibility studies and techno-economic viability assessment. Part of the delays were preventable, such as (i) repeated revisions in Detailed Project Reports which were not realistic in terms of availability of land, layout and technology despite government financially supporting the exercise and (ii) delays in financial closure due to linking it up with generation of internal resources. The delays in acquisition of land were not realistically anticipated and proactively resolved. Based on the learning from delays in achievement of milestones in Phase I, MNRE did review and revise the timelines for Phase II. These too could not be attained, as the underlying issues remained unresolved.

Other key factors impacting achievement of project milestones noticed by Audit were delay in formation of State Level Committees and consequent lack of monitoring. Further, MNRE, having the overall responsibility for the success of the Scheme, did not take the initiative to resolve the issues that impeded the implementation of the Scheme in both phases. As a result, the objectives of the Scheme could not be achieved, with only 28.60 *per cent* of the targeted 40,000 MW being installed as of March 2024. The underutilisation of budget allocated for the Scheme was reflective of the slow pace of implementation of the same.

The key Audit findings, recommendations of Audit and Good Practices noticed are as under.

Good Practices

Some commendable initiatives were noticed in Karnataka, Rajasthan and Gujarat for identification of suitable sites and land. In Karnataka, the landowners of villages of Pavagada Taluk, Tumkur District, voluntarily expressed their willingness to lease out about 11,000 acres land for the site selected for development of Solar Park and the Pavagada Solar Park Project was completed as envisaged. Similarly, in Rajasthan, based on the inputs received from District Collectors, a tentative list of government land available for setting up of solar projects in four districts of Barmer, Bikaner, Jaisalmer and Jodhpur was uploaded on the website of State Nodal

[1] ***As against the target of 57,000 MW under Ground Mounted Solar projects by 2021-22, India has achieved 64,415 MW capacity as on March 2024. Further, against the 2,000 MW capacity under Off-Grid Solar applications by 2021-22, India has achieved 2,958 MW capacity as on March 2024.***

Agency. In Gujarat, the Government wasteland was utilised for Raghanesda, Dholera and Khavda Solar Parks. Raghanesda Solar Park was the first solar park under "Solar Parks and Ultra Mega Solar Power Projects Scheme" in Gujarat, which got successfully commissioned and is running at full capacity of 700 MW. Similar initiatives need to be carried out across the states for successful implementation of solar parks.

(Para 2.3)

Key Audit Findings and Recommendations

The Solar Potential Map of India, which provides an assessment of solar energy potential across Indian States, was last prepared in 2014. Though the Wasteland Atlas was updated in 2019 and the average efficiency of SPV modules increased to 19-22 *per cent*, the Solar Potential Map has not been updated to reflect these advancements.

(Para 2.1)

Planning and Coordination

The initial target of 20,000 MW installed solar power capacity by 2018-19 was revised to 40,000 MW by 2019-20. As of March 2024, 58 Solar Parks were allocated across 13 States, with a total capacity of 40,000 MW of which only 28.60 *per cent* (11,491 MW) of the targeted capacity had been installed. MNRE has extended the deadline for achieving the target three times from 2019 to 2026, indicating challenges in meeting goals.

(Para 2.2.1)

In States like Himachal Pradesh, Meghalaya and Maharashtra, five projects were cancelled/stalled due to lack of thorough feasibility studies, geological studies and non-availability or slow acquisition of land.

(Para 2.2.2)

Recommendations

1. ***MNRE/National Institute of Solar Energy may undertake reassessment of the solar potential of the country, with reference to the current scenario of wasteland availability, efficiency of SPV modules, etc.***

2. ***MNRE may plan the establishment of Solar Parks based on thorough feasibility studies that factor in local conditions and challenges.***

3. ***MNRE in collaboration with states may prepare a detailed plan to identify wastelands and government lands for setting up Solar Parks.***

Establishment of Solar Parks

In the nine sampled States, MNRE allocated 18 Solar Parks from 2014 to 2017 (Phase I), with a total capacity of 12,761 MW, aiming for completion within 18 months of approval. By March 2024, only 12 parks (10,066 MW) were established under Phase I. Though with delays, Gujarat, Uttar Pradesh, Madhya Pradesh and Karnataka completed all; Andhra Pradesh and Rajasthan were able to complete three out of four and four out of five Solar Parks, respectively. Audit revealed significant delays at various stages, including preparation of detailed project reports (DPRs), land acquisition, financial closure and pooling station construction.

(Para 3.1.1)

In the sampled States, MNRE allocated 27 Solar Parks from 2017 to 2022 (Phase II), with a total capacity of 25,600 MW. In February 2019, MNRE revised the Solar Park Scheme, extending the overall completion timeline from 18 to 24 months. By March 2024, only two Solar Parks (Kalpi in Uttar Pradesh and Agar in Madhya Pradesh) were completed and three Solar Parks Dholera (Gujarat), Nokh (Rajasthan) and Omkareshwar (Madhya Pradesh) had been established partially. In Phase-II also, significant delays at various stages, similar to those noticed in Phase-I were noticed by Audit, despite relaxed timelines.

(Para 3.2)

The Solar Park Scheme requires at least five acres of land per MW for solar projects but lacks clarity on the justification for excess land acquisition. Excess land acquisition led to inflated project costs, affecting electricity tariffs for consumers.

(Para 3.3)

Recommendations

4. ***MNRE may ensure that the implementing agencies (Park Developer/Central Transmission Utility/State Transmission Utility) adhere to the guidelines for preparing the detailed project reports and the timelines for commissioning of the projects. If required, it should proactively engage with all concerned to resolve the issues.***

5. ***MNRE may consider issuing guidelines for the assessment of land required by Solar Parks and utilisation of the same may be reflected in DPRs.***

Financial Management

As per Phase I of the Scheme, MNRE was to allocate ₹1,650 crore in the first three years (up to 2016-17), but only ₹640.57 crore (39 *per cent*) was released. Audit noticed that this trend continued in subsequent years too, with MNRE cumulatively releasing only ₹3,231.76 crore (40 *per cent*) by March 2024, against the targeted expenditure of ₹8,100 crore. This shortfall in expenditure was an indicator of the slow pace of implementation of the Solar Parks.

(Para 4.1)

Financial issues, like double taxation in Dondaicha Solar Park, Maharashtra and payment of excess dividend in Rewa Solar Park were observed.

(Paras 4.2 and 4.3)

Recommendations

6. ***MNRE/Park Developer may ensure that park charges/upfront charges recoverable from Project Developers are determined in a financially prudent manner and avoid passing on unwarranted costs, as these have a cascading effect on tariff recoverable from end consumers.***

Monitoring and Review

MNRE Guidelines (2017) mandated the establishment of a State Level Committee (SLC) headed by the Principal Secretary/Secretary (Power/Energy/Renewable Energy) of the State Government responsible for determining park charges, reviewing DPRs, *etc.* Due to delays in constituting SLCs and the absence of a prescribed meeting frequency, meetings were not conducted regularly. This led to lack of monitoring, unresolved challenges and pending issues, thereby impacting project milestones.

(Para 5.2)

The achievement of 40,000 MW solar power was to contribute to long term energy security of the country and ecological security by reduction in carbon emissions and carbon footprint. Since only 28 *per cent* of the targeted Solar Park capacity could be created by March 2024, the anticipated annual CO_2 abatement did not fully materialise.

(Para 5.3)

Recommendations

7. ***MNRE may ensure that State Level Committees are formed in each State with representation of officials of line departments and ensure timely resolution of various issues like land acquisition, finalisation/approval of DPR, transmission issues with Central/State Transmission Utility, Project Developer identification, etc., during development of parks.***

Chapter I: Introduction

1.1 Background

India, with its rapidly expanding economy, faces a critical need for clean, affordable and reliable energy sources. As part of its first Nationally Determined Contribution framed under the 2015 Paris Agreement, the Government of India committed (2015) to reduce the Green House Gas (GHG) emissions intensity of its Gross Domestic Product (GDP) by 33 to 35 *per cent* by 2030 from 2005 level; and generate at least 40 *per cent* of its electricity from clean energy sources by 2030 as part of the global climate action. Even though India aimed to generate 40 *per cent* of electricity from non-fossil-based resources by 2030, the country achieved this target much in advance in November 2021. In August 2022, this target was enhanced to 50 *per cent* of electricity from clean energy sources by 2030 and reduced emission intensity of GDP to 45 *per cent* by 2030 from 2005 level. In addition, India had announced (2021) a net zero emissions target by 2070. India's focus on climate action was reinforced by India's pledge to the 2030 Agenda for Sustainable Development, which included Sustainable Development Goal (SDG) 7: Ensure access to affordable, reliable, sustainable and modern energy for all and SDG 13: Take urgent action to combat climate change and its impacts; which are at the core of SDGs for addressing climate change.

To deliver on its commitments, India has put in place policies to scale up its clean energy supply. Ministry of New and Renewable Energy (MNRE) aimed to install 175 Gigawatt (GW) of Renewable Energy projects by 2022 and achieve a non-fossil fuel energy capacity of 500 GW by 2030. As of 31 March 2024, India had installed a total of 198.75 GW of non-fossil fuel energy capacity. This comprises 81.81 GW of Solar Power, 45.89 GW of Wind Power, 10.94 GW of Bio Power, 46.93 GW of Large Hydroelectricity, five GW of Small Hydro Power and 8.18 GW of Nuclear Power capacity.

MNRE launched the National Solar Mission in January 2010, with an initial aim of achieving 20,000 MW of grid connected solar power capacity by 2022. Subsequently, in July 2015, the target was enhanced to 1,00,000 MW. The targeted capacities and achievements were as follows.

Table 1: Targeted Capacities for the period 2015-16 to 2021-22 and achievements

Particulars		Targeted Capacity (in MW)	Achievement (in MW) (as on 31.3.2024)
Grid Connected		**97,000**	**76,285***
A.	Ground Mounted Solar Projects	57,000	64,415
B.	Rooftop Solar	40,000	11,870

**** It includes 3,743 MW commissioned up to 2014-15.***

1.2 Solar Parks

India is blessed with an abundance of solar energy potential, owing to its location in the high solar insolation region of the world. The establishment of scattered solar power projects across multiple locations poses significant challenges. The fragmented nature of these projects results in higher project costs per MW, as each location requires the creation of its own supporting infrastructure and utilities.

To address these challenges, the concept of Solar Parks emerged. A Solar Park is a designated area specifically designed for the development of solar power generation projects. It provides developers with assured land availability and transmission infrastructure, two crucial components for successful solar projects. It offers developers a well-defined site equipped with proper infrastructure and access to essential amenities and minimises project risks. Additionally, Solar Parks streamline the approval process, saving developers valuable time and resources.

The establishment of a Solar Park is a complex process and involves stages such as preparation of a DPR, acquisition of land, financial closure, construction of pooling station, land development as well as transmission infrastructure for evacuation of power. The activities to be completed at each stage and their importance are as below.

(i) **Detailed Project Report (DPR)** aims to provide comprehensive information encompassing physical, social, technical and economic aspects of establishing a Solar Park. It outlines the basic program, roles and responsibilities, activities to be undertaken, resources required and potential risks along with mitigation measures.

(ii) **Land acquisition** is essential for establishing the pooling station, building common facilities within the Solar Park and installing solar projects. States and UTs are encouraged to identify sites with favourable solar radiation, adequate water availability and proximity to Central Transmission Utility (CTU) or State Transmission Utility (STU), preferably locations with spare transmission capacity. The Solar Parks are required to have at least five acres of land per Megawatt (MW) for setting up solar projects. It is preferable if most of the required land is government-owned to minimise the need for private land acquisition. Land prices are to be kept as low as possible to attract solar project developers. Therefore, the site is to be selected in a way that inexpensive land or wasteland can be made available for the project.

(iii) **Financial Closure** is defined as the arrangement of 90 *per cent* of the total project cost by the Park Developer either from resources of its own or of the promoters/joint venture partners of the Park Developer or through a bank/financial institution by way of sanction of a loan or letter agreeing to finance; grants from government or other sources or accruals from sale/lease/right to use of the land in the park.

(iv) **Pooling Station** is defined as the substation where the pooling of the solar power generated by individual Project Developers was done. As per Scheme guidelines, the Park Developer was to set up the pooling substations (with 220/66 kV or suitable voltage) and other common facilities[2] inside the Solar Park and draw transmission line to transmit power to the substation (set up by CTU/STU with 220/400 kV or suitable voltage), termed as internal transmission system.

(v) **Power Evacuation Arrangement** consists of collecting power from the transmission sub-station at the park boundary and transferring it to the existing grid of CTU/STU. The setting up of a sub-station near the Solar Park and creation of transmission line to connect with the existing network of CTU/STU is termed as external transmission system.

Solar Park Internal Infrastructure being developed by Park Developers

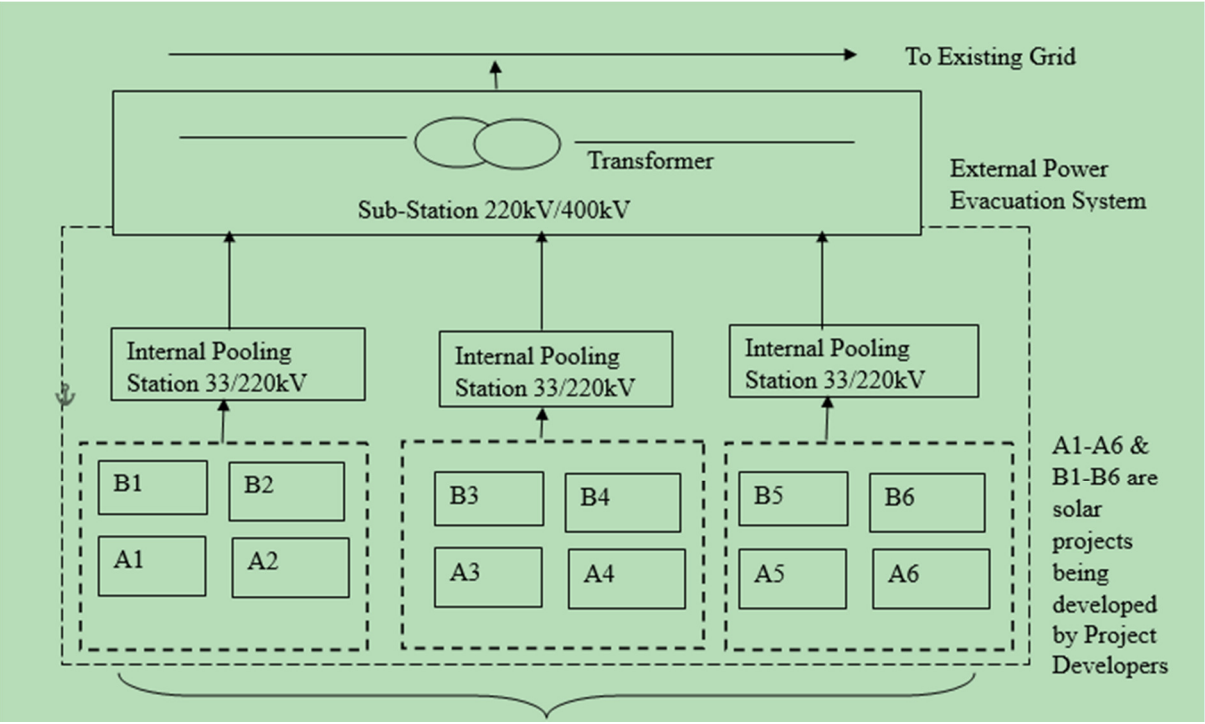

Figure 1: Schematic Representation of Solar Park

[2] ***Apart from transmission facility consisting of pooling stations, Park Developer was also entrusted with providing the following common facilities: (i) land development: cleaning, levelling and its allocation to Project Developer, (ii) road connectivity to each plot of land, (iii) water availability, (iv) flood mitigation measures like flood discharge and internal discharge, (v) construction power, (vi) telecommunication facilities, (vii) housing facilities for basic manpower, wherever possible, (viii) parking, warehouse etc.***

In line with the targets for ground mounted solar projects set under National Solar Mission, MNRE introduced various schemes. 'Solar Parks and Ultra Mega Solar Power Projects' Scheme (launched in December 2014), hereafter referred to as Solar Park Scheme, was one of these schemes to establish Solar Parks of 40,000 MW capacity (out of targeted capacity of 57,000 MW[3] for ground mounted solar projects) across the country by 2019-20.

The journey of exploiting solar energy potential through Solar Parks started with the establishment of 'Charanka Solar Park' in Gujarat (2012), followed by the 'Bhadla Solar Park Phase I' in Rajasthan. Thereafter, Solar Park Scheme quickly emerged as a powerful mechanism for the rapid development of solar power projects in the country and gained momentum with the launch of the National Solar Mission, which established a comprehensive policy framework and roadmap for solar power growth in the country. The framework for incentivising and supporting development of Solar Parks was introduced in two phases.

1.2.1 Solar Parks Phase I

In December 2014, Phase I of the Solar Park Scheme was launched. The Scheme aimed to provide a boost to solar energy generation by acting as a flagship demonstration facility to encourage project developers and investors, prompting additional projects of similar nature, triggering economies of scale for cost-reductions, technical improvements and achieving large scale reductions in Green House Gas (GHG) emissions. All Solar Parks (18) under Phase I, with a combined capacity of 20,000 MW, were slated for completion by 2018-2019.

Kurnool Solar Park 1,000 MW – Andhra Pradesh Solar Power Corporation Private Limited [APSPCL (Park developer)]

400/220/33 kV Substation of Power Grid Corporation of India Limited (PGCIL) at Ananthapuramu I Solar Park

Figure 2: Kurnool and Ananthapuramu I Solar Parks, Andhra Pradesh, Phase I

[3] ***As of March 2024, a total of 64,415 MW Ground Mounted Solar Plants have been installed under various schemes of Centre, State/Private entrepreneurs. This includes 11,491 MW capacity Solar Parks.***

1.2.2 Solar Parks Phase II

In March 2017, MNRE launched Phase II of the Solar Parks Scheme, titled 'Solar Parks and Ultra Mega Solar Power Projects'. It aimed to establish at least 50 Solar Parks, each with a capacity of 500 MW or more, thereby targeting a 40,000 MW of installed capacity of solar power, including the Solar Parks sanctioned under Phase I. These Solar Parks were slated for completion by 2019-20.

The Scheme also encompassed the possibility of setting up Ultra Mega Solar Power Projects[4] within these Solar Parks, which could either be integrated into existing Solar Parks or stand alone as individual Ultra Mega Solar Power Projects.

As per the Scheme, the park to be taken up for development was to be of capacity of 500 MW and above. However, smaller parks in Himalayan and other hilly states, where contiguous land could have been difficult to acquire in view of the difficult terrain, were also to be considered. Further, smaller parks were also to be considered in States/Union Territories (UTs) where there was an acute shortage of non-agricultural lands.

1.3 Implementation arrangements

The implementation arrangement for the Scheme was designed to facilitate the development of Solar Parks across India. The agencies and their roles were as described below.

(i) **Solar Power Park Developer (Park Developer):** The States/UTs applying under this Scheme will have to designate an agency for the development of Solar Park. The agency identified for the development of Solar Parks shall be termed as Park Developer for the purpose of this report. Solar Parks were envisaged to be developed in various modes as indicated in ***Annexure I.***

(ii) **Nodal Agency of MNRE:** Solar Energy Corporation of India (SECI) and Indian Renewable Energy Development Agency (IREDA) were designated as the nodal agencies of MNRE and were responsible for administering the Scheme as per its guidelines. These Central PSUs also managed the funds made available under the Scheme.

(iii) **State Nodal Agency:** MNRE programmes were implemented in close coordination with the State Nodal Agencies for renewable energy.

[4] ***Single power project with capacity of over 500 MW.***

Before releasing financial assistance to the Park Developers, the State Nodal Agencies were required to ensure that the following activities had been completed.

- Submission of a Detailed Project Report (DPR) within the prescribed timeframe;
- Identification and physical survey of land, including soil testing;
- Tendering of water supply system and road connectivity;
- Follow up with the State Government on formation of State Level Committee for monitoring of Solar Parks;
- Development of a Solar Park and other common facilities as per DPR;
- Initiation of work for road, water facilities and other common facilities;
- Obtaining connectivity approval from State Transmission Utility/Central Transmission Utility and verification of the charging of pooling substations and internal transmission lines;
- Verification of the total project cost by requesting full details from the Park Developer; and
- Selection of a solar project developer.

1.4 Financial Support and Outlay

As per the Scheme guidelines, the State Government was initially required to nominate the implementing agency (Park Developer) for the Solar Park and also identify the land for the proposed Solar Park. It was then to send a proposal to MNRE for approval along with (or later) the name of the implementing agency. The implementing agency could be sanctioned a grant of up to ₹25 lakh for preparing Detailed Project Report (DPR) of the Solar Park, conducting surveys, *etc.*

Thereafter, application was to be made by the implementing agency to SECI for grant of up to ₹20 lakh/MW or 30 *per cent* of the project cost including grid-connectivity cost, whichever was lower. This grant was apportioned in the ratio of 60:40, *i.e.,* ₹12 lakh per MW or 30 *per cent* of the project cost, whichever was lower was to be provided to the Park Developers towards development of internal infrastructure of the Solar Parks and ₹8 lakh per MW or 30 *per cent* of the project cost, whichever was lower, was to be provided to the Central or State Transmission Utility towards development of external transmission system of the Parks.

The estimated cost of the Scheme was ₹8,100 crore as detailed below.

Table 2: Estimated Cost

Sl. No.	Particulars	(₹ in crore)
1.	Cost of 40,000 MW @ ₹20 lakh/MW	8,000.00
2.	One *per cent* of the above amount as fund handling fee for SECI	80.00
3.	Cost of DPR preparation for 50 Solar Parks @ ₹25 lakh each park	12.50
4.	Consultancy and other related expenditure (to be incurred by MNRE, SECI, implementing agency)	7.50
	Total	**8,100.00**

1.5 Why we chose the topic?

MNRE had targeted to establish 40,000 MW capacity in various Solar Parks across India by 31 March 2020. However, the Scheme timeline was extended up to March 2026. As of May 2022, 16 Solar Parks with an installed capacity of 10,068 MW (25 *per cent*) had been established. Taking note of the significant shortfall in achieving targets under this component of the National Solar Mission and its criticality in meeting the commitments made by the Government under the Paris Agreement, *i.e.*, to achieve about 50 *per cent* cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 and its linkage to SDGs, the Performance Audit on Solar Parks was conducted.

1.6 Audit Objectives

The Performance Audit on Solar Parks examined whether

(i) the objective of establishment of 40,000 MW capacity Solar Parks was achieved and the establishment of Solar Parks was linked to the commitments made by India in the Paris Agreement[5]?

(ii) there was adequate planning and coordination amongst various designated entities for the implementation of the Scheme for Development of Solar Parks of 40,000 MW capacity?

(iii) the Solar Parks were established as per the timelines and funds were properly utilised?

(iv) there was effective monitoring and review of the implementation of Solar Parks?

1.7 Audit Sample

As of 31 March 2022, a total of 61 Solar Parks[6] with allocated capacity of 40,000 MW had been sanctioned by MNRE to be established in 16 States and these were at various stages of implementation.

(i) Sample of States

Our sample included eight States with the largest allocation of capacity, *i.e.*, Gujarat, Rajasthan, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Karnataka, Himachal Pradesh and

[5] ***As per the commitment made in the Paris Agreement, at least 50 per cent of the electric power generation capacity was to be generated from clean energy sources by the year 2030.***

[6] ***Excluding allocated projects that were cancelled prior to 31 May 2022.***

Maharashtra. Meghalaya was also selected for the purpose of this audit to have representation from the States in the North-Eastern region of the country. In terms of capacity allocated, the selected sample aggregated to 38,196 MW, *i.e.,* 95.49 *per cent* of the targeted 40,000 MW.

(ii) Sample of Solar Parks to be developed by Solar Power Park Developers

All the 45 Solar Parks in the nine selected States were included in the sample. These were at various stages of implementation. The details of selected Solar Parks in each of the nine States are provided in ***Annexure II***.

1.8 Audit scope and methodology

Performance Audit was conducted for the period 2017-18 to 2021-22. However, the report has been updated up to 31 March 2024. While the Ministry of New and Renewable Energy was responsible for overall policy formulation, direction and monitoring, various other agencies at the Centre and State level were engaged in actual implementation of the Scheme. The list of agencies audited is given below.

(i) Ministry of New and Renewable Energy (MNRE) and Ministry of Power (MoP)

(ii) Solar Energy Corporation of India (SECI)

(iii) Power Grid Corporation of India Limited (PGCIL)

(iv) Indian Renewable Energy Development Agency (IREDA)

(v) State Nodal Agency/State Designated Agency

(vi) Solar Power Park Developers (Park Developers)

(vii) Solar Project Developers (Project Developers)

(viii) Generation Companies (GENCOs)

(ix) State Transmission Utility (STU)- TRANSCOs (Transmission Companies)

(x) Distribution Companies (DISCOMs)

Audit held an Entry Conference with MNRE and Ministry of Power on 2 December 2022. Representatives of SECI, IREDA, PGCIL, Central Transmission Utility and Central Electricity Regulatory Commission (CERC) also attended the meeting. The Audit objectives, methodology and time frame of the Performance Audit were shared with the auditees in the entry conference. The draft Audit Report was issued to the Ministry on 21 July 2023 and their response was received on 20 October 2023. An Exit Conference was held on 10 August 2023 with the Ministry to discuss the Audit findings, conclusions and Audit recommendations. Second set of replies on the draft report was received from the Ministry on 31 July 2024. The

comments/replies of the Ministry on Audit observations have been suitably incorporated in the Audit Report.

1.9 Audit criteria

The following are the sources of Audit criteria:

(i) Cabinet Note of 2014 and 2017 for Solar Parks;

(ii) Rules/Guidelines/Regulatory Frameworks/Office Memoranda (OMs) related to implementation of Solar Parks;

(iii) DPRs for establishment of Solar Parks;

(iv) Power Sale Agreements and Power Purchase Agreements signed by Project Developers including tariff; and

(v) Agreements between Park Developers and External Transmission Development Agencies, *viz.,* Central or State Transmission Utility.

1.10 Structure of the Audit Report

The Audit Report comprises five chapters including the introductory chapter. Chapter II contains issues relating to planning and coordination. In Chapter III, we have discussed the implementation of Solar Parks and Solar Power Projects in Phase I and Phase II of the Scheme. Chapter IV deals with financial management while Chapter V has reports on Monitoring and Review.

1.11 Acknowledgement

Audit acknowledges the cooperation extended by MNRE, Ministry of Power, SECI, State Nodal Agencies, Park Developers, Project Developers, PGCIL and other audited entities during the course of the Performance Audit.

Chapter II: Planning and Coordination

2.1 Solar Potential of India

The Solar Potential Map of India was prepared by the National Institute of Solar Energy (NISE)[7] in the year 2014. It provided a comprehensive assessment of solar energy potential across the Indian States. The map was based on the assumption that approximately three *per cent* of wasteland in each state, as documented in the Wasteland Atlas of India[8] 2010, could be utilised for solar power projects. It further considered an average solar photovoltaic (SPV) module efficiency of 15 *per cent*.

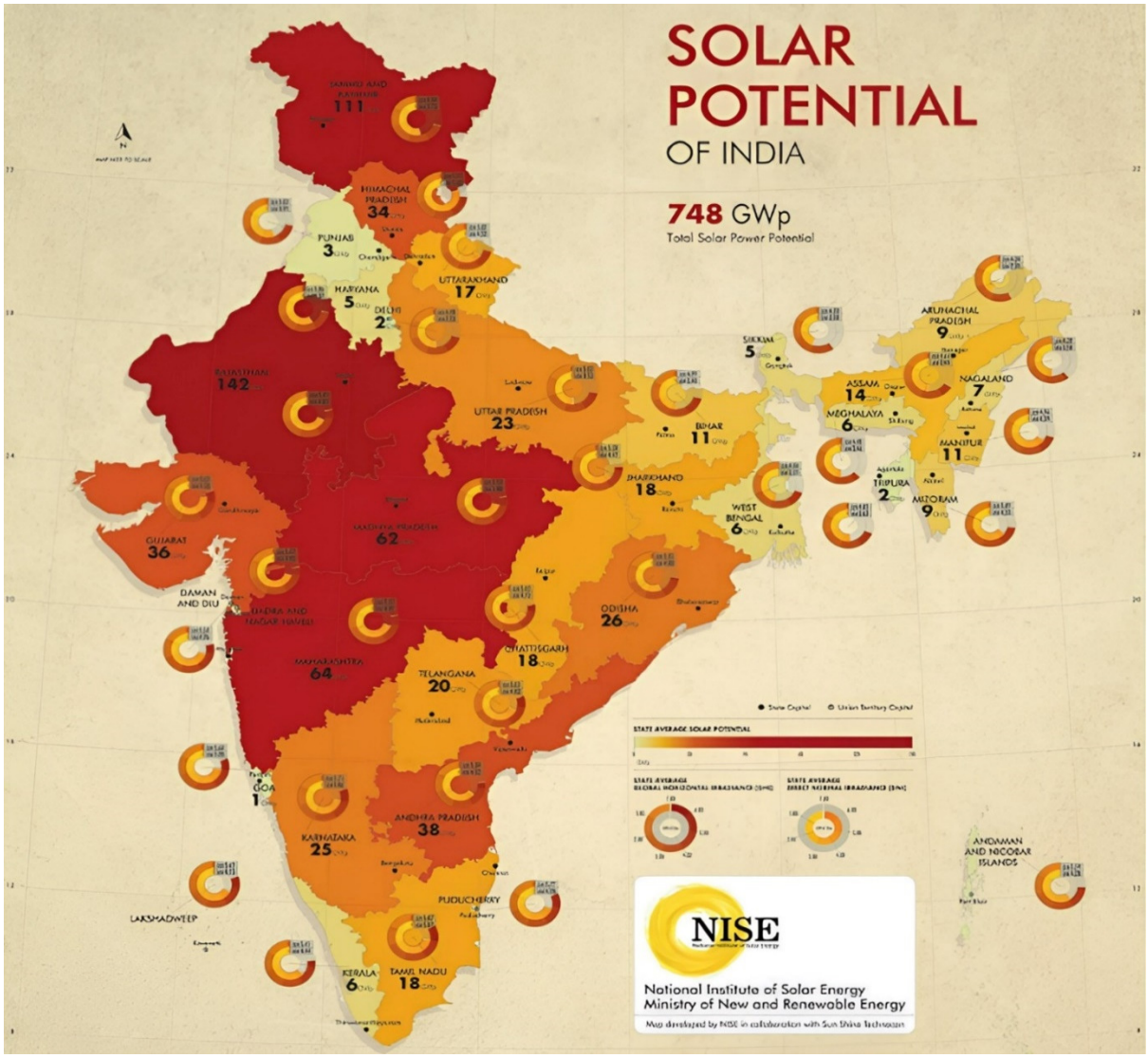

Figure 3: Solar Potential Map of India

[7] *NISE is an autonomous specialised institute under the MNRE.*
[8] *Issued by the Department of Land Resources, Ministry of Rural Development.*

2.1.1 Non updation of Solar Potential Map of India

Department of Land Resources under the Ministry of Rural Development had released an updated Wasteland Atlas of India in 2019. Further, the average efficiency of SPV modules had witnessed a notable increase from 15 *per cent* (2014-15) to 19-22 *per cent* (2023-24). Audit, however, observed that MNRE/NISE did not incorporate these advancements into the country's solar potential assessment. An updated Solar Potential Map would have proven invaluable for States/UTs governments, MNRE as well as potential investors in the sector.

MNRE (October 2023) affirmed that NISE in collaboration with the National Remote Sensing Centre was engaged in upgrading the Solar Potential Map of India. MNRE, in July 2024, further stated that the report on India's Solar Potential Assessment will be finalised by August 2024. However, no action had been taken as of March 2025.

2.2 Planning – Targets and Achievement

The Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects was a significant instrument for achieving the 2030 target of the Renewable Energy Programme of the country.

Initially (December 2014), the Scheme aimed to support solar power projects meant to generate 20,000 MW of solar energy across the country by the end of 2018-19. By 2016-17, the entire 20,000 MW had been assigned to States and Park Developers. The Scheme was revised in 2017 with an enhanced target of 40,000 MW by the end of 2019-20. To achieve this target, MNRE committed to establish Solar Parks as per the following time schedule.

Table 3: Milestones Time frame

Time frame for completion	Major milestone (MW installed capacity)
By 2016-17	Completion of 1,000
By 2017-18	Completion of 13,000
By 2018-19	Completion of 20,000
By 2019-20	Completion of 6,000
Cumulative capacity creation	**Targeted 40,000 MW**

Based on the proposals received from the States, a total of 61 Solar Parks[9] were allocated (40,000 MW) to 16 States/UTs as of 31 March 2022 as given below.

Table 4: Allocation of Solar Parks with capacity

Sl. No.	Name of the State	Capacity allocated (MW) (31 December 2022)	No. of Solar Parks allocated (31 December 2022)
1.	Gujarat	12,025	7
2.	Rajasthan[10]	7,036	10

[9] ***Excluding allocated projects that had been cancelled prior to 31 March 2022.***

[10] ***Two Solar Parks of 800 MW and 510 MW allocated to Rajasthan Rajya Vidyut Utpadan Nigam Ltd. at Poogal were merged by MNRE into one Solar Park of 1,310 MW capacity in August 2022.***

Sl. No.	Name of the State	Capacity allocated (MW) (31 December 2022)	No. of Solar Parks allocated (31 December 2022)
3.	Madhya Pradesh	6,080	9
4.	Andhra Pradesh	4,200	5
5.	Uttar Pradesh	3,805	7
6.	Karnataka	2,500	2
7.	Himachal Pradesh	1,280	2
8.	Maharashtra	1,250	3
9.	West Bengal and Jharkhand[11]	989	2
10.	Odisha	340	3
11.	Jharkhand	180	5
12.	Kerala	155	2
13.	Chhattisgarh	100	1
14.	Mizoram	20	1
15.	Meghalaya	20	1
16.	Manipur[12]	20	1
Total		**40,000**	**61**

Of these, 19 Solar Parks with capacity of 12,866 MW were approved during 2014-17 (Phase I) and 42 Solar Parks were approved between 2017 to 2022 (Phase II) with capacity of 27,134 MW.

2.2.1 Non achievement of targets

The table below indicates a comparison of the targets and achievements in terms of Solar Power capacity installed in Solar Parks (Phase I and II) in the nine sampled States and remaining seven non-sampled States.

Table 5: Capacity Installed

Sl. No.	Name of sampled States	Capacity allocated (MW) (31 March 2022)	Revised capacity allocated (MW) (31 March 2024)	Capacity installed (MW) (*per cent*) (31 December 2022)	Capacity installed (MW) (*per cent*) (31 March 2024)
1.	Gujarat	12,025	12,150	800 (6.65 %)	1,000 (8.23%)
2.	Rajasthan	7,036	9,568	2,901 (41.23 %)	3,091 (32.31%)
3.	Madhya Pradesh	6,080	4,780	1,000 (16.45%)	1,650 (34.51%)
4.	Andhra Pradesh	4,200	4,200	3,050 (72.62 %)	3,050 (72.62%)
5.	Uttar Pradesh	3,805	3,840	266 (6.99 %)	430 (11.20%)
6.	Karnataka	2,500	2,500	2,050 (82%)	2,050 (82%)
7.	Himachal Pradesh	1,280	53	Nil	Nil

[11] ***There were two Floating Solar Parks (755 MW and 234 MW) developed by Damodar Valley Corporation, which spread across the states of West Bengal and Jharkhand.***

[12] ***Cancelled during 2022-23.***

Sl. No.	Name of sampled States	Capacity allocated (MW) (31 March 2022)	Revised capacity allocated (MW) (31 March 2024)	Capacity installed (MW) (*per cent*) (31 December 2022)	Capacity installed (MW) (*per cent*) (31 March 2024)
8.	Maharashtra	1,250	1,105	Nil	Nil
9.	Meghalaya	20	Nil	Nil	Nil
	Sub -Total (A)	**38,196**	**38,196**	**10,067 (26.35 %)**	**11,271 (29.51 %)**
	Non-Sampled States: Sub-Total (B)	**1,804**	**1,804**	**100 (5.54%)**	**220 (11.85%)**
	Total (A+B)	**40,000**	**40,000**	**10,167 (25.41%)**	**11,491 (28.60%)**

From the above, Audit observed that,

i. In July 2018, MNRE extended the timelines for achievement of 40,000 MW under the Solar Parks Scheme from 2019-20 to 2021-22. In March 2021, MNRE again extended these timelines by two years, *i.e.*, up to 31 March 2024. In June 2023, the timelines were further extended up to March 2026. Thus, MNRE could not achieve its targets within the committed timelines and extended these thrice (by six years).

ii. Within the nine sampled States, MNRE managed to commission only 29 *per cent* of the allocated capacity under Solar Parks over a period of more than nine years, spanning from December 2014 to March 2024. With merely 24 months remaining to achieve the current target (April 2024 to March 2026), the task of commissioning the remaining 28,509 MW within the targeted timeline appears to be very challenging.

iii. Amongst the nine sampled States, the best performing States in respect of establishment of Solar Park capacity were Karnataka (82 *per cent*) and Andhra Pradesh (72.62 *per cent*). Projects in Himachal Pradesh, Meghalaya and Maharashtra were unviable propositions as these were found non-feasible/stalled after being approved.

2.2.2 Deficiencies in the process of approval of project

As per the Scheme guidelines, interested parties (Park Developers) were required to submit the proposal for Solar Park to the State/UT Government in the prescribed format. The State/UT Government would then designate the Park Developer as the implementing agency for the Solar Park and identify suitable land for the proposed project. Subsequently, the proposal, along with the name of the Park Developer would be forwarded to MNRE for 'in-principle' approval. Audit analysis of cancelled/stalled projects in Himachal Pradesh, Meghalaya and Maharashtra revealed the following shortcomings in the scrutiny and approval process.

A. Himachal Pradesh

The two cancelled projects of Himachal Pradesh are discussed below.

(i) Kaza Solar Park

In June 2015, the Government of Himachal Pradesh proposed the establishment of a 1,000 MW Solar Park in Spiti valley, District- Lahaul and Spiti[13] by Himachal Pradesh State Electricity Board Limited [HPSEBL (Park Developer)]. The project was envisioned as a significant step towards harnessing the region's abundant solar energy potential. Land measuring 2,525 hectares was identified for the project and the proposal received 'in-principle' approval from the MNRE in September 2015.

To assess the project's feasibility, a Committee comprising HPSEBL, Himachal Pradesh Energy Development Agency [HIMURJA (State Nodal Agency)][14] and Himachal Pradesh Power Transmission Corporation Ltd. was formed in September 2015. The Committee conducted a joint site inspection in October 2015 and identified several challenges, including the scattered nature of the land and the loose rocky terrain. They recommended conducting a detailed geological study to determine the suitability of the terrain for establishing transmission interconnections. However, this study was not undertaken. HIMURJA, in December 2015, again raised concerns about the techno-economic viability of setting up Solar Parks in remote and tribal areas, though large tracts of wasteland were available there. In light of these challenges, the MNRE cancelled the proposed 1,000 MW Solar Park in February 2019.

In response to the MNRE's renewed request (July 2020) for States/Central Public Sector Undertakings (CPSUs) to submit proposals for establishing Power Projects, HIMURJA submitted a proposal (August 2020) for the 1,000 MW Kaza Solar Park project in Spiti Valley, which was subsequently approved by MNRE (September 2020). The Park Developer for the project was Satluj Jal Vidyut Nigam Limited [SJVNL (Park Developer)].

Audit observed that HIMURJA, despite its own assessment of techno-economic non-viability of the project resubmitted the proposal without addressing the concerns raised in the previous feasibility study, indicating a lack of rigour in the appraisal process. It was also imprudent on the part of MNRE to sanction the same Solar Park which it had cancelled earlier ignoring the limitations that were on record. In addition to the techno-economic unviability, the proposal

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[13] ***Locations were in Kaza and nearby areas.***

[14] ***Himachal Pradesh Energy Development Agency was set up during the year 1989 and is responsible for promotion and sustainable development of renewable energy in Himachal Pradesh. HIMURJA is designated as the State Nodal Agency for Kaza and Kinnaur Solar Parks in Himachal Pradesh.***

was also not feasible due to existence of a Wildlife Sanctuary in the identified area. The fact was taken note of at a later stage as was evident from the fact that SJVNL requested (July 2021) MNRE to reduce the capacity of the Solar Park from 1,000 MW to 880 MW due to less availability of land since the site fell within the boundary of the wildlife sanctuary.

(ii) Kinnaur Solar Park

HIMURJA (State Nodal Agency) submitted a proposal to MNRE in June 2021 for the development of the 400 MW Kinnaur Solar Park by SJVNL (Park Developer). However, the proposal was incomplete, lacking crucial details such as site map, satellite image, location of the site on the map, *etc.* In response, MNRE instructed Himachal Pradesh Energy Development Agency in July 2021 to provide these details and to submit the revised proposal. Subsequently, the State Government again endorsed the revised proposal of Solar Park along with requisite details to MNRE and it was approved 'in-principle' by MNRE in February 2022. Audit revealed that no pre-feasibility study or techno-economic viability assessment of the 400 MW Kinnaur Solar Park was conducted prior to the proposal's submission. Additionally, the rationale for selecting the site was also not documented in the relevant file.

Both proposals, *viz.*, Kaza and Kinnaur Solar Parks were envisaged within forest areas and were required to adhere to the provisions of the Forest Conservation Act, 1980, regarding the diversion of forest land for non-forest purposes. MNRE should have verified land details from revenue records before giving in-principle approval for these solar parks. As such, both projects could not commence due to non-compliance with the Compensatory Afforestation clause. SJVNL/State Government applied for exemption from this clause, but the Ministry of Environment, Forest and Climate Change declined to grant the exemption on the grounds that the proposed activities in the forest area appeared to be non-site specific and therefore, could not be permitted within forest areas (December 2022).

Both Solar Parks were subsequently cancelled in April 2023 by MNRE due to issues regarding forest land and slow progress under these Parks.

MNRE accepted that the Kaza Solar Park was cancelled in 2019 on account of slow progress (July 2024). The non-viability of the project was never conveyed by HPSEBL to MNRE. However, after introduction of Mode Eight[15] Ultra Mega Renewable Energy Power Parks of the Solar Park Scheme, SJVNL, one of the CPSUs took interest and submitted a proposal

[15] ***Under Mode Eight, Central or State Public Sector Undertaking/Government organisation/their subsidiaries or the joint ventures of above entities can act as Park Developer.***

through the State Government. By that time, a transmission system was also under planning on account of another Hydro project. While submitting the proposal, as per the requirement of Solar Park Scheme, the State Government had confirmed that the land had been identified for the same. But the Ministry was not aware of the fact that the identified land was falling under forest area at the time of proposal and it became known to them only at a later stage.

Ministry accepted the suggestion of Audit that the land identified should be free from any constraints which may impede the development such as forest clearances for the site identified for the Park.

B. Meghalaya

In December 2014, the Meghalaya Power Department submitted a proposal from the Meghalaya Power Generation Corporation Limited [MePGCL (Park Developer)] to establish a 20 MW Solar Park (10 MW each at Suchen and Thamar) in the East and West Jaintia Hills district of Meghalaya. MNRE granted 'in-principle' approval for the project in September 2015.

Subsequently, in July 2018, the Meghalaya Government expressed concerns about the economic viability of the proposed Solar Park. They cited the relatively low average generation tariff of ₹2.50 per kWh for electricity generated from their existing hydroelectric power stations, a renewable energy source. In contrast, the projected cost of solar power from the proposed Solar Park was estimated to be around ₹5.00 per kWh.

The records revealed that MePGCL had floated a tender in November 2020 for the selection of Project Developer. Due to lack of bidder participation, the deadline for bid selection and bid opening was extended three times, to 17 December 2020, 14 January 2021 and 29 January 2021. However, even with the extended time frame, no bidders participated in the tender process. In October 2022, seven years after approval, the Meghalaya Solar Park was cancelled by MNRE.

MNRE stated (July 2024) that it was aware of the challenges of setting up Solar Parks in the North-Eastern region. It further stated that lower tariffs of ₹2.50 per unit were generally from older hydro-plants and the tariffs from any new hydro-plants setup to meet the additional demand were generally much higher (around ₹5.00 per unit).

This reply should be considered in light of the fact that establishment of Solar Park was expected to be planned keeping local conditions of the region in view.

C. Maharashtra

In Maharashtra, two of the three Solar Power Parks were to be developed under Mode Four[16]. These were the only two projects to be developed entirely by private agencies. As on date, both are stalled. Audit findings in both cases are summarised below.

(i) 500 MW Patoda Solar Park

In December 2015, MNRE accorded 'in-principle' approval for setting up of Solar Park of capacity 500 MW at Patoda in Beed District, Maharashtra. M/s Paramount Solar Power Private Limited (Park Developer) submitted the first DPR in April 2016 which was revised seven times up to September 2019. The DPR was revised based on the request (March 2018) for implementing the Park in two phases of 250 MW each by the Park Developer, besides issues raised by Solar Energy Corporation of India (SECI) and MNRE. Subsequently, the Park Developer reverted to setting up of Solar Park of capacity 500 MW in one phase in March 2019. The DPR was finally approved in January 2020 with the plan to develop the complete Solar Park for 500 MW.

In December 2020, MNRE requested the Park Developer to acquire the entire 2,500 acres of land and develop the Solar Park for the entire allotted capacity of 500 MW by 31 March 2021. In June 2021, MNRE approved the extension of the timeline up to 31 December 2021 for selecting Project Developers, acquiring sufficient land for the Solar Parks and transferring the land in the name of the Project Developer. The Park Developer intimated (October 2021) Maharashtra Energy Development Agency [MEDA (State Nodal Agency)] that it had acquired 770.84 acres of land. Government of Maharashtra formed (November 2021) a Committee for checking the current status of Solar Park, all records and physical visit at site, *etc.* The above Committee physically inspected the Patoda Solar Park in November 2021 and submitted its report through MEDA to Government of Maharashtra in January 2022. The Committee recommended cancellation of the Solar Park due to incomplete physical and technical progress of the project and non-commitment of the Park Developer regarding acquisition of remaining land. Subsequently, the Park Developer intimated (October 2022) that it had acquired 1400 acres of land to develop 500 MW capacity Solar Park. In October 2022, MEDA informed MNRE that the Park Developer had documentary proof of acquiring only 770 acres of land as against the claim of acquiring 1,400 acres. MEDA further intimated that the Park Developer had not submitted any documentary evidence for identification of Project Developer, which

[16] ***Under Mode Four, private entrepreneurs with/without equity participation from the State Government can act as Park Developers.***

was required for granting time extension and hence, MNRE cancelled the project in October 2022 due to the non-acquisition of the requisite land and the non-identification/selection of a Project Developer. In December 2023, based on a request by the State Government, the park was re-approved for a capacity of 250 MW.

MNRE agreed with the Audit observation and stated in July 2024 that the Detailed Project Report (DPR) for the 500 MW Solar Park at Patoda was revised multiple times because the Park Developer could not bring the contents of the DPR in line with the Scheme requirements.

The fact remains that the project remains undelivered even after a lapse of more than eight years since its 'in-principle' approval.

(ii) 500 MW Dhule Solar Park

In September 2015, M/s Sai Guru (Park Developer) gave an Expression of Interest to the Government of Maharashtra for installation of 500 MW Solar Park in Dhule, Maharashtra. The proposal was forwarded (September 2015) to Maharashtra Energy Development Agency [MEDA (State Nodal Agency)] by the Government of Maharashtra for their recommendation under Solar Park Scheme. The Government of Maharashtra sent a proposal (September 2015) to MNRE for which, 'in-principal' approval was also granted by MNRE on the same day, with a request to submit the formal proposal in the prescribed format.

In March 2016, Park Developer submitted a DPR, which was then forwarded to MNRE through Solar Energy Corporation of India (SECI) in April 2016. MNRE granted administrative approval to the project in June 2016. In November 2017, MNRE advised SECI to recover the Central Financial Assistance along with accrued interest due to the lack of progress on the Solar Park project. As the Park Developer did not respond, MNRE, in March 2018, requested the Park Developer to submit a revised DPR with supporting documents for acquisition of at least 50 *per cent* of the required land and to reduce the Solar Park's capacity due to land constraints. However, the Park Developer neither submitted the revised DPR nor produced any documents supporting the land acquisition, prompting MNRE to blacklist the Park Developer in July 2019.

MNRE concurred with the Audit observation and stated (July 2024) that in this case, as per the Scheme guidelines of 2014, ₹4.35 crore was released to the Park Developer for development of the Solar Park and preparation of DPR. Further, the development of the Park was not taken up by the Park Developer even after receiving the funds. Instead, the Park Developer siphoned off the funds in his other accounts to settle different loans, *etc.* and never returned in spite of various requests. Ultimately, Ministry lodged a First Information Report with the Economic

Offences Wing and their two directors were arrested. During the court proceedings, the High Court of Delhi directed M/s Sai Guru to refund the entire fund to MNRE. M/s Sai Guru authorised MEDA to transfer money out of their pending payments. As a result, MEDA could recover ₹2.17 crore which was pending at their end. The matter was sub-judice and the recovery of the balance was under process.

2.3 Non-identification of suitable sites

The Solar Parks initiative involved collaboration between State Governments and their agencies. As per the Cabinet note, the State Government was responsible for identifying suitable land for a Solar Park, unless the Park Developer had its own land. The Park was to have at least five acres per MW to accommodate solar projects. To secure a large tract of contiguous land with adequate insolation levels, the State Government was to prioritise the use of government wasteland to expedite the land acquisition process.

The Cabinet Note encouraged states to identify sites with favourable solar radiation and proximity to the Central Transmission Utility, preferably locations with spare transmission capacity and water availability. MNRE was requested to provide information relating to identification of such sites based on the criteria. MNRE responded that this information was not maintained by MNRE and was handled by Park Developer/Project Developer/Central Transmission Utility/State Transmission Utility.

The primary reason for the non-establishment of the required capacity of Solar Parks/Projects was the non-availability of the requisite amount of land or delays in land acquisition. This issue has been discussed in previous paras with reference to cancelled projects and in further detail in *para 3.1* of *Chapter III*.

However, it was noteworthy that some states had taken commendable initiatives to identify suitable sites and land which resulted in successful completion of Solar Parks. A few good practices are highlighted below which need to be considered across the states for establishment of Solar Parks:

Good Practices

Karnataka: Karnataka Renewable Energy Development Ltd. [KREDL (State Nodal Agency)] invited Expression of Interest *vide* notification dated 16 September 2014, from six districts, *viz.*, Chitradurga, Tumkur, Ballary, Kalburgi, Bidar and Raichur to setup a Solar Park. Considering the response, site visits of Gulbarga District and Pavagada Taluk of Tumkur District were conducted by KREDL. As landowners of villages of Pavagada Taluk, Tumkur District voluntarily expressed their willingness to lease out about 11,000 acres land, the site was selected for development of Solar Park. The Pavagada Solar Park Project was completed as envisaged. The Government of Karnataka waived (August 2019) the land conversion fee and accordingly, Karnataka Solar Power Development Corporation Limited [(KSPDCL (Park Developer)] received (February 2020) a refund of ₹19.49 crore.
Rajasthan: Rajasthan Renewable Energy Corporation Limited, [RRECL (State Nodal Agency)] for Solar Parks, requested (23 February 2015) all District Collectors of Rajasthan to provide the details of government land which could be utilised for the establishment of Solar Parks or solar power projects. Based on the inputs, a tentative list of government land available for setting up of solar projects in four districts of Barmer, Bikaner, Jaisalmer and Jodhpur was uploaded on the website of the State Nodal Agency.
Gujarat: In case of Raghanesda, Dholera and Khavda Solar Parks, Government wasteland was utilised. Further, Raghanesda Solar Park was the first solar park under "Solar Parks and Ultra Mega Solar Power Projects Scheme" in Gujarat which got successfully commissioned and has been running at its full capacity of 700 MW.

2.4 Conclusion

An updated Solar Potential Map of India is yet to be prepared. There were issues relating to identification of wasteland for installation of projects, establishment of Solar Parks without conducting pre-feasibility/geological studies and requirement of forest clearance, *etc*. While in case of Kaza Solar Park, the establishment of the Solar Park was taken up without conducting a detailed geological study to determine the suitability of the terrain for establishing the transmission interconnections, in case of Kinnaur Solar Park, pre-feasibility studies or techno-economic viability assessment of the Solar Park was not conducted prior to the submission of the proposal. Similarly, the establishment of Patoda and Dhule Solar Parks was taken up without ensuring availability of adequate land. In the case of Dhule Solar Park, recovery of ₹2.17 crore remains outstanding from the Park Developer. Project in Meghalaya was approved

without ensuring the economic viability. These shortcomings had a detrimental effect on the projects, eventually leading to their stalling/cancellation.

2.5 Recommendations

1. ***MNRE/National Institute of Solar Energy may undertake reassessment of the solar potential of the country, with reference to the current scenario of wasteland availability, efficiency of SPV modules, etc.***
2. ***MNRE may plan the establishment of Solar Parks based on thorough feasibility studies that factor in local conditions and challenges.***
3. ***MNRE in collaboration with states may prepare a detailed plan to identify wastelands and government lands for setting up Solar Parks.***

MNRE in its response stated that the recommendations are noted and all states/UTs will be advised to consider factors like solar potential, availability of wasteland for preparation of respective renewable energy plans. MNRE was in the process of bringing the next phase of the Scheme for development of renewable energy parks and these recommendations would be suitably incorporated.

Chapter III: Establishment of Solar Parks

Solar Parks are designated areas for solar projects offering developers assured land and infrastructure, reducing risks and streamlining approvals. MNRE launched the Solar Park Scheme in two phases to establish 40,000 MW solar capacity nationwide. Phase I launched in December 2014 aimed for 20,000 MW by the year 2018-2019 and Phase II launched in March 2017 targeted at least 50 parks with 500 MW each, contributing to the 40,000 MW goal by 2019-2020. Smaller parks were allowed in hilly states or land-scarce areas.

In the nine sampled States, MNRE had allotted 45 Solar Parks with a total capacity of 38,196 MW. As of March 2024, 14 of these Solar Parks with installed capacity of 11,271 MW had been established. Audit findings on the creation of Solar Parks in each of the two phases are discussed below.

3.1 Establishment of Solar Parks under Phase I (2014-17)

Under Phase I of the Solar Park Scheme, MNRE sanctioned 18 Solar Parks[17] in eight States selected for audit. The State wise status of Solar Parks (Phase I) sanctioned[18] as on March 2024 was as given below.

Table 6: State wise status of Solar Parks (Phase I) sanctioned as on 31 March 2024

Sl. No.	Name of State (Location)	No. of Solar Parks allocated (Capacity in MW)	No. of Solar Parks completed	Capacity installed in MW[19]	No. of Solar Parks stalled/ cancelled (Capacity in MW)	No. of Solar Parks ongoing (Capacity in MW)
1.	**Gujarat** (Raghanesda)	1 (700)	1	700	0	0
2.	**Rajasthan** (Bhadla II, Bhadla III, Bhadla IV, Phalodi-Pokhran: Phalodi – 400 MW and Phokhran – 350 MW and Fatehgarh)	5 (3,351)	4	2,901	0	1 (450) Phalodi-Pokhran
3.	**Madhya Pradesh** (Rewa, Mandsaur)	2 (1,000)	2	1,000	0	0
4.	**Andhra Pradesh** (Ananthapuramu-I, Kurnool, Kadapa and Ananthapuramu-II)	4 (3,900)	3	3,050	0	1 (850) Kadapa[20]

[17] *The Audit observations concerning the stalled/cancelled Parks from the sampled Parks are discussed in Para 2.2.2 of Chapter II.*
[18] *Excluding allocated projects that had been cancelled prior to 31 March 2024.*
[19] *Details of installed capacity of each Solar Park are given in Annexure II.*
[20] *Out of 850 MW, 750 MW pertains to Kadapa Solar Park and 100 MW pertains to Ananthapuramu-II. Ananthapuramu-II Solar Park was established in February 2019, however capacity for 100 MW was yet to be commissioned.*

Sl. No.	Name of State (Location)	No. of Solar Parks allocated (Capacity in MW)	No. of Solar Parks completed	Capacity installed in MW[19]	No. of Solar Parks stalled/ cancelled (Capacity in MW)	No. of Solar Parks ongoing (Capacity in MW)
5.	**Uttar Pradesh** (UP Solar Park)	1 (365)	1	365	0	0
6.	**Karnataka** (Pavagada)	1 (2,000)	1	2,050	0	0
7.	**Maharashtra** (Dondaicha, Patoda, Dhule)	3 (1,000)	0	0	2 (750) Patoda, Dhule	1 (250) Dondaicha
8.	**Meghalaya** (Suchen and Thamar)	1 (20)	0	0	1 (20) Suchen and Thamar	0 (0)
	Total	**18 (12,336)**	**12**	**10,066**	**3 (770)**	**3 (1,550)**

It is evident from the table above that out of 18 Solar parks allocated during Phase I, 12 (10,066 MW capacity) Solar Parks have been completed by 31 March 2024 as against the original target of 31 March 2019 and three parks of 770 MW capacity were stalled/cancelled. Three projects of 1,550 MW capacity are ongoing as of 31 March 2024.

3.1.1 Adherence to milestones by Solar Parks allocated in Phase I (2014-2017)

MNRE's guidelines (December 2014) that regulated Phase I (2014-17) project allocations stipulated an overall timeline of 18 months for completion of Solar Parks with the following milestones.

Table 7: Milestones of Solar Parks development

Milestones for Phase I	Timelines
Date of issue of administrative approval	Zero date
Submission of DPR	60 days from zero date
Land acquisition and Financial Closure	Six months from zero date
Construction of pooling substation, land development and other common facilities as per DPR	15 months from zero date
Transmission line and grid connectivity and final instalment on completion	18 months from zero date

Audit analysed the process flow in these Solar Parks and noticed delays at different stages, as depicted in the table below.

Table 8: Delays at different stages in Phase I

(Delay in months)

Sr. No.	Name of Solar Park	Delay in submission of DPR	Delay in Land Acquisition	Delay in achieving Financial Closure	Delay in completion of pooling station, land development *etc.*	Delay in Transmission and grid connectivity
1.	Kurnool	0	15	0	13	8
2.	Ananthapuramu-I	0	15	0	56	28
3.	Ananthapuramu-II	17	2	25	21	16
4.	Kadapa	16	5	34	26	24
5.	Raghanesda	9	49	105	64	50

Sr. No.	Name of Solar Park	Delay in submission of DPR	Delay in Land Acquisition	Delay in achieving Financial Closure	Delay in completion of pooling station, land development *etc*.	Delay in Transmission and grid connectivity
6.	Bhadla II	0	0	0	12	8
7.	Bhadla III	4	5	25	36	33
8.	Bhadla IV	2	0	6	27	24
9.	Phalodi-Pokhran	23	23	30	84	81
10.	Fatehgarh	31	35	91	53	48
11.	UP Solar Park	9	3	82	0	93
12.	Pavagada	7	5	7	32	39
13.	Dondaicha	13	9	73	69	66
14.	Mandsaur	16	0	18	53	1
15.	Rewa	36	53	36	50	47

The details of these Solar Parks and delays (March 2024) are in ***Annexure III*** as well.

The varying degrees of delays observed throughout the lifecycle of these Solar Parks underscore significant challenges in their implementation. Delays in the submission of DPR, ranging from two months to 36 months points to inadequate planning, which subsequently affected the achievement of the milestones that followed. Similarly, delays in land acquisition, spanning two months to 53 months, had cascading effects on site development activities such as road construction, drainage and internal pooling stations. Furthermore, only three out of the 15 Solar Parks of Phase I managed to achieve timely financial closure, with the remaining recording delays ranging from six months to 105 months. These delays not only introduced uncertainties in project costs but also hindered progress towards various project milestones. The delay in completion of pooling stations, ranging from 12 months to 84 months, resulted in logistical mismatches between scheduled commissioning of external transmission systems and internal transmission systems, often leading to transmission charges and penalties. Moreover, delays in transmission and grid connectivity, ranging from one month to 93 months, posed significant challenges, particularly when internal evacuation networks were ready but external evacuation networks lagged behind, resulting in the loss of generated solar power. In essence, the array of delays encountered across different stages of these Solar Parks highlight the formidable obstacles faced during implementation. Issues surrounding DPR processing, land acquisition, financial constraints and evacuation infrastructure complexities collectively contributed to the notable setbacks observed in the timely progression of the Solar Parks Scheme.

Audit examined the Solar Park projects in Phase I with reference to these stages and guidelines set by MNRE and detailed findings in two case studies of these parks are illustrated below.

3.1.2 Case Studies of Solar Parks in Phase I

Audit examined cases with substantial delays of four to five years in setting up of Solar Parks along with the reasons to illustrate the cumulative effect of the delays in achieving individual milestones as pointed out above. Audit findings are discussed below.

A. Uttar Pradesh Solar Park

In December 2014, MNRE granted 'in-principle' approval for the establishment of a 600 MW Solar Park in Uttar Pradesh to the Lucknow Solar Power Development Corporation Limited [LSPDCL (Park Developer)], a joint venture between the Solar Energy Corporation of India (SECI) and the Uttar Pradesh New and Renewable Energy Development Agency [UPNEDA (State Nodal Agency)]. Initially, LSPDCL was allotted a capacity of 600 MW across four locations[21]. However, in October 2015, UPNEDA informed MNRE that the land identified in Sonbhadra (160 MW) was unsuitable due to rockiness, prompting a request to reduce the Park's capacity from 600 MW to 440 MW at four locations. MNRE accepted this reduction in June 2017, allocating capacities of 50 MW in Prayagraj, 75 MW in Mirzapur, 50 MW in Kanpur Dehat and 265 MW in Jalaun. The DPR for 440 MW was submitted by Park Developer in November 2015. Again, MNRE in October 2022 cancelled 75 MW of capacity at Jalaun due to the unavailability of Project Developer, resulting in further reduction of the Solar Park's capacity to 365 MW. This highlights shortcomings in the initial feasibility assessment conducted by both the Park Developer and SECI/MNRE. Additionally, Audit findings revealed delays in achieving key milestones such as DPR submission (nine months), financial closure (82 months) and external transmission system construction (20 months to 93 months), indicating inefficiencies and challenges faced during the project's implementation as detailed below.

(i) Delay in preparation and submission of DPR

In accordance with the Scheme guidelines, the DPR was to be submitted by February 2015. Audit observed that the DPR was eventually submitted by LSPDCL in November 2015, nine months behind schedule. MNRE, in January 2017, after a lapse of more than one year from receipt of DPR, requested revisions for depicting only internal infrastructure costs. Despite subsequent requests in May and July 2017 for further modifications, the revised DPR incorporating changes was submitted finally in December 2017.

[21] ***Prayagraj, Mirzapur, Sonbhadra and Jalaun.***

MNRE while forwarding LSPDCL's reply stated (July 2024) that in the DPR, evacuation infrastructure was proposed to be constructed by Power Grid Corporation of India Limited [PGCIL (Central Transmission Utility)]. The LSPDCL had submitted requisition for grant of connectivity in due time, but refusal from PGCIL for going ahead with construction of pooling station and related evacuation infrastructure was received only in December 2016. Therefore, the DPR had to be revised in January 2017 because of the delay in receiving consent from the State Transmission Utility for construction of evacuation infrastructure. It further stated that the delay occurred due to unforeseen conditions arising due to refusal by PGCIL after a lapse of one year from submission of DPR.

The response needs to be viewed in light of the fact that these projects are inherently complex in execution and the timelines being set by MNRE should act as a guiding milestone after factoring in the complexities involved. Even when mid-course adjustments are required, the project timelines should not be extended unreasonably, particularly when an upfront financial support was being provided under the Scheme for the preparation of DPR.

(ii) Delay in achievement of financial closure

As per the established timeline, the target for financial closure was originally set for June 2015. However, Audit observed that it was achieved in April 2022, indicating a delay of approximately seven years.

MNRE, while forwarding LSPDCL's (Park Developer) reply stated (July 2024) that the Park Developer had not taken any loan for the Solar Park Project and financial closure was achieved through one time development charges collected from the successful bidders and grant from MNRE. It further stated that financial closure for 165 MW[22] was achieved in November 2016 whereas for the remaining 200 MW, the financial closure milestone was achieved by March 2022.

Financial closure is necessary at the initial stages of the project execution to ensure fund availability for seamless execution of project. The impact of delay in financial closure on delay in completion of external evacuation infrastructure is discussed in the succeeding para.

(iii) Delay in construction of external transmission line by Uttar Pradesh Power Transmission Corporation Limited (State Transmission Utility)

As per MNRE guidelines, the work of transmission line and grid connectivity was to be completed by June 2016. Uttar Pradesh Power Transmission Corporation Limited [UPPTCL

[22] ***Prayagraj (50 MW), Mirzapur (75 MW) and Jalaun (40 MW).***

(State Transmission Utility (STU)] was assigned with the work of construction of internal infrastructure and external power evacuation system with scheduled date of completion as November 2017. Audit observed that there was a delay in construction of external transmission line by UPPTCL (STU) in UP Solar Park while the Solar Power plants were ready for commercial production, leading to a loss of generation of energy[23].

MNRE while forwarding LSPDCL's (Park Developer) reply stated (July 2024) that work for construction of external transmission line from each project/location could be placed with STU after selection of Developer for that particular location/project. The Park Developer has not taken any loan for the Solar Project and financial closure is achieved through one-time development charges collected from the successful bidder and grant from MNRE. The external transmission line for 165 MW capacity was completed in February 2018 after a delay of 20 months and thereafter, for the remaining 200 MW at Jalaun (150 MW) and Kanpur (50 MW), the work of external transmission line was taken up only after the selection of Project Developer in 2021. The said work had been completed in March 2024 after a delay of 93 months.

The reply needs to be viewed in light of the fact that even though Project Developers were ready for power generation, construction of external transmission lines system was delayed. Furthermore, the dependence on one-time development charges for funding of construction of transmission lines needs to be viewed in conjunction with delays in financial closures. Timely financial closure, irrespective of the source of funding, is essential for execution of projects as per the targeted timelines.

B. Raghanesda Solar Park, Gujarat

Gujarat Power Corporation Limited [GPCL (Park Developer)] submitted a proposal (November 2014) to MNRE for setting up of 700 MW capacity Solar Park in Raghanesda, Gujarat. The 'in-principle' approval for the Solar Park was granted by MNRE in December 2014 with the completion date of the project as June 2016. However, the Solar Park was established in July 2021 with an overall delay of over five years. There were delays in the achievement of each milestone, *i.e.,* DPR (nine months), acquisition of land (49 months), construction of internal pooling sub-station (64 months) and external transmission system (50 months). The financial closure had not been achieved by Park Developer even after a delay of 105 months. The stage wise delay with reasons were as below.

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[23] ***Project Developer intimated to Park Developer in December 2017 that 50 MW Solar Power project at Prayagraj was ready for commissioning on 7 July 2017 (original commercial operation date), but due to non-readiness of external power evacuation infrastructure, there was a loss of energy of 41,243 MWh from 7 July 2017 to 20 December 2017.***

(i) Delay in submission of Detailed Project Report

As per the Scheme guidelines, DPR was to be submitted by January 2015. In May and July 2015, MNRE asked GPCL (Park Developer) to submit the status regarding submission of DPR, identification, acquisition of land and financial closure and requested to submit the DPR before 14 August 2015. Meanwhile, MNRE (September 2015 and November 2015) reviewed the progress of the Solar Park. GPCL submitted the DPR to MNRE on 27 November 2015, *i.e.*, after a delay of nine months. MNRE in January 2016, requested the Park Developer to submit the revised DPR for consideration of release of central grants. GPCL submitted the final DPR to SECI in March 2016.

MNRE, while forwarding (July 2024) GPCL's (Park Developer) reply stated that the delay in submission of DPR was due to non-finalisation of execution modalities. The economic viability of various plot sizes was also explored, wherein initially it was planned to have a small number of plots with bigger size *vis-à-vis* a large number of plots with small capacity and finally it was decided to have seven plots of 100 MW each. It further stated that techno-commercial evaluation of certain infrastructure design works, like earthen bund, had also taken considerable time. The reply indicates that there was lack of examination of all aspects on the part of Park Developer, while preparing the original DPR, which led to delay in submission of final DPR.

(ii) Delay in acquisition of land

As per the timelines, land acquisition was to be completed by June 2015, *i.e.*, within six months from the 'in-principle' approval. Audit, however, observed that physical possession of land was taken by GPCL (Park Developer) in July 2019, *i.e.*, after a delay of more than four years. Reasons for delay are discussed below.

a. The process of shifting of the Gauchar land[24] caused a delay of 210 days[25], indicating a lack of communication and coordination among revenue authorities.
b. There was no progress in the measurement of the plot allotted to GPCL (Park Developer) by revenue authorities from December 2016 to November 2017 causing a delay of 360 days.
c. Lack of coordination between GPCL (Park Developer) and revenue authorities about the way out for conducting measurement of land caused a delay of 41 days[26].

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[24] ***Cattle grazing land is called Gauchar land.***
[25] ***From the date when GPCL was informed (23 February 2016) about the existence of a Gauchar survey number till the date (20 September 2016) Mamlatdar, Vav sent (20 September 2016) the proposal to Deputy Collector Tharad for shifting the Gauchar land.***
[26] ***From the date of joint meeting held on 10 April 2018 among the Company, the officials of Settlement Commissioner and Land Regulation till the measurement taken on 22 May 2018.***

d. There were series of protests from the villagers which affected the project for the period from May 2018 until July 2019 when the measurement was completed. This caused a delay of more than a year.

MNRE, while forwarding (July 2024) GPCL's (Park Developer) reply stated that the land was close to the Rann of Kutch, which was entirely unsurveyed. It further stated that land records for the Gauchar land were reviewed and due to the protests from the Gram Panchayat and nearby villages, the Gauchar land was reallocated.

(iii) Non achievement of financial closure

As per timelines, the financial closure was to be achieved by June 2015. Audit, however, observed that the financial closure had not been achieved till March 2024, *i.e.*, even after a delay of about nine years.

MNRE, while forwarding (July 2024) GPCL's (Park Developer) reply stated that complete 700 MW capacity had been commissioned. Due to some technical issues Gujarat Energy Transmission Corporation Limited [GETCO (State Transmission Utility)] had built an Air Insulated Substation (rather than a standard Gas Insulated Substation) as a stopgap device for evacuating solar power. This had a significant impact on substation costs. It further stated that financial closure of the project could not be completed as the Gas Insulated Substation was under process and GPCL (Park Developer) managed all expenses of the Park from its own funds.

The reply may be viewed in the light of the fact that the financial closure confirms the arrangement of 90 *per cent* of the total project cost by the Park Developer at the onset of the project (within six months from approval) based on the project design. Subsequent implementation challenges or changes in technology and the impact of costs of the same do not have any bearing on the initial financial closure.

(iv) Delay in construction of pooling sub-station

As per the Scheme timelines, construction of pooling sub-station was to be completed by March 2016. In view of criticality of power evacuation system, it was decided (June 2017) to entrust the work of setting up of 220/33 kV Gas Insulated Substation pooling substation at Raghanesda as deposit work to GETCO (State Transmission Utility). However, due to double taxation, the work of creation of 220/33 kV Gas Insulated Substation was taken by GPCL (Park Developer) on its own with technical support from the stage of execution till commissioning from GETCO (March 2019).

Audit observed that there were delays in the completion of the project by the contractor and therefore, GETCO decided (August 2020) to carry out evacuation work as its own project. In view of the expected commissioning of solar projects at Raghanesda, GETCO (State Transmission Utility) gave approval (November 2020) to construct a 220/33 kV Insulated Substation till completion of Raghanesda Gas Insulated Substation as a stopgap arrangement. The Air Insulated Substation was commissioned in July 2021. However, commissioning of Gas Insulated Substation was still pending for more than eight years.

MNRE while forwarding the GPCL's (Park Developer) reply (July 2024) stated that the advanced possession of the required land was given to GPCL by the Competent Authority in July 2019. Further, to evacuate 700 MW solar power generated by various developers/ generators, GETCO (State Transmission Utility) had planned 33/220 kV Gas Insulated Substation as a deposit work to GPCL (Park Developer). The Letter of Intent was issued by GETCO (State Transmission Utility), however, due to some legal issues, the execution work was badly affected and GETCO (State Transmission Utility) developed an Air Insulated Substation as a stopgap arrangement for evacuating solar power.

Therefore, while the Air Insulated Substation established as an interim arrangement is working, the commissioning of Gas Insulated Substation was still pending for more than eight years.

(v) Delay in construction of external power evacuation infrastructure

As per the Scheme guidelines, the transmission line and grid connectivity of Solar Park was to be completed by May 2016. However, there was a delay of more than four years in the completion of grid connectivity.

Scrutiny of records revealed that, in January 2015, the work of construction of transmission lines was assigned to PGCIL (Central Transmission Utility). However, award of supply of goods and services were carried out by PGCIL belatedly during the period May 2017 to December 2017. Resultantly, the transmission line work was completed in August 2020 after a delay of 50 months.

MNRE stated (July 2024) that it was important to match the timelines of the projects coming up in the Solar Park and commissioning of external transmission system without readiness of projects was an infructuous investment. However, the fact remains that PGCIL delayed the award of works contracts which had a cascading effect on completion of transmission lines and grid connectivity.

Reasons submitted by the Ministry for delay in achieving different milestones of the Phase I Projects may be considered in the context that these projects are inherently complex in execution and presumably, MNRE prescribed the timelines after factoring in the complexities involved. The delays at each stage of implementation were significant and pervasive. Therefore, it was incumbent upon all agencies to proactively work towards achieving these timelines and expeditiously find solutions to challenges as these were encountered. During the Phase-I implementation, the scheme guidelines did not prescribe for formation of committees at State Level to monitor and expeditiously resolve issues in implementation as they arise. Such mechanism was, however, created for Phase-II projects. This has been discussed in detail in Chapter-V.

3.2 Establishment of Solar Parks Phase II

MNRE launched Phase II of the Solar Parks Scheme in March 2017 to establish 40,000 MW of installed capacity of solar power, including the Solar Parks sanctioned under Phase I. Taking the learnings from Phase I forward, MNRE modified the Scheme in February 2019, revised the timelines for development of Solar Parks and introduced additional milestones for better monitoring. The overall timeline for completion of Solar Park was revised from 18 months to 24 months. The following table indicates a comparative view of new timelines with Phase I timelines.

Table 9: Seven stage milestones

Milestones	Timeline for milestones from zero date (December 2014 timeline) Phase I	Timeline for milestones from zero date (February 2019 timeline) Phase II
Date of issue of administrative approval	Zero date	-
Date of issue of 'in-principle' approval	-	Zero date
Submission of DPR from date of release of Central Financial Assistance of ₹25 lakh for DPR	2 months	-
Submission of DPR	-	4 months
Land Acquisition and Financial Closure	6 months	-
Land Acquisition (not less than 50 *per cent* land acquired)	-	8 months
Financial Closure	-	11 months
Award of work for pooling stations		14 months
Construction of Pooling Substation, Land Development and other Common facilities as per DPR	15 months	-
Receipt of material on site for pooling stations		17 months
Transmission line and Grid Connectivity and Final instalment on completion	18 months	-
Completion of construction of pooling stations and land development	-	24 months

From the above table, it is evident that for Phase II of the Scheme, MNRE projected slightly liberal timelines, based on the experience of implementation in Phase I. The timelines for milestones, such as DPR, land acquisition, financial closure and pooling stations/common facilities were increased by two months to nine months.

The table below indicates the state wise details of the 27 projects in eight states selected for audit, sanctioned in Phase II for cumulative capacity of 25,600 MW and the status of the projects.

Table 10: State wise status of Solar Parks (Phase II) sanctioned (as on 31 March 2024)

Sl. No.	Name of State (location)	No. of Solar Parks allocated (Capacity in MW)	No. of Solar Parks completed	Capacity (in MW) installed in completed parks of Phase II	Cancelled (Number/ Capacity in MW)	Ongoing (Number/ capacity in MW)
1.	**Gujarat** [Khavada (5 Solar Parks) and Dholera]	6 (11,450)	0	300	0	6 (11,150)
2.	**Rajasthan** [Poogal (3 Solar Parks), Nokh]	4 (4,925)	0	190	0	4 (4,735)
3.	**Madhya Pradesh** (Agar, Shajapur, Neemuch, Omkareshwar, Chhatarpur, Barethi, Morena)	7 (3,780)	1 (Agar)	650	0	6 (3,130)
4.	**Andhra Pradesh** (Ramagiri)	1 (300)	0	0	0	1 (300)
5.	**Uttar Pradesh** (Jalaun, Kalpi, Chitrakoot, Mirzapur, Jhansi, Lalitpur)	6 (3,365)	1 (Kalpi)	65	0	5 (3,300)
6.	**Karnataka** (Kalburgi)	1 (500)	0	0	1 (500)	0
7.	**Himachal Pradesh** (Kaza, Kinnaur)	2 (1,280)	0	0	2 (1,280)	0
8.	**Maharashtra**	0	0	0	0	0
	Total[27]	**27 (25,600)**	**2**	**1,205**	**3 (1,780)**	**22 (22,615)**

As can be seen from the table, only two of the Solar Parks sanctioned in Phase II have been completed. The delay in achievement of various milestones as fixed by MNRE in case of 27 Solar Parks sanctioned in Phase II was as under and further details of these projects are given in ***Annexure IV***.

[27] *New parks sanctioned after May 2022 (date of sample selection) and before March 2024 in sampled States*

State	*Parks*	*Sanctioned Capacity(MW)*
Rajasthan	*Badona*	*1,292*
Himachal Pradesh	*Pekhubela*	*53*
Uttar Pradesh	*Kanpur Dehat Solar Park*	*35*
Uttar Pradesh	*Kanpur Nagar Solar Park*	*75*
Maharashtra	*Erai Floating Solar Park*	*105*

Table 11: Solar Park Milestones for Phase II Projects

Milestones	Projects with timely achievement	Delayed projects	Milestone not yet due in projects	Delay range (in months) till 31 March 2024
Submission of DPR from date of release of Central Financial Assistance of ₹25 lakh for DPR	4	23	0	One month to 27 months
Land acquisition	11	16	0	One month to 35 months
Financial Closure	6	17	4	12 months to 46 months
Construction of Pooling Substation, Land Development and other Common facilities as per DPR	1	12	14	One month to 65 months
Transmission line and Grid Connectivity and Final instalment on completion	1	12	14	One month to 62 months

The project wise delays in achieving different milestones, as per Scheme guidelines are given in the table below.

Table 12: Delays at different stages in Phase II

(Delay in months)

Sl. No.	Name of Solar Park	Delay in submission of DPR	Delay in Land Acquisition	Delay in achieving Financial Closure	Delay in completion of pooling station, land development, *etc.*	Delay in Transmission and grid connectivity
1.	Ramagiri	13	0	17	4	4
2.	Dholera	11	0	46	33	9
3.	Khavda 4750 MW	0	2	0	8	8
4.	Khavda 3325 MW	0	0	0	7	7
5.	Khavda Phase I	8	0	0	6	6
6.	Khavda Phase II	3	0	0	1	1
7.	Khavda Phase III	2	0	0	NA	NA
8.	Kaza Solar Park	16	Park cancelled			
9.	Kinnaur Solar Park	3	Park cancelled			
10.	Kalburgi Solar Park	1	Park cancelled			
11.	Agar	2	0	14	26	26
12.	Shajapur	2	0	14	26	26
13.	Neemuch	3	0	14	26	26
14.	Omkareshwar	16	0	15	18	18
15.	Chhatarpur	16	Park cancelled			
16.	Barethi	16	34	31	18	18
17.	Morena	Park was cancelled in April 2023. Solar Component of Solar Wind Hybrid Park was granted 'in-principle' approval in February 2024.				
18.	RSDCL – Poogal 1	6	17	14	1	1
19.	RSDCL – Poogal 2	5	16	13	0	0
20.	RRVUNL – Poogal	4	2	12	0	0
21.	Nokh	6	15	28	65	62

Sl. No.	Name of Solar Park	Delay in submission of DPR	Delay in Land Acquisition	Delay in achieving Financial Closure	Delay in completion of pooling station, land development, *etc*.	Delay in Transmission and grid connectivity
22.	Jalaun Solar Park (UMREPP)	7	35	31	18	18
23.	Solar Park in Lalitpur	1	31	30	17	17
24.	Solar Park in Jhansi	1	6	30	17	17
25.	Mirzapur Solar Park	0	28	25	12	12
26.	Solar Park in Chitrakoot	27	23	20	7	7
27.	Kalpi	0	0	0	0	0

The table above illustrates the diverse delays observed in solar power projects, emphasising the challenges that continued to affect their implementation. These delays need to be considered in light of the fact that Phase I implementation of the Scheme suffered delays at every stage of implementation. As a course correcting enabler, MNRE revised the guidelines with comparatively liberal timelines. However, the delays in Phase II implementation highlight the fact that for timely delivery of these projects, focus needs to be on concerted efforts from the agencies involved in the implementation of the projects and coordination amongst them.

Some of these cases with issues related to achievement of different milestones are discussed below.

A. Nokh Solar Park, Rajasthan

In July 2017, 'in-principle' approval was granted for the development of 1,000 MW Nokh Solar Park in Jaisalmer. This Solar Park was slated to be executed by the Rajasthan Solar Park Development Company Limited [RSDCL (Park Developer)], a wholly owned subsidiary of the Rajasthan Renewable Energy Corporation Limited (RRECL), established for Solar Park development in the government sector of Rajasthan. Initially, the Park's capacity was reduced to 980 MW in February 2018 following a request from RSDCL (Park Developer) in January 2018. Subsequently, due to land constraints and changes in connectivity to the PGCIL substation, the capacity was further reduced to 925 MW in April 2020, again at the request of the Park Developer.

(i) Delay in submission of DPR

Central Financial Assistance of ₹25 lakh for the preparation of DPR was released to RSDCL (Park Developer) in September 2017. Audit observed that submission of DPR was due in

November 2017 but the same was submitted in March 2018 with a delay of three months. This DPR for 980 MW was approved by MNRE in July 2018. However, the revised DPR for 925 MW was submitted in February 2020, which was approved by MNRE in April 2020.

MNRE forwarded the reply of RRECL/RSDCL (Park Developer) stating (July 2024) that due to land constraints and change of connectivity by PGCIL (Central Transmission Utility), the DPR was revised with a revision in capacity of the Solar Park.

(ii) Delay in land acquisition

As per the Scheme guidelines, land acquisition for the Solar Park was initially scheduled for January 2018 but was ultimately completed in April 2019, resulting in a total delay of 15 months. Audit observed that the Rajasthan Solar Park Development Company Limited [RSDCL (Park Developer)] had requested (June 2017) for allocation of 6,207 acres of land prior to the 'in-principle' approval of the Park by MNRE. After the survey, DPR was prepared and 5,292.33 acres were estimated to be required for setting up of the proposed Solar Park at Nokh. The request for allotment of the said land was made to the Collector, Jaisalmer in February 2018. In response, the District Collector of Jaisalmer recommended (July 2018) allocation of 3,740 acres of land only, citing existing plantation efforts by the Forest Department on the remaining land. Finally, 3,729 acres of land were allotted (February 2019) for which the land cost of ₹39.16 crore was deposited by RSDCL (April 2019) to Revenue Authorities.

MNRE forwarded the reply of RRECL/RSDCL (Park Developer) stating that (July 2024) the required land parcel for setting up of Solar Park was allotted in stages by the Government of Rajasthan.

However, as mentioned in *Para 2.2*, despite identifying availability of government land in Jaisalmer district, the land for Nokh project was allotted in stages, leading to delays.

(iii) Delay in financial closure

As per the Scheme guidelines, financial closure was due in January 2018, but the same was achieved in June 2020, after a total delay of 28 months.

MNRE forwarded the reply of RRECL/RSDCL (Park Developer), stating that (July 2024) financial closure could be ascertained after finalisation of terms with Project Developers, engagement of agencies for other infrastructure works and allotment of land to RSDCL (Park Developer).

(iv) Delay in pooling station work and transmission line

As per the timelines, the construction of pooling sub-station, land development and other common facilities were to be completed by October 2018 and transmission line and grid connectivity was to be achieved by January 2019. However, the pooling station work for Nokh Solar Park was yet to be completed, even after a delay of more than five years and grid connectivity was only partially completed.

MNRE forwarded the reply of RRECL/RSDCL (Park Developer) (July 2024) which attributed delays to delay on the part of PGCIL (Central Transmission Utility) in granting Stage-I Connectivity, COVID-19 pandemic, delay in allotment of land by the Government of Rajasthan, slow progress by the contractor in construction of Park's pooling substation and order passed by the Hon'ble Supreme Court pertaining to the Great Indian Bustard[28]. It was further added that the construction of transmission lines was completed. One pooling substation had been charged from PGCIL (Central Transmission Utility) Grid Sub Station and connectivity of 190 MW capacity was achieved in October 2023.

Hence, it is evident that while the establishment of pooling station was yet to be completed, grid connectivity for Nokh Solar Park was only partially accomplished.

B. Dholera Solar Park, Gujarat

In April 2018, Gujarat Power Corporation Limited [GPCL (Park Developer)], forwarded a proposal to MNRE for establishment of 5,000 MW capacity Solar Park at Dholera. MNRE initially gave 'in-principle' approval in May 2018 for setting up the same. Thereafter, on request (May 2019) of GPCL (Park Developer), MNRE bifurcated (June 2019) the Solar Park into two phases (1,000 MW and 4,000 MW) and conveyed the approval for 1,000 MW to the Department of Energy and Petrochemicals, Government of Gujarat for setting up of Solar Park under Mode One[29] at Dholera. Phase II of 4,000 MW was to be developed by Solar Energy Corporation of India (SECI) under Mode Seven[30]. As per the timelines issued by MNRE, the Solar Park was to be completed by June 2021, *i.e.*, within 24 months from the grant of

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[28] ***The construction of transmission lines for the Nokh Solar Park was impacted by a Supreme Court order dated 19.4.2021, I.A. No. 85618 of 2020 in Writ Petition (Civil) No. 838 of 2019 - M.K. Ranjitsinh and Ors. v/s. Union of India and Ors. The order mandated that all existing and future overhead power lines in the priority and potential habitats of the Great Indian Bustard were to be laid underground. Since Nokh Solar Park fell within a Great Indian Bustard potential habitat, RSDCL (Park Developer) on 12.5.2022, requested the Court-appointed Committee for permission to lay overhead transmission lines through the area, which was granted on 31.1.2023 with the condition that Bird Flight Diverters be installed as per the recommended guidelines. The construction of transmission lines was subsequently completed.***

[29] ***Under Mode One, the State designated nodal agency or a State Government Public Sector Undertaking or a Special Purpose Vehicle of the State Government acts as Park Developer.***

[30] ***SECI will act as the Solar Power Park Developer for Renewable Energy Parks.***

'in-principle' approval. However, till July 2024, the Solar Park was only partially commissioned. The stage wise delay is discussed below.

(i) Delay in submission of DPR

As per the timelines of MNRE for execution of projects in Phase II (February 2019), the DPR of the Park was to be submitted by October 2019, *i.e.*, within four months from the date of issue of 'in-principle' approval. However, Audit observed that GPCL (Park Developer) submitted DPR for 1,000 MW Dholera Solar Park to SECI in October 2020, *i.e.*, after a delay of 11 months. Further, SECI (November 2020) made observations on the DPR regarding availability of land and necessary permits and clearance, water availability for construction and running of power plants, transmission facility consisting of pooling station and Solar Park charges, *etc.* GPCL (Park Developer), in compliance with observations of SECI submitted revised DPR in July 2021, after eight months. Finally, the DPR was approved by MNRE in November 2021.

MNRE, while forwarding (July 2024) GPCL's (Park Developer) reply stated that delay in submission of draft report was due to capacity revision. It further stated that earlier plots of 50 MW each were decided, which was later revised to 100 MW each.

(ii) Non achievement of financial closure

As per the timelines, financial closure was to be achieved by May 2020, *i.e.*, within 11 months from the 'in-principle' approval. Audit, however, observed that it was not achieved till July 2024, *i.e.*, even after a delay of about 46 months.

MNRE while forwarding (July 2024) GPCL's (Park Developer) reply stated that the capacity of 300 MW was completed and commissioned by Tata Power Renewable Energy Limited, while the matter was sub-judice in the Appellate Tribunal for Electricity for remaining 700 MW and only few months back an order was received from the Appellate Tribunal. Keeping in view the order of Appellate Tribunal for Electricity, one developer was given consent to proceed with the project development. The developers for 500 MW, were not confirmed by Gujarat Urja Vikas Nigam Limited, which was to select the project developers. Hence, certain infrastructure works are still incomplete. Therefore, GPCL (Park Developer) had not achieved financial closure.

(iii) Delay in construction of pooling station and non-completion of common facilities

According to the project timelines, the construction of the pooling substations, land development and other common facilities was slated to be completed by June 2021, which equated to 24 months from the 'in-principle' approval. The planned Gas Insulated Substations

encountered delays and were substituted with Air Insulated Substations as a stopgap measure. These Air Insulated Substations were eventually completed in March 2022, marking a delay of nine months.

MNRE, while forwarding (July 2024) GPCL's (Park Developer) reply stated that the construction work of internal substation had been carried out by Gujarat Energy Transmission Corporation Limited [GETCO (State Transmission Utility)] on behalf of GPCL (Park Developer). It was further stated that GPCL (Park Developer) had not received possession of the entire land. Therefore, construction of pooling station and completion of common facilities was delayed.

However, the fact remains that timely acquisition of entire land was the responsibility of the Park Developer, the delay in which impacted this milestone.

Reasons submitted by the Ministry for delay in achieving different milestones of above mentioned Phase II Projects may be viewed keeping in mind that the timelines for execution of Phase II projects were revised based on learnings from the experience of Phase I projects. The continued inability to adhere to revised timelines questions the soundness of the review of the Scheme by MNRE and indicates that the core issue of ensuring focussed and coordinated effort by multiple agencies remained unaddressed. Though MNRE envisaged formation of State Level Committees for monitoring of the projects in Phase II Guidelines, the mechanism was found to be deficient for reasons discussed in Chapter V.

3.3 Issues relating to land

The Scheme stipulates that the Solar Park must have at least five acres (two hectares approximately) per MW towards installation of solar projects. Even though the Scheme insists upon minimum land required for these projects, there was no clarity on the reasonableness of the excess land acquired in many projects. As the cost of land acquisition contributed to the pricing of power to the end user, an unreasonable amount of land acquired by the projects was detrimental. Some of these issues in Madhya Pradesh and Karnataka are discussed below.

A. Karnataka

Karnataka Solar Power Development Corporation Limited [KSPDCL (Park Developer)] owned around 12,951 acres of land in five villages of Pavagada Taluk, Tumkur district of Karnataka. Out of this, 12,708.54 acres were acquired on a leasehold basis (rental land lease of ₹21,000 per acre per annum payable to land owners) and 142.32 acres were purchased by

KSPDCL (Park Developer). Out of this total leasehold land of 12,709 acres, KSPDCL (Park Developer) had identified 1,897.54 acres as unused land.

Audit noted that out of the unused land of 1,897.54 acres, 1,531.76 acres (723.41 acres consisting of areas of less than five acres and 808.35 acres measuring above five acres of land) could not be assigned to any Project Developer as it was not suitable for Solar Power Projects. KSPDCL (Park Developer) paid excess lease rent of ₹3.22 crore[31] per year due to this unused land. Furthermore, the financial implications of lease rent extended for the entire lease agreement period of 28 years are subject to a five *per cent* escalation every two years.

Even though acquiring uniform patches of usable land was challenging, detailed surveys for preparation of DPR were required to minimise acquisition of large tracts of unusable lands. The cost of land acquisition contributed to the total project development cost and was finally passed on to the end consumer. Thus, acquisition of large unusable land was avoidable.

MNRE, while forwarding the KSPDCL's (Park Developer) reply stated (July 2024) that KSPDCL had subleased 10,811 acres of land to Project Developers through land sublease agreements for setting up projects in Pavagada Solar Park. The Project Developers have paid the land lease charges to KSPDCL (Park Developer) from 2015-16 onwards.

However, the fact remains KSPDCL (Park Developer) had been paying rent for 1,898 acres of unusable land since 2015-16.

B. Rajasthan

Rajasthan Solar Energy Policy 2014 and 2019 provides that government land would be allotted to Solar Park/Solar Power Projects as per the provisions of Rajasthan Land Revenue (Allotment of Land for setting up of Power Plant based on Renewable Energy Sources) Rules 2007. The Park Developer shall be allowed to sub-lease the allotted land as per the Rules of 2007. Subsequently, in August 2014, Rule 12A was inserted which stated that for allotment of land to Rajasthan Renewable Energy Corporation Limited (RRECL) and Rajasthan Solar Park Development Company Limited [RSDCL (Park Developer)] for 99 years, premium was to be charged equivalent to 25 *per cent* of the prevailing District Level Committee rate of the same class of agricultural land in the vicinity. The lease rent was payable at ₹1 per acre per annum.

[31] ***Considering land lease rental of ₹21,000 per acre/annum (₹21,000*1,531.76 acres), payable to landowners by KSPDCL (Park developer).***

Audit observed that the Revenue Department of the Government of Rajasthan had allotted 4,441.50 acres of land to RSDCL for the Bhadla II Solar Park in January 2015. RSDCL (Park Developer) deposited ₹9.13 crore as land premium at the rate 25 *per cent* of the prevailing District Level Committee rate in March 2015. The Park Developer sub-leased 3,371.58 acres out of 4,441.50 acres land at Bhadla II Solar Park to the Project Developers as detailed in ***Annexure V***.

The prevailing District Level Committee rate for Bhadla II Solar Park was ₹1.22 lakh per acre and RSDCL (Park Developer) received ₹41.31 crore[32] as land premium from Project Developers against ₹9.13 crore paid by it on allotment by the Government of Rajasthan. Thus, sub-lease of land at Bhadla II at a higher land premium, *i.e.*, at the rate 100 *per cent* of District Level Committee rate had the effect of increasing the Solar Project cost by ₹4.56 lakh per MW as upfront land premium charges.

Audit further noticed that RSDCL (Park Developer) charged lease rent from Project Developers at the rate five *per cent* of land premium with five *per cent* escalation each year after initial two years, while it was paying land rent at the rate ₹1 per acre per annum. Thus, RSDCL (Park Developer) was collecting yearly lease rent[33] of ₹2.06 crore for Bhadla II. However, RSDCL (Park Developer) did not pass on the benefit of reduced lease rent to the Project Developers, which would have ultimately impacted the cost per unit of electricity produced.

The Ministry forwarded (July 2024) RSDCL's (Park Developer) reply stating that it had followed the Rajasthan Land Revenue Rules 2007 and amendments thereof, wherein RSDCL (Park Developer) had been empowered to recover charges as they themselves determined. Accordingly, RSDCL (Park Developer) recovered the charges as per prevailing District Level Committee rates. Regarding the contention of Audit that reduced land premium had the potential to reduce the cost of solar project and ultimately the tariff thereon, it was stated that the difference of 75 *per cent* of the District Level Committee rate was only around ₹31 crore which was 1.14 *per cent* of the total project cost of 680 MW, *i.e.*, around ₹2,720 crore. Hence, the impact on tariff was immaterial.

The reply is not tenable as it is silent about increasing the Solar Project cost by ₹4.54 lakh per MW as upfront land premium charges. Also, RSDCL (Park Developer) was collecting yearly

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[32] ***District Level Committee rate for Bhadla was revised (September 2015) from ₹82,176 per acre to ₹1,22,490.50 per acre.***
[33] ***Annual escalation of five per cent of lease rent after initial two years was not considered.***

lease rent[34] of ₹2.06 crore for Bhadla II, while it was paying land rent at the rate ₹1 per acre per annum. RSDCL (Park Developer) did not pass on the benefit of reduced lease rent to the Project Developers, thus putting yearly extra burden on Project Developers, which would have ultimately impacted the tariff during the entire period of agreement, however marginal it was.

3.4 Other Issues

Audit noticed other issues in implementation of Solar Parks, some of which are described below as case studies.

A. Karnataka (Pavagada Solar Park – 2,000 MW)

As per MNRE guidelines on the development of Solar Parks, Park Developer collects annual lease charges for the land leased and upfront charges as one-time park development expenses from the Project Developers. The entire 2,000 MW Solar Park was put into commercial operation by December 2019. Audit noticed the following deficiencies in establishment of the project.

(i) In February 2019, KSPDCL (Park Developer) requested MNRE to enhance the capacity of the Solar Park from its existing 2,000 MW capacity to 2,060 MW since Karnataka Renewable Energy Development Ltd. [KREDL (State Nodal Agency)], a joint venture partner, wanted to set up a solar project of 60 MW capacity in the park. MNRE in March 2019, denied the request stating that as per its administrative guidelines on the Solar Park Scheme, KREDL (State Nodal Agency), being a joint venture partner, could not set up a solar project and advised KSPDCL (Park Developer) to select a Project Developer through a transparent process of bidding.

However, Audit observed that KSPDCL (Park Developer) irregularly sub-leased (October 2019) 293.82 acres of land to KREDL (State Nodal Agency) and permitted it to set up a 50 MW solar project. Audit also observed a conflict of interest in KREDL (State Nodal Agency), being the co-owner of the Solar Park, setting up a solar power project even though MNRE had earlier denied the request.

MNRE, while forwarding KSPDCL's (Park Developer) reply, stated (July 2024) that KSPDCL (Park Developer) had not taken land from landowners exclusively for accommodating KREDL's (State Nodal Agency) 50 MW project but rather had handed over unutilised non-contiguous land of about 293.82 acres to KREDL (State Nodal Agency) for establishing decentralised generation.

[34] ***Annual escalation of five per cent of lease rent after initial two years was not considered.***

The reply needs to be viewed in light of the fact that due procedure for bids was not followed and prior approval from MNRE was not obtained.

(ii) According to the DPR, KSPDCL (Park Developer) was to charge an upfront fee of ₹27.27 lakh per MW for 2,000 MW from Project Developer. However, Park Developer charged ₹27.27 lakh per MW for 600 MW and ₹29.025 lakh per MW for the remaining 1,400 MW from Project Developer. This resulted in an extra collection of ₹24.57 crore by Park Developer for 1,400 MW.

MNRE, while forwarding KSPDCL's (Park Developer) reply (July 2024), stated that KSPDCL (Park Developer) had not obtained separate approval from MNRE for levying different upfront charges from different Project Developers.

Consequently, Park Developer's collection of increased upfront charges was not in accordance with MNRE's directive.

B. Madhya Pradesh: 750 MW Rewa Ultra Mega Solar Park

In July 2014, MNRE granted 'in-principal' approval to Rewa Solar Park of 750 MW capacity. The Solar Park was to be executed by a joint venture company, namely, Rewa Ultra Mega Solar Limited [RUMSL (Park Developer)], which had been constituted as a 50:50 joint venture between Solar Energy Corporation of India (SECI) and MP Urja Vikas Nigam Limited[35].

The Solar Park required the development of power evacuation infrastructure, including internal and external evacuation systems, to integrate the generated electricity into the power grid. RUMSL (Park Developer) was responsible for constructing the internal power evacuation system and PGCIL (Central Transmission Utility) was accountable for building the external power evacuation system. Both PGCIL and RUMSL were obligated to complete their power evacuation infrastructure projects by the projected solar power generation date.

PGCIL completed its external evacuation infrastructure and achieved commercial operation in July 2018. However, RUMSL could not meet its scheduled completion date of April 2018. With delays ranging from five months to 20 months, RUMSL eventually developed and commissioned its internal power evacuation infrastructure in December 2019.

According to the Central Electricity Regulatory Commission (CERC) (Sharing of Inter-State Transmission Charges and Losses) Regulation, 2010, the generator bears the cost of transmission charges until power generation commences, after which long-term transmission

[35] ***100 per cent Government of Madhya Pradesh owned company.***

consumers assume responsibility. Since PGCIL had successfully developed its evacuation infrastructure, CERC issued an order (November 2018) mandating the recovery of transmission tariffs in accordance with CERC (Sharing of Inter-State Transmission Charges and Losses) Regulation, 2010.

In adherence to this CERC tariff order, PGCIL issued transmission charges bills (January 2020) amounting to ₹14.42 crore to RUMSL for the period between evacuation infrastructure creation and generation commissioning. Consequently, RUMSL's delay in developing internal evacuation infrastructure resulted in non-provision of full capacity of the internal evacuation system to the Project Developers on time. This not only delayed power generation but also led to RUMSL paying ₹14.42 crore to PGCIL for transmission charges.

MNRE forwarded the reply of the Government of Madhya Pradesh/RUMSL, stating (July 2024) that the part commissioning of Rewa project was matching with commissioning of PGCIL's evacuation infrastructure. Further, there was a delay in commissioning of internal infrastructure due to various factors such as delay in disbursement of World Bank loan, absence of Line of Credit, land issues, lack of clarity over GST. Further, due to delay in RUMSL's internal evacuation infrastructure, there was no financial implication on Project Developers.

The reply needs to be viewed in light of the fact that factors contributing to delays on part of RUMSL (Park Developer) were operational issues such as GST issues, land issues, *etc.*, and could have been managed better to align with the creation of external evacuation structure by PGCIL.

C. Maharashtra: 250 MW Dondaicha Solar Park

Maharashtra State Power Generation Co. Ltd. [MAHAGENCO (Park Developer)] informed (July 2020) Maharashtra State Electricity Transmission Co. Ltd. [MSETCL (State Transmission Utility (STU))] to develop 220/33 kV Air Insulated Substation based pooling substation. Accordingly, MSETCL (STU) invited a tender in May 2021 and the work was awarded (December 2021), with a completion schedule of 12 months from the date of handing over of site by STU. As per the schedule of activity given in the Letter of Award issued (December 2021), it was mandatory for contractors to take possession of site within 30 days from the date of issue of Letter of Award. Audit, however, observed that the land was handed over only in April 2022 even though the land was in possession of STU since September 2017. Audit also observed that the revised completion date was 30 September 2024 and substation work was 90 *per cent* complete and line work was 60 *per cent* complete till 15 July 2024.

MNRE forwarded the reply of MSETCL (STU) (July 2024), which attributed delay to lack of clarity regarding the type of sub-station to be constructed, failure on part of MAHAGENCO (Park Developer) to give encumbrance free land to MSETCL at the time of actual project execution and non-payment of 100 *per cent* Scheme cost to MSETCL.

However, the fact remains that the STU had been in possession of the land since September 2017 and the Solar Park, which was approved in December 2015, could not be completed even after a lapse of more than eight years, despite its capacity being reduced to half.

3.5 Establishment of Solar Power Projects

Solar parks were vital in motivating Solar Project Developers to invest in renewable energy ventures. These designated zones enabled the establishment of solar power projects based on the demand and interest of developers. Projects could be undertaken through different Central, State, or UT government schemes, or developed for third-party sales or captive use.

Project Developers for projects within Solar Parks entered into Power Purchase Agreements (PPAs) with various entities, including Central Utilities, State Utilities, DISCOMs, Third Parties and Captive Users who were willing to purchase power from the developer(s). The tariff for the sale of power through PPAs was determined either based on Central Electricity Regulatory Commission[36] or State Electricity Regulatory Commission regulations or through a bidding process.

Audit examined the establishment of these solar power projects. Deficiencies noticed in a few instances are discussed in the succeeding paras.

A. Andhra Pradesh (Ananthapuramu II Solar Park- 400 MW)

Andhra Pradesh Solar Power Corporation Private Limited served as the Solar Park Project Developer (Park Developer) for the Ananthapuramu II Solar Park. Andhra Pradesh Power Generation Corporation Limited [(APGENCO (Project Developer)] awarded (May 2017) Engineering, Procurement and Construction (EPC) contracts, along with Operation and Maintenance (O&M) contracts for five years, for establishment of 400 MW power projects at the Ananthapuramu II Solar Park. These contracts were awarded through a tariff based competitive bidding to three contractors. The selection process involved contractors matching the lowest price of ₹2,07,64,805.41 per Million Units (MU) quoted in their respective bids.

[36] ***Ministry of Power vide Resolution dated 3 August 2017, had issued Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects. The objective of the guidelines was to promote competitive procurement of electricity from solar PV power plants by distribution licensees to protect consumer interests.***

Table 13: Details of Contracts

Name of the Contractor	MUs quoted in the Bid per 100 MW	Capacity awarded (in MW)	Plot numbers awarded[37]
M/s Vikram Solar	223	200	1 and 3
M/s Mc Nally Bharat Engineering Company Ltd.	200	100	4
M/s KEC	212.4	100	5

As per the bid documents (Notice Inviting Tenders), 178 MUs per 100 MW was the minimum annual generation, which translates into a minimum of 20.3 *per cent* of Capacity Utilisation Factor (CUF). The following are generation details from 2019-20 to 2021-22 in respect of the four plots.

Table 14: Details of Generation

Year	Plot No.1		Plot No.3		Plot No.4		Plot No.5	
	Actual MUs	CUF (*per cent*)	Actual MUs	CUF (*per cent*)	Actual MUs	CUF (*per cent*)	Actual MUs	CUF (*per cent*)
2019-20	215.07	24.55	213.02	24.32	162.53	18.55	203.5	23.23
2020-21	195.26	22.09	197.36	22.31	164.42	18.57	194.03	21.88
2021-22	187.32	21.41	188.85	21.59	149.92	16.98	186.89	21.35

(Including loss due to State Load Despatch Centre back down)

Audit observed that the 100 MW unit at Plot No. 4, awarded to M/s Mc Nally Bharat Engineering Company Ltd., had not achieved the minimum CUF of 20.3 *per cent* since its commercial operation date. Despite the inclusion of a requirement for minimum annual generation of 178 Million Units (MU) per annum per 100 MW in the Notice Inviting Tender, the O&M contracts lacked a penal clause for failing to meet this minimum generation target. Consequently, APGENCO (Project Developer) had no legal recourse to recover losses incurred due to the shortfall in generation, amounting to a total loss of 57.13 MUs from 2019-20 to 2021-22. This shortfall resulted in a revenue loss of ₹16.85 crore (57.13 MUs * ₹2.95 per unit) over the last three years.

APGENCO (Project Developer) acknowledged (March 2023) the Audit findings and committed to incorporating a penalty clause in future O&M contracts, given that the current contracts conclude in June 2024.

B. Madhya Pradesh

According to MNRE guidelines, the Solar Power Park Developer (Park Developer) was tasked with the Operation and Maintenance (O&M) of Solar Parks, recovering costs over 25 years on an actual cost basis without profit. Under the Implementation Support Agreement between

[37] ***Four plots of 100 MW each were commissioned and Plot no. 2 of 100 MW was not allocated.***

Rewa Ultra Mega Solar Limited [RUMSL (Park Developer)] and National Thermal Power Corporation (NTPC) for the Mandsaur Solar Park, NTPC (Project Developer) was obligated to pay annual operation and maintenance charges for evacuation infrastructure. This amounted to ₹51.29 lakh annually to be paid to RUMSL until the 220 kV lines to the permanent substation at Sitamau were ready (initial period). Subsequently, an additional ₹80.22 lakh would be paid annually to RUMSL after the infrastructure was operational, with no provision for escalation.

Audit observed that a separate tripartite agreement for O&M (December 2021) was executed among NTPC (Project Developer), RUMSL (Park Developer) and MP Power Transmission Company Limited [MPPTCL (State Transmission Utility)], the O&M contractor for the internal evacuation system of the Mandsaur Solar Park. As per this agreement, RUMSL (Park Developer) was to pay MPPTCL (State Transmission Utility) ₹51.29 lakh annually until the Sitamau substation's completion, increasing to ₹80.22 lakh annually thereafter. The O&M charges were subject to annual escalation of 10 *per cent* solely borne by RUMSL (Park Developer), as stipulated in the agreement.

The O&M charges for the Mandsaur Solar Park should have been borne by the Solar Power Developer (Project Developer) on an actual cost basis, either through direct execution of an O&M agreement with MPPTCL (State Transmission Utility-O&M contractor) by NTPC (Project Developer) or by reimbursing the actual O&M costs to RUMSL as per MNRE guidelines. Notably, RUMSL does not handle maintenance for other Project Developers in the Rewa Solar Park.

The arrangement for reimbursing O&M charges in the O&M agreement lacked provision for cost escalation over the 25-year period stipulated in the Implementation Support Agreement between RUMSL and NTPC, despite RUMSL paying escalating O&M charges to MPPTCL (State Transmission Utility-O&M contractor). MNRE, while forwarding the reply (July 2024) of the Government of Madhya Pradesh/RUMSL, stated that RUMSL (Park Developer) was exploring the option of reviewing the existing contract and may engage some other agency for O&M, to keep the O&M charges within the range of the receivable amount.

3.6 Conclusion

During 2014-17, MNRE allocated 18 Solar Parks[38] with a capacity of 12,336 MW for Phase I in eight states selected for audit. These were to be completed in 18 months from the date of 'in-principle' approval. However, there were delays in establishment of these Solar Parks and up

[38] ***Excluding cancelled Solar Parks and capacity reduction in others.***

to March 2024, 12 Solar Parks with a capacity of 10,066 MW were established, three Solar Parks of 1,550 MW capacity were still under implementation and three Solar Parks (770 MW) were stalled/cancelled. While, out of 45 Solar Parks in the nine sampled states, with a capacity of 38,196 MW, only 14 Solar Parks with a capacity of 11,271 MW were established up to March 2024. Overall slippage in achievement of milestones and consequent delays in completion of the Solar Parks was observed. Audit observed that even though MNRE guidelines presumably provided reasonable time frame for completion of various milestones, which should have led to completion of the projects as per timelines envisaged, there were challenges faced by projects in adhering to these guidelines. There were preventable delays such as (i) repeated revisions in Detailed Project Reports, which were not realistic in terms of availability of land, layout and technology despite the government financially supporting the exercise and (ii) delays in financial closure due to linking it up with generation of internal resources. There was no clarity on the reasonableness of the excess land acquired, which led to unnecessary expenses in the form of lease rent for such excess land. There were instances of projects approved irregularly, receipt of extra upfront fee of ₹24.57 crore without approval of MNRE in Pavagada Solar Park and unnecessary burden of ₹14.42 crore on account of payment of transmission charges due to delay in developing internal evacuation infrastructure in Rewa Ultra Solar Park. In the case of Ananthapuramu II Solar Park in Andhra Pradesh, contracts lacked a penal clause for failing to meet minimum generation target. Similarly, the O&M agreement entered into in Madhya Pradesh lacked provision for cost escalation for reimbursement of O&M charges.

Execution of projects in Phase I was marred by delays/non-achievement of various milestones set by the Ministry. Despite the Ministry revising the timelines for different milestones, this trend of delays/non-achievement of milestones continued in Phase II, putting into question the soundness of the review methodology adopted by the Ministry.

3.7 Recommendations

4. ***MNRE may ensure that the implementing agencies (Park Developer/Central Transmission Utility/State Transmission Utility) adhere to the guidelines for preparing the detailed project reports and the timelines for commissioning of the projects. If required, it should proactively engage with all concerned to resolve the issues.***

5. ***MNRE may consider issuing guidelines for the assessment of land required by Solar Parks and utilisation of the same may be reflected in DPRs.***

Chapter IV: Financial Management

4.1 Introduction

MNRE provided Central Financial Assistance under the Scheme, to promote the development of Solar Parks in the country. The grant, *i.e.*, Central Financial Assistance was managed and released by Solar Energy Corporation of India (SECI), on behalf of MNRE, for which SECI was given a fund handling fee of one *per cent* of the grant released. Central Financial Assistance at the rate of ₹25 lakh per Solar Park was released to Park Developer for preparation of DPR for the Solar Park, conducting surveys, *etc.* Besides this, Central Financial Assistance of up to ₹20 lakh per MW or 30 *per cent* of the project cost, including grid-connectivity cost, whichever was lower, was provided to Park Developer on achievement of various milestones of the Scheme. For release of requisite funds, the State Government had to send a formal proposal to MNRE.

MNRE had targeted to disburse Central Financial Assistance for an amount of ₹4,050 crore for Phase I of the Scheme[39] during the period 2014-15 to 2018-19, as detailed below.

Table 15: Targeted disbursement of funds

(₹ in crore)

Year	Targeted disbursement of fund
2014-15	500.00
2015-16	550.00
2016-17	600.00
2017-18	1,000.00
2018-19	1,400.00
Total	**4,050.00**

The Scheme was revised in 2016-17 with an increased allocation of ₹8100 crore (Phase II) up to 2019-20. However, in 2017, the Ministry revised the target for allocation of funds, as given below.

Table 16: Revised allocation

(₹ in crore)

Year	For first 20,000 MW capacity	For additional 20,000 MW capacity	Target of fund disbursement
2014-17	1,198.25	143.90	1,342.15
2017-18	1,515.55	984.45	2,500.00
2018-19	1,336.20	1,394.80	2,731.00
2019-20	0	1,101.90	1,101.90
2020-21	0	424.95	424.95
Total	**4,050.00**	**4,050.00**	**8,100.00**

Against the allocation, the year wise details of expenditure incurred by MNRE was as follows.

[39] ***Release against sanction in Phase I.***

Table 17: Details of expenditure

Year	Target *(₹ in crore)*	Amount released by MNRE *(₹ in crore)*	Percentage of amount released
2014-17	1,342.15	640.57	47.73
2017-18	2,500.00	430.26	17.21
2018-19	2,731.00	266.38	9.75
2019-20	1,101.90	227.44	20.64
2020-21	424.95	68.18	16.04
2021-22	0	207.33	-
2022-23	0	676.10	-
2023-24	0	715.50	-
Total	**8,100**	**3,231.76**	**39.90**

As per the initial proposal of Phase I Scheme, MNRE was to allocate ₹1,650 crore in the first three years (up to 2016-17), but only ₹640.57 crore (39 *per cent*) was actually released. Audit noticed that this trend continued in subsequent years also, with MNRE releasing only ₹3,231.76 crore (40 *per cent*) by March 2024, against the targeted expenditure of ₹8,100 crore. The shortfall in expenditure against targets was an indicator of the slow pace of implementation of the Solar Power projects.

Audit examined the process of fixing user development charges by Park Developer, cost estimates and general financial management of the projects. Some of the case studies are discussed in succeeding paras.

4.2 User Charges Determination Process

According to the Scheme guidelines (2014 and 2017), the implementing agency, *i.e.,* Park Developer, which was responsible for building the Park, was to develop the land and provide necessary infrastructure such as road connectivity, transmission infrastructure, *etc.* Significant investments were also to be made in the operation and maintenance of the Solar Park, including hiring staff and other activities like marketing. The entire cost of development, including the cost of land acquisition, was to form the total cost of the project, for which an estimate was to be prepared beforehand by the nodal agency. Based on this estimate, Park Developer was to formulate a recovery model in the form of user charges (one-time land charges, land lease rentals, power consumption charges, water charges, *etc.*) to ensure the sustainability of the Park. Audit observations related to two solar parks are given below.

A. Dondaicha Solar Park, Maharashtra

In November 2019, the Park Developer decided to delegate the internal power evacuation aspect of the project to Maharashtra State Electricity Transmission Co. Ltd. [(MSETCL) STU]. Subsequently, MSETCL awarded this responsibility to a firm in December 2021, which invoiced MSETCL for the services provided. However, the firm applied GST on the basic cost,

which MSETCL paid. MSETCL then billed the Park Developer for the amount paid to the firm, inclusive of additional charges such as supervision fees, along with GST. To mitigate the issue of double taxation, MSETCL proposed in March 2022 that a tripartite agreement be established amongst the Park Developer, MSETCL and the firm, allowing the firm to directly invoice the Park Developer.

However, it was observed during Audit that this agreement was not executed, leading to duplication of GST charges, first by the firm and subsequently by MSETCL. Consequently, the cumulative impact of this double taxation amounted to ₹10.78 crore on the overall cost incurred by the park developer for the services provided by the firm, which would have ultimately led to fixation of higher user charges.

MNRE forwarded the reply (July 2024) of the Government of Maharashtra/MAHAGENCO stating that the matter of double GST was referred to MSETCL. MSETCL informed that it had approached the Authority of Advance Ruling to ascertain whether Input Tax Credit can be availed for input service for Deposit/Outright Contribution and a ruling on the same was awaited. Further, MAHAGENCO stated that it will ensure taking up deposit works through MSETCL by execution of Tri-Partite Agreement for future projects in order to avoid impact of double GST.

B. Rewa and Mandsaur Solar Parks, Madhya Pradesh

For the development of an internal evacuation system, Rewa Ultra Mega Solar Ltd. (RUMSL) requested Madhya Pradesh Power Transmission Corporation Ltd. (MPPTCL) to provide Project Management Consultancy (PMC) in Rewa and Mandsaur Solar Park. Audit observed that RUMSL did not follow general financial prudence in determination of PMC charges to be paid to MPPTCL as illustrated in the table below.

Table 18: Extra burden of PMC charges

(₹ in crore)

Name of the Solar Park	Estimated cost of the project	PMC charges originally intimated by MPPTCL	Revised PMC charges intimated by MPPTCL	PMC charges actually paid (Including GST)	Actual Cost of the project	PMC charges recoverable (Including GST)	Difference
Rewa	212.51	38.08	30.64	20.34	111.95	18.19	2.16
Mandsaur	132.70	23.93	19.08	19.16	65.78	10.32	8.84
Total	345.21	62.01	49.72	39.50	177.73	28.51	11.00

The original PMC charges were calculated based on the estimated cost of the internal evacuation system prepared by MPPTCL and were approximately 18 *per cent* of the total estimated cost. On the request of RUMSL, MPPTCL revised PMC charges, which were

approximately 14.45 *per cent* of the estimated cost. However, the actual cost of the project was ₹177.73 crore, on which PMC charges worked out to ₹28.51 crore[40] only. Therefore, by not evaluating PMC charges against the actual cost of internal evacuation system, RUMSL had to bear an extra burden of ₹11 crore[41] against PMC charges, inclusive of GST.

MNRE forwarded the reply (July 2024) of the Government of Madhya Pradesh/RUMSL, stating that the actual cost of the internal evacuation system in Rewa and Mandsaur was much lower than the cost estimated by MPPTCL. Therefore, cumulatively, RUMSL had restricted the payment of PMC charges to ₹35 crore, which was only 70 *per cent* of the total fee proposed by the MPPTCL. Subsequently, based on previous learnings, RUMSL had sought PMC services from PGCIL and MPPTCL at competitive rates for Agar, Shajapur and Neemuch Solar Parks and on actual infrastructure costs for Omkareshwar Solar Parks.

The reply itself indicates that the PMC charges should have been fixed as per actual cost of the projects.

4.3 Other Financial Issues

Audit examined general management of the Solar parks and a few case studies related to financial management of the Solar Parks are illustrated below.

A. Rewa Solar Park - Excess claim of Central Financial Assistance

According to an Office Memorandum (OM) issued by MNRE in December 2014, the Central Financial Assistance of ₹20 lakh per MW or 30 *per cent* of the project cost, whichever was lower, was to be released to the Park Developer/Central Transmission Utility (CTU) on achieving various milestones of the project. The expenditure on the development of a solar park mainly constitutes (a) expenditure on account of development of land and its infrastructure facilities and (b) Transmission network and Pooling Sub-station. MNRE, in March 2021, clarified that Local Area Development Charges (LADF) may be formed by contributions from project developers and may be maintained by park developers.

Audit observed that while determining the complete cost for claiming Central Financial Assistance in Rewa Solar Park (750 MW), RUMSL included various components, which should not have been part of the project cost as detailed below.

[40] ***Calculated @ 14.45 per cent of actual cost.***
[41] ***₹11 crore (₹2.16 crore for Rewa and ₹8.84 crore for Mandsaur).***

Table 19: Details of various ineligible components

(₹ in crore)

Components	Amount
Project Management Consultant to MP Urja Vikas Nigam	12.16
Penal transmission charges	14.42
Registration charges	7.50
Local Area Development Fund charges	15.00
Total	**49.08**

Considering the exclusion of ineligible components, the revised cost and eligible Central Financial Assistance would have been lower, as indicated below.

Table 20: Calculation of Excess Central Financial Assistance

(₹ in crore)

Total completed cost considered for Central Financial Assistance	Total cost of ineligible component	Total completed cost to be considered for Central Financial Assistance	Central Financial Assistance eligible	Central Financial Assistance claimed	Central Financial Assistance received	Excess Central Financial Assistance claimed	Excess Central Financial Assistance received
(A)	**(B)**	(C= A-B)	**(D=30% of C)**	(E)	**(F)**	**(G=E-D)**	**(H=F-D)**
295.66	49.08	246.58	73.97	88.70	76.33	14.73	2.36

Therefore, RUMSL claimed excess Central Financial Assistance of ₹14.73 crore and has received excess amount of Central Financial Assistance of ₹2.36 crore till date. While granting the Central Financial Assistance, MNRE did not exercise due diligence and released an excess claim of ₹2.36 crore to RUMSL.

MNRE replied (October 2023) that the final settlement of the Rewa Solar Park was yet to be made and this observation would be considered during the final settlement of Central Financial Assistance of this Park.

B. Dondaicha Solar Park, Maharashtra- Unrealistic preparation of DPR

In December 2015, MNRE accorded 'in-principle' approval for setting up of Solar Park of Capacity 500 MW at Dondaicha, District Dhule by Maharashtra State Power Generation Co. Ltd. [MAHAGENCO (Park Developer)]. Audit scrutiny revealed the following shortcomings in financial management of the project.

The Park Developer appointed (July 2016) an agency for providing consultancy services for development of Dondaicha Solar Park, including preparation of DPR. Park Developer decided (September 2017) to execute 500 MW Dondaicha Solar Park in two phases, *i.e.*, Phase I 250 MW and Phase II 250 MW due to power evacuation constraint for 500 MW Solar Park. Audit observed that the DPR was not revised based on the Schedule of State Rate of 2019-20, while

inviting the tender in 2021. The DPR cost of ₹215.73 crore was prepared with increased cost of land (due to increase in land area by 70.82 acres[42]) and cost of power evacuation system based on intimation by State Transmission Utility (STU) (₹124.57 crore) in March 2020. The Schedule of State Rate of 2016-17 was applied for all other infrastructure works in the DPR, though the Schedule of State Rate for 2019-20 was available. Thus, the preparation of DPR by the Consultant was not realistic, thereby impacting estimated cost of the project.

MNRE forwarded the reply (July 2024) of the Government of Maharashtra/MAHAGENCO (Park Developer), stating that considering the Power Purchase Agreement (PPA) petition filed by M/s T.P. Saurya Limited with Maharashtra Electricity Regulatory Commission (MERC), MAHAGENCO had decided to go ahead with development of its own 250 MW Engineering, Procurement and Construction (EPC) solar project inside Dondaicha Solar Park. Once MERC's verdict was declared, MAHAGENCO intended to submit a revised Solar Park cost estimate to MNRE based on latest Schedule of State Rate/actual tender rates.

C. Rewa Solar Park - Payment of excess dividend to Joint Venture (JV) partners

The Solar Park Scheme was to facilitate development of solar power projects and therefore not to be treated as purely commercial projects for unreasonably high profit generation. The profits were preferably to be converted into equity of the JV partners or the Park Developers so that Park Developers got the financial strength for long term sustenance.

The formation of Rewa Ultra Mega Solar Ltd. (RUMSL) was done under Mode Two[43] of the Scheme, *i.e.*, a joint venture (50:50) of Madhya Pradesh Urja Vikas Nigam (State Nodal Agency) and Solar Energy Corporation of India (SECI). The paid-up equity capital of RUMSL was ₹2 crore.

During the review of annual reports of RUMSL, it was found that RUMSL paid a total dividend of ₹9.44 crore out of profits earned during the period 2018-19 and 2020-22. In June 2020, MNRE, while notifying the new Mode Eight[44], *viz.*, Ultra Mega Renewable Energy Parks, had laid down that maximum 16 *per cent* Return on Equity may be allowed. Considering a Return on Investment of 16 *per cent* as a benchmark, Audit observed that RUMSL made an excess payment of dividend to its promoters by ₹8.48 crore, as detailed below.

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[42] ***Original land was 1,176.35 acres which was increased to 1,247.17 acres.***
[43] ***A joint venture company of State designated nodal agency and Solar Energy Corporation of India Ltd. (SECI).***
[44] ***CPSU/State PSU/Government organisation/their subsidiaries or the JV of above entities can act as SPPD.***

Table 21: Details of dividend

(₹ in crore)

Year	Profit for the year	Paid up equity	Amount of dividend for the year	Dividend as a percentage of total equity contribution	Amount of maximum Return on Equity considering a maximum of 16 *per cent* of paid up equity	Excess payment of dividend
	(A)	(B)	(C)	(D=C/B)	(E)	(F=C-E)
2018-19	14.3887	2.00	1.44	71.94	0.32	1.12
2020-21	13.4519	2.00	4.00	200	0.32	3.68
2021-22	12.7473	2.00	4.00	200	0.32	3.68
Total						**8.48**

The overall objective of the Scheme was to reduce the cost of development of Solar Parks to lower the tariffs of solar projects. Audit observed that RUMSL had availed a loan from World Bank with a fixed interest rate of 8.5 *per cent* per annum and an amount of ₹100.11 crore was outstanding at the end of March 2021. Higher retained earnings, which are a source of internally generated funds for an organisation, reduce dependence on interest bearing loans and associated costs. Using these funds for repayment of loans instead of paying liberal dividend would have helped the park developer to get financial strength for long term sustenance.

MNRE, forwarded the reply (July 2024) of the Government of Madhya Pradesh/RUMSL, stating that RUMSL admits that though the dividend paid was more than 16 *per cent* of Return on Equity but considering the directions of the notification of the Ministry of Finance regarding payment of minimum dividend, the dividend was paid from time to time. RUMSL reiterated that once the observations of the Audit were made known, the dividend payout was reduced for the FY 2022-23. The reply itself illustrates that the dividend paid was more than the prescribed limit of 16 *per cent*.

4.4 Conclusion

In Phase I of the Scheme, against a target of ₹1,650 crore for the period 2014-15 to 2016-17, only ₹640.57 crore were released by the Ministry on account of slow pace of the projects. This trend continued in subsequent years as MNRE released only ₹3,231.76 crore against a target of ₹8,100 crore during the period 2014-15 to 2023-24. In Dondaicha Solar Park, Maharashtra, due to failure to enter tripartite agreement, double taxation amounting to ₹10.78 crore on the overall cost was incurred. In case of Rewa and Mandsaur Solar Parks, excess expenditure of ₹11 crore was incurred due to payment of Project Management Consultant charges on estimated cost of the work instead of actual expenditure. Again, excess Central Financial Assistance of ₹14.73 crore was claimed in the case of Rewa Solar Park due inclusion of ineligible components in the project cost. Further, in case of Rewa Solar Park, payment of

excess dividend of ₹8.48 crore to joint venture partners was also observed, which could have been utilised to reduce loans from financing institutions and thereby avoided high finance costs.

4.5 Recommendations

6. ***MNRE/Park Developer may ensure that park charges/upfront charges recoverable from Project Developers are determined in a financially prudent manner and avoid passing on unwarranted costs, as these have a cascading effect on tariff recoverable from end consumers.***

Chapter V: Monitoring and Review

5.1 Deficiencies in monitoring

The Ministry of New and Renewable Energy (MNRE) appointed Solar Energy Corporation of India (SECI) as its nodal agency for the Solar Park Scheme, compensating SECI with one *per cent* of the Central Financial Assistance. As per MNRE's instructions (August 2016), SECI, State Nodal Agencies and Solar Power Park Developers (Park Developers) were tasked with specific responsibilities, including ensuring timely submission of Detailed Project Reports (DPRs), land identification and physical surveys, tendering for water supply systems, road connectivity, internal transmission systems and pooling substations.

SECI's role was to ensure that funds were released only for projects adhering to the guidelines and to provide adequate guidance to park developers, ensuring the creation of essential facilities at minimal cost and within the timeframes required for commissioning solar power projects. The lack of coordination and inadequate monitoring by SECI and State Nodal Agencies contributed to delays and non-generation of power by Project Developers, despite installed capacity as discussed in previous chapters.

5.2 State wise observations relating to monitoring

MNRE guidelines (2017) mandated the establishment of a Committee headed by the Principal Secretary/Secretary (Power/Energy/Renewable Energy) of the State Government on account of slow pace of implementation of solar power projects. The Committee, comprising representatives from Park Developers, heads of State Nodal Agency and three experts in renewable energy and power systems, was tasked with overseeing the progress of each Park and addressing any implementation related issues. MNRE reiterated the need for establishing State Level Committees (SLCs) in November 2021.

SLCs were responsible for determining park charges (infrastructure development and operation and maintenance charges) and reviewing DPRs for all solar/renewable energy parks across all scheme modes. Additionally, SLCs were tasked with verifying the work’s adherence to the DPR specifications. This measure aimed to ensure that the subsidy provided by the Government of India for establishing Solar Parks was ultimately passed on to beneficiaries through proportionally lower park charges.

The State wise observations relating to SLCs are discussed in the succeeding paras.

Table 22: State-wise observations relating to State Level Committee (SLC)

State/UT	Date of constitution of Committee	Observations
Himachal Pradesh	12 July 2022	There was a delay in the constitution of the SLC. Audit observed that while the DPR of the Kaza Solar Park Project was submitted before the SLC's formation, the DPR for the Kinnaur Solar Park project was not submitted to the SLC.
Rajasthan	Committee constituted on 22 March 2022. Experts nominated on 8 December 2022.	MNRE in March 2016 communicated to the Government of Rajasthan to form the SLC. Audit observed that the SLC was constituted after a delay of six years in March 2022. Besides, the formation of SLC was incomplete till December 2022. Since the constitution of SLC in March 2022, two meetings were held for vetting of DPRs and infrastructure charges: 1. On 30 August 2022, for Fatehgarh Solar Park of Adani Renewable Energy Park Rajasthan Limited [AREPRL (Park Developer)]. This meeting was held with representation from only one Park Developer, *viz.* AREPRL, Additional Chief Secretary (Energy), Government of Rajasthan and Head of Rajasthan Renewable Energy Corporation Limited [RRECL (State Nodal Agency)]. No expert in renewable energy power or member from other Park Developers was present at that meeting 2. On 2 March 2023 for Poogal I and II Solar Parks of Rajasthan Solar Park Development Company Limited [RSDCL (Park Developer)]. In this meeting, though renewable energy experts were present, there was representation of only one Park Developer, *viz.* RSDCL.
Andhra Pradesh	8 January 2018	Audit observed that SLC was constituted in January 2018. However, the details of the meetings held were not available with MNRE.
Gujarat	23 July 2021	Audit observed that SLC was formed in July 2021 and three meetings were held.
Karnataka	27 August 2015	Audit observed that the SLC was constituted in August 2015 and nine meetings were held during 2015-2022.
Uttar Pradesh	9 February 2021	Audit observed that the SLC was formed in February 2021 and four meetings were held.
Madhya Pradesh	10 March 2021 21 February 2022	Audit observed that SLC was formed in March 2021 and February 2022 and three meetings were held.
Maharashtra	4 November 2016	Audit observed that SLC was formed in November 2016 and four meetings were held till April 2021.

As can be seen from above, there were delays in constitution of State Level Committees. The meetings of these SLCs were held irregularly in the absence of any prescribed frequency of these meetings by the Ministry.

The findings reveal significant deficiencies in the monitoring mechanisms established by the MNRE for the Solar Park Scheme. Despite guidelines, there were notable lapses in

coordination and monitoring, leading to delays and non-compliance with time schedule by Park Developers during project implementation. One of the major issues highlighted was the delayed formation of SLCs across different states, impacting the oversight and review processes. As a result, no intervention could be made to address the delays in preparation of DPRs, land acquisition and establishment of internal and external evacuation arrangements, which finally resulted in delay/non-establishment of Solar Parks. Furthermore, the irregularity in the conduct of SLC meetings further exacerbated the monitoring challenges, hindering effective decision-making and progress assessment.

MNRE stated (July 2024) that it had already written to the States for the formation of the State Level Committee and conducts regular review meetings to monitor the progress and resolve issues arising during the development of the Solar Parks. Ministry constituted (June 2024) a Solar Park Monitoring Unit comprising representatives from MNRE, Ministry of Power, SECI, IREDA, Central Transmission Utility (CTU) to monitor the progress of Solar Parks and take measures to mitigate the issues during implementation.

However, the fact remains that the absence of smooth functioning State Level Committees led to projects being implemented without the required guidance and oversight.

5.3 Sustainable Development Goals, Paris Agreement and Solar Parks

Sustainable development is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainable development calls for concerted efforts towards building an inclusive, sustainable and resilient future for people and the planet. The 193 member states of the United Nations (UN) officially adopted a new sustainable development agenda entitled, "Transforming Our World: The 2030 Agenda for Sustainable Development" at the Sustainable Development Summit held at UN Headquarters in New York in September 2015. This agenda contained 17 Goals and 169 targets. The action for achievement of Sustainable Development Goals (SDGs) started on 1 January 2016 and these were expected to be achieved by 31 December 2030. Of these 17 goals, SDG 7 on "Affordable and Clean Energy" and SDG 13, which emphasised "Climate Action", are related to solar power. The National Solar Mission was one of the eight[45] missions under the National Action Plan for Climate Change (NAPCC) 2008, which was the Government of India's programme for mitigation of and adaptation to the

[45] *(i) National Solar Mission, (ii) National Mission for Enhanced Energy Efficiency, (iii) National Mission on Sustainable Habitat, (iv)National Water Mission, (v) National Mission for Sustaining the Himalayan Ecosystem, (vi) National Mission on Strategic Knowledge for Climate Change, (vii) National Mission for a Green India and (viii) National Mission on Sustainable Agriculture.*

adverse impact of climate change. The Scheme for Development of Solar Parks was one among the many initiatives under the National Solar Mission. The Solar Park Scheme under National Solar Mission was to help in achieving the SDGs through deployment of renewable energy projects in the country.

Further, target 7.2 under SDG 7 was to "increase substantially the share of renewable energy in the global energy mix by 2030". One of the indicators identified by NITI Aayog for target 7.2 was 'renewable share of installed generating capacity (40 *per cent*)'. This was based on India's commitments at the Paris Climate Agreement (2016), wherein India aimed to generate 40 *per cent* of electricity from non-fossil-based resources by 2030 as part of its Nationally Determined Contribution. The country achieved this target in November 2021 itself and in August 2022, the target was revised to about 50 *per cent* cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.

Chapter III of this report points out the delays in achievement of target to establish 40,000 MW capacity Solar Parks. As of March 2024, only 14 Solar Parks with an installed capacity of 11,491 MW (28.60 *per cent*) had been established. This was indicative of the fact that even though renewable energy was continuously increasing its share in the overall energy mix, the Solar Park Scheme, with the intended objective to aid this effort, had not been able to achieve its targets so far.

Further, in the Cabinet Note of 2017, MNRE had stated that the total capacity, when operational, would generate 64 billion units of green energy/electricity per year at the rate 1.6 Million Unit per MW. The achievement of 40,000 MW solar power was to contribute to long term energy security of the country and ecological security by reduction in carbon emissions and carbon footprint. It was expected that the installation of 40,000 MW of solar would lead to abatement of around 55 million tonnes of Carbon Dioxide (CO_2) per year over its life cycle. MNRE restated (March 2023) that 40,000 MW capacity was to generate around 77 billion units of electricity per year, which was to lead to abatement of around 63 million tonnes of CO_2 in its life cycle. MNRE needs to reconcile and justify these figures in view of the wide variation.

Ministry stated (July 2024) that the Cabinet Note was prepared around the year 2017, wherein the Capacity Utilisation Factor was taken around 18 *per cent*. However, due to technological advancement with time, the Capacity Utilisation Factor had increased and accordingly, the data in the reply of MNRE was taken using a higher Capacity Utilisation Factor assumption of around 22 *per cent*. Further, the GHG emissions (which abate on establishment of a Solar

Park/project) were generally calculated based on the Carbon Dioxide (CO_2) baseline index published by Central Electricity Authority.

However, the fact remained that against the targeted creation of 40,000 MW capacity Solar Parks, only 11,491 MW could be created by March 2024. Hence, the anticipated annual CO_2 abatement did not materialise.

5.4 Conclusion

There were delays in constitution of State Level Committees (SLC). The meetings of these SLCs were held irregularly in the absence of any prescribed frequency of these meetings by the Ministry. Delayed formation of SLCs across different states impacted the oversight and review processes. Furthermore, the irregularity in the conduct of SLC meetings exacerbated the monitoring challenges, hindering effective decision-making and progress assessment. MNRE had not developed any measuring mechanism for reduction in GHG emissions from various parks and as such, the actual figures of GHG emissions from the established Solar Parks could not be ascertained.

5.5 Recommendations

7. ***MNRE may ensure that State Level Committees are formed in each State with representation of officials of line departments and ensure timely resolution of various issues like land acquisition, finalisation/approval of DPR, transmission issues with Central/State Transmission Utility, Project Developer identification, etc., during development of parks.***

India's efforts to scale up solar energy production through the Scheme for Solar Parks and Ultra Mega Solar Power Projects were examined in this Report. The Scheme aimed to install 40,000 MW of solar power capacity by 2019-20. Audit found substantial delays in submission of DPRs, construction of internal and external transmission infrastructure, issues related to land acquisition and non-achievement of financial closure. Inadequate feasibility studies and identification of unsuitable land led to the cancellation/stalling of several projects. There were preventable delays in some cases where repeated revisions were carried out in Detailed Project Reports, which were not realistic in terms of availability of land, layout and technology, despite government financially supporting the exercise and delays in financial closure due to linking it up with generation of internal resources. Further, the lack of coordination at various levels, including delays in the constitution of State Level

Committees and irregular monitoring, contributed to the non-resolution of various issues mentioned above. The milestones set in Phase I and Phase II were not achieved, despite the relaxation of timelines in Phase II. This indicates that either the timelines were unrealistic or there was a lack of concerted effort on the part of MNRE, State Nodal Agencies and State Level Committees to proactively resolve issues that impeded the implementation of the Scheme and facilitation of timely achievement of targets, with only 28.60 *per cent* of the targeted 40,000 MW being installed as of March 2024. To address these issues, it is recommended that MNRE devise a well-defined framework for land identification and acquisition, set realistic timelines for various milestones and conduct robust monitoring in coordination with the State agencies for timely and effective implementation of the Scheme on the ground.

(Dr. Kavita Prasad)
New Delhi **Director General of Audit, Central Expenditure**
Dated: **(Environment and Scientific Departments)**

Countersigned

New Delhi **(K. Sanjay Murthy)**
Dated: **Comptroller and Auditor General of India**

Annexures

Annexure I
(Refer to Para 1.3)
Different Modes for Park Developers

Mode	Brief Description	Central Financial Assistance Pattern
1	The State designated nodal agency or a State Government Public Sector Undertaking (PSU) or a Special Purpose Vehicle (SPV) of the State Government.	₹12 lakh/MW or 30 *per cent* of the project cost to Park Developer for development of internal infrastructure and ₹8 lakh/MW or 30 *per cent* of the project cost to the Central Transmission Utility/State Transmission Utility for creation of external transmission infrastructure.
2	A Joint Venture Company of State designated nodal agency and Solar Energy Corporation of India Ltd. (SECI).	
3	The State designates SECI as the nodal agency.	
4	Private entrepreneurs with/without equity participation from the State Government.	
5	Central Public Sector Undertakings like SECI, NTPC, *etc*.	
6	Private entrepreneurs without any Central Financial Assistance from MNRE.	No Central Financial Assistance.
7	SECI will act as the Solar Power Park Developer (Park Developer) for Renewable Energy Parks.	₹20 lakh/MW or 30 *per cent* of the project cost for external transmission infrastructure only.
8	CPSU/State PSU/Government Organisation/their subsidiaries or the Joint Venture of the above entities can act as Park Developer.	₹20 lakh/MW or 30 *per cent* of the project cost for internal infrastructure only.

Annexure II
(Refer to Para 1.7)
List of 45 Solar Parks selected in nine States

Sl. No.	Name	State	Implementation Agency (Park Developer)	Capacity Allocated (in MW)
1.	Anantpur Ultra Mega Solar Park	Andhra Pradesh	Andhra Pradesh Solar Power Corporation Private Limited (APSPCL)	1400
2.	Kurnool Ultra Mega Solar Park		APSPCL	1,000
3.	Kadapa Solar Park		APSPCL	1,000
4.	Ananthapuramu II Solar Park		APSPCL	500
5.	Ramagiri Hybrid Park - SECI (Solar Energy Corporation of India)		SECI	300
6.	Raghanesda Solar Park	Gujarat	Gujarat Power Corporation Limited (GPCL)	700
7.	Dholera Solar Park		GPCL	1,000
8.	*Khavada Solar Park		NTPC RE Ltd.	4,750
9.	*Khavada Solar Park		GSECL (Gujarat State Electricity Corporation Limited)	3,325
10.	*Khavada Solar Park		GIPCL (Gujarat Industries Power Company Limited)	600
11.	*Khavada Solar Park- Phase II		GIPCL	1,200
12.	*Khavada Solar Park- Phase III		GIPCL	575
13.	*Kaza Solar Park	Himachal Pradesh	SJVNL (Satluj Jal Vidyut Nigam Limited)	880
14.	*Kinnaur Solar Park		SJVNL	400
15.	Pavagada Solar Park	Karnataka	Karnataka Solar Power Development Corporation Ltd. (KSPDCL)	2,000
16.	*Kalburgi Solar Park		Karnataka Renewable Energy Development Ltd. (KREDL)	500
17.	Rewa Ultra Mega Solar Ltd.	Madhya Pradesh	Rewa Ultra Mega Solar Ltd. (RUMSL)	750
18.	Mandsaur Solar Park		RUMSL	250
19.	*Agar Solar Park		RUMSL	550
20.	*Shajapur Solar Park		RUMSL	450
21.	*Neemuch Solar Park		RUMSL	500
22.	*Omkareswar Floating Solar Park		RUMSL	600
23.	*Chhattarpur Solar Park		RUMSL	450
24.	*Morena Solar Park		RUMSL	600
25.	*Barethi Solar Park		NTPC RE Ltd.	630
26.	Sai Guru Solar Park (Pragat) (Dhule Solar Park)	Maharashtra	M/s Sai Guru Mega Solar Power Park Private Limited	500
27.	Dondiacha Solar Park		MAHAGENCO (Maharashtra State Power Generation Co. Ltd.)	250
28.	Patoda Solar Park		M/s Paramount Solar Power Ltd.	250
29.	Suchen and Thamar Solar Park	Meghalaya	Meghalaya Power Generation Corporation Ltd. (MePGCL)	20
30.	Bhadla Phase II	Rajasthan	Rajasthan Solar Park Development Company Ltd. (RSDCL)	680

Sl. No.	Name	State	Implementation Agency (Park Developer)	Capacity Allocated (in MW)
31.	Bhadla Phase III		Saurya Urja Company of Rajasthan Ltd. (SUCRL)	1000
32.	Bhadla Phase IV		Adani Renewable Energy Park Rajasthan Ltd. (AREPRL)	500
33.	Essel Phalodi-Pokhran Solar Park		Essel Saurya Urja Company of Rajasthan Ltd.	750
34.	Fatehgarh Solar Park		AREPRL	421
35.	Nokh Solar Park		RSDCL	925
36.	RSDCL – Poogal 1		RSDCL	1,000
37.	RSDCL – Poogal 2		RSDCL	1,000
38.	RRVUNL – Poogal		Rajasthan Rajya Vidyut Utpadan Nigam Ltd.	2,000
39.	UP Solar Park	Uttar Pradesh	Lucknow Solar Power Development Corporation Limited (LSPDCL)	440
40.	*Jalaun Solar Park		Bundelkhand Saur Urja Limited (BSUL)	1,200
41.	Mirzapur Solar Park		BSUL	100
42.	*Lalitpur Solar Park		TUSCO Ltd.	600
43.	* Jhansi Solar Park		TUSCO Ltd.	600
44.	*Chitrakoot Solar Park		TUSCO Ltd.	800
45.	Jalaun Solar Park		BSUL	65

Ultra Mega Renewable Energy Power Park

Annexure III
(Refer to Para 3.1.1)
Milestone wise delay in respect of 15 Solar Parks of Phase I

(Delay in months)

Sl. No.	State	Name of Solar Park	Name of Park Developer	Capacity (in MW)	Date of approval	Delay in submission of DPR	Delay in land acquisition	Delay in achieving financial closure	Delay in completion of pooling station, land development, *etc.*	Delay in transmission and grid connectivity
Prescribed timeline (in months)						**2**	**6**	**6**	**15**	**18**
1.	Andhra Pradesh	Kurnool	APSPCL	1,000	28.11.2014	0	15	0	13	8
2.	Andhra Pradesh	Ananthapuramu.I	APSPCL	1,400	28.11.2014	0	15	0	56	28
3.	Andhra Pradesh	Ananthapuramu.II	APSPCL	500	15.01.2016	17	2	25	21	16
4.	Andhra Pradesh	Kadapa	APSPCL	1,000	09.10.2015	16	5	34	26	24
5.	Gujarat	Raghanesda	GPCL	700	01.12.2014	9	49	105*	64	50
6.	Rajasthan	Bhadla II	RSDCL	680	02.12.2014	0	0	0	12	8
7.	Rajasthan	Bhadla III	SUCRL	1,000	12.12.2014	4	5	25	36	33
8.	Rajasthan	Bhadla IV	AREPRL	500	29.09.2015	2	0	6	27	24
9.	Rajasthan	Phalodi Pokhran	ESUCRL	750	17.12.2015	23	23	30	84*	81*
10.	Rajasthan	Fatehgarh	AREPRL	421	01.02.2016	31	35	91*	53	48
11.	Uttar Pradesh	UP Solar Park	LSPDCL	440	02.12.2014	9	3	82	0 **	93
12.	Karnataka	Pavagada	KSPDCL	2,000	19.03.2015	7	5	7	32	39
13.	Maharashtra	Dondaicha	MAHAGENCO	250	17.12.2015	13	9	73	69*	66*
14.	Maharashtra	Dhule	M/s Sai Guru Mega Solar Park Pvt. Ltd.	500	29.09.2015	In case of Dhule, the matter is sub-judice.				
15.	Maharashtra	Patoda	M/s Paramount Solar Power Pvt. Ltd.	250	17.12.2015	MNRE cancelled the Park in October 2022. Further, based on request by the State Government and acquisition of land, the park was re-approved for a capacity of 250 MW in December 2023.				
16.	Meghalaya	Suchen and Thamar Solar Park,	MePGCL	20	04.09.2015	Park cancelled in October 2022.				
17.	Madhya Pradesh	Mandsaur	RUMSL	250	15.01.2016	16	0	18	53	1
18.	Madhya Pradesh	Rewa	RUMSL	750	15.07.2014	36	53	36	50	47

**** Milestone not achieved; delay calculated till 31.3.2024.***
***** No pooling station required in case of UP Solar Park as the Park was scattered.***

Annexure IV
(Refer to Para 3.2)
Milestone wise delay (till 31 March 2024) in respect of 27 Solar Parks of Phase II

(Delay in months)

Sl. No.	State	Name of Solar Park	Name of Park Developer	Capacity (in MW)	Date of approval	Delay in submission of DPR	Delay in land acquisition	Delay in achieving financial closure	Delay in completion of pooling station, land development, *etc.*	Delay in transmission and grid connectivity
Prescribed timeline (in months)						**4**	**8**	**11**	**24**	**24**
1.	Andhra Pradesh	Ramagiri	SECI	300	11.11.2021	13	0	17*	4*	4*
2.	Gujarat	Dholera	GPCL	1,000	25.06.2019	11	0	46*	33*	9
3.	Gujarat	Khavda 4750 MW	NTPC	4,750	12.07.2021	0	2	0	8*	8*
4.	Gujarat	Khavda 3325 MW	GSECL	3,325	12.08.2021	0	0	0	7*	7*
5.	Gujarat	Khavda Phase I	GIPCL	600	24.09.2021	8	0	0	6*	6*
6.	Gujarat	Khavda Phase II	GIPCL	1,200	24.02.2022	3	0	0	1*	1*
7.	Gujarat	Khavda Phase III	GIPCL	575	31.03.2022	2	0	0	Completion date not yet due.	Completion date not yet due.
8.	Himachal Pradesh	Kaza Solar Park	SJVNL	880	17.09.2020	16	Park Cancelled.			
9.	Himachal Pradesh	Kinnaur Solar Park	SJVNL	400	24.02.2022	3	Park Cancelled.			
10.	Karnataka	Kalburgi Solar Park	KREDL	500	26.04.2021	1	Park Cancelled.			
11.	Madhya Pradesh	Agar	RUMSL	550	28.01.2020	2	0	14	26	26
12.	Madhya Pradesh	Shajapur	RUMSL	450	28.01.2020	2	0	14	26*	26*
13.	Madhya Pradesh	Neemuch	RUMSL	500	28.01.2020	3	0	14	26*	26*
14.	Madhya Pradesh	Omkareshwar	RUMSL	600	17.09.2020	16	0	15	18*	18*
15.	Madhya Pradesh	Chhatarpur	RUMSL	450	17.09.2020	16	Request received for cancellation. Park was cancelled in June 2024.			
16.	Madhya Pradesh	Barethi	NTPC	630	17.09.2020	16	34*	31*	18*	18*
17.	Madhya Pradesh	Morena	RUMSL	600	13.01.2021	Park was cancelled in April 2023. Solar Component of Solar Wind Hybrid Park was granted 'in-principle' approval in February 2024.				

Sl. No.	State	Name of Solar Park	Name of Park Developer	Capacity (in MW)	Date of approval	Delay in submission of DPR	Delay in land acquisition	Delay in achieving financial closure	Delay in completion of pooling station, land development, *etc*.	Delay in transmission and grid connectivity
18.	Rajasthan	RSDCL – Poogal 1 (Dist Bikaner)	RSDCL	1000	24.02.2022	6	17*	14*	1*	1*
19.	Rajasthan	RSDCL – Poogal 2	RSDCL	450	31.03.2022	5	16*	13*	0*	0*
20.	Rajasthan	RRVUNL – Poogal	RRVUNL	1,310	31.03.2022	4	2	12	0*	0*
21.	Rajasthan	Nokh	RSDCL	925	18.07.2017	6	15	28	65*	62*
22.	Uttar Pradesh	Jalaun Solar Park (UMREPP)	BSUL	1,200	17.09.2020	7	35*	31*	18*	18*
23.	Uttar Pradesh	Solar Park in Lalitpur	TUSCO	600	13.10.2020	1	31	30*	17*	17*
24.	Uttar Pradesh	Solar Park in Jhansi,	TUSCO	600	13.10.2020	1	6	30*	17*	17*
25.	Uttar Pradesh	Mirzapur Solar Park	BSUL	100	01.03.2021	0	28*	25*	12*	12*
26.	Uttar Pradesh	Solar Park in Chitrakoot	TUSCO	800	18.08.2021	27*	23*	20*	07*	07*
27.	Uttar Pradesh	Kalpi	BSUL	65	16.09.2021	0	0	0	0	0
**** Milestone not achieved till 31.3.2024.***										

Annexure V
(Refer to Para 3.3(B))
Details of District Level Committee Rate

Plot No.	Solar Project Developers	Sub lease agreement date	Land allotted *(in acre)*	Land Premium received by RSDCL *(in crore)*
	Bhadla II Solar Park			
1	Raising Bhadla (1) Pvt. Ltd.	01.12.2016	345.99	4.24
2	Raising Bhadla (2) Pvt. Ltd.	24.01.2017	345.94	4.24
3	Yarrow Infrastructure Ltd.	09.11.2016	346.04	4.24
4 to 7	NTPC Ltd.	10.02.2017	1,290.38	15.81
8	Solaire Saurya Urja Pvt. Ltd.	08.11.2016	347.64	4.26
9	Fortum FinnSaurya Energy Pvt. Ltd.	08.09.2016	347.22	4.25
10	Solaire Saurya Urja Pvt. Ltd.	08.11.2016	348.36	4.27
	Total		**3,371.58**	**41.31**

Abbreviations

1.	APGENCO	Andhra Pradesh Power Generation Corporation Limited
2.	APSPCL	Andhra Pradesh Solar Power Corporation Private Limited
3.	AREPRL	Adani Renewable Energy Park Rajasthan Limited
4.	BSUL	Bundelkhand Saur Urja Limited
5.	CERC	Central Electricity Regulatory Commission
6.	CFA	Central Financial Assistance
7.	CPSU	Central Public Sector Undertaking
8.	CTU	Central Transmission Utility
9.	CUF	Capacity Utilisation Factor
10.	DISCOMs	Distribution Companies
11.	DLC	District Level Committee
12.	DPR	Detailed Project Report
13.	EPC	Engineering, Procurement and Construction
14.	GETCO	Gujarat Energy Transmission Corporation Limited
15.	GHG	Green House Gas
16.	GIPCL	Gujarat Industries Power Company Limited
17.	GPCL	Gujarat Power Corporation Limited
18.	GSECL	Gujarat State Electricity Corporation Limited
19.	GST	Goods and Services Tax
20.	GW	Gigawatt
21.	HIMURJA	Himachal Pradesh Energy Development Agency
22.	HPSEBL	Himachal Pradesh State Electricity Board Limited
23.	IREDA	Indian Renewable Energy Development Agency
24.	JV	Joint Venture
25.	KREDL	Karnataka Renewable Energy Development Limited
26.	KSPDCL	Karnataka Solar Power Development Corporation Limited
27.	kV	Kilovolt
28.	LSPDCL	Lucknow Solar Power Development Corporation Limited
29.	MAHAGENCO	Maharashtra State Power Generation Co. Limited
30.	MEDA	Maharashtra Energy Development Agency
31.	MePGCL	Meghalaya Power Generation Corporation Limited
32.	MERC	Maharashtra Electricity Regulatory Commission
33.	MNRE	Ministry of New and Renewable Energy
34.	MoEF&CC	Ministry of Environment, Forest and Climate Change
35.	MPPTCL	MP Power Transmission Company Limited
36.	MPUVNL	MP Urja Vikas Nigam Limited
37.	MSETCL	Maharashtra State Power Generation Co. Limited
38.	MU	Million Units

39.	MW	Megawatt
40.	NAPCC	National Action Plan for Climate Change
41.	NDC	Nationally Determined Contribution
42.	NIT	Notice Inviting Tenders
43.	NISE	National Institute of Solar Energy
44.	NRSC	National Remote Sensing Centre
45.	NTPC	National Thermal Power Corporation
46.	O&M	Operation and Maintenance
47.	OM	Office Memorandum
48.	PGCIL	Power Grid Corporation of India Limited
49.	PMC	Project Management Consultancy
50.	PPA	Power Purchase Agreement
51.	PSU	Public Sector Undertaking
52.	RE	Renewable Energy
53.	RoE	Return on Equity
54.	RoI	Return on Investment
55.	RRECL	Rajasthan Renewable Energy Corporation Limited
56.	RRVUNL	Rajasthan Rajya Vidyut Utpadan Nigam Limited
57.	RSDCL	Rajasthan Solar Development Corporation Limited
58.	RUMSL	Rewa Ultra Mega Solar Limited
59.	SDG	Sustainable Development Goals
60.	SECI	Solar Energy Corporation of India
61.	SERC	State Electricity Regulatory Commission
62.	SJVNL	Satluj Jal Vidyut Nigam Limited
63.	SLC	State Level Committee
64.	SPD	Solar Project Developer (Project Developer)
65.	SPPD	Solar Power Park Developer (Park Developer)
66.	SPV	Solar Photovoltaic
67.	STU	State Transmission Utility
68.	TRANSCOs	Transmission Companies
69.	UN	United Nations
70.	UPNEDA	Uttar Pradesh New and Renewable Energy Development Agency
71.	UPPTCL	Uttar Pradesh Power Transmission Corporation Limited
72.	UT	Union Territory