SBF Project Completion Note

India: Transmission System Strengthening Project (Tamil Nadu)

1. Project Information

Project ID:	000006	Investment Number:	L0006A
Member:	India	Region:	Southern Asia
Sector:	Energy	Sub-sector:	Electricity transmission and distribution
Financing Type:	☒ Loan ☐ Guarantee	E&S category:	B
Co-financier(s):	Asian Development Bank (ADB), joint co-financing of USD 50million		
Borrower:	Power Grid Corporation of India Limited ("POWERGRID")		
Guarantor:	Republic of India		
Implementing Entity:	POWERGRID		
Other entities involved:	-		
Project Team Leader(s):	Previous PTL: Hongliang Yang, Principal Investment Operations Specialist, Infrastructure Investment Department Region 2 Current PTL: Alok Dayal, Principal Portfolio Management Officer, Implementation Monitoring Department (IMD)		
Project Team Members:	Somnath Basu, Principal Environment and Social Development Specialist, Operational Services Department (OSD) Naveed Ahmed, Social Development Specialist, OSD Yangzom Yangzom, Procurement Specialist, OSD Shonell Robinson, Financial Management Specialist, OSD Liu Yang, Counsel, Legal Department Valeria Smarrini, Portfolio Management Officer, IMD Jackie Jing Cui, Portfolio Management Associate, IMD		
Site Visits by AIIB:	April 2019 (by Hongliang Yang) March 2020 (by an AIIB-appointed E&S Consultant, jointly with ADB))		

2. Project Summary and Objective

India has historically suffered from unreliable power supply, which has inhibited its economic growth potentials. In particular, the Southern Region of the country has faced power deficit mainly due to (i) delay/deferment of anticipated generation projects and (ii) non-availability of gas for existing gas projects. Increasing power supply deficit in the Southern Region has led to growing demand for interstate electricity transmission. To enable synchronous operations of an

interconnected national power grid, the Indian Government has endorsed the Scheme of *HVDC Bi-pole Link between Western Region (Raigarh, Chhattisgarh) and Southern Region (Pugalur, Tamil Nadu) – North Trichur (Kerala)* (the "Scheme"), which comprised three sub-schemes to expand the interstate transmission network in Western and Southern India. In October 2014, POWERGRID was entrusted by the Ministry of Power to implement the Scheme.

In September 2017, AIIB's Board of Directors approved the Transmission System Strengthening Project loan of USD100 million to POWERGRID, with the Government of India as guarantor, to meet part of the sub-scheme 2 investment needs. Sub-scheme 2 involved the construction of 400kV transmission lines from Pugalur to five grid substations in Tamil Nadu. The loan became effective on January 9, 2018 and closed on March 31, 2021. The project was co-financed with ADB (as defined in Schedule 1 to the ADB Loan Agreement for the Green Energy Corridor and Grid Strengthening Project) – who provided financing support also for sub-schemes 1 and 3. The objective of the AIIB-funded project is to enhance capacity of electricity transmission in the Southern Region of India and re-balance the peak and off-peak energy sharing from the surplus areas of Northern and Western regions to the deficit areas in the Southern Region. The project aimed to help POWERGRID to optimize the nation's electricity transmission system and improve the generation mix, thereby improving utilization of unevenly distributed renewable energy resources. The overall impact for the project was to enhance availability and sustainability of power supply in India.

The Project covered construction and installation of five transmission lines in Tamil Nadu, including: (i) Pugalur HVDC substation - Pugalur substation (existing) 400kV double-circuit (quad) line; (ii) Pugalur HVDC substation - Arasur substation 400kV double circuit (quad) line; (iii) Pugalur HVDC substation – Thiruvalam substation 400kV double circuit (quad) line; (iv) Pugalur HVDC substation – Edayarpalayam substation 400kV double-circuit (quad) line; and (v) Edayarpalayam substation – Udumalpet substation 400kV double-circuit (quad) line. In addition, the project also funded 400kV line bays extension at Pugalur, Arasur, Udumalpet and Thiruvalam substations.

3. Key Dates

Approval:	September 27, 2017	Signing:	December 7, 2017
Effective:	January 9, 2018	Restructured (if any):	n/a
Orig. Closing:	September 30, 2020	Rev. Closing (if any):	March 31, 2021

4. Disbursement Summary (USD million)

a) Committed:	100.0	b) Cancelled (if any):	3.2
c) Disbursed:	96.8	d) Last disbursement: (amount /date)	1.3 (April 29, 2021)
e) Undisbursed (if any):	-	f) Disbursement Ratio (%) [1]:	100.0%

[1] Disbursement Ratio is defined as the volume (i.e. the dollar amount) of total disbursed amount as a percentage of the net committed volume, i.e., f = c / (a – b)

5. Estimated and Actual Costs of the Project (USD million)

At appraisal, the project's total cost was estimated at USD303.5 million equivalent (Rs. 20,365.88 million), of which AIIB's share was USD100 million (33%) and ADB's share was USD50 million (16.5%). POWERGRID covered the balance project cost of USD153.5 (50.5%), including interest during construction (IDC). AIIB and ADB jointly funded equipment and materials associated with the development of the project.

The financing plan at appraisal had a ratio of 33% : 67% between ADB and AIIB for each disbursement. The disbursement ratio between AIIB and ADB was waived in December 2020 pursuant to an amendment letter to the Loan Agreement to enhance the fund utilization efficiency by using AIIB's loan balance first for the remaining project activities[2]. The ADB loan balance was then deployed to the non-cofinanced components of ADB's Green Energy Corridor and Grid Strengthening Project (ADB Loan 3365-IND), which was also implemented by POWERGRID. This explains the lower utilization (71.7%) of ADB resources for this project.

Due to the combined effects of RoW issues and COVID-19, at the loan closing date of March 31, 2021, there were still certain project activities not fully completed. POWERGRID had sought for a further extension of the loan closing date but the request was denied by the Government of India. Subsequently in May 2021, POWERGRID requested for closing the loan resulting in AIIB's undisbursed loan balance of USD3.2 million being cancelled.

The actual cost as of 26 October 2021[3] was USD285.9 million, with AIIB's share at USD96.8 million (96.8% of planned AIIB expenditures), ADB's share at USD35.9 million (71.7% of planned ADB expenditures), and POWERGRID's share at USD153.2 million (99.8% of planned POWERGRID expenditures).

Overall, and as of 26 October, the actual project costs stood at approximately 94% of the estimate at loan approval. However, POWERGRID is projecting some additional costs at completion. The total project cost including expenses yet to be incurred is projected by POWERGRID at the level of USD345.3 million. The contingency budget foreseen at appraisal stage was used to cover expenses under the Equipment and Material budget line. Reasons for cost overruns incurred/ to be incurred under certain expenditure categories are summarized below:

- Civil Works: Increase in civil infrastructure costs due to the construction of storage platforms and store for transmission towers at the sub-stations of Udumalpet and Thiruvalam.
- Equipment and Material: Initial calculation of taxes and duties had to be revised following changes in the taxes regime of India, namely the implementation of the Goods and Services tax (GST).
- Safeguard and Compensation: All possible efforts were deployed under the project to avoid asset damage to the extent possible. In instances when this was not possible,

[2] The amendment was initiated by POWERGRID and approved by AIIB and ADB. POWERGRID estimated that by the loan closing date there would be certain undisbursed balanced for both AIIB and ADB loan. It was therefore proposed to waive the disbursement ratio and use the AIIB loan to reimburse all eligible costs and allocate ADB undisbursed loan towards non co-financed sub-projects under the ADB facility

[3] This includes eligible cost and expenses which have occurred after the loan closing date. This is because certain project activities continued after loan closing date and the associated cost and expenses were covered by POWERGRID from its own resources.

compensation at market rate had to be provided. In addition to payment of compensation for tree and crop damage, POWERGRID paid for diminution of land value for tower footing and line corridor areas to affected persons in accordance with the prevailing regulations. It is worth mentioning in this context that the level of compensation applicable as per regulations of State Government of Tamil Nadu exceeds that required as per regulations of the Government of India since it includes payment of land compensation for tower base and corridor, based on the market value as provided in the new land act i.e. Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 (RFCTLARRA, 2013).

- Others: The increase in cost is on account of Foreign Exchange Rate Variation due to payments towards the contracts awarded in foreign currency.

Table 1. below compares the details of the project cost at appraisal and as of 26 October 2021, as well as reflecting additional costs to be incurred as projected by POWERGRID.

Table 1. Comparison of Estimated and Actual Project Cost (USD million)

		Appraisal Estimate[4]				Actual [5]				Projected till Completion	
	Components	**AIIB**	**ADB**	**POWER GRID**	**Total**	**AIIB**	**ADB**	**POWER GRID**	**Total**	**POWERGRID**	**Total**
A.	**Project Expenditure**	**100.0**	**50.0**	**114.3**	**264.3**	**96.77**	**35.86**	**140.36**	**272.99**	**58.26**	**331.25**
1	Civil Works	0.0	0.0	0.2	0.2	0.0	0.0	0.04	0.04	0.70	0.74
2	Equipment and Material	100.0	50.0	56.8	206.8	96.77	35.86	86.66	219.29	10.60	229.89
3	Safeguard and Compensation	0.0	0.0	42.1	42.1	0.0	0.0	36.74	36.74	38.47	75.21
4	Survey and Investigation	0.0	0.0	0.2	0.2	0.0	0.0	0.01	0.01	0.14	0.15
5	Others	0.0	0.0	15.0	15.0	0.0	0.0	16.92	16.92	8.35	25.27
B.	**Contingencies**	**0.0**	**0.0**	**21.1**	**21.1**	0.0	0.0	0.0	0.0	0	0
C.	**Interest during Construction (IDC)**	**0.0**	**0.0**	**18.0**	**18.0**	**0.0**	**0.0**	**12.89**	**12.89**	**1.11**	13.99
	Total (A+B+C)	**100.0**	**50.0**	**153.5**	**303.5**	**96.77**	**35.86**	**153.25**	**285.89**	**59.37**	**345.26**

6. Project Implementation, including major changes to the original Objective, Project Design, Project Implementation Plan, and Results Indicators

(A) Project Design

The project design was consistent with AIIB's mission and its Energy Sector Strategy (promotion of sustainable and green infrastructure, especially in energy transmission and distribution).

As indicated above, the project was a subset of the broader sector development Scheme "*HVDC Bi-pole Link between Western Region (Raigarh, Chhattisgarh) and Southern Region (Pugalur,*

[4] [4] Minor discrepancies are the result of rounding up.

Tamil Nadu) – North Trichur (Kerala)", which comprised three sub-schemes to expand the interstate transmission network in western and southern India:

i. Scheme 1: +800kV HVDC link from Raigarh (Chhattisgarh, Western Region) to Pugalur (Tamil Nadu, Southern Region);
ii. Scheme 2: 400kV transmission lines from Pugalur to five grid substations in Tamil Nadu; and
iii. Scheme 3: +320kV HVDC link from Pugalur (Tamil Nadu) to Trichur (Kerala).

At project appraisal, it was estimated that sub-schemes 1-3 combined would be able to wheel 6.0 GW of electricity from Chhattisgarh and Madhya Pradesh states to the Pugalur sub substation, and then transmit 4.0GW of electricity into Tamil Nadu and 2.0 GW of electricity into Kerala. Sub-scheme 1 and sub-scheme 3 were funded by ADB, and did not include any financial support from AIIB. Sub-scheme 2 was designed to handle two-thirds of the total capacity of the Scheme, and therefore was critical to the overall success of the Scheme. ADB therefore co-financed sub-scheme 2 with AIIB in a 1:2 proportion between ADB and AIIB respectively.

(B) Overall Implementation Status as of Reporting Date

At loan approval, the project was planned to be completed in 30 months by February 2020, with the loan closing date as of September 30, 2020. Due to severe right of way (RoW) issues and the impact of the COVID-19 pandemic, particularly the rapid increase of new cases since March 2021, the construction and commissioning schedule was delayed. The closing date was subsequently extended to March 31, 2021 at the request of POWERGRID, by which time the overall physical construction had reached 96%, which then progressed to 99% as of October 6, 2021.

Matters relating to RoW issues, which caused the project delay were reviewed multiple times with all the respective District Collectors by the Minister of Electricity & Prohibition, Government of Tamil Nadu, Chief Secretary of Government of Tamil Nadu. A court ruling was issued in June 2019 by the High Court of Judicature at Madras, which dismissed the writ petition filed against POWERGRID by certain landowners who alleged to be affected by the erection of the transmission towers, finding it unsubstantiated. More recently, the High Court ruled in favor of POWERGRID in March 2021 against the writ petitions raised by certain landowners and farmers seeking re-routing of the transmission lines and stay of the project due to environmental and health concerns. Notwithstanding the positive ruling of the Court, construction works has unavoidably experienced further delays before full completion was achieved on Oct. 26, 2021. As on date, all the five transmission lines have been successfully commissioned. Table 2. below summarizes the overall project implementation and compliance status.

Table 2. Overall Implementation and Compliance Status

Components	Physical Progress	Environmental & Social Compliance	Procurement	Financial Management
Component 1:	100% completed.	In compliance	100% completed.	In compliance

400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu	As of October 2021, five lines were completed and commissioned. Partly due to the impact of COVID-19 pandemic, at the loan closing date of March 31, 2021, the overall physical progress was 96% with two transmission lines commissioned. The remaining transmission lines were gradually commissioned during July – October 2021.	POWERGRID has complied with various environmental and social safeguards as agreed in the loan covenants with AIIB/ADB.	Total ten packages (4 tower packages and 6 conductor packages) covered under the loan were opened for bids in 2017 and awarded by January 2018.	Audited Financial Report covering the period of April 1, 2020 to March 30, 2021 was received in September 2021. The submission was made on time (delayed submission due to the COVID pandemic was agreed upon jointly with ADB). The auditors issued an unmodified (clean) opinion on the financial statements and have also confirmed the eligibility of all expenditures financed by AIIB during the financial year which ended March 31, 2021. Additional reimbursement of approximately USD1.3 million took place in April 2021 (for eligible expenditures before the closing date), which were not covered in the audit report. Such expenses will be captured in the next (and final) financial report.

(C) Project Components

The project comprised of the construction of five transmission lines in Tamil Nadu and associated line bays extension. There was no major change in project outputs as compared to the original design except for the output target dates, which were not met due to implementation delays. A brief review of each subproject is as follows:

i. Pugalur HVDC substation – Pugalur substation (existing) 400kV double-circuit (Quad) D/C line

This subproject comprised the construction of approximately 49 km of 400kV D/C transmission line from Pugalur HVDC station to the existing Pugalur substation. The subproject, completed and commissioned in May 2020, helped in extending power supply to Erode, urban part of Tamil Nadu.

ii. Pugalur HVDC substation – Arasur substation 400kV double-circuit (Quad) D/C line

This subproject comprised of the construction of 59 km of 400kV D/C transmission line from Pugalur HVDC station to Arasur substation. The subproject, completed and commissioned in September 2020, increased electricity transfer capacity to Arasur substation and relieved load pressure of the 400kV line between Madurai – Udumalpet substations.

iii. Pugalur HVDC substation – Thiruvalam substation 400kV (Quad) D/C line

This subproject comprised of the construction of approximately 390 km of 400kV D/C transmission line from Pugalur HVDC station to Thiruvalam substation. The subproject, completed and commissioned in October 2021, improved the inter-connectedness between major transmission corridors, thus strengthening the overall reliability of electricity supply in the Southern Region.

iv. Pugalur HVDC substation – Edayarpalayam substation 400kV double-circuit (Quad) D/C line

This subproject comprised of the construction of approximately 57 km of 400kV D/C transmission line from Pugalur HVDC station to Edayarpalayam substation. The subproject, completed and commissioned in July 2021, fed into the newly constructed Edayarpalayam substation to cater to the increasing demand for electricity in the area.

v. Edayarpalayam substation – Udumalpet substation 400kV (Quad) D/C line

This subproject comprised of the construction of approximately 54 km of 400kV D/C transmission line from the Edayarpalayam substation to the Udumalpet substation. The subproject, completed and commissioned in July 2021, acted as additional feed and helped to reduce the heavy load of the existing Madurai-Udumalpet 400kV line. In addition, the two-transmission line together (Pugalur HVDC – Edayarpalayam – Udumalpet) enhanced the feeding capacity to Kerala through the Udumalpet – Palakkad 400 kV D/C transmission line.

(D) Disbursements

Disbursements totaled USD96.8 million out of the loan amount of USD100 million. The first disbursement took place on April 2, 2018. As requested by POWERGRID, USD3.2 million of unused loan balance was cancelled pursuant to the loan closing letter dated May 19, 2021.

The AIIB loan was disbursed in accordance with the AIIB General Conditions for Sovereign-backed Financing, the project Loan Agreement and the loan Disbursement Letter. Loan proceeds were disbursed mainly through reimbursement procedure. POWERGRID expressed its satisfaction regarding AIIB's disbursement procedures, and informed that it had not encountered any major problems in processing reimbursement claims under various contracts. The actual annual disbursements are presented in the following table.

Table 3. Actual Disbursements (USD million)

	Actual Disbursements			
Year	Loan Annual Disbursement	% of Total	Total Cumulative Disbursement	% of Total
2018	28.0	28.9%	28.0	28.9%
2019	32.7	33.8%	60.7	62.7%
2020	12.2	12.6%	72.9	75.3%
2021	23.9	24.7%	96.8	100.0%
Total	**96.8**	**100.0%**	**96.8**	**100.0%**

(E) Project Schedule

As indicated above, due to persistent RoW issues and the prolonged impact of the COVID-19 pandemic, the project experienced some implementation delays and the loans closing date had to be extended once, for a period of six months (from 30 September 2020 to 31 March 2021).

Factually, two subprojects were completed within the original loan closing date of September 2020; another two subprojects were completed progressively in July 2021. The Pugalur HVDC Station – Thiruvalam substation line (sub-project iii) suffered from more severe RoW issues (being the longest line) and was completed and commissioned in Oct. 2021.

The major milestones in the implementation of the project are described below.

i. Subprojects were approved by AIIB in the fact-finding mission dated July 18 – July 27, 2016.
ii. Initial Environment Examination (IEE) report and Compensation Plan for Temporary Damages (CPTD) were approved by ADB on May 19, 2017 and June 7, 2017.
iii. Investment approval for the project was accorded by POWERGRID's Board of Directors on August 16, 2017.
iv. Invitations for bidding (IFB) were published in March 2016 and September 2017 for 4 tower packages and 6 conductor packages. By January 2018, all procurement contracts were awarded.
v. On May 14, 2020, the 400kV D/C Pugalur HVDC Station – Pugalur Line was commissioned.
vi. On September 4, 2020, the 400kV D/C Pugalur HVDC Station – Arasur Line was commissioned.
vii. On July 13, 2021, both the 400kV D/C Pugalur HVDC Station – Edayarpalayam Line and the 400kV D/C Edayarpalayam – Udumalpet Line were commissioned.
viii. On October 26, 2021, the Pugalur HVDC Station – Thiruvalam substation line was commissioned.

The actual construction and commission schedules of the subprojects are presented in Annex 2.

7. Results Achieved (against the original indicators and/or revised indicators)[6]

Project Objective Indicators	Baseline 2016	2017		2018		2019		2020		2021
		Target	Actual	Target	Actual	Target	Actual	Target	Actual	Actual (cumulative end target)
Capacity of electricity supply added in Southern Region (MW)	0	0	0	0	0	1,500	0	4,000	1,500	4,000
Project Output Indicators	**Baseline 2016**	**2017**		**2018**		**2019**		**2020**		
		Target	**Actual**	**Target**	**Actual**	**Target**	**Actual**	**Target**	**Actual**	**Actual**

[6] The original closing date for this project was September 2020. For this reason, no target values are set for 2021, and the same targets set for 2020 apply for all three project indicators.

Length of 400 kV transmission lines installed (KM)	0	0	0	0	0	500	0	619	109	600
Number of transmission lines constructed	0	0	0	0	0	4		5	2	5

Overall, the project has successfully achieved its stated objectives, although the project has experienced some delays in implementation.

8. Investment Sustainability (operational, financial/commercial, institutional)

POWERGRID is a central Government agency, which is triple-A rated domestically and listed on the National Stock Exchange of India. POWERGRID is highly familiar with MDB-funded projects in the energy transmission sector, having previously acted as borrower and implementing agencies for ADB and the World Bank. At the end of financial year 2020/21, the total transmission assets of POWERGRID and its subsidiaries stood at 170,685 km of transmission lines, 261 substations and 437,523 MVA of transformation capacity. On the operational front, POWERGRID has maintained 99.78% system availability with number of tripping per line for the year contained at 0.36 which was lowest in five years.

The project is likely to be sustainable. The design of the subprojects and the technology adopted are quite standard and similar to other projects implemented by POWERGRID, given the technical parameters and the requirements of India's power sector. Future funding for the required O&M is expected to be adequate since POWERGRID has a strong balance sheet and a lot of experience to support such activities.

More specifically:

- The power evacuation system is designed according to the current trends in technology and in compliance with international requirements, so as to minimize losses and optimize efficiency.
- The power flow in a particular line varies due to demand variation, failure of equipment, line faults, etc. For the system to be stable and to use optimized resources, it is very important to record the power flow at all times. This necessitates the monitoring of operation of the system on a three shift basis.
- The maintenance management system adopted aims at keeping the system under stable conditions while ensuring minimum maintenance cost and safety of equipment and personnel. A detailed maintenance management schedule has been finalized by POWERGRID, with specific responsibilities and timelines.
- A spare part management system was set up to ensure timely availability of proper spare parts for efficient maintenance of the substations and lines without excessive build-up of non-moving and slow moving inventory.
- There is adequate expertise available within POWERGRID and in the country to properly cover maintenance of transmission line and substation EHV equipment. POWERGRID can count on a training facility and on sufficient resources to cover demand for training in O&M aspects.
- Adequate O&M manuals will be made available to all concerned parties prior to commissioning of substations and transmission lines to avoid problems in preparation of commissioning documents as well as proper installation and commissioning of equipment.

- Two unused sets of special tools and tackles shall be provided for installation, commissioning and proper maintenance of equipment.

9. Compliance and Alignment with AIIB's Policies and Strategic Priorities

Despite having been designed prior to the formal approval of the Energy Sector Strategy – Sustainable Energy for Asia, the project is fully compliant with the Strategy's overarching principles, namely with regard to energy transmission and distribution (T&D), and fully aligned to Principle 1 "Promote energy access and security". As part of AIIB's commitments under power T&D, the project promoted "rehabilitation and reinforcement of existing networks to increase their resiliency to natural disasters, reduce technical losses, allow smooth integration of intermittent RE and improve reliability of supply". Due attention was paid during design to ensure appropriate consideration of potential environmental and social impacts (see section 10, below). The results framework for the project included indicators aligned to the strategy's results monitoring framework (additional electricity supply generated – MW and transmission lines installed – km and number.). Furthermore, the project is fully aligned with AIIB's Operational Policy on Financing.

Lastly, undertaking this project in partnership with ADB as a co-financier fulfills AIIB's purpose to "promote regional cooperation and partnership in addressing development challenges by working in close collaboration with other multilateral and bilateral development institutions" as defined in the Bank's Articles of Agreement.

10. Implementation of project-specific Environmental and Social instruments

AIIB agreed to use ADB's Safeguard Policy Statement (SPS, 2009) for this project, according to which this investment is classified as Category B for Environmental and Involuntary Resettlement, and Category C for Indigenous Peoples. Thus AIIB assigned Category B classification to this project.

The project's Grievance Redress Mechanism (GRM) was functional and was widely used. A Grievance Redress Committee (GRC) was established both at the project/scheme level and at Corporate/HQ level. The project-level GRCs have been established including members from POWERGRID, local administrations, Panchayat Members, Affected Persons representatives and reputed persons from the society on nomination basis under the chairmanship of project head. The corporate level GRC functions under the chairmanship of Director (Projects) and includes one representative from corporate ESMD who is conversant with the environment & social issues.

Additionally, the GRM was accessible to Project Affected People having grievances regarding land acquisition and tree or crop compensation. Extensive public consultations were carried out before commencement of work wherein community concerns were addressed in a systematic manner. Further, consultations with the community continued while implementation was in progress.

The Semi-Annual Environment and Social Safeguard Monitoring Report for Jan-June 2021 indicates that POWERGRID made payments totaling USD 16 million for land acquisition, as per replacement cost and has put in place funds for any land that is acquired in the future for the Project.

The transmission lines were constructed as per the Central Electricity Authority's Regulations 2010/2011 as well as Bureau of Indian Standards IS: 5613. These regulations stipulate requirements for the construction of transmission lines, including minimum clearance requirements from ground, buildings, structures, roads, etc. In accordance with the guidelines on construction of transmission lines, a Right of Way (ROW) is provided so that the transmission lines are not in contact with any object (trees or houses). Any trees in the ROW are felled only after an intensive tree survey. POWERGRID has already made compensation of USD 12 million as crop compensation and USD 31 million as tree compensation as of June 2021.

A total of 11 grievance cases were received by the project (7 presented at the courts and 4 registered in writing through the project-level GRM). POWERGRID has responded, in compliance with the provisions of the Lender's policy, to the public complaints raised through the GRM. The Madras High Court has quashed the petitions of the aggrieved persons on the ground that the writ petitions were not justified and was done with a motive to stall the project. The Madras High Court also observed that the petitioners cannot go to any other court for a second opinion.

11. Lessons Learned

- At loan closing date, one of the planned transmission lines was yet to be completed, due to substantial delays in the resolution of RoW issues, which are frequently encountered in power transmission construction projects in India. In this specific case, RoW issues materialized in spite of some mitigation measures implemented by the borrower to offset risks in this regard (i.e. use of an innovative tower design to reduce required RoW width). It is advisable that project teams assess the severity of RoW issues and associated risks (particularly environmental and social risks which may require time to be resolved) in project implementation through site visits and sufficient consultations with stakeholders along the planned stretch of the transmission lines so that the potential delays in implementation are adequately accounted for during project design and realistic implementation schedules are adopted. Allowing sufficient project implementation time for the resolution of potential issues to which energy transmission construction projects are bound to be vulnerable will help mitigate the risk of having to resort to requests for extension.

- The COVID-19 pandemic, and its severe impact in the project implementation area, caused significant delays in the commissioning and completion of physical works (in spite of all contracts having been awarded in a timely manner), due to the extensive lockdown measures imposed by the Government of India to offset the spread of the virus. Similarly, the pandemic was also responsible for delayed submission of the project's final audit report, as well as delays in the processing of GRM cases presented to the courts. The pandemic represents a major and unforeseen risk, for which mitigation strategies could not have been envisaged during project design. This nevertheless represents an important lesson learned, as it has shown the deeply interconnected nature of elements such as physical completion of works, E&S aspects and their resolution process in courts.

12. Borrower's Feedback

POWERGRID submitted written responses to the client feedback questionnaire sent by AIIB and included in Annex 1 to this Note. POWERGRID expressed appreciation for the positive and fruitful collaboration with AIIB, highlighting in particular AIIB's efficient and client-oriented approach to processing no-objections and withdrawal applications and to adopting ADB procurement guidelines for increased efficiency. POWERGRID concluded that, should the opportunity for future collaboration arise, they would be happy to consider working again with AIIB. In terms of suggestions for future improvement, POWERGRID has highlighted how some communication gaps arose with staff turnover within the project team, and they recommend that AIIB consider developing an online portal for more expeditious processing of disbursements rather than processing disbursements based on withdraw applications delivered by POWERGRID.

13. Any Pending issues and Follow-up actions, if applicable

The following points remain pending at the time of writing this Project Completion Note:

- Borrower to submit audited financial reports as part of their financial report due next year (September 2022) covering AIIB expenses reimbursed in the month of April 2021 (approximately USD1.33 million for eligible expenditures incurred before 31 March 2021), which were not covered in the report submitted for the previous FY (ended 31 March 2021).

- As per Loan Agreement dated 7 December 2017, and in reference to Section 4.08 (c) of the General Conditions, "the Recipient shall prepare, or cause to be prepared, and furnish to the Bank not later than six (6) months after the Closing Date, or such other date as may be specified for that purpose in the Loan Agreement, a report of such scope and in such detail as the Bank shall reasonably request, on the execution of the Project, the performance by the Loan Parties, the Project Implementing Entity and the Bank of their respective obligations under the Legal Agreements and the accomplishment of the purposes of the Loan ("Completion Report")." The Borrower is currently working on the report as the construction of the transmission lines have just been completed. The Project Team will follow up closely with POWERGRID for submission of the said report in compliance with the applicable loan covenants.

14. Achievement of Project Results

At the time of writing this Note, the project has successfully met its project objective targets. The project is relevant, appropriately designed and its benefits are likely sustainable. Regarding intermediate (output-based) results, the project has reached the target of number of transmission lines constructed which facilitate peak and off-peak energy sharing from the surplus areas of Northern and Western regions to the deficit areas in the Southern Region, although it is lagging slightly behind in terms of length of transmission lines in kilometers (see section 7 for detailed targets and indicators). The project experienced significant delays in the commissioning of lines due to right of way issues affecting the sub-projects. While overall project costs as of October 2021 are in line with the total appraised budget, the borrower is currently foreseeing some additional

costs which are expected to result in overruns across four expenditure categories (see Section 5 for further details).

Annex 1: Client Feedback Questionnaire[7]

1. Q: **Are the services and support provided by the Project Team professional, sufficient and in time, during project preparation and project implementation? Please provide some specifics or examples as an illustration.**

   A: AIIB's Project Team were professional and prompt in rendering the services and support as and when sought by POWERGRID. One such example for illustration is processing the disbursement Applications submitted through e-mail instead of waiting for receipt of hard copies of the same.

2. Q: **Is it convenient to access to the Project Team's services and support? Please provide some specifics or examples as an illustration.**

   A: AIIB's Project Team were always accessible and rendered their services and support. Few such instances are mentioned below:

   (i) Issuance of No-objections promptly as and when sought by POWERGRID on various matters.
   (ii) Prompt processing and disbursement of withdrawal applications submitted.

3. Q: **Does the Project Team demonstrate flexibility and efficiency during project preparation and project implementation? Please provide some specifics or examples as an illustration.**

   A: AIIB's Project Team demonstrated flexibility and efficiency during the project implementation period. Examples of demonstration of such flexibility is as below:

   (i) Adoption of Procurement Guidelines of ADB for procurement of packages.
   (ii) Extension of Loan closing period on account of extension in Project Completion due to COVID-19 pandemic.

4. Q: **What is the value addition of AIIB's financing in the Project?**

   A: The subject project considered under Sovereign Loan financing from AIIB is expected to benefit the public with overall reduction in project cost. Also, the procurement under Multilateral funding Agencies (viz. AIIB) carried out under International Competitive bidding provided the participation of technically qualified International vendors and competitive pricing. The project implementation complies with the Procurement and Safeguard related provisions/guidelines of the AIIB and ADB.

   It is to mention that the financing from AIIB is being envisaged for the first time by POWERGRID for implementation of its transmission project of immense national importance. Delivering reliable electricity to India's energy demand centers is a top priority for the Indian government to support the country's impressive growth momentum and the subject project is expected in fulfilling the Government of India's vision of providing 24x7 reliable power to all as it will balance the demand-supply patterns for the southern region of the country.

[7] Submitted by POWERGRID on 20 October 2021.

5. Q: **Will you consider working with the AIIB again in infrastructure development? Please provide a few specific reasons.**

   A: POWERGRID was satisfied with AIIB's professionalism and flexibility demonstrated in procurement, disbursement procedures and overall implementation of the project. Keeping in view of the above, POWERGRID would consider working with AIIB in case of any future requirement for its projects.

6. Q: **Do you have any suggestion to the Project Team and/or the AIIB for them to improve their operations in the future?**

   A: During the Project implementation period, there were multiple changes in Project Team of AIIB which led to discontinuity in exchange of information to the new team. It is suggested that the same Project Team may be maintained through out the implementation of the project till completion.

   Further, the submission of disbursement applications was carried out manually for the project. It is suggested that online portal for disbursement may be developed by AIIB, where the Executing Agency/Borrower can lodge the disbursement applications which will help in saving considerable time.

7. Q: **Other comments, such as comments on the reporting requirements, approval of project changes, etc.**

   A: Nil.

Annex 2. Construction and Commission Schedules of Subprojects (As of October 26, 2021)

Description	Foundations (Nos.)			Tower erection (Nos.)			Stringing (km)		
	Total	Comp-leted	% Prog-ress	Total	Comp-leted	% Prog -ress	Total	Comp -leted	% Prog -ress
400 kV (Quad) D/C line Pugalur HVDC Station – Pugalur (Existing) line	Commissioned in September, 2020								
400 kV (Quad) D/C line Pugalur HVDC Station – Arasur	Commissioned in September, 2020								
400 kV (Quad) D/C line Pugalur HVDC Station – Edayarpalayam	Commissioned on 13th July, 2021								
400 kV (Quad) D/C line Edayarpalayam – Udumalpet	Commissioned on 13th July, 2021								
400 kV (Quad) D/C line Pugalur HVDC Station – Thiruvalam	Commissioned on 26th October, 2021								