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Report No: ICR00005042

IMPLEMENTATION COMPLETION AND RESULTS REPORT

IBRD-86050 AND IBRD-88690

ON A

LOAN

IN THE AMOUNT OF US$500 MILLION

TO

INDIA

FOR THE

FIRST AND SECOND PROGRAMMATIC ELECTRICITY DISTRIBUTION REFORM DEVELOPMENT POLICY LOAN FOR RAJASTHAN

June 9, 2021

Energy and Extractives Global Practice
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective October 31, 2019)

Currency Unit =	Indian Rupee (INR)
INR 71.1 =	US$1

FISCAL YEAR

July 1–June 30

ABBREVIATIONS AND ACRONYMS

ACoS	Average Cost of Supply
AMI	Advanced Metering Infrastructure
AMR	Automatic Meter Reading
ARR	Average Revenue Realized
AT&C	Aggregate Technical and Commercial
AVVNL	Ajmer DISCOM or Ajmer Vidyut Vitran Nigam Ltd.
BPL	Below Poverty Line
CFL	Compact Fluorescent Lamp
CGFA	Corporate Governance and Financial Accountability
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
DISCOM	Distribution Company
DPL	Development Policy Loan
EPI	Employee Performance Incentive
ERP	Enterprise Resource Planning
FRBM	Fiscal Responsibility and Budget Management
GoI	Government of India (Central Government)
GoR	Government of Rajasthan
GSDP	Gross State Domestic Product
IPF	Investment Project Financing
IT	Information Technology
JdVVNL	Jodhpur DISCOM or Jodhpur Vidyut Vitran Nigam Ltd.
JVVNL	Jaipur DISCOM or Jaipur Vidyut Vitran Nigam Ltd.
LED	Light Emitting Diode
MOP	Ministry of Power
MoU	Memorandum of Understanding
O&M	Operations and Maintenance
P4R	Program-for-Results
PFA	Power for All
PPA	Power Purchase Agreement

R-APDRP	Restructured-Accelerated Power Development and Reform Program
RERC	Rajasthan Electricity Regulatory Commission
RSEDMR	Rajasthan State Electricity Distribution Management Responsibility
RUVNL	Rajasthan Energy Development Corporation Ltd. or Rajasthan Urja Vikas Nigam Ltd.
UDAY	Ujwal DISCOM Assurance Yojana (Program for the Financial Turnaround of DISCOMs)

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DATA SHEET

BASIC INFORMATION

Program Series

Project ID	Short Name	Full Name
P157224	First Programmatic Electricity Distribut	First Programmatic Electricity Distribution Reform Development Policy Loan for Rajasthan
P159669	Rajasthan Electric Distribution Reform 2	Second Programmatic Electricity Distribution Reform DPL for Rajasthan

Series Details (USD)

Project ID	Approved Amount	Disbursed Amount
P157224	250,000,000.00	250,000,000.00
P159669	250,000,000.00	250,000,000.00
Total	**500,000,000.00**	**500,000,000.00**

	P157224	P159669
Policy-Based Guarantees	No	No
Ln/Cr/TF	IBRD-86050	IBRD-88690
Concept Review	16-Dec-2015	18-Jan-2017
Decision Review	16-Feb-2016	11-Dec-2017
Approval	25-Mar-2016	05-Jul-2018
Effectiveness	13-May-2016	01-Oct-2018
Original Closing	31-Mar-2017	30-Sep-2019
Actual Closing	31-Mar-2017	31-Oct-2019
Crisis or Post-Conflict	No	No

Regular Deferred Drawdown Option	No	No
Catastrophe Deferred Drawdown Option	No	No
Sub-National Lending	Yes	Yes
Special Development Policy Lending	No	No

Organizations

Series Project	Borrower	Implementing Agency
P157224	Republic of India	Department of Energy, Government of Rajasthan
P159669	Department of Economic Affairs, Ministry of Finance	Energy Department, Government of Rajasthan, Ajmer, Jaipur and Jodhpur DISCOMs

Program Development Objective (PDO)

Program Development Objective (PDO) (From last operation in the series)

The proposed second operation of the program will continue to support the Government of Rajasthan's program for the turnaround of the distribution sector in Rajasthan under the 24x7 Power for All program. The Program Development Objectives are to support the turnaround of the electricity distribution sector in Rajasthan, by (a) strengthening the governance framework, (b) enhancing policies torestructure its finances, and (c) improving its operational performance.

PROGRAM FINANCING DATA (USD)

World Bank Administered Financing

	Approved Amount	Actual Disbursed
P157224		
IBRD-86050	250,000,000	250,000,000
P159669		
IBRD-88690	250,000,000	250,000,000
Total	**500,000,000**	**500,000,000**

RATINGS SUMMARY

Program Performance

Overall Outcome	Relevance of Prior Actions	Achievement of Objectives (Efficacy)
Moderately Satisfactory	Satisfactory	Moderately Satisfactory

Bank Performance

Satisfactory

ACCOUNTABILITY AND DECISION MAKING

At ICR:

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P157224

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P159669

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I. PROGRAM CONTEXT AND DEVELOPMENT OBJECTIVES

A. Context at Appraisal

Context

1. Efforts to alleviate poverty in Rajasthan are significant for all of India, as the nation's sixth most populous state and the seventh largest state economy with a gross state domestic product (GSDP) of US$43 billion in 2012. In the decade leading up to the Development Policy Loan (DPL) series initiated in 2015, Rajasthan's economy grew faster than the nation as a whole, with an annualized rate of 7.9 percent. The state poverty rate also fell more rapidly than the national average, and economic growth was significantly more effective at reducing poverty in Rajasthan than at the all-India level.

2. In 2014, the Ministry of Power, Government of India (GoI), launched the '24 x 7 Power for All' (PFA) program as a joint initiative between GoI and states/union territories to provide continuous, reliable power supply to all domestic, industrial, and commercial customers and adequate supply to agricultural customers, by 2019. PFA was one of the six priority areas agreed between the Indian Prime Minister and the World Bank President in July 2014 for collaboration and engagement. The PFA program set a broad power sector development agenda and addresses adequacy of generation, transmission and distribution capacity addition, affordable procurement and efficiency of electricity supply, financial measures to ensure liquidity of the utilities, loss reduction, modernization and automation of the power system to improve reliability and consumer satisfaction, and state coverage of the subsidies to the utilities up front.[1] Around the same time, the Government of Rajasthan (GoR) released a 'Vision 2020' that included goals for improving capacity and efficiency of the transmission and distribution sectors.

3. These strategies came at an important time because the electric power sector in Rajasthan faced serious structural financial challenges that risked its immediate and long-term health. The distribution sector is at the heart of the structural deficit. Rajasthan's share of electricity consumed by categories of consumers that are subsidized is the highest in the country, including approximately 45 percent of electricity consumption going to agriculture. Rajasthan's distribution companies (DISCOMs) were also experiencing losses to theft and network inefficiency approaching 30 percent, while power costs were among the highest in the country owing to Rajasthan's coal power stations being far from the coal mining regions of India and higher costs of transmission owing to a population density roughly half the national average.

4. From FY09 to FY14, annual revenue deficits ballooned by 130 percent, as the state delayed tariff adjustments even as generation and operational costs increased, such that only 50 percent of costs were recovered through electricity sales. As deficits mounted, the DISCOMs) resorted to short-term borrowing with interest costs so high that debt service constituted INR 1.81 per kWh sold in FY14 (compared to an average of INR 0.44 per kWh nationally). By FY15, the accumulated revenue deficits of the DISCOMs in Rajasthan were ~INR 814 billion (US$13 billion), putting the DISCOMs in a position of unsustainable debt

[1] Joint initiative of GoI and GoR (December 2014). '24x7-Power for All'.

service levels. The precarious situation of the Rajasthan DISCOMs[2] effectively left no choice but for losses to be assumed by the state, else a broader crisis would ensue. Financial institutions were reluctant to extend further financing owing to the risk of nonperforming loans, with potential collateral damage to generation and transmission sectors given the perceived risks of non-payment by the DISCOMs. This impact could substantially hamper the power sector's ability to serve rising demand during a period of rapid expansion of electricity services and industrialization.

5. The state had a history of assuming the debts of the DISCOMs as contingent liabilities. The state's financial support to the electricity distribution sector was in the form of (a) subsidies for supply of power to the agriculture sector, (b) interest subsidies for loans taken by DISCOMs, (c) equity support for capital investments, and (d) financial bailouts and rebalancing of debt-equity ratios. In FY15, total public support to the power sector in the state amounted to 2.4 percent of GSDP, eroding state efforts since 2005 to reduce the fiscal deficit.

6. Although Rajasthan's DISCOMs had the most accumulated debt than any other state in India, the issue of financial insolvency of the distribution sector is not unique to Rajasthan and has been seen as the core challenge to the sustainability and viability of the Indian power sector for decades.[3] India's DISCOMs have accumulated losses of INR 3.8 trillion (US$61 billion), serving debts with interest rates as high as 14–15 percent. The financial distress was most directly attributed to non-revision of tariffs while costs increased, causing the gap between Average Cost of Supply (ACoS) and Average Revenue Realized (ARR) to swell to INR 2.36 per kWh by FY15–FY16. Rajasthan's tariff increases had lagged those of other states whose distribution sectors were in better financial health.

Rationale

7. In July 2015, the GoI requested US$500 million in World Bank financing for the GoR to help achieve long-term financial sustainability of the electricity distribution sector and ensure quality, affordable, and reliable power supply to all customers in Rajasthan. The activities were to include reforms by the GoR to improve operational efficiency and financial sustainability of the power sector in Rajasthan in the long run. While the initial financing request was for a significantly higher amount, it was subsequently scaled down based on discussions of the state with the GoI. Even though the financing being sought from the World Bank was a small proportion of the needs of Rajasthan, the GoR saw the merit of having an independent third party to support the state during what promised to be a difficult journey of reforms and to enhance visibility of progress even if there were challenges. This request for support came at a time of growing recognition by the state and the Ministry of Power (MOP) that comprehensive financial restructuring was needed and that such intervention could only be sustainable if accompanied by governance and operational reforms for the distribution sector.

8. While discussions between the GoR and the World Bank to support the state distribution sector were in progress, the GoI was preparing a broader financial bailout plan for the distribution sector, which

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[2] Distribution of electricity in Rajasthan is the responsibility of three state-owned companies: Jaipur Vidyut Vitran Nigam Ltd (JVVNL or Jaipur DISCOM), Jodhpur Vidyut Vitran Nigam Ltd (JdVVNL or Jodhpur DISCOM), and Ajmer Vidyut Vitran Nigam Ltd (AVVNL or Ajmer DISCOM). There are legally distinct from transmission and generation companies and an independent regulator (Rajasthan Electricity Regulatory Commission [RERC]) responsible for approving tariffs and oversight of regulatory obligations.

[3] Dubash, Navroz K., ed. 2018. *Mapping Power: The Political Economy of Electricity in India's States*. Oxford University Press.

was announced in November 2015 and was called Ujwal Discom Assurance Yojana (UDAY). UDAY was intended as a systemic intervention to alleviate the risk imposed by DISCOM insolvency on the financial sector and create levers for introducing commercial discipline in the sector. The UDAY program included provisions for: (i) improving operational efficiencies, including reduction of losses and revenue requirements adjustments; (ii) improving optimization of power generation costs and price discovery by the DISCOMs; (iii) requiring state governments to absorb and restructure the majority of DISCOM debt through bond issuance that would lower interest payments by the DISCOMs; and (iv) making the contingent liabilities of the states to the DISCOMs explicit and mandating states to finance DISCOM deficits rather than allowing DISCOMs to resort to borrowings from financial institutions to cover losses.

9. As a concurrent subject under the Indian constitution, electricity is the domain of both central and state policy making. Governance of the power sector in India has served important social objectives, including expanding access and providing electricity for water pumping in agriculture. The structure of the Indian distribution sector has long left it substantively reliant on government support,[4] owing to a nonviable operational and financial model from a commercial perspective.[5] Successive waves of reform have not forestalled the need for later relief, but each has moved the power sector toward more sustainable operation. In 2001, Rajasthan implemented recommendations from the Ahluwalia Committee on a bailout of the distribution sector that converted arrears into state government bonds. The GoI adopted the 2003 Electricity Act to increase the performance and efficiency of the power sector, including by permitting competition, increasing transparency through state electricity regulatory commissions, and moving toward sector cost recovery and commercial viability. Less than a decade later, in 2012, the GoR had to assume 50 percent of the outstanding short-term liabilities of DISCOMs, amounting to US$3 billion, onto the state government's balance sheet and recapitalized the companies through equity support. This Scheme for Financial Restructuring of State Distribution Companies was not seen as effective in guarding against future DISCOM loss accumulation owing to inadequacy of a monitoring framework for efficiency improvement efforts, a failure to control the cost of power supply, and lack of managerial accountability.[6]

10. Based on earlier experience, UDAY was designed with substantive reform actions that had to accompany the financial assistance to mitigate the risks of moral hazard.[7] UDAY was to be implemented through tripartite memorandums of understanding (MoUs) between the GoI, the state, and DISCOMs that included several features to incentivize performance and discourage backsliding. Only partially achieved through the prior schemes under UDAY, the financial liabilities of the DISCOMs were to be assumed directly by the states thus investing them in enhanced DISCOM performance. UDAY also prohibited further commercial lending and high interest rates that accompany them, required review of long-term power purchase agreements (PPAs) and procurement through the power exchange to lower the cost of bulk power supply from generators to the DISCOMs; required heightened measures to reduce distribution

[4] Former Planning Commission official, referenced in Dubash, Navroz K., and Sudhir Chella Rajan. 2001. "Power Politics: Process of Power Sector Reform in India." *Economic and Political Weekly* (2001): 3367–3390.
[5] Khurana, M., and S. G. Banerjee. 2015. "Beyond Crisis: The Financial Performance of India's Power Sector." World Bank, Washington, DC.
[6] The inability for these conditions to remove moral hazard are noted in Pargal, S., and S. G. Banerjee. 2014. *More Power to India: The Challenge of Electricity Distribution. Directions in Development - Energy and Mining.* Washington, DC: World Bank.
[7] The logic of moral hazard would hold that because the state would never allow the DISCOM to fail as its financial situation deteriorated, there would be weak incentive for the DISCOM to undertake costly substantive reforms that could forestall financial deterioration.

losses and improve revenue recovery from power sales; and imposed penalties for noncompliance including ineligibility for central financing schemes made available by MOP.

11. The World Bank's intention in supporting Rajasthan was to achieve long-term financial sustainability and included full implementation of UDAY in addition to technical and operational reforms that would forestall further financial deterioration and improve service with a long-term view to more modern, efficient, and sustainable operations.

12. The DPL series was designed to support the World Bank's broader objectives under the Country Partnership Strategy (CPS) for India FY13–FY17[8] in terms of engagement to end poverty and boost shared prosperity in India. The CPS included a focus on provision of electricity services to increase economic growth and opportunities for the poor, particularly in low-income states like Rajasthan. Improving the financial performance of DISCOMs in one of India's lowest income states would accelerate extension of energy access and improved power quality to the poor and facilitate the adoption of clean and distributed sources of power while also putting the DISCOMs on a sustainable footing whereby the state budget could make funds available for more poverty-targeted interventions. Furthermore, the World Bank's newer Country Partnership Framework (CPF) for India was under development during the period of the DPL series, and the operations are fully consistent with those priorities. The CPF indicates the institution's priority to "Increase access to sustainable energy" including by "redoubling efforts to carry through on state transmission and distribution (T&D) utility reforms and institutional strengthening to ensure increased access to reliable power in alignment with the GoI's 24x7 Power for All Program." The logic for intervention on this issue notes that state government-owned DISCOMs are responsible for electricity supply disruptions and that these institutions carry financial losses that present risks across the sector.[9] The CPF priority is to improve institutional capacity and governance and then to "increase commercial orientation and management and accountability," including by leveraging private finance for power sector development. The program was focused on strengthening the institutional capabilities of the DISCOMs to meet future electricity service without long-term reliance on public support. The DPL series also supported the World Bank's efforts termed 'State Partnership' which sought to deepen relationships with the identified partner states and 'Lighthouse India', sharing good practices across India and to the region. The World Bank was developing a state partnership with Rajasthan, involving World Bank senior management to initiate discussions and technical assistance on a portfolio of development challenges. The GoR expressed that the power sector was an urgent priority.

13. In principle, through measures under UDAY and the actions that the World Bank was preparing to support, Rajasthan's DISCOMs would be able to break even financially within three to four years, with only modest tariff increases. The reality, however, was understood to be more complex, given the political headwinds surrounding tariff revisions needed to realize sustained positive financial returns, particularly bringing transparency around cross-subsidies to agricultural power consumption and controlling commercial losses (electricity theft). The DPL series made a strategic decision early on to couple technical improvements with strengthening the institutional and financial foundation in support of these broader reforms.

[8] Report 76176-IN, discussed by the Executive Directors on April 11, 2013.
[9] UDAY notifications, December 2015 and December 2017, as cited in CPF 2018.

Original Program Development Objective(s) (PDO) (as approved)

14. The original Program Development Objective (PDO) at the time of the approval the first operation of the program was to ‘support the Government of Rajasthan (GoR)’s program for the turnaround of the distribution sector in Rajasthan under the 24x7 Power for All program’. This first operation lays the foundation for legislative changes and institutional reforms to improve the sector’s governance, supports the financial restructuring of the sector, and backs actions necessary to improve operational performance.

Original Policy Areas/Pillars Supported by the Program (as approved)

15. The policy areas of the GoR program that are supported by the proposed operation are (a) Strengthening Governance in the Rajasthan Electricity Distribution Sector; (b) Financial Restructuring and Recovery; and (c) Improving Operational Performance of Distribution Utilities.

B. Significant Changes during Implementation

Revised Program Development Objectives (PDOs)

16. The second operation of the program maintained the focus from the first operation on supporting the GoR’s program for the turnaround of the electricity distribution sector in Rajasthan under the 24x7 PFA program, with no substantial change. The second operation’s PDO was “to support the turnaround of the electricity distribution sector in Rajasthan, by (a) strengthening the governance framework, (b) enhancing policies to restructure its finances, and (c) improving its operational performance.”

Revised Policy Areas/Pillars Supported by the Program

17. The three policy areas of the program are maintained without substantive change, though reframed as follows:

(a) Strengthening the governance framework of the state-owned utilities *(the change references a framework of legislation and institutional reforms that were implemented in the first operation)*

(b) Enhancing policies to restructure the finances of the electricity distribution sector *(**recovery** was removed, which refers to reversing the financial deterioration of the utilities that had a crescendo in 2015 before the UDAY financial restructuring)*

(c) Establishing operational performance criteria, financial conditions, and management incentives for the sustainable financial recovery of the sector *(includes additional modalities for improving operational performance)*.

18. The program design built on progress since UDAY’s launch in late 2015 and early 2016. It also built on another central scheme called the Restructured-Accelerated Power Development and Reform Program (R-APDRP), in addition to the GoR’s State Electricity Distribution Management Responsibility (RSEDMR) Act, which aims to reform the governance of DISCOMs and brings more public accountability to the sector and was enacted in March 2016.

19. The design of the second operation articulates additional focuses on (a) reversing the financial deterioration of the utilities; (b) increasing access to electricity and improving services; and (c) achieving long-term reliability of electric power supply, with improved energy efficiency and its associated climate benefits.

Other Changes

20. Other revisions are reflected in the Assessment of Key Program Design and Outcomes table, as follows.

II. ASSESSMENT OF KEY PROGRAM DESIGN AND OUTCOMES

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
Policy Area A: Strengthening the Governance Framework in the Rajasthan Electricity Distribution Sector				
Prior Action 1: Rajasthan has issued and notified the Electricity Distribution Management Responsibility Ordinance	**Indicative Trigger 1:** Rajasthan has entered into MoUs with DISCOMs setting out targets for key performance indicators regarding: AT&C[10] losses; Feeder metering and Consumer Indexing; Energy accounting and auditing; and performance evaluation for the DISCOMs for FY17-18.	**Prior Action 1:** The GoR has entered into Memoranda of Understanding with each of the DISCOMs setting out targets for key performance indicators regarding: (a) AT&C losses; (b) energy accounting and auditing; (c) billing and collection efficiency; and (d) filing of revenue and/or tariff petitions for FY17-18 *(Change from DPL 1) The revision elaborates on the key aspects of the UDAY MoUs. The ordinance referenced in DPL 1, Prior Action 1 is the RSEDMR Act, which came into force in June 2016.*[11]	**Result Indicator 1:** Appointment of Independent Directors in accordance with the clause No. 8 of the Ordinance/Act in each DISCOM: • Baseline: 1 in FY15 • Interim: 2 (September 2016) • Target: As per provisions of the Companies Act (Central Act No. 18 of 2013) by March 2017 • Current status (FY17): 2 ***(Achieved)***	
Prior Action 2: The DISCOMs have developed and obtained approvals for their Employee Performance Incentive (EPI) schemes.	**Indicative Trigger 2:** The DISCOMs have prepared and approved a revised transfer and promotion policy for its employees.	**Prior Action 2:** The DISCOMs have approved a Transfer Policy and Performance Management Policy, for their employees.	**Result Indicator 2:** Implementation of EPI scheme: • Baseline: 0 in FY15 • Interim: Incentive for performance in FY16	**Result Indicator 1:** Incentive for Performance during FY: • Baseline: 0 in FY15 • Target: Incentive for performance in FY19

[10] AT&C = Aggregate technical and commercial.
[11] https://energy.rajasthan.gov.in/content/dam/raj/energy/dept_of_energy/pdf/misc/RajStateElecDistMangAct2016.pdf.

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
		(Change from DPL 1) The revision strengthened the prior action to indicate a transfer and key performance indicator-based performance management system is being put in place for employees.	disbursed (by September 2016) • Target: Incentive for performance in FY17 disbursed (by June 2017) *Updated in DPL 2 as Results Indicator 1*[12]	disbursed (by September 2019) • *Current status: One of three DISCOMs disbursed incentive in FY19* ***(Partially achieved)***[13]
Prior Action 3: The DISCOMs have completed audited financial statements for FY 14-15.	**Indicative Trigger 3:** The DISCOMs have completed audited financial statements for FY 15-16. **Indicative Trigger 4:** The DISCOMs have started the implementation of their Corporate Governance and Financial Accountability (CGFA) Plan	**Prior Action 3:** The DISCOMs have started the implementation of their Corporate Governance and Financial Accountability Plans, duly adopted by their Boards of Directors, by publishing their audited financial statements for FY16-17. *(Change from DPL 1) Through the revision, Triggers 3 and 4 were merged and language strengthened to reflect adoption of CGFA Plan and that its implementation was initiated.*	**Result Indicator 3:** Date of availability of audited annual accounts • Baseline: December 31, 2015 (delay of three months) • Target: September 30, 2016 (within six months of end of FY) • Current status: Audited annual accounts for DISCOMs for FY17 were available before September 30, 2017 ***(Achieved)***	**Result Indicator 2:** Date of availability of audited annual accounts • Baseline: December 31, 2015 (delay of three months) • Target: September 30, 2019 (within six months of end of FY, i.e. zero-month delay) • Current status: Audited annual accounts for DISCOMs for FY19 were available before September 30, 2019 ***(Achieved)***
Policy Area B: Enhancing Policies to Restructure the Finances of the Rajasthan Electricity Distribution Sector				
Prior Action 4: The Union Government,	**Indicative Trigger 5:**	*No additional Prior Action in*	**Result Indicator 4:** Percentage of outstanding debt (as	**Result Indicator 3:** Annual loss of DISCOMs to be

[12] Target was not achieved during DPL 1 but continued in DPL 2. The FY16 incentive was not disbursed due to underattainment of AT&C loss reductions. In FY17, the EPI scheme was not approved by the Government in time for implementation by the DISCOMs.
[13] Of the three DISCOMs, two did not have sufficient reduction in losses at overall DISCOM level (according to internal targets) to justify disbursement of the incentive.

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
Rajasthan and the DISCOMs have entered into tri-partite MoUs providing for the implementation of UDAY program.	The DISCOMs have combined losses (measured by Profit before Taxes) for the period from 1st April, 2015 to 31st March, 2016 that do not exceed INR 100 billion	*DPL 2.* *Trigger 5 had been kept during DPL 1 approval to ensure that DISCOMs' financial performance progresses positively. However, it is not relevant as a prior action since the DISCOM's financial performance continued to improve in FY17 and losses reduced to INR 48.12 billion. Trigger 6 moved to Policy Area C, Prior Action 6 (DPL 2).*	of September 30, 2015) of DISCOMs taken over by GoR • Baseline: 0 as on September 30, 2015 • Interim: 50% by June 30, 2016 • Target: 75% by March 2017 • Current status: 75% ***(Achieved)***	taken over and funded by State, as provided under UDAY program • Baseline: 0 in FY15 • Target: 10% in FY19 • Current status: 0 ***(Not achieved)*** – Context changed during implementation[14]
	Indicative Trigger 6: The DISCOMs have published complete monthly energy audits for 90% of their respective feeders at their websites and initiated the Loss-Based Load Scheduling program		**Result Indicator 5:** Monthly Distribution Energy Audit reports generated and disclosed (expressed as % of feeders) • Baseline: 0% in FY15 • Interim: 20% by March 2016 • Target: 90% by March 2017 • Current status: 100% ***(Achieved)***	
Prior Action 5: The DISCOMs have filed with RERC their annual revenue requirements and tariff petitions for FY16.	**Indicative Trigger 7:** The DISCOMs have filed with RERC their annual revenue requirements and tariff petitions for FY17.	**Prior Action 4:** The DISCOMs have filed with RERC their annual revenue requirements and tariff petitions for FY17-18.	**Result Indicator 6:** Gap between Average Cost of Supply (ACoS) and Average Revenue Realized (ARR) • Baseline: INR 3.00/kWh in FY15 • Interim: INR 2.40/kWh in FY16	**Result Indicator 4:** Gap between ACoS and ARR • Baseline: INR 3.00/kWh in FY15 • Target: INR 0.70/kWh in FY19

[14] None of the DISCOMs' annual loss has been explicitly assumed by the State as mandated under UDAY. The State has made a request to MOP to relax this provision under UDAY. MOP has not responded on the request.

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
			• Target: INR 0.70/kWh in FY17 *(Updated in DPL 2 as Results Indicator 4)*	• Current status: INR 1.7/kWh in FY19 ***(Partially achieved) –*** *Trajectory for attainment is again in the right direction, after backsliding in FY18.*
Prior Action 6: Rajasthan has set up the Rajasthan Energy Development Corporation Ltd (Rajasthan Urja Vikas Nigam Ltd.), a company aiming to bring transparency and optimize power purchases on behalf of DISCOMs	**Indicative Trigger 8:** Rajasthan Energy Development Corporation Ltd. is operational	**Prior Action 5:** Rajasthan Urja Vikas Nigam Ltd. ('RUVNL') is operational and power purchases (including renewable energy purchases) for DISCOMs are made through RUVNL *(Change from DPL 1) The revision reflects the company name and strengthens the prior action to reflect the focus toward greening the energy mix.*	**Result Indicator 7:** Power Purchases for DISCOMs routed through Rajasthan Energy Development Corporation Ltd. • Baseline: 0 in FY15 • Interim: 30% by September 2016 • Target: 90% by March 2017 • Current status: 100% ***(Achieved)***	
Policy Area C: Improving Operational Performance of Distribution Utilities				
		Prior Action 6: The DISCOMs have published completed periodic energy audits of 90% of their respective feeders at their websites and initiated, since December 2016, a Loss-Based Load Scheduling Program *Previously under Policy Area B, Indicative Trigger 6.* *The revision reflects that energy audits will be done periodically*	**Result Indicator 8:** AT&C losses (%): • Baseline: 29.5% (Provisional) in FY15 • Interim: 28% i.e. reduction of 1.5 percentage points over baseline by FY16 • Target: 23% i.e. reduction of 6.5 percentage points over baseline by FY17 • Current status (FY17): 23.78% ***(Mostly achieved)***	**Result Indicator 5:** AT&C losses (%): • Baseline: 29.5% in FY15 • Target: 17% that is, reduction of 12.5 percentage points over baseline by FY19 • Current status (FY19): 21.2% ***(Partially achieved)***

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
		(rather than monthly) and indicates when the loss-based load scheduling scheme has been initiated.	*Results indicator was previously associated with Prior Action 7.*	
Prior Action 7: The DISCOMs have approved Business Plans for improved operational performance and initiated their implementation including on: (a) Pre-paid Metering Program for government consumers; and (b) The Energy Efficiency Lighting Program	**Indicative Trigger 9:** The DISCOMs have implemented a unified billing system including billing all Large and Medium Industrial consumers based on an Automated Meter Reading system.	**Prior Action 7:** The DISCOMs have implemented a unified billing system including billing large and medium industrial consumers based on an Automated Meter Reading system. *(Change from DPL 1) Removes 'all' while reflecting rollout of billing of large and medium industrial consumers.*	**Result Indicator 9:** Number of consumers put on pre-paid/ Advanced Metering Infrastructure (AMI)/ Automatic Meter Reading (AMR) meters • Baseline: 0 in FY15 • Interim: 20,000 by September 2016 • Target: 100,000 by March 2017 *(Target date revised in DPL 2 as Results Indicator 6[15])* **Result Indicator 10:** Number of LED lamps distributed • Baseline: 0 in FY15 • Interim: 10,000,000 by March 2016 • Target: 15,000,000 by March 2017 *(Target date revised in DPL 2 as Results Indicator 7)* **Result Indicator 11:** Number of IT staff appointed • Baseline: 0 in FY15	**Result Indicator 6:** Number of consumers put on pre-paid/ AMR/ AMI meters • Baseline: 0 in FY15 • Target: 100,000 by September 2019 • Current status (October 2019): 120,000[17] ***(Achieved)*** **Result Indicator 7:** Number of LED lamps distributed • Baseline: 0 in FY15 • Target: 16,000,000 by September 2019 • Current status: 16,164,048 by March 2019 ***(Achieved)*** **Result Indicator 8:** Percentage of positions filled in
	Indicative Trigger 10: The DISCOMs have started implementation of their approved IT Roadmap including creation of an IT cadre and filling 50% of the posts with IT professionals.	**Prior action 8:** The DISCOMs have (a) started implementation of their approved IT Roadmaps by preparing detail project reports for Enterprise Resources Planning (ERP) deployment and (b) created an IT cadre and started mapping IT professionals accordingly. *(Change from DPL 1)*		

[15] The revision in target attainment date accounts for challenges experienced in tendering of smart meters.
[17] This includes 70,000 smart meters implemented by distribution franchisee CESC in Kota, Bharatpur, and Bikaner. See National Smart Grid Forum (October 9, 2020). "Smart Meters (Nos.) Installed in India." https://www.nsgm.gov.in/en/content/sm-stats.

Prior Actions			Results Indicators	
DPL 1	**DPL 1 Indicative Triggers**	**DPL 2**	**Original DPL 1**	**Revised DPL 2**
		The revision reflects how the start of implementation of information technology (IT) road map is being demonstrated and filling of posts to be assessed as part of the results indicator, without being overly prescriptive.	• Interim: 15 by September 2016 • Target: 30 by March 2017 • Current status: 30 ***(Achieved)*** **Result Indicator 12:** Number of consumers put on unified billing system • Baseline: 50% in FY15 • Interim: 100% by December 2016 • Target: 100% by March 2017 • Current status: 100% ***(Achieved)*** **Result Indicator 13:** Number of villages remaining to be electrified • Baseline: 495 (April 2015) • Interim: 250 (October 2016) • Target: 25 (March 2017) • Current status: 0[16] ***(Achieved)***	IT cadre in DISCOMs • Baseline: 0 in FY15 • Target: 75% by September 2019 (with gender disaggregated data and target of 15% share of females in filled up positions) • Current status (March 2019): 83.9%, 24.7% of which are female employees ***(Achieved)*** **Result Indicator 9:** Number of unelectrified Households in State • Baseline: 21,82,180 (as of October 10, 2017) • Target: 7,50,000 (by September 2019) • Current status (October 2019): 0 ***(Achieved)*** – *No households remain unelectrified in the state.*

[16] Excludes remote villages that the state government has determined will not be electrified through grid extension.

A. Relevance of Prior Actions

Rating: Satisfactory

21. The World Bank's support for the turnaround of the Rajasthan distribution sector built on the reform program of the GoR and the GoI centered on two key frameworks: (a) UDAY, which Rajasthan joined in January 2016, and (b) the RSEDMR Act, enacted in March 2016. The World Bank's intervention came at a crucial time for the sector's stability and health and contributed toward a momentum for reform.

22. **Policy areas.** The three policy areas supported under the program have a strong and direct link to attainment of the objective, and the prior actions and associated results indicators are relevant to the objective, with only minor issues in terms of indicator design. Policy Area A sought to strengthen the governance framework of the distribution sector. The unsustainable tariff structure and lack of employee incentives to identify and minimize losses ultimately eroded transparency and accountability in the sector that contributed to declines in its financial health. Policy Area B sought to restructure the finances of the sector under the UDAY program, which was a necessary condition to stabilize the sector and avoid further losses. This policy area contributes more directly to 'rescue' than immediately to 'turn around' but was indisputable as a necessary foundation before broader reform could be achieved toward long-term financial sustainability. Finally, Policy Area C builds on the stabilizing benefits of Policy Area A (governance) and Policy Area B (restructuring) to address the longer-term issue of operational performance (in effect, cost recovery and service delivery).

23. **Policy Area A (Governance Framework)** is supported by three prior actions in both DPL1 and DPL2.

24. The first prior action commits the GoR to the reform agenda, in DPL1 through notification of the Electricity Distribution Management Responsibility Ordinance and in DPL2 through MoUs with each of the DISCOMs with concrete and substantive expectations that relate directly back to the turnaround agenda. The associated indicator (DPL1, Result Indicator 1) ensures appointment of independent directors in accordance with the implementation of the ordinance. The results indicators included in the MoUs are also assessed by the World Bank under other prior actions.

25. The second prior action creates incentives for employee performance to work toward reduction in AT&C losses crucial to financial turnaround and sustainability of the DISCOMs. In DPL1, the prior action rewarded all employees within the operations and maintenance (O&M) units working in subdivisions that achieved AT&C loss targets, with revision in DPL2 to assess attainment at a more aggregated level (distribution *Circle* or group of subdivisions). The associated indicator (DPL1, Result Indicator 2; DPL2, Result Indicator 1) simply measures whether the incentive is being disbursed in each of the three DISCOMs. The program arose out of concerns that employees had been either ignoring or facilitating theft and insufficient efforts have been taken on this issue. The incentive is intended to align employee interests with strategic and operational goals of the DISCOMs and therefore motivate nonperforming staff and increase theft mitigation actions. Despite these intentions, the design of the prior action and the associated indicator have significant issues that follow the design of the EPI scheme. First, the AT&C target requires collective effort by employees and the incentive is offered to all employees in areas where the target is achieved. This creates a collective action problem, whereby individual staff could underperform but still be rewarded—which has the aggregate effect of demotivating individual action. This raises

questions whether the incentive would substantively contribute to the intended AT&C loss reductions. Second, while the intent is good, it is not clear whether the incentive is substantive enough to change behavior (putting aside the collective action issue) and therefore whether the incentive could be substantively attributed toward AT&C loss reductions and therefore the PDO.

26. The third prior action is for the DISCOMs to publish audited financial statements on time. Such reports allow for the state to hold DISCOM management accountable, increase transparency on the accuracy of the reviews, and help the state monitor DISCOM progress toward turnaround. During the implementation of DPL1, each of the DISCOMs' boards of directors implemented CGFA Plans, which included a multitude of important features for financial management, timeliness in preparation of financial statements, and confidence in their reliability and accuracy. The associated prior action in DPL2 sought to ensure that the audited financial statement requirement of the CGFA was being implemented, though it did not follow up on other action plan elements (DPL1, Indicative Trigger 4). The associated results indicators (DPL1, Result Indicator 3; DPL2, Result Indicator 2) are intuitive, reducing the delay from three to zero months.

27. **Policy Area B focuses on policies to restructure sector finances.** It has three prior actions in DPL1, reduced to two in DPL2.

28. The first prior action (DPL1, Prior Action 4) sought to ensure that Rajasthan participated fully in the UDAY scheme, through which the state government took over 75 percent of the DISCOM liabilities totaling INR 805 billion or 9.0 percent of the GSDP.[18] UDAY was operationalized through a tripartite MoU among the GoR, the GoI, and the respective DISCOMs. The Rajasthan DPL series was at its preparation stage and pre-appraisal when UDAY was being rolled out, which allowed the team to engage substantively with the GoR on the program preparation. The first associated indicative triggers under the prior action (DPL1, Indicative Trigger 5) provided for the DISCOMs to keep yearly losses at manageable levels (defined as below INR 100 billion) in FY16. This amount was exceeded owing to higher AT&C losses than projected in the UDAY financial models alongside late-payment surcharges imposed by the generation companies. However, these losses were more than halved by the time of preparing DPL2. Furthermore, as formulated, the trigger was not an 'action' and so no associated prior action was included in DPL2. The results indicator (DPL1, Result Indicator 4) measured the share of outstanding DISCOM debts assumed by the GoR, as a clear indication of whether the GoR was serving its obligation under UDAY. Implementation was further monitored with an associated indicator in DPL2 (Result Indicator 3), measuring the share of continued loss taken over by the state. This results indicator (DPL2, Result Indicator 3) may have been more effectively positioned as a prior action, framed as the GoR assuming some share of the DISCOM annual losses. As discussed later in the Efficacy section, this may have allowed the World Bank to support dialogue between the state and DISCOMs to resolve the issue of non-attainment of this Indicator.[19]

29. The second prior action (DPL1 Prior Action 5; DPL2 Prior Action 4) provides for the DISCOMs filing annual revenue requirements and tariff petitions with the RERC. Following years of non-increase in tariffs undermining financial performance of the DISCOMs, inclusion of this prior action in both operations of the series sought to increase transparency and ensure the regulator had an opportunity every year to

[18] Those liabilities outstanding as of September 30, 2015.

[19] A second results indicator associated to DPL1 Prior Action 4 (Result Indicator 5) measured progress toward publishing of monthly energy audits. This was supporting an indicative trigger (DPL1, Indicative Trigger 6), which was moved under Policy Area C in DPL2 (Prior Action 6).

consider tariff increases. Although only a procedural step that does not assure a tariff revision, for several years, the DISCOMs were discouraged from submitting tariff revision petitions to RERC, contributing to the DISCOMs' insolvency. Submission to RERC is a necessary step toward tariff revision, and the associated result indicator (DPL1 Result Indicator 6; DPL2 Result Indicator 4) measures the closing of the gap between ACoS and ARR, which indicates the ability of the utility to recover its costs through appropriately structured tariffs (which follow a cost-plus methodology).

30. The third prior action (DPL1 Prior Action 6; DPL2 Prior Action 5) is the creation (DPL1) of the Rajasthan Energy Development Corporation, also called Rajasthan Urja Vikas Nigam Ltd (RUVNL), and then sees that it is operating to serve its intended purpose of purchasing power on behalf of the DISCOMs (DPL2). The state through RUVNL made efforts to reduce power purchase costs to bring down the ACoS component of the ACoS-ARR gap. The associated results indicator measures the share of power routed through RUVNL, which should lower ACoS (and thus the revenue gap) by regularizing and optimizing power purchase for the DISCOMs and thus bringing the costs of power supply down. RUVNL was operational and routing 100 percent of power purchases by the time of preparation for DPL2. An additional prior action was included in DPL2 that RUVNL would include renewable energy among its power purchases.

31. **Policy Area C's focus on operational performance** includes one prior action under DPL1 and three associated to DPL2.

32. Prior Action 6 in DPL2 focuses on energy audits at the feeder level, with the objective of monitoring the distribution network to identify areas where high losses are occurring and cannot be accounted for. This allows for identification of feeders with the highest loss levels, so efforts can be taken such as 'Loss-Based Load Scheduling' to implement load shedding on high-loss feeders, both to dis-incentivize theft and keep losses in check. Since all users on a feeder would be affected, this would help create a social dynamic against theft and a heightened community-level vigilance. Furthermore, the prior action requires the feeder meter information to be published online, with the hope this will create transparency and mobilize communities and the civil society to support norms against theft. The associated indicators (DPL1 Result Indicator 8; DPL2 Result Indicator 5) help monitor the impact of these measures on AT&C losses, the reduction of which is a key part of the financial turnaround under the UDAY program.

33. Prior Action 7 under DPL1 sought for the DISCOMs to approve—and initiate implementation—of business plans for improving operational performance. The business plans were to include provisions on pre-paid metering for government customers who as a customer group were the most delinquent in electricity payments and the deployment of an energy-efficient lighting initiative. The energy efficiency program—to distribute LED lights through Energy Efficiency Services Limited—was intended to reduce power purchases and thus the financial loss associated with electricity sales. This also reduced the needs for costly peaking power that was negatively affecting the ACoS-ARR gap.

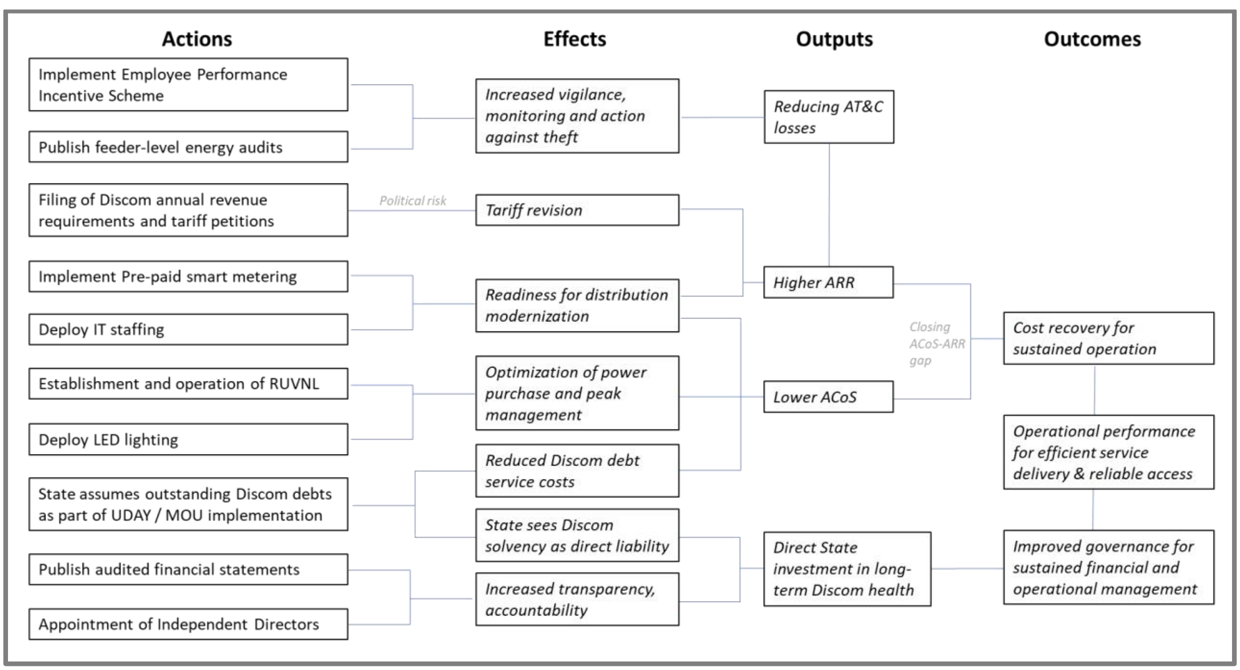
34. Under DPL2, the remaining prior actions focused on other grid modernization efforts that would help in reducing AT&C losses while also promoting energy conservation and grid management. This included the implementation of a unified billing system for large and medium industrial customers based on Automated Meter Reading (AMR) (DPL2, Prior Action 7). Such a system was expected to improve customer service and lock in revenue streams for the utility.

35. Building on the IT reforms, DPL2 Prior Action 8 provided for the DISCOMs' implementation of IT roadmaps including detailed project reports for ERP, as well as creation of an IT cadre with mapping of IT professionals. This prior action related to the PDO because of the potential for distribution automation to reduce operating costs (and thus contribute to ACoS reduction) as well as enabling service modernization and digitization through a skilled IT workforce that ultimately improves efficiency, responsiveness of the system to service disruption, and the ability to adopt new cost-saving technologies such as distributed energy resources.

36. A number of results indicators monitored progress on these measures to automate billing processes and improve the efficiency of distribution. The target for uptake of AMI/AMR is measured as the number of pre-paid meters, but it does not specify that these should be large and medium industrial customers (as intended in the prior action) nor does the number give an indication of penetration, as might 'share of customers on pre-paid meters'. It is not clear from the design of the indicator whether it is intended to include efforts by the distribution franchisees, which account for a large number of meters but are the intended actors for reforms under the DPL series. Distribution of LED lamps suffers from the same issue as the meters in terms of indicating magnitude but not specifying what customers are intended to be covered in the accounting. The other indicators, on staffing of the IT cadre, share of females hired into new positions, customers participating in unified billing system, and electrification of villages and households, are well designed and relevant to turnaround of the distribution sector.

37. The relevance of the prior actions to the objectives of the reform program are summarized through the Theory of Change in Figure 1.

Figure 1. Theory of Change Connecting the Prior Actions of the Development Policy Financing with the Policy Areas Supporting the Turnaround of the Rajasthan Distribution Sector



38. In summary, the Program design is Satisfactory because, overall, the prior actions and results indicators have a strong and direct link to supporting the turnaround of the distribution sector. This includes increasing the impetus for Rajasthan to translate UDAY into action at the state level, complementing state-level policy initiatives that help stabilize the finances of the sector, establishing governance structures to avoid backsliding, and addressing the abilities of the DISCOM to efficiently deliver on its core business. By creating the conditions for a reversal in the financial deterioration of the sector, the policy areas allow for the distribution utilities to serve broader objectives for the World Bank's support, including increasing access to electricity, improving the reliability of power supply, and increasing the energy efficiency of electricity service with its associated climate benefits.

39. The choice to exclude other relevant reforms considered during preparation as potentially fundamental to turnaround of the distribution sector in Rajasthan is also considered but with reasonable justification for their exclusion from the Program design. The team made a choice to act quickly to build on political alignment and momentum for reform with the client. The tradeoff in this approach was that deeper substantive changes would be deferred to later. The means of impact by the operation included the ability to earn trust and demonstrate value to the client, which created openings for later pilots that have transformational potential in the sector. The actions taken supported sector changes that were *necessary* for achieving turnaround of the distribution sector, as specified in the PDO; the question of whether the actions supported by the Program design were *sufficient* to achieve turnaround is separate.

B. Achievement of Objectives (Efficacy)

Rating: Moderately Satisfactory

40. The PDO is formulated to indicate that the World Bank is supporting the GoR program for the turnaround of the distribution sector, rather than having 'turnaround' as the objective in itself. This is not a semantic difference, as the operation recognizes that the foundation laid by the GoR program and World Bank support are necessary but not sufficient conditions for turnaround and that while financial sustainability could be attainable through the program alone, the risks were significant.

41. Based on the results indicators and other evidence, most of the DPL outcomes were achieved and prior actions implemented. Shortcomings in each policy area – while consequential – are mitigated by the overall progress toward achievement of the objectives.

42. There was substantial progress under Policy Area A (Strengthening the Governance Framework).

43. Independent directors were appointed in accordance with the enactment of the RSEDMR Act (DPL1 Result Indicator 1). The act has facilitated the introduction of good practices of corporate governance and accountability as well as strengthened the oversight mechanism for the functioning of the DISCOMs through replication of some of the best practices from the central level being followed by well-performing central public sector undertakings. This includes signing of annual performance MoUs between the state government and the DISCOMs to set clear goals and objectives; induction of industry experts on the board of directors as independent directors; and bringing in additional public oversight over the sector through the RSEDMR Act that mandates the state government shall present a State Electricity Distribution Management Statement to the Rajasthan Legislative Assembly, containing the measures taken by the state government in relation to electricity distribution of the state every year.

These are important initiatives that should yield results gradually as the different stakeholders realize the value of these changes.

44. The employee incentive for performance scheme (DPL1 Result Indicator 2; DPL2 Result Indicator 1) had not been approved in time for disbursement during the implementation of DPL1, and it was achieved for only one of three DISCOMs during DPL2. Ajmer DISCOM and Jodhpur DISCOM fell short of their respective AT&C targets and therefore did not disburse the incentive. It is not clear whether non-attainment is on account of the incentive design (as discussed earlier) or whether other factors affecting the overall non-attainment of AT&C losses contributed. The DISCOMs made their audited annual accounts available without delays, as provided for in the CGFA Plans adopted by their boards (DPL1 Result Indicator 3; DPL2 Result Indicator 2).

45. Two core indicators under Policy Area B (Financial restructuring) were not achieved, though with momentum in a positive direction.

46. The GoR assumed three-quarters of the outstanding debt held by the DISCOMs, implementing a key component of the UDAY program as formalized in the tripartite MoUs (DPL1 Result Indicator 4). In DPL2, the state was to continue taking on some of the DISCOMs' liability for continued losses (DPL2 Result Indicator 3); however, the GoR is appealing to MOP to relax this provision of UDAY, leaving this target unattainable.

47. Auditing of distribution feeders was fully attained under DPL1 (Result Indicator 5), increasing the capability of the DISCOMs to monitor unaccounted-for losses across the network and to implement mechanisms to deter theft, such as the Loss-Based Load Scheduling Program.

48. A key metric of cost recovery, the ACoS-ARR gap (DPL1 Result Indicator 6; DPL2 Result Indicator 4), reflects in aggregate the totality of tariff revision, AT&C loss reduction, and power purchases reforms. While the ACoS-ARR gap was cut nearly in half during implementation of the DPL series (Table 1), the gap is INR 1 per kWh higher than the target. Tariff petitions were submitted to RERC (DPL1 Policy Area 5; DPL2 Policy Area 4); however, tariff revisions anticipated during project preparation were nonetheless not realized. In September 2016, RERC announced a tariff hike amounting to nearly 10 percent across consumer categories (and 5.5 percent for agriculture), as called for under the National Tariff Policy.[20] By February 2017, the state government had to roll back agriculture tariff revisions in face of farmer protests and agreed to provide an additional subsidy of INR 5 billion to the DISCOMs. There was also an accelerated release of 200,000 agricultural connections under Rajasthan's New Agriculture Connection Policy 2017.

49. Following the creation of RUVNL, the DISCOMs routed all their power purchases through the company (DPL1, Result Indicator 7), thus exceeding the target and increasing the efficiency of power purchases and contributing to the ACoS-ARR gap reduction.

[20] Times of India. 2016. "Power Shock for Rajasthan Residents: Tariff up by 9.6%." September 23, 2016. https://timesofindia.indiatimes.com/city/jaipur/Power-shock-for-Rajasthan-residents-Tariff-up-by-9-6/articleshow/54473780.cms#:~:text=The%20power%20tariff%20for%20domestic,Rs%208%20per%20unit%20for.

Table 1. Targeted, Revised, and Realized Gap between ACoS and ARR[21]

(INR/kWh)	FY15	FY16	FY17	FY18	FY19	FY20E	FY21E
Base Case - DPL 1 (Program Document - Annex 7, Table 6)	2.9	2.4	0.7	0.1	0	-0.1	-0.1
Base Case - DPL 2 (Program Document - Table 8.2)	3.0	2.6	1.1	0.7	0.7	0.3	0.1
Actual/Revised - RTI Analysis (December 2019)	3.0	2.6	1.1	1.9	1.7		

50. Indicators of improved operational performance under Policy Area C were mostly achieved.

51. Both UDAY and R-APDRP set targets of AT&C losses of 15 percent by FY19; however, the team, based on its own assessment and discussion with the client, set targets that were considered more attainable given the risks that efforts to control theft would face barriers: 23 percent by FY17 and 17 percent by FY19. Initial progress gave the indication that even the 15 percent target was attainable, following years with nearly 4 percent year-on-year reductions. The UDAY Monitoring Committee of MOP recognized Rajasthan as among the states with the highest reductions in AT&C losses and lauded its efforts to mobilize community participation in anti-theft vigilance.[22] However, several factors ultimately led to non-attainment of the AT&C target. The likelihood of moving toward cost-reflective tariffs in Rajasthan was stalled by the 2018 Rajasthan Legislative Assembly Elections, which created political headwinds for tariff reforms, including through additional subsidy for new power connections and reducing fines and enforcement for power theft.[23] Consequently, there was backsliding on earlier progress in the form of reestablishing illegal connections and placement of illegal transformers. While the FY17 target was nearly achieved (DPL1 Result Indicator 8), by FY19, progress had slowed and reversed, missing the target by a substantial margin (DPL2 Result Indicator 5). Losses crept high enough to compromise the potential for cost recovery according to the World Bank's financial modeling.[24] The shift in momentum in the final year of implementation contributed to non-attainment of both the AT&C loss and ACoS-ARR gap targets.

[21] Difference in the FY15 figures for DPL1 and DPL2 is due to provisional figures reported during the preparation of DPL1 project documents.
[22] MOP. 2019. *UDAY Newsletter*. January 2019. https://www.uday.gov.in/images/newsletter_jan_2019.pdf.
[23] Hindustan Times. 2017. "Discom Losses down by INR 14,000 Crore in 4 Years: Minister." December 12, 2017. https://www.hindustantimes.com/jaipur/discom-losses-down-by-14-000-crore-in-4-years-minister/story-pP0o7od8CX0rPCD5FpwlSO.html.
[24] Program Document, DPL 1, Annex 7, Table 8, p.78.

Table 2. Targeted, Revised, and Actual AT&C Trajectories[25]

AT&C Losses (%)	FY15	FY16	FY17	FY18	FY19	FY20E	FY21E
UDAY / R-APDRP target					*15*		
Base Case - DPL 1 (Program Document - Annex 7, Table 4)	27.2	24.6	20.1	17.6	15	14	13.5
Sensitivity - DPL 1 (Program Document - Annex 7, Table 7)		26.2	24.2	21.2			
Base Case - DPL 2 (Program Document - Table 8.2)	29.5	27.7	23.8	20.5	17	15	14
Sensitivity - DPL 2 (Program Document - Table 8.4)			23.8	21	20	18	
Actual/Revised - RTI Analysis (December 2019)	29.5	27.7	23.8	20.2	21.2		

52. Substantial progress was made with smart meter implementation, meeting the target under DPL2 after postponing attainment from DPL1 (DPL1 Result Indicator 9; DPL2 Result Indicator 6). The meter deployment target is attainable only by including deployment by distribution franchisees. However, the sector reforms were intended to benefit the health of the DISCOM itself—not its independently operating franchisees. Therefore, the target should have differentiated the DISCOM and its franchisees.

53. The remaining results indicators under Policy Area C were achieved. The target for distribution of LED lamps was exceeded but only after pushing the target into the period of DPL2 (DPL1 Result Indicator 10; DPL2 Result Indicator 7). The results indicator on staffing of the IT cadre was achieved both in terms of absolute number of staff as well as percentage of positions that are filled (DPL1 Result Indicator 11; DPL2 Result Indicator 8). In DPL2, the target for share of females hired as part of the target was also exceeded by 10 percent. All consumers were put on a unified billing system by the end of 2016 (DPL1 Result Indicator 12), achieving the target early in the implementation period. Assured revenue in combination with its reduced debt payments contributed to allowing the Rajasthan DISCOMs between FY17 and FY18 to make power supply payments on time, with the benefit of helping restore confidence in their status as off-takers. The push to complete the electricity access agenda (DPL1 Result Indicator 13; DPL2 Result Indicator 9) ensured that no villages or households in the state remain without electricity at the end of the program.

54. In summary, the DPL series strengthened governance and incentives for operational performance, which were necessary preconditions for utility turnaround. It did not fully achieve results indicators for financial restructuring. However, the monitoring of these indicators under the program have made the impacts and drivers of backsliding more transparent. Non-attainment of core diagnostics of turnaround—particularly cost recovery (a continued ACoS-ARR gap) and loss mitigation (AT&C losses remaining high)—are balanced against the recognized political risks assessed by the team and the positive progress relative to the situation during appraisal. Finally, a key provision of UDAY intended to keep the state accountable for DISCOM losses (by assuming a share of the DISCOM annual losses as a direct liability) is currently facing an uncertain future in the discussion between the GoR and MOP.

[25] Difference in FY15 figures for DPL1 and DPL2 is due to provisional figures reported during the preparation of DPL1 project documents.

55. The rating of Moderately Satisfactory is on the basis that many of the targets were achieved, all with positive momentum, though with significant shortcomings.

C. Overall Outcome Rating and Justification

Rating: Moderately Satisfactory

56. Without fundamentally addressing several of the structural issues underlying the sector and the risks for efficacy of several targets—particularly AT&C losses and tariff revision that would close the ACoS-ARR gap—it would be difficult to rate the operation as Satisfactory. While these may be critical measures for 'turnaround', rescue of the Rajasthan DISCOMs was essential to avoid collateral damage throughout the power sector and for continued provision of quality electricity to support improved access and growth of the Rajasthan economy to alleviate poverty.

57. During implementation, the World Bank deliberated on whether the operation has gone far enough, acknowledging that despite evident progress in stabilizing the sector and achieving substantive reforms, there can be differing views about whether progress has been fast enough to avoid future bailouts and achieve sufficient progress on the underlying structural challenges to warrant support (a case of glass half full or half empty). Incentives to follow through on the UDAY framework were also questioned given the limited enforcement. The accomplishments of the operation must be considered alongside the challenging multi-sectoral and electoral politics that complicate reform efforts in the Indian distribution sector.

58. The overall outcome rating is Moderately Satisfactory, considering the substantial relevance of the program's prior actions to the achievement of turnaround, though these actions were neither sufficient for achieving the program's anticipated outcomes nor were they fully achieved. Nonetheless, the program made substantial progress toward attainment of the objectives and has provided a more stable foundation for further strengthening of the sector.

III. OTHER OUTCOMES AND IMPACTS

A. Poverty, Gender and Social Impacts

59. The operational design recognized the potential for impacts on poorer populations owing to the elimination of illegal connections to reduce AT&C losses, particularly in poorer rural areas where the highest-loss feeders are located. This impact was expected to be offset by the ability of the financially stable DISCOMs to extend quality service at reasonable cost to the entire population, particularly the remaining poor and vulnerable groups that were without power (access has since been completed for all households). Furthermore, new or formalized connections were assessed to be affordable even for the lowest-consumption households.

60. The team also assessed potential impacts of tariff revision on "Below-Poverty-Households" (BPL) and low-consumption households. The tariff structure was mostly progressive owing to a subsidy from the GoR for BPL households and those with consumption below 50 kWh per month, though that is offset by fixed charges affecting low-consumption households disproportionately. The team expected any tariff increases to have a small effect on electricity expenditure, which constituted about 10.7 percent of

household expenditure among the poor and was considered to be 'moderately affordable'. Nonetheless, measures were taken so that energy-efficient LED lighting would be made available with a subsidy through the program to offset the impacts of potential electricity cost increases on the poor.

61. The reliable and adequate supply of electricity was expected to have substantial benefits for women and girls, by enabling the use of appliances that reduce the burden of time-consuming household activities, increase opportunities for economic activity and girls' education, and improve health and safety outcomes. Furthermore, under the program, DISCOMs were to undertake outreach and direct recruitment activities to fill 15 percent of newly created IT positions with women; the target was exceeded.

B. Environmental, Forests, and Natural Resource Aspects

62. The DPL series was not expected to have significant adverse environmental impacts, and none materialized during implementation. The team reviewed the relevant extant regulatory provisions and codes in India and finds that it either sufficiently mitigates potential for harm under any anticipated Program-supported activities or the Program supports the development of relevant regulatory initiatives,[26] most notably the following:

- Prior Action 4 (filing with RERC annual revenue requirements and tariff petitions) could lead to fuel switching; however, this was not seen as a risk given that electricity is not a key source of cooking energy in India. In any case, tariff increases did not materialize.
- Environmental benefits were expected in terms of reduced local and global pollution from reductions in coal-fired power generation resulting from decreases in distribution losses from the start of the program, as well as energy conservation measures from LED bulbs. LED lamps and energy-efficient street lighting were assessed to reduce peak capacity needs by 461 MW and reduce greenhouse gas emissions by 1.8 million tons of CO_2.
- The World Bank had several discussions between the DISCOMs and the Rajasthan State Pollution Control Board regarding the handling of mercury-bearing compact fluorescent lamp (CFL) bulbs, which would be replaced by LED bulbs through the program implementation. The team explored options for exchanging the CFL bulbs when the LEDs were distributed or providing an incentive for consumers to return the bulbs for appropriate disposal. The DPL1 Program Document indicates that discussions to assess recycling feasibility with a lamp manufacturer could inform policies for encouraging voluntary recycling.
- Reductions in AT&C losses mean that less electricity generation is needed to service the same amount of load, or conversely, to service more load with the same amount of electricity. This results in more efficient and productive use of electricity and, while not the primary intention of the program, is a highly economic means of reducing carbon dioxide emissions. The approaches for reducing AT&C losses have been integrated in other programs in Andhra Pradesh, Jharkhand, and West Bengal to avail these benefits.

[26] Program Documents (DPL 1, paragraphs 66–70; DPL 2, paragraphs 95–97).

C. Institutional Change/Strengthening

63. The Program included measures to strengthen the accountability, transparency, and performance incentives of Rajasthan DISCOMs. Policy Area A specifically focused on governance and supported the implementation of RSEDMR, which had features that were first of their kind in India, while others caught up to the Rajasthan best practice. This included actions to appoint independent directors for each DISCOM, creation of policy within each DISCOM that incentivizes performance and manages talent and commitment within the organization and provides for timely reporting of audited financial statements to increase transparency and accountability. Policy Area B created a new institution (RUVNL) that had the authority to negotiate power purchases for the DISCOMs that has the potential to reduce supply costs.

D. Other Unintended Outcomes and Impacts

64. **Strengthened engagement on the electricity-water-agriculture nexus.** The operation built trust for engaging in the complex electricity-water-agriculture nexus, which underlies the substantial subsidy requirements of the sector. The World Bank carried out an analysis on four agriculture feeders to develop innovative business models to provide financially and economically viable solutions to address the challenges posed by the nexus using provisions of the KUSUM scheme.[27] The opening for this engagement in Rajasthan was aided by the institutional connections built during the DPL series and furthermore by stabilizing the DISCOMs so they would be in a position to work on challenging issues like agriculture that otherwise have chronic and lasting impacts for the sector.

65. **Use of IT.** The World Bank leveraged the engagement to engage in digitalization as the future of the utility business and IT will play a central role in improving performance. Some of the areas where it is expected to be used are energy auditing, automated meter reading and billing, electronic payments, consumer services through centralized customer care centers, ERP (already implemented in Transco and Detailed Project Report ready for DISCOMs), and social media for better outreach. A clear road map that provides a short-, medium-, and long-term direction to the IT initiatives and how to integrate the same as well as creating an IT skill base in the DISCOMs are critical for smooth and successful future business operations. This road map will be implemented through qualified IT officials inducted into the newly created IT cadre for DISCOMs. It was important that the DPL program could help in supporting the reforms in this direction.

IV. BANK PERFORMANCE

Rating: Satisfactory

66. In early meetings with the Rajasthan Chief Minister in September 2015, the World Bank team assessed the commitment and ownership of the Rajasthan political leadership to undertake deep systemic reforms in the power sector to bring about accountability and transparency, before further discussion on supporting the state and the sector. Once that signal was available from the political and bureaucratic leadership, the World Bank moved quickly. During preparations, the World Bank considered and excluded

[27] World Bank. 2020. "Rajasthan Water-Food-Energy Nexus (Grow Solar, Save Water, Double Farmer Income). World Bank, Washington, DC. http://documents1.worldbank.org/curated/en/490261581497030796/pdf/Grow-Solar-Save-Water-Double-Farmer-Income-An-Innovative-Approach-to-Addressing-Water-Energy-Agriculture-Nexus-in-Rajasthan.pdf.

alternative program designs and prior actions, keeping focus on pragmatically achieving the objectives with the client's goals in mind.

67. The review of possibilities for engagement to restore the financial health of the DISCOMs was extensive, and many linked up closely with the 10 'Target Areas' (or *sutras*) that formed the main strategy between the GoR and DISCOMs,[28] discussed further in annex 5. The World Bank's approach to the operational design considered these client target areas, balanced with the World Bank's independent understanding of what could result in meaningful improvement and using the policy structures that were being implemented or which already existed.

68. At the time of initiating the operation, the World Bank team knew that UDAY was under development but not its full scope or timing of its announcement. The team aligned the DPL with UDAY when narrowing its selection of prior actions and triggers for the operation. The team's view was that orientation of World Bank engagement through the operation should be on ensuring effective implementation and monitoring of the UDAY scheme, while adding certain features especially on corporate governance and performance management of utilities that make it 'UDAY plus'.

69. The objectives of the UDAY scheme, and the World Bank's operation in support of UDAY's implementation, recognized the central political economy challenges of the distribution sector and sought to make substantive progress through solutions that were attainable given political realities but would create institutional and operational foundation for broader reform. While the intent of UDAY was focused on immediate objectives to rescue the sector and make substantive reforms, it was widely understood that it was not a panacea for the risks and challenges facing the sector, even as it goes further than earlier DISCOM bailouts. To increase revenue, given the challenges of increasing regulated tariffs, the operational design focused on reducing operational inefficiency of the DISCOMs, particularly AT&C losses.

70. The team recognized that the DPL program could be perceived as signaling the World Bank's agreement with the UDAY approach which covers US$65 billion of accumulated debt to financial institutions and therefore could be of systemic importance in India. The team's conclusion was that the UDAY program represented an important innovation over prior programs and addressed important sectoral issues. For instance, the team believed that DISCOM losses should be the responsibility of the state (at least those arising from delayed/non-payment of subsidies), so it is preferable to bring them 'on the books' and recognize them as direct liabilities rather than keeping the losses as contingent liabilities. The state would therefore have a stronger incentive to limit the financial bleeding of the DISCOMs, so that other expenditures can be realized, including in social and infrastructure investments. The team noted the relative strengths of UDAY and felt that its protections against moral hazard were sufficient to justify World Bank support while acknowledging that a single operation may not be able to fully mitigate the risk of future bailouts.

71. **Results chain and other relevant topics for reform.** There were several areas of focus that were intentionally excluded from the DPL, despite their potential importance to the attainment of the PDOs. The World Bank learned from power sector reform efforts in Rajasthan over a decade earlier that had

[28] These are also discussed in detail in the DPL1 Program Document, paragraph 34.

been overambitious in their objectives despite political headwinds.[29] The choice to exclude these areas of focus—despite work under way with World Bank grant funds—related to the risk that the World Bank's association with particularly sensitive topics could have created more attention and risks for successful implementation. This included provisions to (a) encourage private participation; (b) revise tariffs to improve cost recovery; and (c) address the nexus of power, water, and agriculture sectors for long-term viability of the distribution sector.

- **Encouraging private participation.** The team debated whether a prior action on private participation should be included. The GoR had been considering approaches to attract private partners in the Rajasthan DISCOMs including through franchisees, co-operatives, and private ownership. The objective would have been to redistribute debt and liabilities while incentivizing performance improvements. This suggestion builds on principally urban experience in Delhi, Mumbai, and Bhiwandi where DISCOMs were unbundled, privatized, or franchised, with subsequent achievement of significant efficiency improvements, with similar arguments of the Shunglu Commission Report that "Efficiency may well be a function of ownership." The Letter of Development Policy from the Rajasthan Government included reference to interest of the state government in inviting bids for distribution franchisees in both Phase 1 and Phase 2 of the DPL series, to "reap benefits of private sector efficiencies," including for AT&C loss reduction. The World Bank has a long history with power sector reform and privatization, the experience of which shows that reforms involving participation of the private sector, along with other features of the Washington Consensus, were not determinative of outcomes, which are more likely a function of targeted policy objectives. Furthermore, distribution privatization operations have had a polarizing history in India,[30] making it difficult for the World Bank to engage with clients on related reforms. The program design acknowledged several of these lessons and alluded to key messages from contemporaneous analytical work under way at the World Bank to assess the conditions where distribution reform had been successful.[31] In Rajasthan, during the runup to the elections, the franchisee model for distribution was contentiously debated, including impacts on poorer consumers. Any pressure on the state to pursue privatization had the potential to weaken its ability to credibly walk away from negotiation with a potential franchisee and therefore demand better terms. Consequently, the World Bank team encouraged the GoR to learn from early experience with franchisees in Rajasthan awarded in Kota, Bharatpur, Bikaner, and Ajmer between 2016 and 2017 but without inclusion as a prior action.
- **Tariff revision.** After consideration, the team made a choice to exclude any prior action related to tariff revision, opting instead (via DPL2 Prior Action 4) to support UDAY and RSEDMR provisions for regular filing of revenue petitions to the regulator, who would then decide whether they should be implemented. In January 2016, the GoI issued an updated

[29] World Bank Independent Evaluation Group. 2007. *India - Rajasthan Power Sector Restructuring Project (English) – Implementation Completion Report Review.* http://documents.worldbank.org/curated/en/117391474850992418/India-Rajasthan-Power-Sector-Restructuring-Project.
[30] Dubash, Navroz K., and Sudhir Chella Rajan. "Power Politics: Process of Power Sector Reform in India." *Economic and Political Weekly* (2001): 3367–3390.
[31] Foster, Vivien, and Anshul Rana. 2020. *Rethinking Power Sector Reform in the Developing World. Sustainable Infrastructure.* Washington, DC: World Bank.

'Tariff Policy Resolution' with the same objective. UDAY/RSEDMR/Tariff Policy would give more autonomy to the regulator in considering tariff petitions. The World Bank's decision not to more explicitly address tariff revision on Program design also considered analysis showing that tariff increases would have a small negative impact on the poor, though electricity would remain affordable and increases could be offset by measures encouraging energy-efficient LED lighting. More importantly, the World Bank recognized that after implementing tariff increases in the past several years since 2012,[32] Rajasthan had the highest tariffs in the country and that pushing for yet higher tariffs could be politically unsustainable. An order increasing tariffs was issued in September 2016, obviated in part by subsequent additional subsidy to absorb the increase for agricultural consumers. Despite this political environment around tariffs, the World Bank's financial analyses that resulted in financial sustainability for the included tariff revisions in all scenarios (see annex 5, Table 5.1). This analysis may have been overly optimistic, particularly as the magnitude of tariff increases in DPL2 were more modest than in DPL1 and reflected the souring political mood toward tariff revision given the forthcoming elections.

72. The complete disbursement of the operation and positive progress toward results indicators is a reflection of a pragmatic operational design that considered long-standing political and institutional barriers in risks to reform. Risks were assessed during the operational design of DPL1, reassessed during DPL2, and targets adjusted accordingly. The targets for ACoS-ARR gap and AT&C losses were relaxed between DPL1 and DPL2 to reflect the shifting political realities amid the state elections in 2018.

73. **Monitoring arrangements and quality of supervision.** The Program Documents elaborate the monitoring, evaluation, and accountability frameworks in place for the operations. Regular review was in place owing to (a) smart metering and performance incentives that enable continuous monitoring, though this refers to capabilities enabled through program implementation and not for monitoring the program itself; (b) GoR task force monthly meetings—though it is not clear whether there is interest in accountability and transparency at this level of oversight and furthermore the task force lost its influence following the 2018 state elections; (c) DISCOM management performance reviews, though this is not an independent review; and (d) UDAY oversight from MOP and Ministry of Finance, though presumably this relies on DISCOM and GoR reporting, which is not independent. Perhaps recognizing the weakness of the monitoring ex ante, the DPL2 clarifies that "strengthening the monitoring and evaluation systems is an integral part of the proposed operation," with the continuous monitoring capabilities listed above as the main intervention for achieving this. The operation may have clarified the importance of regularized audits as part of the effort to achieve accountability.

74. In summary, the World Bank performance is assessed as Satisfactory. The World Bank responded quickly to the needs of the sector and prepared a reform Program that made significant changes that put the Rajasthan DISCOMs on a more stable path to sustainable operations. The results can reasonably be assumed to have substantive lasting impact on institutional strength and reduced losses. The achievements of the program are proportionate with the magnitude of finance and nature of the instrument.

[32] Rajasthan DISCOMs increased tariffs by 92.5 percent between FY12 and FY15, following six years with no tariff revision despite operational and power purchase costs growing by 48 percent over the period.

V. RISK TO SUSTAINABILITY OF DEVELOPMENT OUTCOMES

75. Due to the continued annual revenue shortfall of the DISCOMs and the inclination of the state government to exert influence on the regulator, the risk to financial sustainability remains Substantial.

76. UDAY's enforcement mechanisms and incentives are intended to protect against further bank loans for future losses of the DISCOMs, preventing backsliding and reaccumulation of high-cost debt. For instance, DISCOMs are no longer legally permitted to cover short-term losses by borrowing from commercial banks and therefore forced to borrow from the state government, which is itself tightly constrained on borrowing by the Central Government that has the ability to withhold fiscal transfers. However, the question remains whether—in the local political context—this chain of consequences could credibly be expected to constrain future loss-making activity. UDAY has added constraints to a sector already overconstrained by other political tradeoffs, which creates risks of potential backsliding. Already, the GoR is appealing to MOP regarding the requirement under UDAY to assume part of the DISCOMs' annual losses. This suggests a willingness by the state to push back on tenets of UDAY and raises broader questions about the appetite for full implementation of the reform agenda. Therefore, the risks of moral hazard raised in earlier programs involving state bailout of the distribution sector have not been fully mitigated.

77. Nonetheless, governance changes at the DISCOMs themselves supported by the Program are likely to be durable and will help increase the independence, transparency, and accountability of the distribution sector. While this is a promising step, it remains to be seen whether independent directors at the DISCOMs will have an adequate role to steer further toward operational efficiency and cost recovery. Other reforms will be resilient to any political shifts, including preparations for digitization and smart metering and energy efficiency and improving employee capacity at the DISCOMs.

78. The risks facing the distribution sector are exacerbated by COVID-19, which can suppress demand for electricity through economic disruption, increase poverty rates and reduce consumer ability to pay for power, and delay the state government's priority on the reduction of AT&C losses and tariff revision. Strengthening the financial position of the Rajasthan DISCOMs should enable them to sustain quality and reliable service despite disruption from COVID-19. The GoI has committed more than INR 90,000 crore in stimulus to the public DISCOMs in May 2020 to weather the sector disruption. As with UDAY and other support packages that preceded it, there are reform conditions on accepting these COVID-19 funds. These include implementation of smart meters and assurances from state governments that loan amounts are paid monthly or quarterly, which are measures that the World Bank program has supported. The package has also allowed one-time relaxation of working capital borrowings,[33] though as the COVID-19 crisis persists, it is not clear how the pressures on the state government will limit its abilities to supplant future borrowing.

79. The COVID-19 disruption is expected to negatively affect the ability of the Rajasthan DISCOMs to generate net income (see annex 5, Table 5.2). From a pre- COVID-19 starting point of net income from FY18 onward, a decrease in electricity sales of 10 percent to commercial and industrial consumers would

[33] Bhaskar, U. 2020. "Economic Stimulus INR 90,000 Crore Liquidity Injection for Fund-Starved Discoms.". *LiveMint.* May 13, 2020. https://www.livemint.com/news/india/economic-stimulus-rs-90-000-crore-liquidity-injection-for-fund-starved-discoms-11589369762139.html.

delay turnaround to net income to FY22. If the decrease in sales is for all customers, the DISCOMs will experience net losses for the near future. COVID-19 may also lead to de-prioritization of further reductions in AT&C losses, which could delay financial turnaround to FY23.

VI. LESSONS AND NEXT PHASE

A. Lessons Learned

80. **Importance of sustained engagement.** Accessing the most intractable challenges of a sector are not attainable in short operational engagements. There was a recognition that achieving turnaround of the distribution sector would require sustained engagement extending beyond political cycles and the time frame of a DPL and also that assistance was needed urgently. It would have been helpful to create expectations with the client early on for a multiphase approach that may involve a DPL for quick engagement alongside complementary and longer-term support through a Program-for-Results (P4R), Investment Project Financing (IPF), or sustained technical assistance to help secure gains and mitigate risks of potential backsliding while also capitalizing on openings for more substantive and cross-sectoral reforms. For instance, there was over a decade of discontinuity between the Rajasthan DPL series and earlier World Bank support to Rajasthan from 2001 to 2006 with similar objectives.[34] The first power sector operation in Rajasthan (Rajasthan Power Sector Restructuring Project) provided US$180 million for restoring the distribution sector's creditworthiness and putting Rajasthan on a path to financial self-sufficiency by FY05 through an IPF operation with reform objectives. Several of the operational strategies were the same, including reduction of theft through investments in loss mitigation schemes and improved management and operational efficiency (though involving privatization).[35] The same issue underlying insolvency of the sector today was understood at that time, namely that "appropriate adjustments in agricultural tariffs [was needed] to ensure financial recovery of the power sector as well as restore financial balance." A continuous engagement may have yielded deeper results on the fundamental structural challenges of the sector.

81. **Deep engagement enabled by deep state partnerships.** The World Bank committed substantial effort upstream of the DPL series to deepen and broaden its engagement with the GoR, including through the appointment of a state coordinator, to advance discussions of lending support in priority areas such as power. The World Bank senior management and executive directors also invested in the state relationship, and this allowed for trust fund resources to be mobilized in support of upstream analysis to inform the DPL series design. This state partnership approach facilitated the World Bank's pipeline and portfolio development in the state and contributed to the successful implementation of operations such as the DPL series. The positioning of the DPL series within a broader World Bank state partnership with Rajasthan has allowed for the World Bank's visibility in the electricity sector reform effort to translate to other state-level sectoral DPLs that the World Bank may consider in partnership with India in the future.

82. **Identifying windows of opportunity for reform.** The team believed that there was a window of opportunity for reform available through quick action. While more substantive reforms may have been

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[34] World Bank. 2007. *India - Rajasthan Power Sector Restructuring Project (English) - Implementation Completion Report*. http://documents.worldbank.org/curated/en/307891468260067359/India-Rajasthan-Power-Sector-Restructuring-Project.
[35] World Bank. 2000. *Project Appraisal Document - Rajasthan Power Sector Restructuring Project (P038334)*. pp.6.

possible via an operational design requiring more sustained engagement, there was also the risk that the window of opportunity could close and ultimately achieve fewer reforms. The team therefore decided to capitalize on political momentum for reform within the state rather than holding the processing of the first DPL for an indeterminate period which could risk losing the state government's trust and the prevailing appetite for reform at the time. As a consequence of moving quickly, the types of reforms that were feasible tended to be technical rather than political in nature. Given the scale of the challenge facing the Rajasthan distribution sector, the need for continued engagement was evident following the completion of the DPL series. In principle, the potential for deepening and implementing further substantive reforms and guarding against backsliding risks could have been explored through follow-up technical assistance and follow-up IPF/P4R, but there too, the window of opportunity was uncertain. When the team explored complementing the DPL series with additional technical assistance after the 2018 state elections, there was a change in priorities of the state government due to other emerging challenges, and this foreclosed the possibility of a third phase.

83. **Strengthening progress on private participation.** The World Bank was able to support the client's interest in exploring increased private participation for some distribution areas, even though this was not included as part of the operational design. The World Bank's indirect support was enabled in part by the client's momentum in pushing reforms, including on private sector participation. Consequently, even without an associated prior action or results indicator, there was significant progress on private participation during the implementation period, from which lessons can be derived for future operations. DISCOMs have awarded distribution franchises in four towns to established private players—Kota and Bharatpur (under Jaipur DISCOM) in June 2016, Bikaner (under Jodhpur DISCOM) in February 2017, and Ajmer (under Ajmer DISCOM) in March 2017. This covers around 5 percent of the consumer base of the DISCOMs, and the model has given encouraging positive results in addition to setting benchmarks in customer service which will have long-term effects on the distribution sector in Rajasthan. Both public and private sector resources should be explored to improve sector performance for the benefit of customers.

84. **Importance of quality client leadership in championing reform.** Momentum to reform can substantially be attributed to key leaders in the GoR, who worked closely with the World Bank, first, in conceiving an operational design that would strike the balance of political realism and substance and, second, in overcoming challenges to implementation. The World Bank's engagement with these leaders through the DPL can strengthen their position as 'champions' for approaching needed reforms. Furthermore, working closely with leaders of reform also strengthens their ownership of the process, which can translate into more sustained and durable change, and potential for transferring best practices to other parts of an organization when those leaders move on.

85. **DISCOM management needs to be politically savvy.** DISCOM management has to be adroit in navigating the politics of the electricity sector. Efforts to improve DISCOM performance by bringing in professional managers with organizational expertise but no experience with the sensitive political context did not improve outcomes in Rajasthan. While professional management skills are valuable, the key barriers to performance in Rajasthan DISCOMs were inherently political and not organizational. Therefore, changes in management are only effective in conjunction with enabling conditions for reform. In another example of the importance of political awareness in DISCOM management, the structured transfer policy's intention to allocate personnel to positions where they will be most impactful was viewed

suspiciously by staff as being used as a political tool and as rewarding (or punishing) performance. These softer reforms can be impactful in the long term but must first overcome a trust barrier.

86. **Addressing tariff revisions more explicitly.** Although the team chose not to address tariff revisions more explicitly as part of a prior action (discussed in the Bank Performance section), other approaches may have been appropriate and feasible. For instance, while the operational design could not specify a magnitude or timeline for tariff revision—which is at the discretion of the independent regulator—DPL 2 could have considered a more explicitly articulated trigger relating to cost recovery through tariff revision. This would have put the onus on the DISCOMs to not only file timely petitions to the regulators but also to ensure these petitions were moving the sector in the direction of cost recovery.

87. **Addressing important cross-sectoral issues like 'energy-water-agriculture' nexus.** At the core of the distribution sector's insolvency in India is the issue of subsidized provision of electricity to farmers for use in groundwater pumping for irrigation. While this issue has put a strain on the power sector and state finances, it has also led to overextraction of groundwater and depletion of the groundwater table. The energy-water-agriculture 'nexus' underlies the complex political economy of electricity tariffs. In the years leading up to the DPL series, agricultural users accounted for 60–95 percent of the total subsidy to the power sector.[36] The agricultural sector has significant political power and capabilities for collective organizing that increase risk aversion among government officials. The importance of agricultural electricity subsidies for sector finances was well understood by the GoR, the World Bank team, , distribution utilities, and the GoI, at the time of developing the Rajasthan DPL. The challenge for the operational design was finding openings for making substantive progress in increasingly the solvency of the sector while being sensitive to the political economy of electricity in agriculture. The team therefore chose to engage more on technical, operational, and organizational issues, where there was multi-stakeholder convergence for pursuing reform. However, financial turnaround of the distribution sector is cross-sectoral by nature. Deepening collaborations across global practices could help identify openings where progress is achievable on these cross-sectoral issues.

B. Next Phase

88. While the needs of Rajasthan's public DISCOMs were particularly acute, the World Bank's support for restoring the health of the distribution sector at the state level served to inform a broader dialogue at the national level.

89. This DPL series has national-level relevance to the current steps under consideration by the GoI in strengthening DISCOMs, and this is already evident from the fact that the program may include a component on 'reform-linked investment programs', where outcomes are defined against which to release the money instead of releasing the funds for investments. The DPL series shows the value of components that are technical in nature and likely to be politically resilient, including timeliness of financial audits, independent directors, automated metering and billing, and energy auditing.

[36] Program Document, DPL2. Table 3, p.8.

ANNEX 1. RESULTS FRAMEWORK

A. RESULTS INDICATORS

Pillar: Strengthening the governance framework

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Appointment of Independent Directors in accordance with the clause No. 8 of the Ordinance/ Act in each DISCOM	Text	One 31-Mar-2015	Two 31-Mar-2017	Two 31-Oct-2019

Comments (achievements against targets):
The target has been achieved on completion of DPL1 and maintained till completion of DPL2

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Incentive for Performance during FY	Text	No 31-Mar-2015	Yes 31-Oct-2019	Yes for 1 Discom and No for 2 Discoms 31-Oct-2019

Comments (achievements against targets):
The incentive for FY19 was disbursed to employees in case of Jaipur Discom while the other two Discoms didn't disburse incentive as the overall AT&C loss levels didn't decrease in these two Discoms in line with internal targets.

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Date of availability of audited annual accounts	Text	With a three month delay 31-Dec-2015	Within six months of end of FY (i.e. no delay) 30-Sep-2019	Audited annual accounts for DISCOMs for FY19 were available before September 30, 2019. 30-Sep-2019

Comments (achievements against targets):

Pillar: Enhancing policies to restructure finances

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Percentage of outstanding debt (as on September 30, 2015) of DISCOMs taken over by GoR	Percentage	0.00 30-Sep-2015	75.00 31-Mar-2017	75.00 28-Feb-2017

Comments (achievements against targets):
Achieved

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Power Purchases for DISCOMs managed by Rajasthan Energy Development Corporation Ltd.	Percentage	0.00 31-Mar-2015	90.00 31-Mar-2017	100.00 28-Feb-2017

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Gap between Average Cost of Supply (ACoS) and Average Revenue Realised (ARR)	Text	INR 3.00/kWh 31-Mar-2015	INR 0.70/kWh 31-Mar-2019	INR 1.7/kWh 31-Mar-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Annual loss of DISCOMs to be taken over and funded by the State, as provided under UDAY Program	Percentage	0.00 31-Mar-2015	10.00 31-Mar-2019	0.00 31-Oct-2019

Comments (achievements against targets):
Government of Rajasthan has requested Ministry of Power, GoI to relax the subject provision of UDAY but the request is yet to be accepted.

Pillar: Improving operational performance

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Monthly Distribution Energy Audit reports generated and disclosed (expressed as % of total	Percentage	0.00 31-Mar-2015	90.00 31-Mar-2017	100.00 28-Feb-2017

feeders)				

Comments (achievements against targets):
Energy audit has been started on 100% feeders

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Aggregate Technical and Commercial (AT&C) losses	Percentage	29.50 31-Mar-2015	17.00 31-Mar-2019	21.20 31-Mar-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of consumers put on unified billing system	Percentage	50.00 31-Mar-2015	100.00 31-Mar-2017	100.00 31-Mar-2017

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of consumers put on pre-paid/ AMI/ AMR meters	Number	0.00 31-Mar-2015	100,000.00 31-Oct-2019	120,000.00 31-Oct-2019

Comments (achievements against targets):
This includes 70,000 meters installed by a franchisee of one of the Discoms

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of LED lamps distributed	Number	0.00 31-Mar-2015	16,000,000.00 31-Oct-2019	17,129,445.00 04-Nov-2020

Comments (achievements against targets):
The figure was 16,164,048 as of March 7, 2019

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of IT staff appointed in DISCOMs	Number	0.00 31-Mar-2015	30.00 31-Mar-2017	30.00 31-Mar-2017

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Percentage of positions filled in IT cadre in DISCOMs	Percentage	0.00 31-Mar-2015	75.00 31-Oct-2019	0.00 31-Oct-2019

Comments (achievements against targets):

Out of 617 sanctioned posts in IT cadre, 518 posts have been filled up. Out of the filled posts, 127 posts (24.5%) have female employees

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of villages remaining to be electrified	Number	495.00 01-Apr-2015	25.00 31-Mar-2017	0.00 31-Mar-2017

Comments (achievements against targets):
Achieved, all villages except 68 uninhabited villages electrified

Indicator Name	Unit of Measure	Baseline	Target	Actual Achieved at Completion
Number of unelectrified Households in State	Number	2,182,180.00 10-Oct-2017	750,000.00 31-Oct-2019	0.00 31-Oct-2019

Comments (achievements against targets):
Data Source is Ministry of Power's SAUBHAGYA portal

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION PROCESSES

A. TASK TEAM MEMBERS

P157224

Demetrios Papathanasiou (Task Team Leader), Rohit Mittal (Co-Task Team Leader), Frederico Gil Sander (Team Member), Heenaben Yatin Doshi (Procurement Specialist), Savinay Grover (Financial Management Specialist), Boonsri Prasertwaree Kim (Team Member), Rinku Murgai (Team Member), Sheoli Pargal (Team Member), Mridula Singh (Social Specialist), Mohan Nagarajan (Team Member), Gaurav D. Joshi (Environmental Specialist), Martin M. Serrano (Team Member), Neetu Sharda (Team Member), Volker Treichel (Team Member), Kavita Saraswat (Team Member), Urmila Chatterjee (Team Member), Smriti Seth (Team Member), and Amol Gupta (Team Member)

P159669

Rohit Mittal (Task Team Leader), Frederico Gil Sander (Co-Task Team Leader), Heenaben Yatin Doshi (Procurement Specialist), Savinay Grover (Financial Management Specialist), Gaurav D. Joshi (Environmental Specialist), Martin M. Serrano (Counsel), Neetu Sharda (Team Member), Kavita Saraswat (Team Member), Amol Gupta (Team Member), and Sutirtha Sinha Roy (Team Member)

A. STAFF TIME AND COST

P157224

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY16	72.816	273,150.57
FY17	3.437	21,675.03
FY18	.375	2,135.47
Total	**76.63**	**296,961.07**
Supervision/ICR		
FY16	3.100	7,543.20
FY17	33.432	143,507.18

FY18	0	11.49
Total	**36.53**	**151,061.87**

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Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY16	72.966	276,982.53
FY17	20.545	143,087.65
FY18	51.170	650,846.15
FY19	.638	22,895.49
Total	**145.32**	**1,093,811.82**
Supervision/ICR		
FY16	3.100	7,543.20
FY17	33.432	143,507.18
FY18	0	11.49
FY19	34.550	193,316.10
FY20	17.955	103,602.89
Total	**89.04**	**447,980.86**

ANNEX 3. BORROWER, CO-FINANCIERS, AND OTHER DEVELOPMENT PARTNERS'/STAKEHOLDERS' COMMENTS

JAIPUR VIDYUT VITRAN NIGAM LIMITED
CIN: U40109RJ2000SGC016486
[Office of the Chief Accounts Officer (FM-W&M)]
Regd. Office: Vidyut Bhawan, Jyoti Nagar, Jaipur-302005
Website: www.energy.rajasthan.gov.in/jvvnl ☎: 0141-2747038, 2747051
@: caofmwm@jvvnl.org , budget419@gmail.com

No. JPD/ CAO/AO/B-W&M/F. WBL/D. 86   Jaipur, Dt. 27th May'2021

Mr. Rohit Mittal,
Task Team Leader & Senior Energy Specialist,
The World Bank,
India Country House, 70, Lodi Estate,
New Delhi - 110003.

Sub: Draft ICRR for the first and second programmatic electricity distribution reform DPL for Rajasthan (P157224 and P159669.
Ref: Your Office Letter Dated 17.03.2021.

Sir,

This is with reference to subject cited above and referred letter, we have reviewed the shared draft ICRR of the 1st and 2nd DPL for Rajasthan.

The Management is broadly agree with the findings brought out in the report. Discoms shall endeavour to focus on the areas highlighted in the report.

(A. K. Joshi)
Director (Finance)

ANNEX 4. SECTORS AND THEMES

SECTORS AND THEMES

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Sectors

Major Sector/Sector	(%)	Mitigation Co-benefits (%)	Adaptation Co-benefits (%)
Energy and Extractives	**100**	**29.00**	**0.00**
Energy Transmission and Distribution	100	29	0

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Economic Policy	**18**
Fiscal Policy	18
Fiscal sustainability	18
Public Sector Management	**82**
Public Finance Management	18
Debt Management	18
Public Administration	64
Transparency, Accountability and Good Governance	50
State-owned Enterprise Reform and Privatization	14
Environment and Natural Resource Management	**29**
Climate change	29
Mitigation	29

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Sectors

Major Sector/Sector	(%)	Mitigation Co-benefits (%)	Adaptation Co-benefits (%)

Information and Communications Technologies	**6**	**3.00**	**0.00**
ICT Services	6	50	0
Energy and Extractives	**94**	**47.00**	**0.00**
Other Energy and Extractives	94	50	0

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Private Sector Development	**13**
ICT	13
ICT Solutions	13
Finance	**13**
Financial Stability	13
Financial Sector oversight and policy/banking regulation & restructuring	13
Human Development and Gender	**13**
Gender	13
Environment and Natural Resource Management	**100**
Climate change	50
Mitigation	50
Energy	100
Energy Efficiency	75
Energy Policies & Reform	88
Access to Energy	13

ANNEX 5. SUPPORTING DOCUMENTS

Table 5.1. Scenarios for Tariff Increases Considered during Project Preparation, Leading to Financial Turnaround

Percent change (%)	FY15	FY16	FY17	FY18	FY19	FY20E	FY21E
Base Case - DPL 1: Non-Agriculture Tariff Increases (Program Document - Annex 7, Table 4)	*	16.3%	10.0%	8.0%	0.0%	8.0%	5.0%
Sensitivity - Non-Agriculture Tariff Increases *(DPL 1, Program Document - Annex 7, Table 7)*	*	16.0%	8.0%	4.0%			
Base Case - DPL 1: Agriculture Tariff Increases (Program Document - Annex 7, Table 4)	14.5%	6.0%	4.8%	0.0%	0.0%	4.8%	3.0%
Base Case - DPL 2: Non-Ag Tariff Increases (Program Document - Annex 8, Table 8.2)	*	16.3%	10.0%	0.0%	0.0%	8.0%	6.0%
Sensitivity - Non-Agriculture Tariff Increases *(DPL 2, Program Document - Annex 8, Table 8.4)*			10.0%	0.0%	0.0%	5.0%	
Base Case - DPL 2: Agriculture Tariff Increases (Program Document - Annex 8, Table 8.4)	*	14.5%	6.0%	0.0%	0.0%	4.8%	3.6%

Table 5.2. Targeted, Revised, and Realized Net Profit/Loss

Scenarios of Financial Position: *(Profit(+) or Loss(-) in billion INR)*	FY15	FY16	FY17	FY18	FY19	FY20E	FY21E
Base Model ***(DPL 1 Program Document - Annex 7, Table 6)***	-124.7	-96.1	-17.5	13.1	13.8	26.4	28.7
Sensitivity - Slow AT&C loss reduction *(DPL 1 Program Document - Annex 7, Table 7)*		-101.7	-30.5	1.0			
Sensitivity - Lower non-agriculture tariff increase *(DPL 1 Program Document - Annex 7, Table 7)*		-96.1	-28.6	-12.4			
Base Model ***(DPL 2 Program Document - Annex 8, Table 8.3)***	-124.7	-112.4	-48.2	-30.0	-32.7	-9.4	8.1
Sensitivity - Slow AT&C loss reduction *(DPL 2 Program Document - Annex 8, Table 8.4)*			-48.2	-31.4	-41.4	-20.1	
Sensitivity - Lower non-agriculture tariff increase *(DPL 2 Program Document - Annex 8, Table 8.4)*			-48.2	-30.0	-32.7	-19.4	
Actual/ Revised (RTI International 2020)				**21.7**	**26.1**	**50.5**	**5.6**
Scenario 1: Delayed tariff increases						50.5	5.6
Scenario 2: Delayed reductions in AT&C loss						45.0	-15.1
COVID-19 (Scenario 3a): Decrease in sales to Commercial & Industrial consumers by 10%						50.5	-2.3
COVID-19 (Scenario 3b): Decrease in sales by 10%						50.5	-33.0
COVID-19 (Scenario 3c): Decrease in Sales by 10% and delayed reductions in AT&C losses						50.5	-35.1

The 'Ten Sutras' discussed as possible areas for engagement with the client under the reform program are as follows:

(a) **Customer service strategy.** Addressing the remaining access challenge; modernizing connection, billing, and payment IT processes; centralized customer care and call center; and better customer outreach

(b) **Loss reduction.** Universal metering for consumers and feeders and AMR system for high-value consumers, energy audit and accounting at feeder level, introducing distribution franchisee/public-private partnership in identified areas, network strengthening and optimization, loss-based feeder supply management, and aggressive vigilance drives

(c) **Cost optimization.** Review of power procurement policies and procedures and improvement of operational efficiency of generation companies

(d) **Improved revenue realization.** Aggressive arrear recovery drives and outsourcing of the disconnection of defaulting consumers

(e) **Demand-side management and energy efficiency.** Launch of energy-efficient street lighting program, replacement of incandescent bulbs with LEDs through the Energy Service Company (ESCO) model, replacement of old agriculture pump sets with energy-efficient ones, flattening of the load curve, and introduction of smart metering and time-of-day tariffs

(f) **Tariff measures.** Submission of timely and adequate tariff revisions to RERC and revision of electricity duty from per unit to ad valorem basis

(g) **Asset monetization.** Exploration of options including sale/lease of land and sale of unserviceable assets/equipment

(h) **Disinvestment and private participation.** Options for strategic disinvestment of state-owned generation, sale of loss-making assets, and selective use of the distribution franchisee model

(i) **Employee engagement.** Improved communications, results and performance monitoring, assessment of training and capacity needs, accountability for results, and performance incentives

(j) **Sustained support from the state government.** Relying on the GoR for continued financial support and the GoI for a Financial Restructuring Plan.