

UDAY and Power Sector Debt:

DISCUSSION PAPER

Assessing Efficiency Parameters and Impact on Public Finance

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1. Introduction

With the introduction of UDAY¹ - Ujwal DISCOM Assurance Yojana - States' deficits and debt have increased. We examine the progress of UDAY and its impact on sub-national public finances.² The UDAY scheme required State governments to absorb 75% of the DISCOM debt - 50% in 2015-16 and 25% in 2016-17. The scheme also issued bonds to take over DISCOM debt with a mix of equity, grant and loan. Since its launch, 27 States have signed MoU with the Union government and have joined this scheme.

This paper analyses the State-wise progress of UDAY scheme with a focus on financial and operational efficiency parameters. This paper also examines the impact of the UDAY scheme on State Finances. In 2015-16, eight States (Uttar Pradesh, Rajasthan, Chhattisgarh, Punjab, Jammu & Kashmir, Bihar, Jharkhand and Haryana) borrowed under UDAY, while in 2016-17, twelve States (Uttar Pradesh, Maharashtra, Punjab, Rajasthan, Bihar, Jammu & Kashmir, Andhra Pradesh, Tamil Nadu, Himachal Pradesh, Telangana, Madhya Pradesh and Meghalaya) borrowed under UDAY.³ The other eight States (Gujarat, Goa, Manipur, Tripura, Uttarakhand, Puducherry and Kerala) have joined UDAY for achieving operational efficiency.

The impact of UDAY on State finances of each of these individual States is difficult to undertake, as in many

States data at sufficient level of disaggregation is not available. However, our analysis is based on the UDAY Memorandum of Understandings (MoUs) signed as tripartite agreement between the Government of India, DISCOMs and the State Governments, and State-wise information provided in the UDAY portal of Government of India. However, detailed analysis of the impact of UDAY on State finances has been carried out for the State of Rajasthan. The paper tries to forecast the trajectory of debt and deficits incorporating the UDAY power debt to understand the fiscal implications on State finances of Rajasthan. It needs to be noted that the impact of UDAY is asymmetric across States and this result cannot be generalized for States. The paper is organized as follows. Section 2 and 3 analyse respectively the financial and operational efficiency parameters. The aggregate and State-wise picture of the performance of UDAY scheme on quarterly basis is also presented here. There are four financial parameters and ten operational efficiency parameters envisaged in UDAY MoUs. Section 4 analyses the impact of UDAY on State finances, with special reference to the State of Rajasthan and provides the fiscal forecasts of UDAY on debt-deficit dynamics of the State.

2. Financial Performance of States under UDAY

The objective of UDAY is to improve operational efficiency and financial transformation of electricity distribution companies (DISCOMs). Also the scheme objective includes reduction in the cost of genera-

¹ The Ujwal DISCOM Assurance Yojana (UDAY) scheme was announced by Minister of State (IC) for Power, Coal & New and Renewable Energy in November 2015..

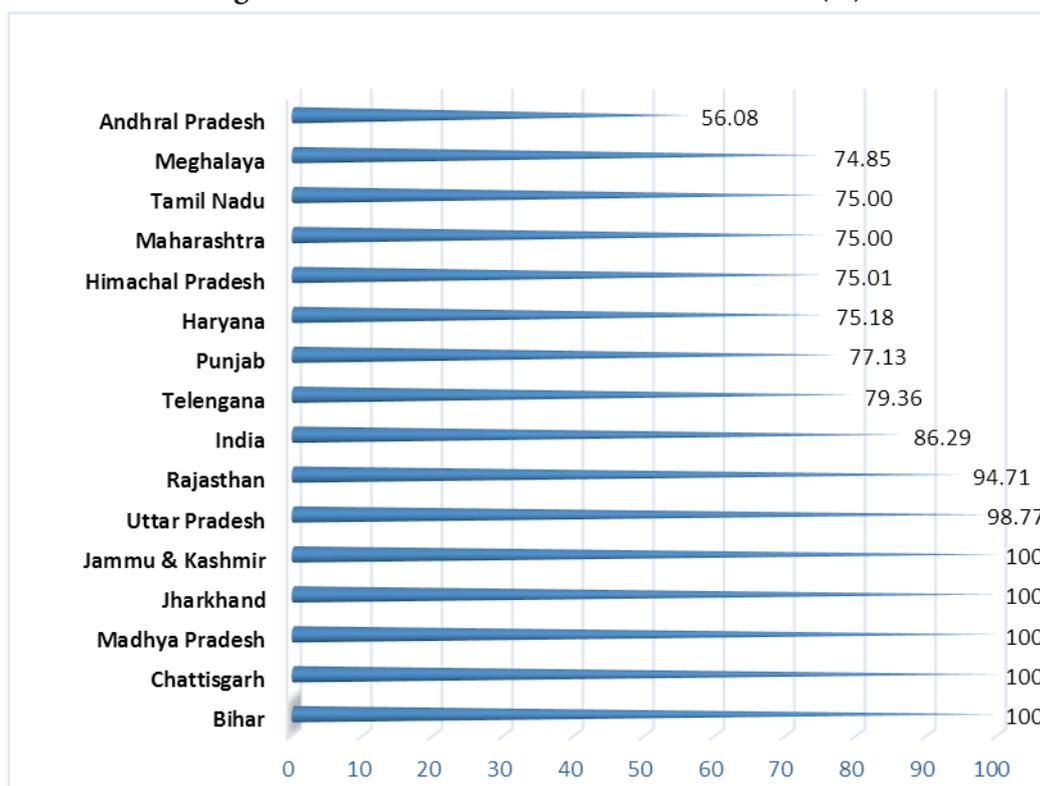
² The RBI in its State Finance Report-2016-17 has given data for fiscal deficit with and without UDAY for the year 2016-17 (RE) at 3.4 per cent (with UDAY) and 2.7 per cent (without UDAY) of GSDP (RBI 2017, page 13) respectively.

³ Obtained from The Economic Survey, Volume 2 submitted in August 2017 and also from RBI State Finance report 2016-17.

tion of power and energy conservation. This section analyses the UDAY financial performance parameters across States of India. The financial parameters analysed in this section are the progress in the issuance of UDAY bonds, the reduction in aggregate technical and commercial losses, the reduction in the gap between average cost of supply (ACS) per unit of power and per unit average revenue realised (ARR) and tariff revisions by DISCOMs post UDAY.

ala no information on the issuance of bond is available. As per the MoUs, there were no debt takeover in most of these States. These States are Gujarat, Goa, Manipur, Tripura, Uttarakhand and Puducherry and Kerala. As mentioned, in these States, this scheme is targeted only to achieve further operational efficiency of DISCOMs.

Figure 1: State-wise Issuance of UDAY Bonds (%)



Source : (Basic data), Government of India , UDAY portal

2.1 State-wise Issuance of UDAY Bonds

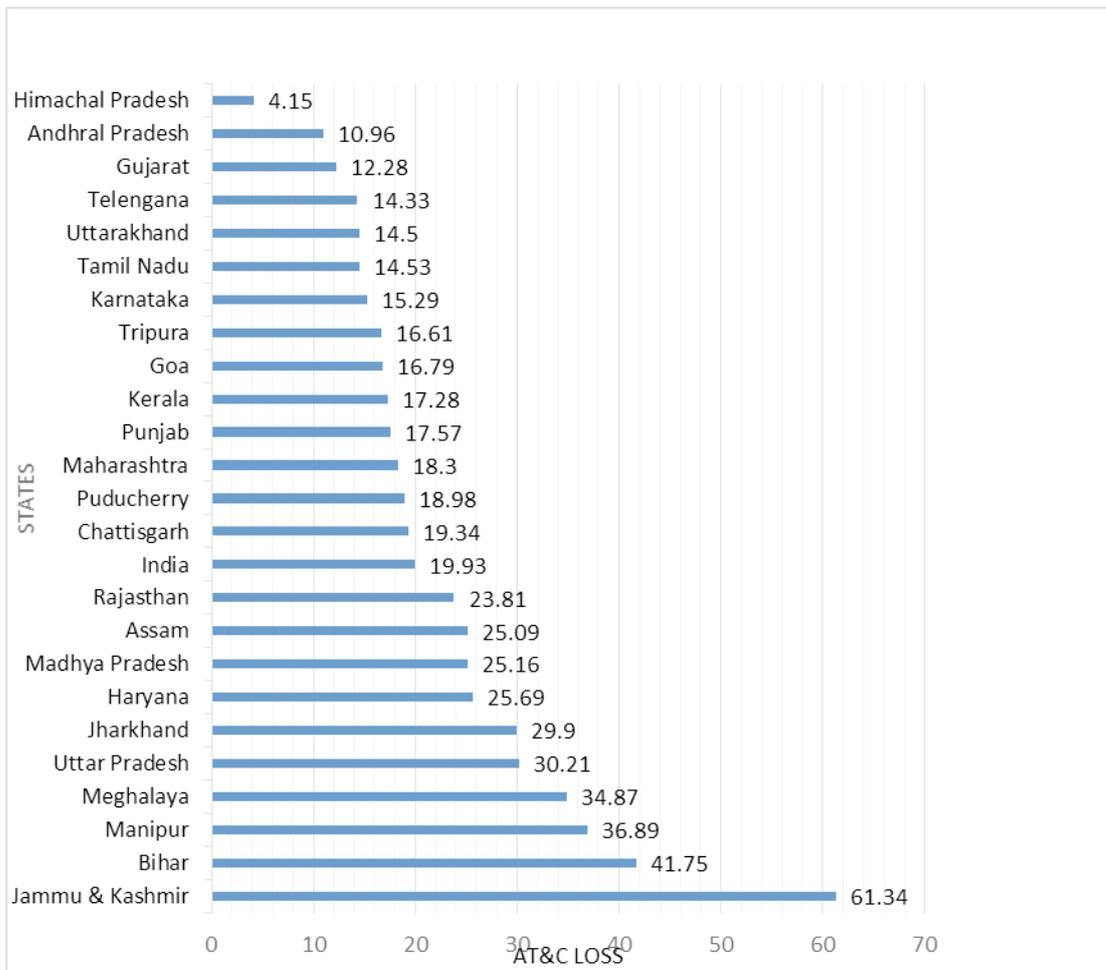
As mentioned, under the UDAY scheme, States agreed to convert 75% of the DISCOM debt into State government non-SLR bonds. These UDAY bonds were priced at not more than 75 basis points above the prevailing cut-off yield rate of government security of 10-year maturity. In aggregate level, so far, around 86% of UDAY bonds were issued (INR 2.32 lakh crores out of INR 2.69 Lakh crores) across all UDAY States. Five States, namely Jammu & Kashmir, Bihar, Chhattisgarh, Madhya Pradesh and Jharkhand issued 100% of the bonds to the DISCOMs as mandated in the UDAY scheme. Seven States (Maharashtra, Telangana, Himachal Pradesh, Haryana, Meghalaya, Tamil Nadu and Punjab) issued 75% of the total bonds so far. For eight States, namely, Gujarat, Karnataka, Puducherry, Tripura, Assam, Uttarakhand, Goa, Manipur and Ker-

2.2 State-wise aggregate technical and commercial losses (AT&C)

The aggregate technical and commercial losses is termed as AT&C loss. This includes losses which are technical and commercial. The commercial losses also include the loss of electricity due to theft, illegal metering etc. The technical losses are unavoidable losses in the transmission system. As per the UDAY scheme, State governments are required to reduce these losses to 15% by 2018-19.

As shown in Figure 2, only six States (Himachal Pradesh, Andhra Pradesh, Gujarat, Telangana, Uttarakhand and Tamil Nadu) have AT&C losses below the 15 % norm. The all States combined average is at 19.93%. Jammu & Kashmir reports AT&C loss of 61.34 % which is the highest while Himachal Pradesh

Figure 2: State-wise AT&C Loss (Aggregate Technical and Commercial Loss)



Source: (Basic data), Government of India, UDAY portal

has reported 4.15% AT&C loss which is the lowest in the scale. Six States report AT &C losses in the range of 20-30%. These States are Assam, Haryana, U.P, Madhya Pradesh, Jharkhand and Rajasthan. The highest in the scale are Jammu & Kashmir, Meghalaya, Manipur and Bihar that have AT&C losses between 30-60%.

2.3 State-wise Commercial Viability: ACS-ARR Gap (INR per unit)

Another milestone to be achieved under UDAY is reduction in the difference between average cost of Supply (ACS) per unit of power and per unit average revenue realised (ARR) to nil by 2018-19. This tests the commercial viability by covering the cost through revenues. The overall gap in India is INR 0.45 per unit.⁴

Eighteen out of the 24 States that reported the data have the gap ratio between 0-1. The gap is below 0.5

for Karnataka, Puducherry, Maharashtra, Tripura, Haryana, Uttarakhand, Manipur and Tamil Nadu. Ten States report gap ratio of above 0.5 but below 1. These are Goa, Madhya Pradesh, Punjab, Rajasthan, Kerala, Bihar, U.P., Andhra Pradesh, Telangana and Assam. Jammu & Kashmir tops the list of having a ratio of 2.15 followed by Meghalaya (1.81) and Jharkhand (1.48). Only Gujarat, Himachal Pradesh and Chhattisgarh have reported negative ratios for the same. For the FY 2016-17, out of 27 States tariff orders were issued by 24 States.⁵

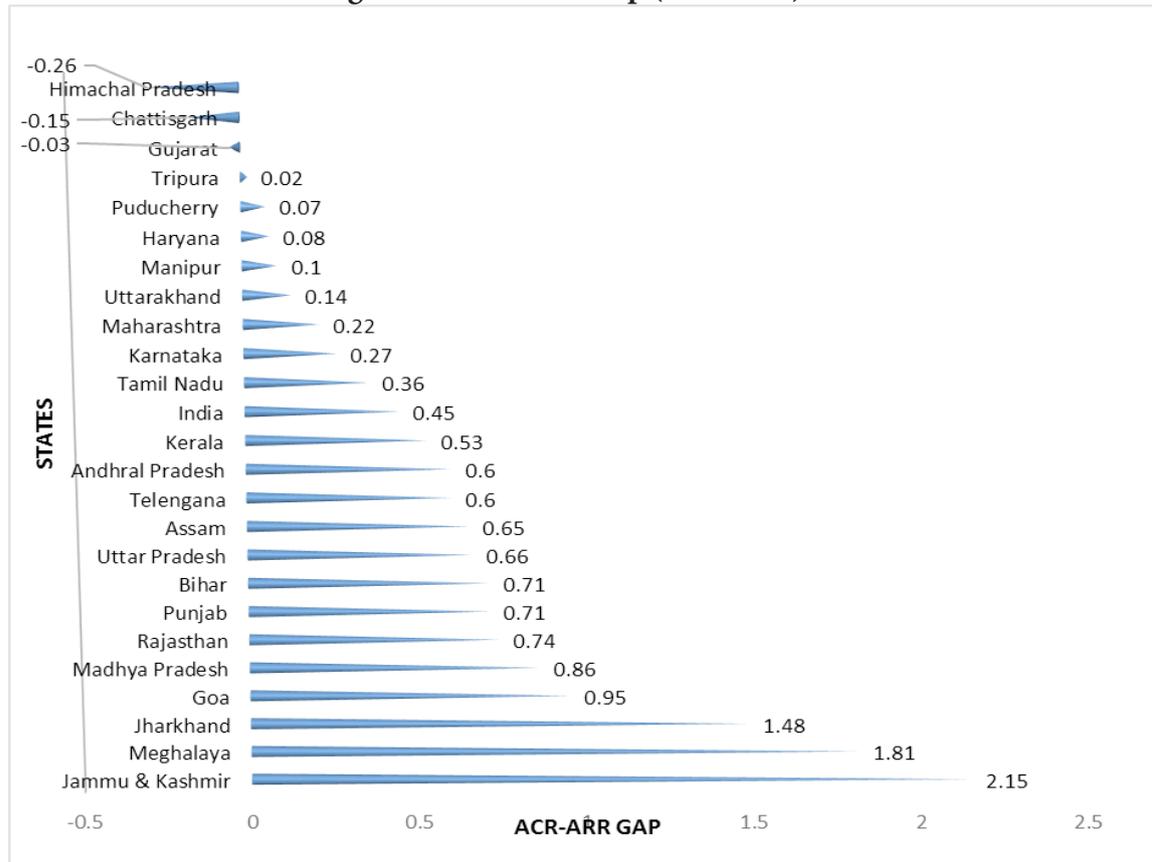
3. Operational Efficiency Parameters under UDAY

Apart from financial parameters to check performance of DISCOM across States, there are stipulated 10 operational efficiency indicators to be monitored under UDAY scheme. This section analyses these 10 operational efficiency indicators to understand the progress of UDAY across States.

⁴ UDAY portal reports that this data does not include data of Sikkim, Arunachal Pradesh and Mizoram.

⁵ Delhi Electricity Regulatory Commission. 2017. "Terms and Conditions for Determination of Tariff, Regulations 2017"

Figure 3: ACS-ARR Gap (INR/Unit)



Source : (Basic data), Government of India , UDAY portal

3.1 Power Supply Infrastructure (Feeder Metering)

Feeder metering is to ensure effective power supply and reduction in Aggregate Technical and Commercial (AT&C) losses. Target for 100% metering is the stated goal under UDAY. Figures 4 and 5 depict the progress made by the distribution companies in this respect. Also, it projects the outcome in absolute terms on the basis of the target set by the States at the time of joining UDAY. Figure 4 gives the State-wise feeder metering for urban areas of the States. Out of 24 States, 21 States have achieved their targets while Gujarat, Karnataka, Maharashtra, H.P, Andhra Pradesh are much ahead of their set targets. For urban feeders, Assam, Meghalaya and Kerala are yet to achieve their targets. The State-wise UDAY health cards of respective States report that even though States have not achieved their targets, still there is large improvement compared to pre-UDAY scenario. Feeder metering for both urban and rural shows an upward trend.

If we consider Feeder Metering in rural areas, 21 States have provided data, wherein fourteen States have reported to have achieved the targets. Meghalaya, Kerala, Jharkhand, Bihar, Chhattisgarh, U.P. and Assam

have not been able to achieve the targets in rural areas. Himachal Pradesh, Tamil Nadu, and Telungana have not reported the progress and set targets.

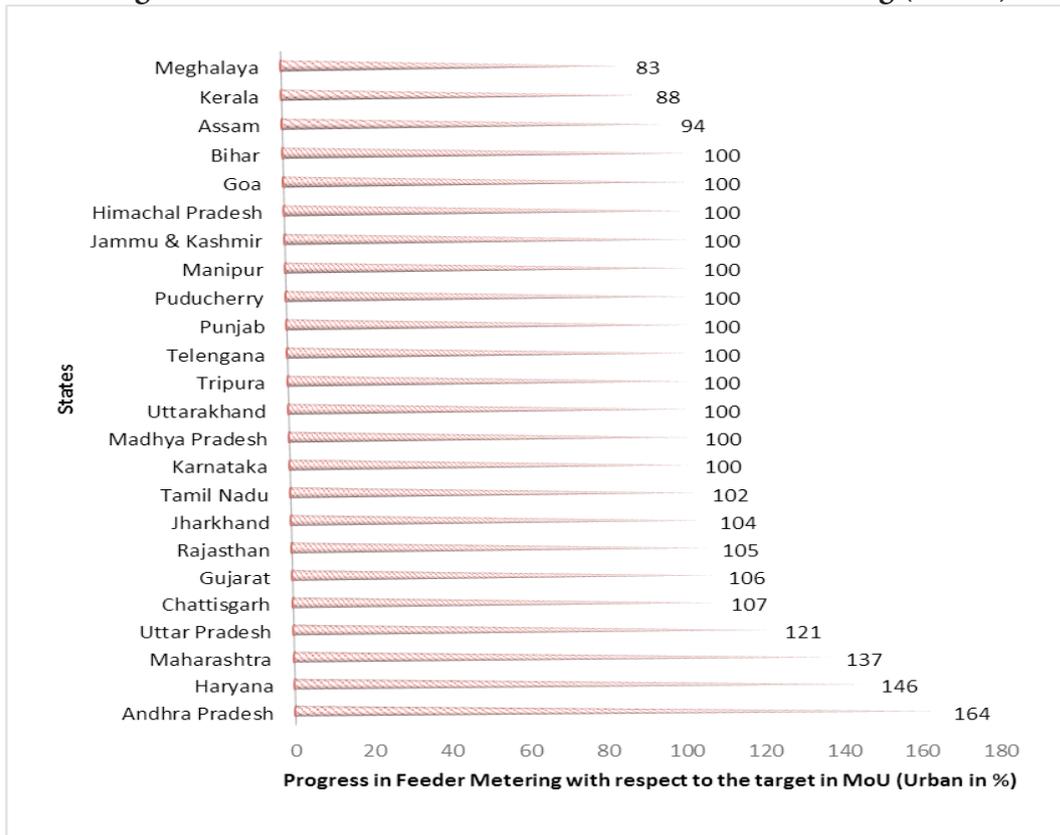
3.2 Energy Distribution Infrastructure: DT Metering

The Distribution Transformer Metering (DTM) helps in improving the energy distribution system and reduces the losses caused by thefts. This helps in load balancing and monitoring the quality of power. Also, it provides real time input and output data of the units consumed for better records. Figures 6 and 7 provide the DT metering for urban and rural areas respectively in absolute term. Out of 22 State utilities that reported data depict that this target has not been achieved by 18 States. Gujarat, Assam and Jharkhand lead in reaching their targets while all the other States lag behind. On the other hand, DT Metering in the rural areas seems to be a major challenge as no States out of 24 have been able to achieve this target by this year.

3.4 Electricity Access to Un-connected Households

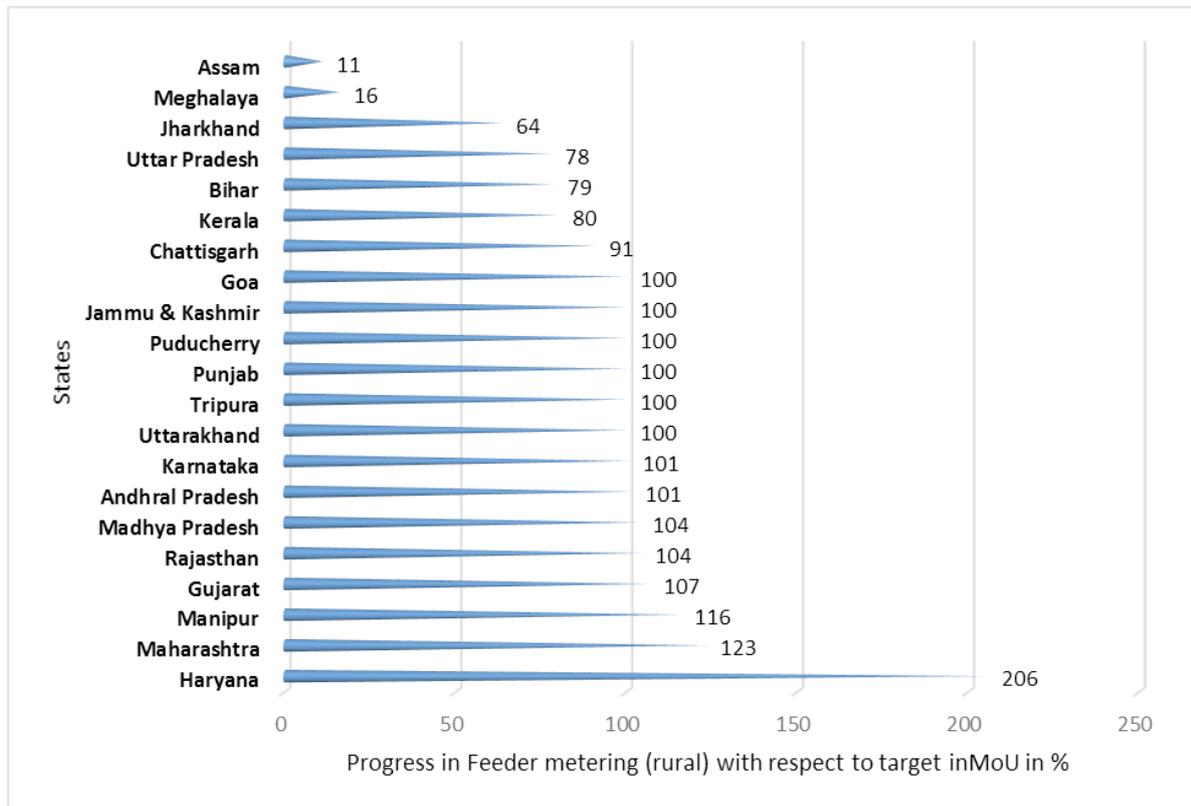
Figure 8 provides the progress of the States on the ba-

Figure 4: Power Infrastructure: State-wise Feeder Metering (Urban)



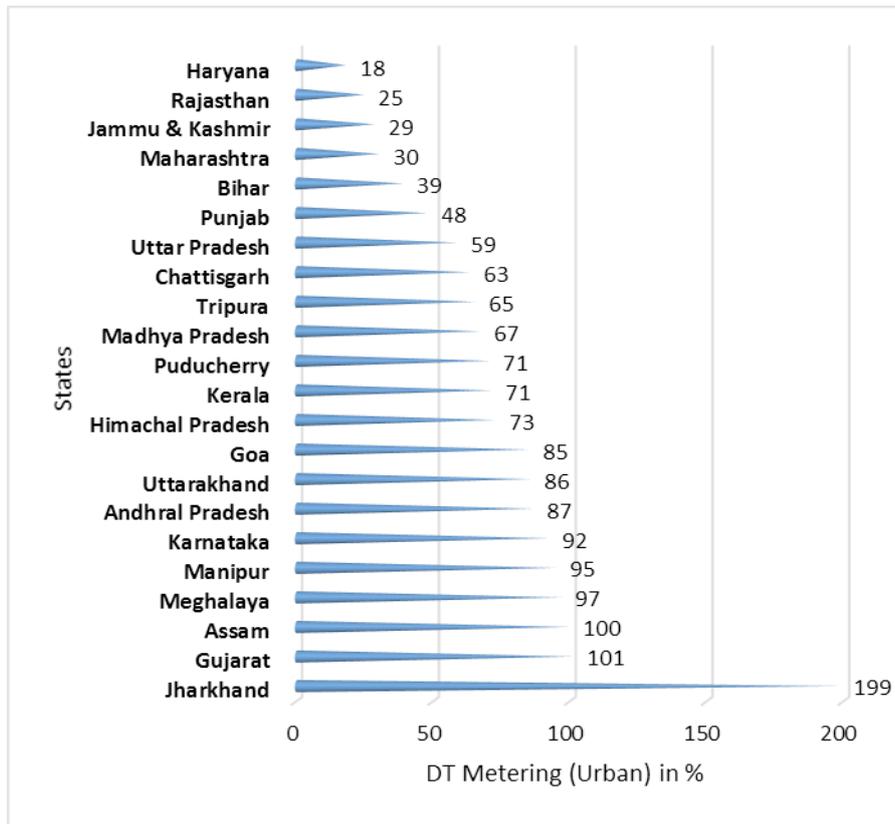
Source : (Basic data), Government of India, UDAY portal

Figure 5: Power Infrastructure - State-wise Feeder Metering (Rural)



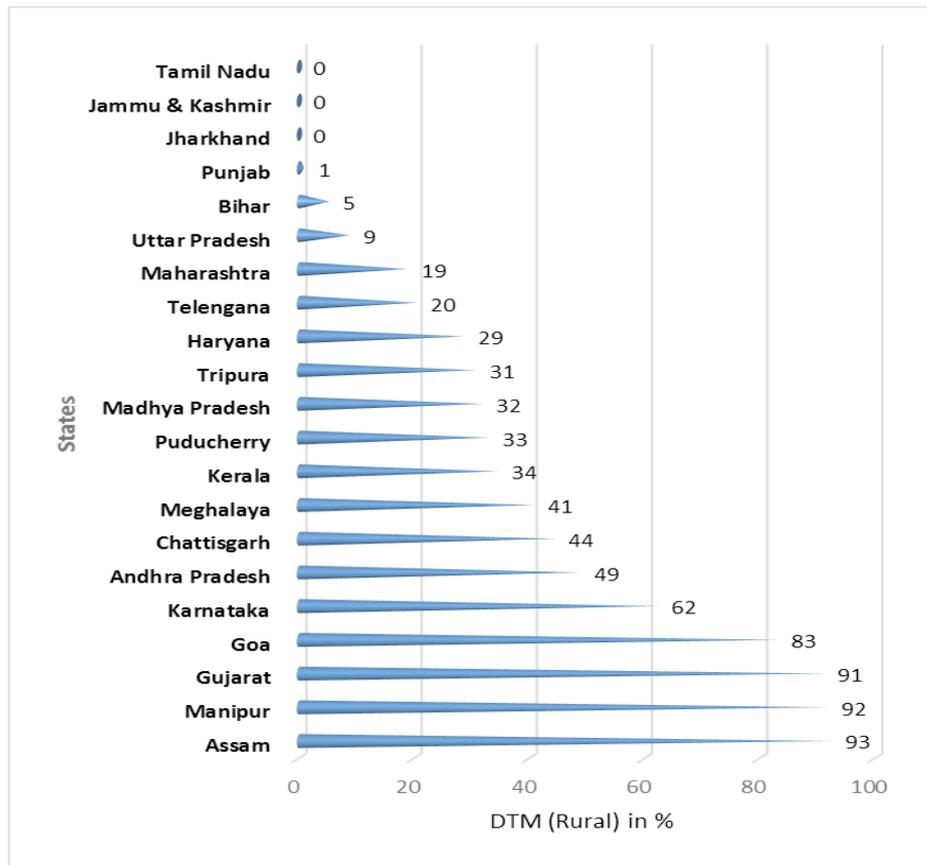
Source: (Basic data), Government of India, UDAY portal

Figure 6: DT Metering (Urban)



Source : (Basic data), Government of India , UDAY portal

Figure 7: State-wise DT Metering (Rural)



Source: (Basic data), Government of India, UDAY portal

sis of their targets for the financial year, in absolute terms, for electricity access to unconnected households. We do not have data for Tamil Nadu, Sikkim, Arunachal Pradesh and Mizoram. Electricity access is low on average for all the States except Gujarat, Puducherry, Punjab and Goa that have achieved their targets for the year (Figure 8). Even though the States have not been able to achieve their targets, a pre and post UDAY analysis shows improvement in electricity access to households vis-à-vis prior to UDAY.

3.5 Smart Metering above 200 and upto 500 Kwh & above 500 Kwh

Installations of Smart Meters help in recording energy consumption in intervals of an hour or less and communicate the same to State utilities for effective monitoring and billing.⁶ The government aims to reach this target by December 2017 for greater than 500 units and December 2019 for greater than 200 units. Out of the 27 States that have signed MoU, Punjab,

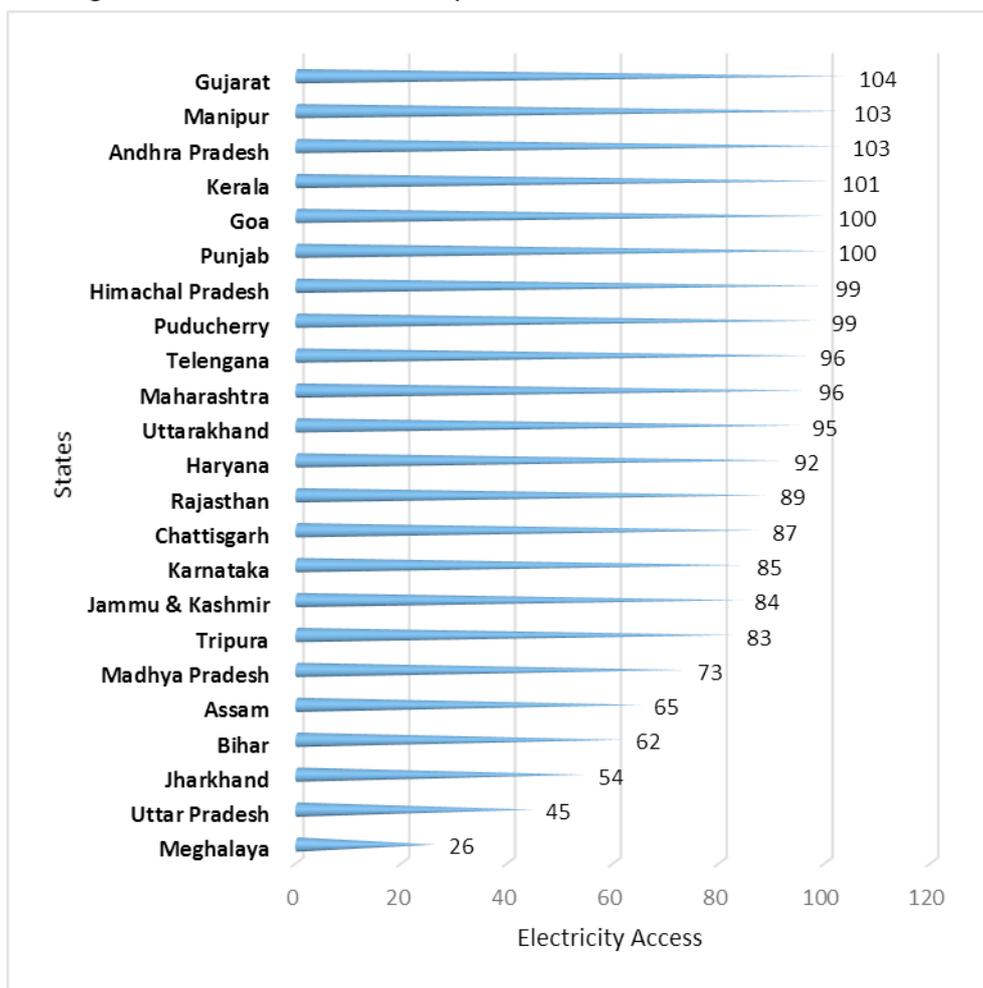
Puducherry, Sikkim, Arunachal Pradesh, Mizoram have not reported the data on same. Also, none of the 24 States that have reported seem to reach near the target for above 500 kWh (figure 9) as well as above 200 and upto 500 Kwh (figure 9 and 10).

Only six States have reported data on pre and post UDAY progress and witness an improvement in their goals after UDAY for above 200 units. This progress is based on the quarterly performance of the States. These States are Meghalaya, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Tripura and Karnataka.

3.6 Feeder Segregation

As per the RBI State Finance report 2016, those States who adopt UDAY and perform as per operational milestones will be given additional / priority funding through Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS), Power Sector Development Fund (PSDF) or

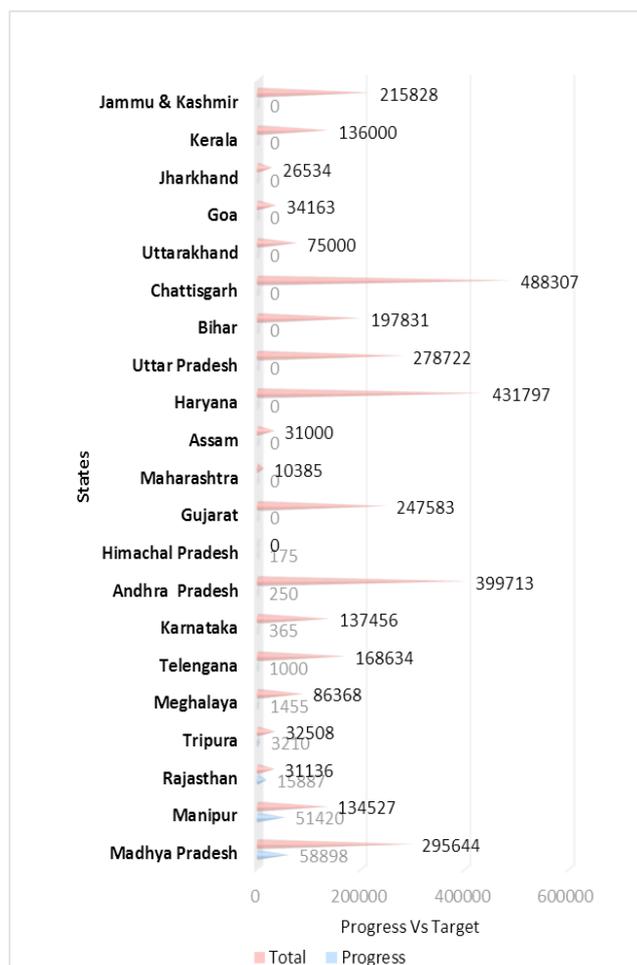
Figure 8: State-wise Electricity Access to Unconnected Households



Source: (Basic data), Government of India, UDAY portal

⁶ Ministry of Power, Coal and New & Renewable Energy, 2015. "Presentation on Towards Ujwal Bharat UDAY: The Story of Reforms", (November).

Figure 9: State-wise Smart Metering Above 500kWH



Source: (Basic data), Government of India, UDAY portal

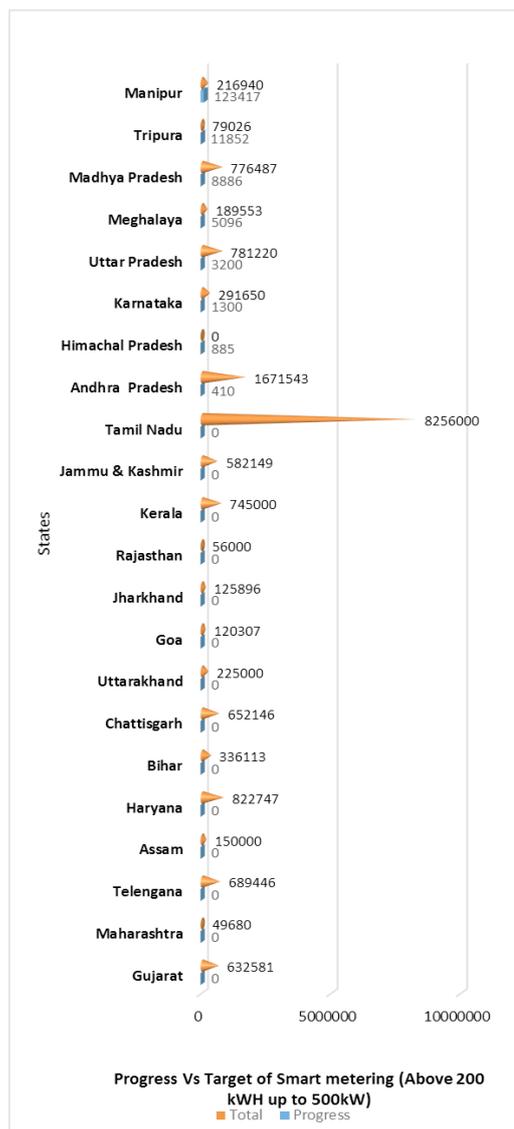
other such schemes of Ministry of Power and Ministry of New and Renewable Energy.⁷

Government approved Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) that aims at segregation of agricultural and non-agricultural feeders for uninterrupted supply to non-agricultural consumers in the rural areas.⁸ This aims at imparting 24*7 electricity supply to the rural households. Figure 11 gives us the State-wise Feeder segregation targets achieved (in per cent) so far. This includes the data reported for 17 States wherein only Gujarat and Haryana have achieved the targets. A pre and post UDAY trend for feeder segregation shows progress after signing for

⁷ States not meeting operational milestones, however, will be liable to forfeiture of their claim on IPDS and DDUGJY grants. (Box IV.1 of RBI State Finance Report, April 2016). <https://rbi.org.in/scripts/PublicationsView.aspx?id=16836>

⁸ Ministry of Power. 06-August-2015. "Feeder Segregation Scheme". Press Information Bureau, Government of India.

Figure 10: State-wise Smart Metering above 200 kWh up to 500kW



Source : (Basic data), Government of India , UDAY portal

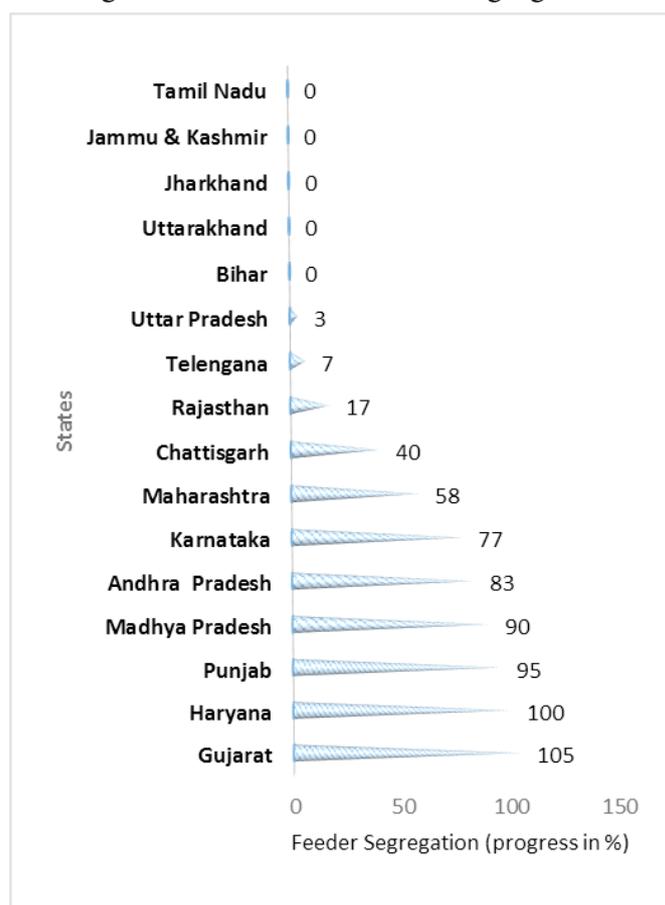
UDAY for 7 States out of 24 States. The remaining States have not reported yet.

3.7 Rural Feeder Audit

Rural feeder audit helps in identifying the utilities/feeders making losses and helps in taking necessary actions to improve their health. Also, the audit locates the areas that require immediate attention thereby improving efficiency.

Figure 12 provides the State-wise data for rural-feeder audit. Gujarat, Maharashtra, H.P., Madhya Pradesh, Goa, Manipur and Rajasthan have successfully

Figure 11: State-wise Feeder Segregation



Source : (Basic data), Government of India, UDAY portal

reached their targets for energy audit. Moreover, out of 24 States, 17 States are yet to attain their objectives. The pre and post UDAY performance of 14 States (out of 24) show a positive trend and progress in their targets.

3.8 Distribution of LEDs under UJALA

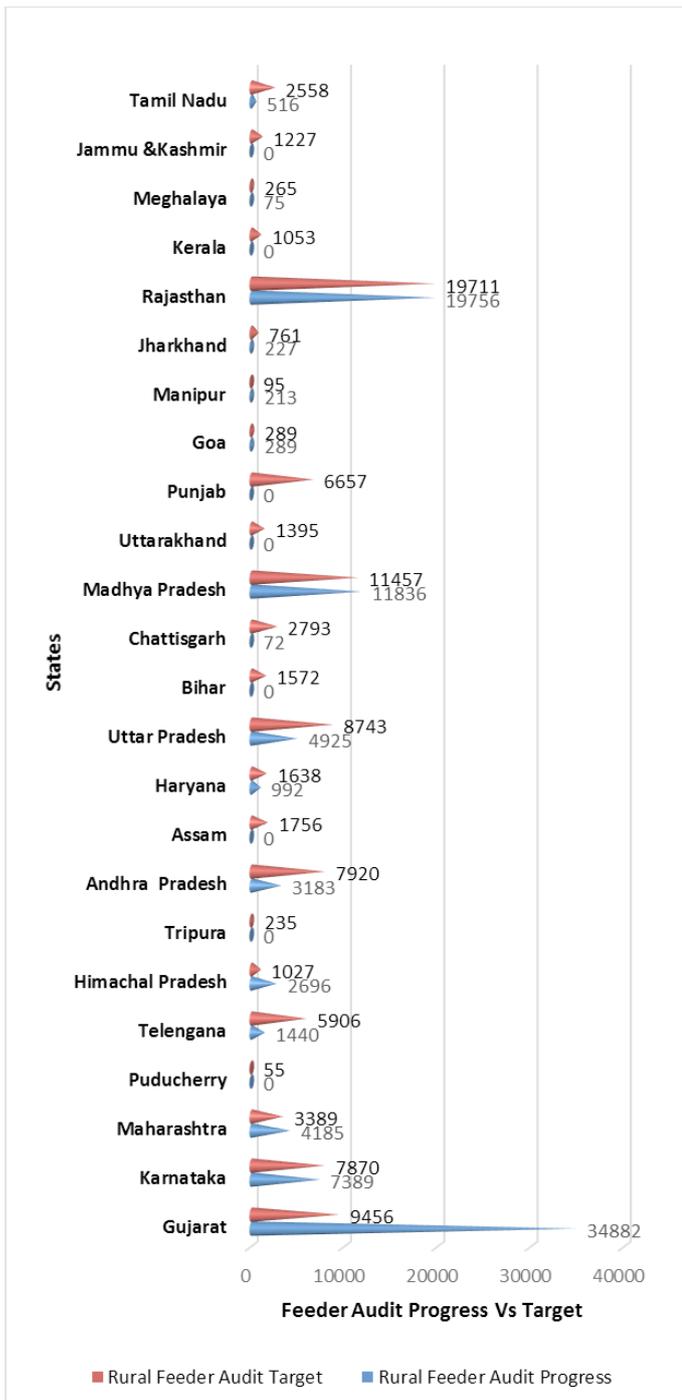
UJALA, an acronym for Unnat Jyoti by Affordable LEDs for All, is being implemented by Energy Efficiency Services Limited (EESL). Under this scheme, superior quality energy efficient LED bulbs are distributed to domestic consumers at INR 75 to 95, which is 80% less than the market price of INR 350-450. The main idea is promoting energy conservation and creating awareness about energy saving technologies.⁹ Table 13 depicts State-wise distribution of LEDs under UJALA scheme. Out of the 24 States, Gujarat, Karnataka, Maharashtra, Puducherry, Tripura, Andhra Pradesh, Assam, U.P., Bihar, Chhattisgarh and Jharkhand have achieved their target levels while other States report less than the total no. of LEDs targeted. The pre and post UDAY trend depicts progress for all the States from 2016 to June, 2017.

Taking India as a whole, the aggregate picture is depicted in Figure 14. As evident, aggregate operational parameters for India show an upward trend in the performance if we compare pre and post UDAY. All the parameters are analysed from March 2016 to September 2017 (figure 14).

On the basis of operational and financial parameters, State-wise performance has been discussed. Gujarat takes the lead as the best performer among all the States. It tops for having the lowest ATC losses and the ACS/ARR gap is also negative. It is followed by Karnataka, Maharashtra, Puducherry, Telangana and Himachal Pradesh. States that are at the bottom in terms of performance of these indicators are Tamil Nadu, J&K, Meghalaya, Kerala and Rajasthan. In addition to this, ranking of States have also been done on quarterly basis for the DISCOMs. Among the DISCOMs, Bangalore Electricity Supply Company Ltd. (BESCOM) tops the scale based on the performance of parameters on quarterly basis. This is followed by 3 out of 4 DISCOMs of Gujarat.

⁹ Fact Sheet on Unnat Jyoti by Affordable LEDs for All (UJALA) PIB, Government of India.

Figure 12: State-wise Rural Feeder Audit



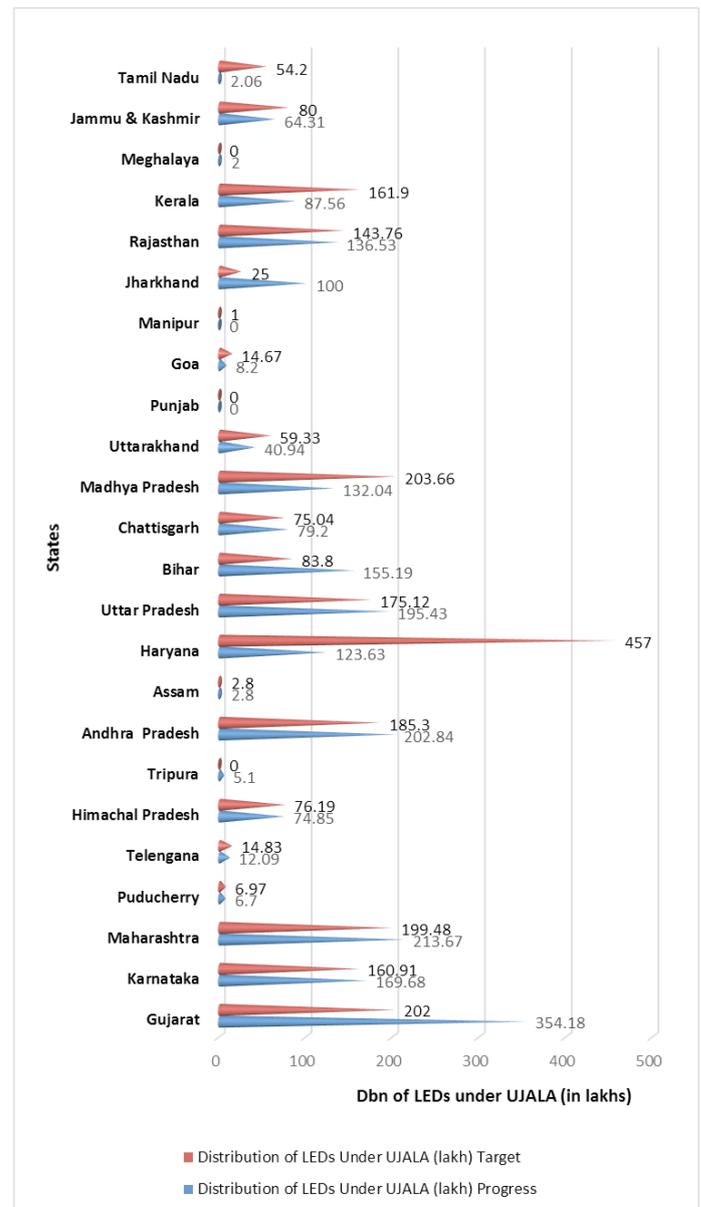
Source: (Basic data), Government of India, UDAY portal

4. Impact of UDAY on State Public Finance

It is pertinent to ask about the likely impact and future implications of the UDAY debt on State finances. To arrive at an aggregate debt (with and without UDAY) is a challenge. As all States have not provided UDAY-disaggregated debt figures in their recent budgets, we cannot provide an aggregate number.

The RBI State Finances Study for the year 2016-17

Figure 13: State-wise Distribution of LEDs under UJALA



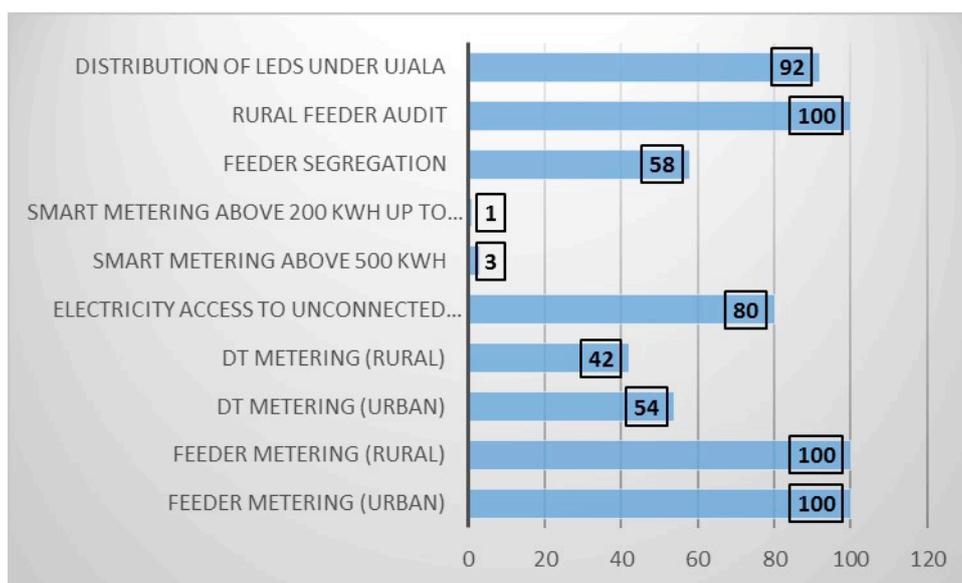
Source: (Basic data), Government of India, UDAY portal

has also provided the fiscal deficit number. However, in all likelihood, there will be asymmetric impact of UDAY across States since power sector debt liabilities are different across States. For instance, the Budget 2017-18 of Rajasthan revealed that the fiscal deficit with UDAY as percent of GSDP was as high as 9.38 per cent in 2015-16 due to the absorption of 50 per cent of DISCOM debt in that year (which was INR 62,000 crores).

The outstanding liabilities of Rajasthan increased to 33.79 per cent in 2016-17 (RE) which was much above

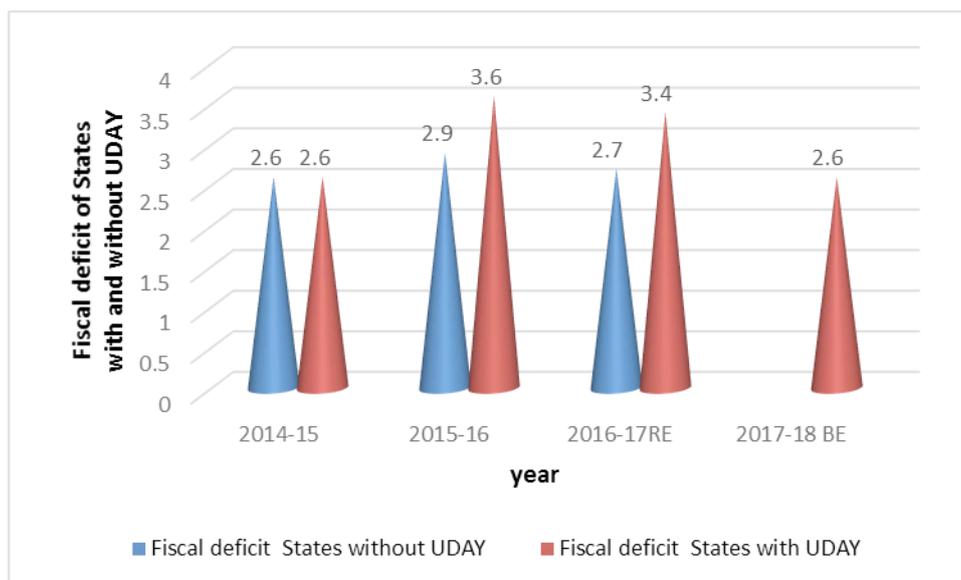
IDRC project on 'Intergovernmental Fiscal Transfers in India'

Figure 14: Progress of UDAY Operational Parameters (as of March 31, 2017)



Source: (Basic data), Government of India, UDAY portal

Figure 15: Fiscal deficit of the States - with and without UDAY



Source: (Basic data), RBI State Finances & Economic Survey, Vol 2, 2017.

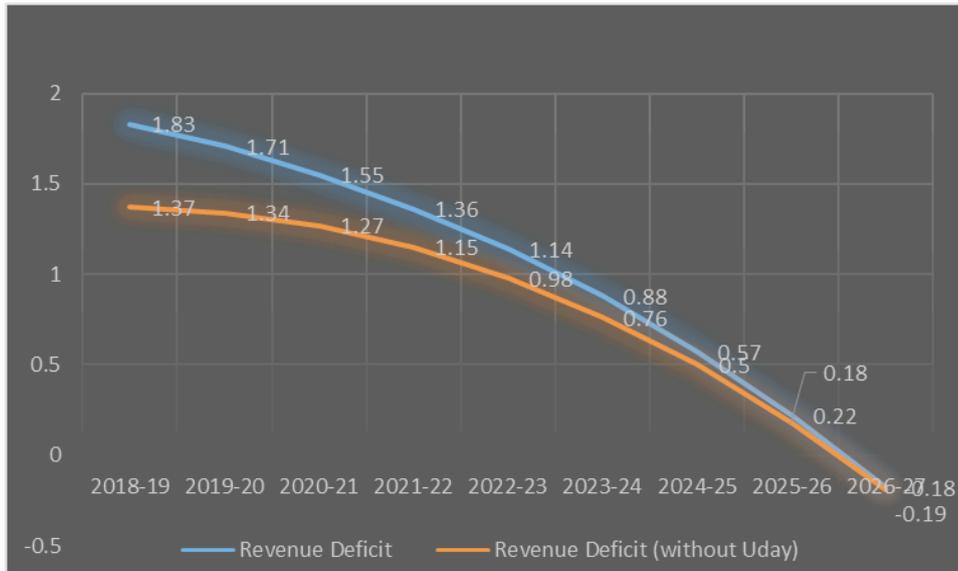
the FC-XIV suggested debt cap of 25 per cent of GSDP or the proposed target of 20 per cent recommended by FRBM review committee to be achieved by 2025.

ruptions to State government finances, reflecting their absorption of the DISCOM liabilities under the UDAY programme.

The Economic Survey – Volume 2 submitted in early August 2017 observed that: *The Union Budget for 2017-18 opted for a gradual rather than the sharp consolidation path recommended by the FRBM Review Committee, prudently balancing the requirements of a cyclically weakening economy and the imperative of maintaining credibility, especially in the wake of dis-*

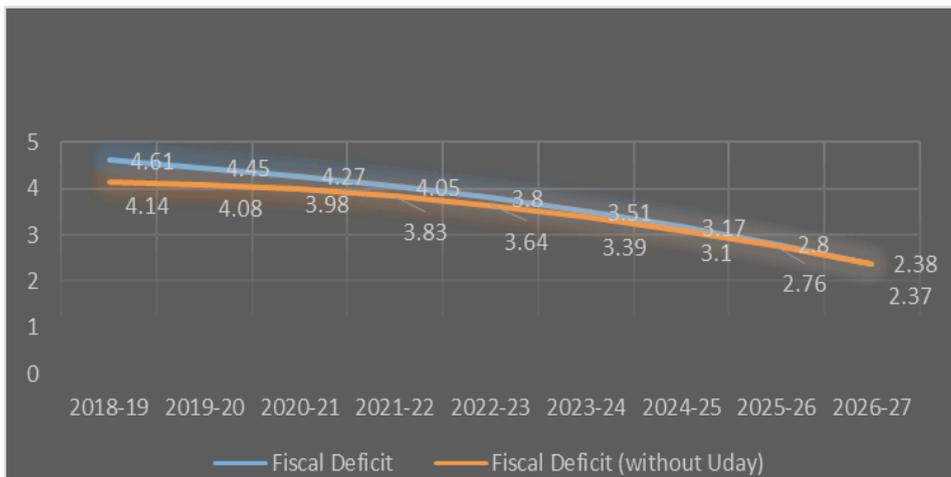
The RBI Study on State Finances points to the worsening of the fiscal deficit to GDP ratio on account of the increase in capital outlay and loans and advances to power projects-around \$98960 crore was borrowed under UDAY by eight States during 2015-16 (Economic Survey, Volume 2, 2017). Net of UDAY bonds, consolidated State fiscal deficit moderates by

Figure 16: Forecast of Revenue Deficit (with and without UDAY in Rajasthan)



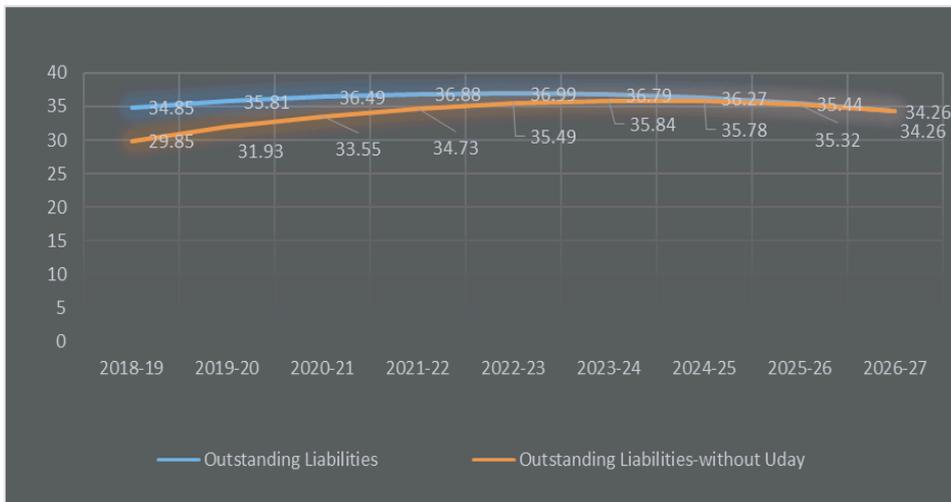
Source: Chakraborty et al., 2017

Figure 17: Forecast of Fiscal Deficit: with and without UDAY in Rajasthan



Source: Chakraborty, et al. 2017

Figure 18: Forecast of Outstanding Liabilities with and without UDAY in Rajasthan



Source: Chakraborty, et al. 2017

0.7 percentage point to 2.9 per cent (Figure 12). Thus with UDAY, as per the available information, the combined fiscal deficit of States crossed the FRBM benchmark of 3.0 per cent. Based on information on 25 States, the combined fiscal deficit of States in 2016-17 (RE) would be 3.4 per cent, while it would be 2.7 per cent without the UDAY liabilities (Figure 15).

The UDAY-incorporated forecast path of outstanding liabilities of States would depend on a host of factors including the buoyancy of State revenues and performance of DISCOMs. As data is not disaggregated for UDAY and non-UDAY in all States, we are unable to provide all the State-specific forecasts. However, we have the forecast path of debt and deficit of Rajasthan with and without UDAY.

4.1 Forecast of Debt-Deficit in Rajasthan (with and without UDAY)

The forecasts of revenue deficit, fiscal deficit and outstanding liabilities of Rajasthan are shown in Figure 16, 17 and 18 respectively. The projections are carried out on the basis of tax buoyancy, expenditure elasticities and assumed the inflation-growth paths (for details, Chakraborty et al., 2017).

5. Conclusion

UDAY power debt raises a fundamental question. What should be the criteria to judge fiscal prudence at the State level? May be it is time to propose that future reforms on debt and deficit should judge fiscal prudence based on comparable measures of deficits and debt across States. The aim should be to have a comprehensive measure of Public Sector Borrowing Requirement (PSBR) by encompassing all public sector liabilities at the State level including power sector debt, than using a measure which only reflects deficit arising out of budgetary transactions.

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