

MSC Policy brief #25

Gauging the readiness of Indian states to adopt DBT in electricity

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Many states in India provide free electricity to farmers. The estimated annual spending of state governments on electricity subsidy is around USD 15 billion (INR 1,104 billion). This is in addition to the cross-subsidy¹, which keeps the tariff for agriculture activities far lower than the average

cost of electricity supply. Electricity regulators in India allot 75% of the total cross-subsidy or USD 10.20 billion (INR 750 billion) to agriculture power consumers (that is, farmers. It allots 20% to domestic power consumers and 4% to industries—as of FY 2020.²



Need for reforms in agriculture power subsidy

During the 1970s, the then government had initiated subsidies in power for the agricultural sector to support farmers and enhance agricultural productivity in India. Over the years, appeasing farmers gradually became a political necessity, resulting in free or low flat rate³ unmetered agriculture power in most Indian states. As a result, distribution companies (DISCOMs), the erstwhile electricity boards, stopped installing meters to save on capital expenditure.

While some state-level agriculture subsidy policies have proven to be economically inefficient, policymakers often pursue them in the name of welfare. This approach fails to consider the tradeoff in terms of resource sustainability. Subsidized electricity for agriculture, coupled with existing procurement policies incentivizing the overproduction of wheat and rice, results in excessive groundwater exploitation.



Boost from the center ushers in reforms to the power sector

The Government of India (GoI) seeks to reform the power sector, considering the current costs of subsidies and operational losses. One such initiative is using the Direct Benefit Transfer (DBT) system, which has emerged as an effective tool to eliminate

inefficiencies in mechanisms to deliver services. The GoI has already implemented DBT for approximately 318 schemes, involving 54 ministries. This has led to a cumulative savings of more than USD 24.5 billion (INR 1,700 billion)⁴

¹ In India, certain class of consumers, such as industries and commercial establishments are charged higher electricity rates than the average cost of supplying electricity. The government uses the surplus to subsidize electricity for marginal consumers, such as low-income households and farmers. This is known as cross-subsidization.

² *Unpacking India's Electricity Subsidies* (2020): <https://www.iisd.org/system/files/2020-12/india-electricity-subsidies.pdf>

³ In a flat-rate tariff, customers are billed a fixed amount at a defined interval irrespective of the consumption. Flat rate does not need measurement. hence a few electricity distribution companies discontinued installing meters to save the cost of equipment

⁴ Source: [DBT Bharat Portal](#), accessed on 21 April 2021

Significance of DBT in electricity (DBTE) for different stakeholders

The Ministry of Power recognized the effectiveness of the DBT system. It proposed Direct Benefit Transfer in Electricity (DBTE) in the draft Electricity Transfer in Electricity (DBTE) in the draft Electricity Amendment Bill 2021 to enhance the financial viability of DISCOMs. Implementing DBTE will help reduce the significant commercial losses incurred by DISCOMs due to inefficient billing and collection.

DBTE will ensure that electricity subsidies target the intended beneficiaries while improving how promptly customers pay DISCOMs.⁵ The draft National Electricity Policy, 2021 also prescribes DBTE as a provision for the delivery of subsidies by states to any consumer.

	Government	DISCOMs	Farmers
 <p>Pain point</p>	 <p>The states have to bear a high fiscal burden and increasingly depend on subsidies. <u>At an all-India level, 16% of the total DISCOM revenues comprise of subsidy provided by states.</u></p>	 <p>DISCOMs face financial losses due to poor billing and energy accounting. The total loss was estimated to be around <u>INR 90,000 crore in FY 2021</u></p>	 <p>The power supply is unreliable and is of poor quality- it is marked by frequent power-cuts, voltage fluctuations, and restricted hours of power supply</p>
 <p>Benefit through implementation of DBTE</p>	<ul style="list-style-type: none"> DBTE will reduce the state's subsidy burden with improved monitoring efficiency and curb leakages in the system. DBTE will facilitate tariff rationalization, which will help reduce the dependence on subsidy for DISCOMs. It also offers tremendous scope to channelize efforts toward improving subsidy targeting. 	<ul style="list-style-type: none"> DBTE will reduce delays for DISCOMS in revenue realization through timely payments by consumers and implementation of <u>cost-reflective tariffs</u>. DBTE will also create an opportunity to install meters and improve billing efficiency, which will further help to optimize operations and reduce transmission losses. 	<ul style="list-style-type: none"> DBTE will improve the quality of power supplied and offer flexibility to irrigate fields at convenient hours with unrestricted supply. The DBTE scheme could be structured in a way such that it benefits customers for efficient use of electricity, such as through the <i>Paani Bachao Paise Kamao</i> scheme in Punjab

⁵ What Purpose will the Centre's New DBT Model for Power Subsidies Serve? (2020) <https://www.ceew.in/blogs/what-purpose-will-centre%E2%80%99s-new-dbt-model-power-subsidies-serve>



To facilitate the implementation of such initiatives, the GoI introduced reform-linked borrowings⁶. States implementing reforms in the power sector and experimenting with DBTE initiatives are permitted to borrow additional funds from the central government to fight the COVID-19 pandemic. Madhya Pradesh was the first state to qualify for these additional borrowings, piloting the DBTE scheme in the Vidisha district of Madhya Pradesh. This helped the state mobilize additional financial resources

worth USD 0.194 billion (INR 14.23 billion). Similarly, Andhra Pradesh implemented a DBTE pilot in the Srikakulam district of Andhra Pradesh, becoming the second state to benefit from additional borrowings.

As prospects for the adoption of DBTE increase among Indian states, MSC examined the readiness of select states across India for DBTE implementation. The examination led to a DBTE readiness index that ranked states based on their perceived ability to take up such reforms.



MSC's assessment framework

Two major factors drive the readiness of a state to implement DBTE reforms: (i) the availability of adequate infrastructure and (ii) an appropriate policy environment

coupled with political dynamics. We developed the framework with these two factors to create a composite score to measure each state's readiness.

⁶ For the fiscal year 2020-21, in part due to the COVID-19 pandemic, the union government raised the states' borrowing limits by 2% of GSDP, but half of this limit (1%) is subject to the implementation of prescribed reforms. For this purpose, the government identified four citizen-centric reform areas, of which the power sector was one.

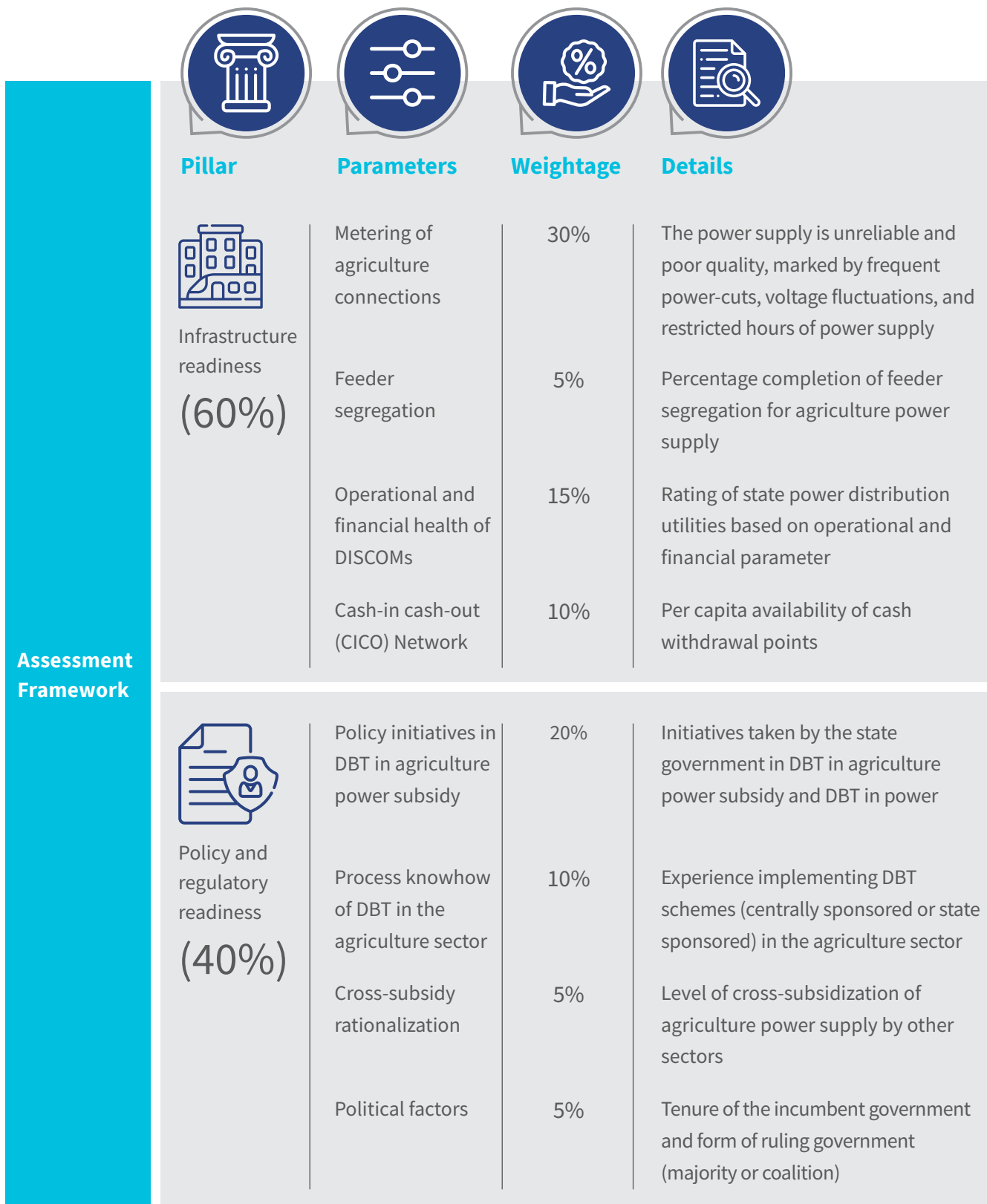
The infrastructure readiness of states to implement DBTE hinges on the following four factors:

- 1 The extent of metered agriculture power connections in the state** is critical to measuring electricity consumption for an efficient billing and collection process. Installing electricity meters to agriculture connections is capital-intensive and politically sensitive. Hence, states that already have meters are better prepared for DBTE.
- 2 Feeder segregation for agriculture and non-agriculture power connections** is another crucial factor. The duration and quality of supply for agriculture and domestic rural consumers are usually different. Hence, these have to be supplied electricity through different feeders, which is considerably capital-intensive. States that have segregated their feeders are better prepared for DBTE.
- 3 The financial health of DISCOMs** determines their ability to sustain the DBTE model.
- 4 The presence of a reliable cash-in and cash-out (CICO) network** determines how well farmers can access subsidies transferred into their bank accounts.

The policy and regulatory readiness of states to implement DBTE hinges on the following four parameters:

- 1 The presence of policy initiatives in DBT for agriculture power subsidy** is the most crucial factor because it indicates ongoing policy measures in DBTE. It shows the inclination of the government to reform the power sector and take up initiatives readily in the direction.
- 2 Process knowhow of DBT for the agriculture sector** is the second-most crucial factor. It indicates the state's experience of implementing central schemes, such as PM-KISAN, in addition to state-specific schemes, such as *Rythu Bandhu*, *Rythu Bharosa*, and *Bhavantar*. Demonstrated operational and technical proficiency of states in implementing such schemes lays a strong foundation for executing DBT in agriculture power.
- 3 The percentage of cross-subsidy rationalization** indicates the extent of cross-subsidy surcharge levied on industries and commercial enterprises to provide low-cost electricity to farmers and domestic consumers. The distortionary effects of cross-subsidies lead to theft or leakages in electricity, which result in poor accountability of revenue earned by DISCOMs. Therefore the National Tariff Policy, 2016 indicates that state electricity regulatory commissions should ensure cross-subsidies within $\pm 20\%$ of the average cost of electricity supply⁷. States that have made progressive efforts to bring down cross-subsidies are better positioned to take up DBTE.
- 4 Political factors, such as the tenure and the form of the ruling party (majority or coalition)**, indicate the will and ability of states to implement DBTE. Political instability leads to poor decision-making and delays action. States with stable governments are better placed to roll out policy decisions more effectively and promptly execute them.

⁷ <https://wberc.gov.in/sites/default/files/tariff-policy-28.01.2016.pdf>



Note: Despite its importance, the weightage for feeder segregation has been set low because most states, except for Rajasthan and UP, have achieved close to 100% feeder segregation.

Figure 1: Assessment framework of the study



Findings from the exercise

Haryana, Rajasthan, and Gujarat were the top three ranked states in terms of their infrastructure and policy readiness to implement DBTE. Bihar, Maharashtra, and Punjab ranked fourth, fifth, and sixth, respectively⁸. The three top-ranked states have a very high percentage of metered connections (94%, 64%, and 68%, respectively). They also have an “above average” performance of DISCOMs, indicating adequate availability of infrastructure to implement DBTE initiatives. The policy readiness scores of these states reflect a conducive political

environment and the states’ capacities to roll out DBTE effectively.

From a sustainability lens, we also ordered⁹ the selected states based on the urgency of implementing these reforms. States such as Rajasthan, Gujarat, and Punjab (highlighted in red in the table below) emerged as the top three states with alarming groundwater extraction rates—water tables have reached critical levels. The burden of agriculture power subsidy is exceptionally high.

Table 1: State-wise scoring¹⁰ and ranking of readiness to implement DBT in agriculture power subsidy alongside state-wise ranking of critical groundwater levels

DBTE readiness rank	State	Infrastructure readiness score	Policy readiness score	Final composite score	Percentage of blocks in the state with critical and overexploited groundwater table
1	Haryana	3.92	3.00	3.55	12%
2	Rajasthan	3.42	3.50	3.45	74%
3	Gujarat	4.00	1.88	3.15	63%
4	Bihar	3.33	2.75	3.1	6%
5	Maharashtra	3.75	1.88	3	5%
6	Punjab	2.42	3.25	2.75	80%
7	Karnataka	2.42	2.75	2.55	31%
8	Andhra Pradesh	2.00	3.38	2.55	11%
9	Madhya Pradesh	1.83	3.38	2.45	23%
10	Uttar Pradesh	2.33	2.13	2.25	17%
11	Telangana	1.83	2.38	2.05	9%

Indicates states with poor groundwater levels

⁸ Detailed ranking and scores can be found in the [annexure](#)

⁹ Based on the [status of groundwater table of the states](#).

¹⁰ 1 being the lowest score and 5 being the highest score

Though Madhya Pradesh and Andhra Pradesh have initiated DBTE pilots, they did not feature in the top six states due to a lack of infrastructural preparedness. However, they scored high on the policy readiness parameters.

Before Madhya Pradesh and Andhra Pradesh's DBTE pilots, the Government of Punjab rolled out an innovative pilot scheme for the DBTE subsidy. It was called "*Paani Bachao, Paise Kamao*" (save water, earn money). The scheme provides monetary incentives to farmers to use less power and, hence, less groundwater to irrigate their fields. [MSC's assessment of this intervention](#) concluded that the pilot serves as a behavioral nudge and incentivizes farmers to consume less electricity than the levels to which they are entitled.

[The World Bank's experience¹¹ of the scheme shows](#)

[that frequent communication with farmers \(through WhatsApp and SMS\), coupled with timely benefit payments, instills trust and maintains their interest in the scheme.](#) The Punjab pilot is the first of its kind. It addresses the twin problem of overuse of groundwater and electricity.

DBTE pilots in Punjab, Madhya Pradesh, and Andhra come as a lesson for the top-ranking states to experiment with similar initiatives. Despite high infrastructural preparedness, such reforms are delayed in these states due to resistance from farmers and reluctance from the state governments to adopt more firm policy choices. Reasonable nudging by the central government in the form of reform-linked borrowings will give the necessary impetus for these state governments to initiate reforms in the power sector and eventually roll out DBTE.



Recommendations and considerations for adopting DBT in agriculture power subsidy

DBT has proved to be a revolutionary tool in policymaking through effective implementation of initiatives, such as [DBT in LPG \(PAHAL and Pradhan Mantri Ujjwala Yojana\)](#), [DBT in fertilizer](#), income transfers, and many other schemes. The success of DBT initiatives indicates how benefits can reach targeted beneficiaries while ensuring minimum leakages. From a financial standpoint, DBTE also acts as a strong successor policy to the [UDAY scheme¹²](#), a revival package to transform the financials of the power sector and keep DISCOM losses in check.

Before implementing the DBT for the agriculture power subsidy, the GoI and state governments

should consider the following:

- (i) **Smart metering to ensure efficiency in consumption:** Smart metering has a long implementation trajectory, is investment-intensive and requires the cooperation of farmers. Yet, it benefits the financial health of DISCOMs and reduces both power leakages and billing and collection inefficiencies. For example, [IntelliSmart is a national smart metering initiative and is the first of its kind in India.](#) The success of such interventions can promote smart metering at scale across various states in the country.

¹¹ World Bank Newsletter (2020)

¹² Ujjwal DISCOM Assurance Yojana (UDAY) is a scheme for the financial turnaround of power distribution companies initiated by the GoI to improve the operational and financial efficiency of state DISCOMs

- (ii) **Differing willingness among states:** Indian states have not welcomed DBTE reforms uniformly. Some states like Tamil Nadu have vehemently opposed the DBT amendment in the Electricity Bill (2021). Tamil Nadu is one of the few states that provide free electricity to a wide ambit of consumers, including 2.14 million farmers, 1.1 million huts, and 77,000 weavers. The state has a large beneficiary base of subsidized electricity consumers and a strong political will to continue paying lump-sum subsidies to DISCOMs. Hence, Tamil Nadu did not show interest in adopting the new DBTE model.
- (iii) **Delays in subsidy transfer:** Lessons from DBT schemes, such as PM KISAN and others, have revealed delays in the payment of benefits to beneficiaries. Yet similar delays in DBTE payments could prove to be even more



politically sensitive. This exacerbates the problem of political pressure among states to adopt the new DBTE model.

- (iv) **Lack of data transparency by states:** Most states have not measured the actual cost incurred to provide subsidies to agricultural power consumers (farmers) among other categories of consumers. According to a recent independent report by CEEW and IISD⁵, only 15 out of 28 states¹³ have reported their values of subsidy payments. Most states do not specify subsidy support for a fixed number of units. When it comes to data transparency on category-wise subsidy payments, Gujarat, Haryana, Himachal Pradesh, Karnataka, Punjab, Tamil Nadu count among the better performing states.

Measuring, calculating, and reporting tariffs and subsidies is key to monitoring DISCOM's financial health and ensuring judicious use of the state's subsidy. State regulators can mandate DISCOMs to periodically release category-wise subsidies both committed and disbursed, a schedule of subsidy payments, and reporting of payment delays. In the long run, a comprehensive real-time portal can be set up for tracking delays in subsidy payments to DISCOMs and subsidy calculations.

- (v) **Inculcating lessons from DBTE pilots:** States need to conduct pilots before rolling out the DBTE schemes at scale. Early lessons from MSC's assessment of DBTE during the Punjab Pilot highlighted the need for preparedness at technical, governance, and beneficiary levels for scaling up the program. It also demonstrated the need to widen the ambit of target beneficiaries to include tenant farmers as well.

¹³ The states that do not report subsidies are Assam, Bihar, Chhattisgarh, J&K, Jharkhand, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, and West Bengal



Implementation strategies

The government should use existing direct benefit cash transfer programs and schemes to implement DBTE at scale. As schemes such as PM-KISAN—an income support scheme for all landholding farmers in India—are already in place, challenges around obtaining land records and ensuring KYC of farmers' bank accounts can be mitigated easily.

Given the number of schemes available for agriculture, the government could also consider bundling all such subsidies and offer a lump-sum cash transfer or income support to the farmer. Bundling of the scheme eases political tension. It will ensure buy-in from a large number of

stakeholders. The architects of PM-Kisan are also attempting to create a database of farmers across the country. It could serve as a strong base on which other farmer-targeted programs, such as DBTE could be rolled out.

While DISCOMs already have a database of registered electricity consumers, it excludes farmers without electricity connections, tenant farmers, and sharecroppers. Currently, only those farmers who have their own electricity connections on their own land are eligible for free electricity. We suggest DISCOMs following steps to build an inclusive database while rolling out DBTE:

Step 01

DISCOMs can roll out DBTE first for those with electricity connections. DISCOMs can improve their existing database of customers by adding bank account details of beneficiaries once they are registered on the DBTE scheme.

Step 02

DISCOMs can then align and update their existing database as per the latest records in the PM KISAN database. This can help increase the outreach of DBTE and reach the otherwise excluded farmers.

“Smart villages” or even the Aspirational District program of NITI Aayog could be a fruitful way for policymakers to pilot, experiment, and tweak policies to ensure scalability and gain early feedback of DBTE programs. NITI Aayog's Aspirational District program spans health and nutrition,

agriculture, water resources, and financial inclusion initiatives—the DBTE model aligns well with these core areas. The food-water-energy nexus comprises sustainability. Since it forms a vital objective of the DBTE initiative, sustainability could complement other pilots taking place in “smart villages.”



Conclusion

DBT in agriculture power subsidy is a policy that has broad implications for the environment, agriculture, farmers, and the government. It is an effective as well as an imperative intervention to address the food-energy-water nexus. The lessons from the “*Paani Bachao, Paise Kamao*” pilot indicate that DBT reforms in the energy sector can be further used to incentivize necessary measures toward water harvesting and crop diversification in the water and food sector, respectively.

Implementation of DBTE requires the cooperation of states to break the dependency on free and unregulated power. This model of DBT could prove to be a win-win for both state governments and financially weak DISCOMs. If DBTE is successful, the burgeoning energy subsidy will be in check. States can divert financial resources to other sectors in need. The new model will help improve the energy accounting and subsequently the quality of power supply, improving the service and benefit delivery to beneficiaries.





Annexes

MSC conducted in-depth desk research to understand the DBTE landscape in India and developed an assessment framework to gauge the readiness of select Indian states to implement DBTE in agriculture.

The selection of states for the assessment involved a three-step process. First, from among the 36 states and union territories (UTs) in the country, we

eliminated states and UTs with a farmer population of less than 1 million, which numbered 18 states and UTs in all. In the next step, states and UTs receiving little or no agriculture power subsidy were removed. From the remaining states, we selected 11 states¹⁴ representing high power consumption in agriculture. We also ensured an appropriate representation of all geographical regions of the country during the selection process.

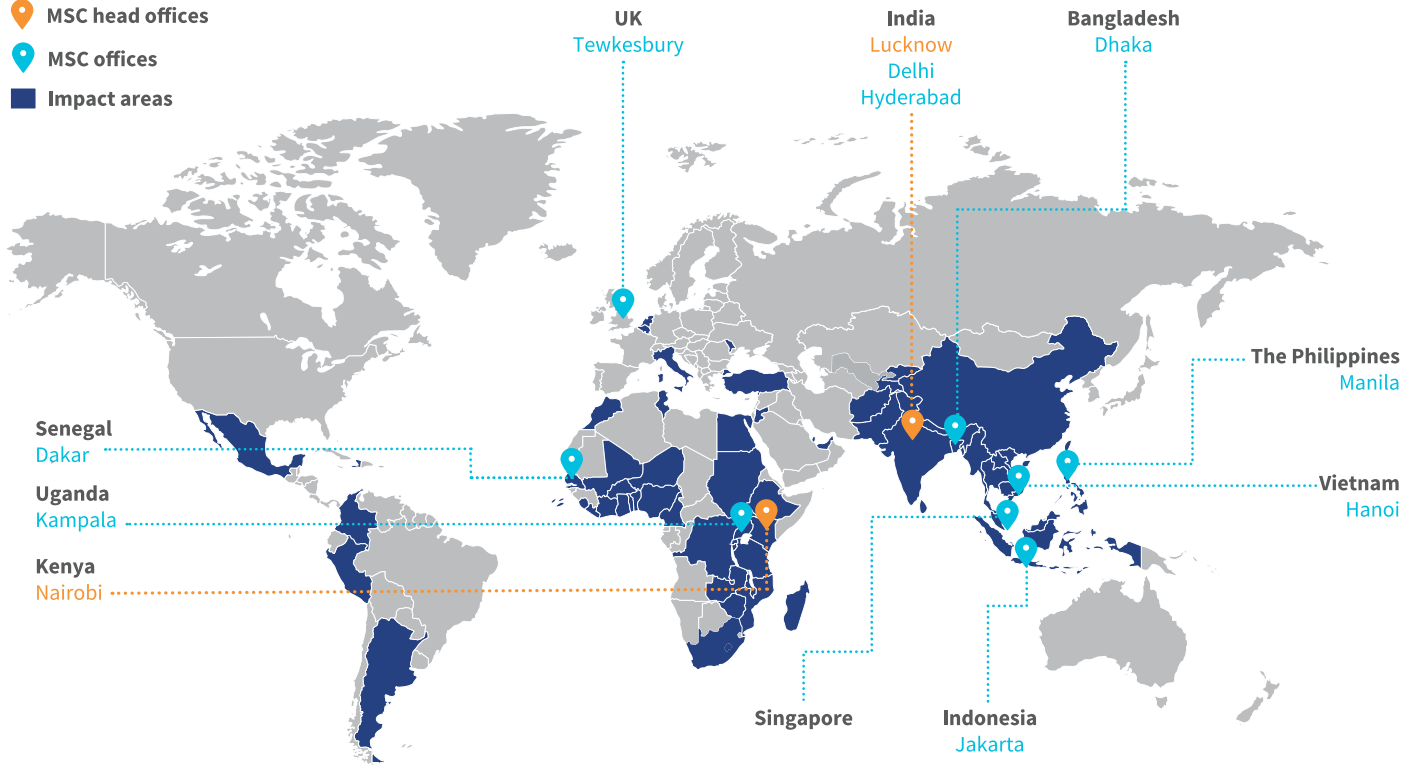
State	Infrastructure readiness				Policy readiness				Final score (Out of 5)
	Metering	Feeder segregation	DISCOM health	CICO network	Policy initiatives	Process knowhow	Cross subsidy rationalization	Political factors	
Haryana	4	5	4	3	2	4	5	3	3.55
Rajasthan	5	1	2	2	4	3	3	3	3.45
Gujarat	4	5	5	2	1	3	3	2	3.15
Bihar	3	5	3	4	2	3	5	3	3.10
Maharashtra	4	5	4	2	1	3	2	3	3.00
Punjab	1	5	4	3	3	4	4	2	2.75
Karnataka	1	5	4	3	2	4	3	3	2.55
Andhra Pradesh	1	5	3	2	3	4	3	4	2.55
Madhya Pradesh	1	5	1	4	3	4	4	3	2.45
Uttar Pradesh	3	3	1	2	2	3	1	2	2.25
Telangana	1	5	3	1	1	4	3	4	2.05

¹⁴ The states that do not report subsidies are Assam, Bihar, Chhattisgarh, J&K, Jharkhand, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, and West Bengal

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