

Digitalisation is the next phase of discom reforms

- *By Amitabh Kant and Ravi Venkatesan***

The past decade has seen an exponential growth in India's renewable installations. A landmark 300 GW of non-fossil fuel capacity was achieved just last month, accounting for more than 54% of the country's total installed power base. Solar has grown from 2.8 GW in 2014 to approximately 165 GW, and the country added a record 55.29 GW of non-fossil fuel capacity in the last financial year alone. Getting to this point did not happen by default and required sustained policy support, from PLI schemes for domestic solar manufacturing to bidding reforms, plus years of capital deployment by both public and private developers. But the capacity-addition challenge, however demanding, is at least a known one: it responds fairly predictably to capital, land availability and regulatory clearance, and India has by now built considerable institutional muscle in solving for exactly these variables.

The harder task lies downstream: ensuring that generation, and increasingly, variable renewable output, actually reaches consumers as a reliable and affordable supply. Distribution companies (DISCOMs) sit at the centre of that task and to effectively support renewable integration, they need to be capable of seeing the network as it runs. A lack of visibility is a key concern, among other varied factors, why DISCOMs have long been the weakest financial link in India's power sector. This fragility stems from a familiar set of pressures. Tariffs remain politically hard to set at cost-reflective levels, aggregate technical and commercial (AT&C) losses persist across ageing networks, and a fair amount of billed electricity simply never gets paid for.

Despite these challenges, national AT&C losses fell from 21.91% in FY21 to 15.04% in FY25. For the first time, DISCOMs collectively posted a profit after tax of Rs 2,701 crore. These gains reflect the Revamped Distribution Sector Scheme's (RDSS) sanctioned infrastructure work, including new and upgraded substations, distribution transformers, and feeder segregation among others, alongside financial discipline such as timely subsidy payments and regular tariff orders. Yet the national figure masks wide variation underneath it. While Andhra Pradesh, Gujarat, Delhi, and Kerala posted single-digit AT&C losses, several others remain far outside the RDSS band, for instance Madhya Pradesh at 22.76%, Telangana at 19.84%, and Punjab at 19.21%.

This is precisely where digitalisation becomes an operational necessity. It allows utilities to see their own network clearly enough to plan ahead of failure, rather than respond after it. This digitalisation process proceeds in layers. The first is a digital map: every asset geolocated, so a utility knows precisely what it owns and where. Most DISCOMs are still building this layer. The second is live network data laid over that map, showing how power is actually moving and where it is getting stuck. The third is forecasting: once the network and its flows are visible, a utility can anticipate tomorrow's demand by area and by hour, and plan purchases and repairs accordingly. Each layer answers a question most DISCOMs cannot presently answer: what do we own, where is the power actually going, and what will be needed next? India has already committed over Rs 3 lakh crore to distribution reform, spent largely on meters and wires. The next tranche should make the

digital layer a condition: each utility maps its network, publishes feeder-level loss and reliability data, and is funded against verified savings.

The opportunity is already visible in Rajasthan, where roughly 11.5 GW of wind and solar were curtailed between January and April this year. Jaipur Vidyut Vitran Nigam Limited (JVVNL), which serves over 5.5 million consumers, offers an instructive case in point. It is working with the Global Energy Alliance for People and Planet, a global nonprofit, to build a digital twin of its network because the network's first and foremost requirement was simply knowing what it owns and where. With close to four million assets such as substations, feeders, transformers, and poles digitized, the system now processes around 120 million records a day. JVVNL projects that this could lead to savings of around INR 200 crores annually. This is just one utility among many across the country, and the opportunity is to give them the information they need to make better decisions.

However, technology alone will not achieve this transformation. A digital grid still needs people capable of interpreting information and making decisions differently. Investment in human capability must therefore move alongside investment in technology. Customer experience should also come to count as much as capacity. Once a network is mapped and monitored, it becomes possible to track what people actually receive: hours of uninterrupted supply, how long a fault takes to restore and whether a bill is accurate. Most Indian utilities cannot report these reliably today, which is one reason they rarely feature in how performance is judged.

No one can do this alone; the first step has to be shared. The government sets direction and creates the regulatory framework; utilities carry the operational risk; and private firms bring technology and capital at scale. Catalytic actors pay for the first demonstrations and the change management that no balance sheet rewards. This convergence can count for something only when what it proves is taken up by national programs and scaled with public money.

The direction JVVNL has charted is one the wider sector will need to follow, and the sooner this replication begins, the better India's prospects of meeting its own distribution targets. India has demonstrated that it can build renewable capacity at scale. But capacity added upstream only translates into reliable, affordable power if the utilities carrying it can integrate and manage it. That is the task India has not yet fully solved, and it will matter just as much to the energy transition's outcome as tariff reform, storage buildout and grid strengthening.

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