

# Power for All: Is Anything Being Learnt from Past Programmes?

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*Power for All is the new programme to provide 24 × 7 electricity to the entire population by 2019. There have been many such plans in the past which have failed. What have we learnt from those experiences? There remain many concerns about the way the new programme is being formulated and executed. The major challenge in PFA is in providing quality, affordable power to rural areas and small consumers. However, the PFA plans do not adequately address these challenges. Based on a study of publicly available state PFA plans and documents, this article raises some key concerns and offers suggestions for a course correction.*

In June 2014, the union government announced its commitment to 24x7 power supply for all by 2019. From then, there have been many statements from the Union Minister for Power and the Prime Minister reiterating this commitment. As a welcome change, unlike previous programmes, “Power For All” (PFA), which is a joint effort by the central and state governments, explicitly focuses on universal access to reliable supply. The broad objective of the PFA programme is to provide reliable 24x7 supply to all households, industrial and commercial consumers while providing 8-10 hours of supply to agricultural consumers. The programme also envisages providing connections to all non-electrified households by 2019 (Forum of Regulators 2014).

While one wishes for the best, very little has been learned from the experiences of planning and implementing India’s past electrification programmes. If PFA has to meet its stated objectives, there is an urgent need to initiate corrective measures.

## Story So Far

The story of electrification in India has been one of ambitious commitments and slow progress, especially for rural electrification which is the major challenge. Table 1 indicates the commitments and shifting timelines.

**Table 1: Commitments towards rural electrification**

Initiative	Commitment	Target year
Electricity Supply Act 1948	Benefits of electricity are to be extended to semi-urban and rural areas	Target not given. Village Electrification status:0.5%
Conference of Chairman of SEBs (1976)	100% village electrification	1995
Rajadhyaksha Committee Report (1980)	100% village electrification	1995
	100% household electrification	2000
National Development Council – Sharad Pawar Committee (1994)	100% household electrification	2010
Conference of Chief Ministers (2001)	Power for All	2012
	100% village electrification	2007
National Common Minimum Programme(2004), National Electricity Policy (2005)	100% household electrification	2009
National Electricity Policy(2005)	Providing 1 unit / household /day as a merit good	2012
Rural Electrification Policy, (2006)	100% village electrification, 100 % BPL household electrification	2009, revised to 2012
RGVY (2005)		
Power for All (2014)	24x7 power for all	Target Year: 2019 Village electrification status: 96.7% (2015) Household electrification: 67% (2011) *

\*This is from Census 2011. Rural household electrification in 2011 was much less at 55%. Accounting for the increase in rural households and connections given under RGGVY, our estimate of rural household electrification in 2015 is around 53%.

Despite several efforts, the spread of electrification was slow and concentrated in areas which were political or economic centres. Even within electrified villages, load development remained poor and concentrated among the wealthy. Since the 1980s, several efforts have been made to increase access to Dalit *bastis*, provide connections to Below the Poverty Line (BPL) households and provide incentives to utilities for village electrification. But they have had limited success (Planning Commission 2014). Efforts were also made to increase generation capacity and augment networks. In fact, the capacity addition targets for the 10<sup>th</sup> and 11<sup>th</sup> Plan were considered necessary to meet the goal of Power for All by 2012<sup>1</sup>.

The Planning Commission Evaluation Studies (1965,1982 and 1983) and the report of the Rajadhyaksha Committee on Power (1980) identified key areas for improvement in rural electrification programmes. These included the need for financial support to utilities for rural electrification, reducing procedural and cost barriers to electricity connections and promoting load development within villages. Another area that had earlier been overlooked and was identified was the lack of reliable supply of power. These reports also identified several issues with the schemes including institutional and manpower challenges, delays, cost overruns, underestimation of expenditure and overambitious targets.

In 2005, the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was launched as the first concerted, centrally sponsored programme with the ambitious objective of providing connections to all BPL households. Rural network expansion, village electrification<sup>2</sup> and provision of free BPL connections were part of this scheme. By the end of the 11<sup>th</sup> plan, Rs.29,986 crores were invested in electrification of over one lakh villages, intensive capital works in over three lakh villages, the provision of free connections to over two crore BPL households. During the 11<sup>th</sup> and 12<sup>th</sup> plans, many of the objectives and commitments such as the requirement of franchisees, commitment on hours of supply and support for productive loads have been diluted.

Though RGGVY attempted to address several lacunae in previous rural electrification programmes, various evaluation reports show that the problems have persisted. The rate of increase in access, at 12% between 2001 and 2011 was slower compared to some other countries, which registered 30-40% in rates decadal growth during electrification drives (Sreekumar, Josey, et al. 2013). The overemphasis on centralised planning, lack of feasibility studies and delay of up to eight years in finalising state rural electrification plans point to serious lacunae in planning (Planning Commission 2014, CAG 2014, Dixit and Sreekumar 2011 and Standing Committee on Energy 2009). Implementation was also fraught with significant setbacks such as numerous delays, cost overruns, frequent burnouts due to installation of transformers without adequate capacity, non-deployment of franchisees and lack of effective monitoring at all levels (Planning Commission 2014, Standing Committee on Energy 2013, CAG 2014, Sreekumar and Dixit 2011, Rural Electrification Corporation 2013, and Dixit and Sreekumar 2011). Today, though almost all villages are electrified, more than half the rural households do not have electricity connections. Households which are deemed Above the Poverty Line (APL) are slow in obtaining connections given the high connection costs. As per the 66<sup>th</sup> round (2009-2010) of the National Sample Survey, 54% of non-electrified households were APL.

Rural electrification was also to support and expand income generating activities. Currently, there are no statistics on the number of electricity connections given for productive activities under various programmes. With prohibitive costs of connections, high tariffs for commercial and industrial activities, electricity demand for productive uses may be hampered (Sreekumar and Dixit 2010). Lack of reliable power supply has also been a major barrier in the growth of rural connections. Between 2004-05 and 2011-12, despite a 66% increase in net generation, there has been no improvement in average hours of supply<sup>3</sup>, with rural areas facing an average of 9 hours of power outages every day. A recent survey indicates that 70-80% of households in Uttar Pradesh, Bihar and Jharkhand receive less than three hours of supply during the evening<sup>4</sup> (Jain, et al. 2015). Low hours

of supply to small rural consumers is largely due to the loss of about Rs. 4-5<sup>5</sup> per unit to the distribution company (DISCOM) while supplying to these consumers (Sreekumar, Josey, et al. 2013). Adequate support to DISCOMs (by compensating the loss or providing low-cost power) and strict monitoring of supply hours on rural feeders were not planned.

RGGVY has now been subsumed under the Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), with an increase in its scope<sup>6</sup> and improvements in reporting and monitoring. The rural electrification component in DDUGJY is set to continue in the 12<sup>th</sup> and 13<sup>th</sup> Five Year plans with an outlay of Rs.39, 275 crores<sup>7</sup>.

### **Power for All Programme**

PFA documents resemble State Five-Year-Plan documents in that they contain integrated state-specific power sector plans with targets and outlays for existing programmes of central and state governments as well as planned private sector investments. Activities, investments, and targets of central sector schemes, investments in transmission and distribution, renewable energy missions, generation capacity addition plans, including plans to enable coal, gas linkages and energy efficiency programmes are all part of the plan. District, state and national-level monitoring systems to ensure timely implementation are also included.

A working group of the Forum of Regulators<sup>8</sup> presented a national road map for PFA in December 2014 which estimated the required investments till 2018-19 to be Rs. 15.7 lakh crore. The plans for Andhra Pradesh and Rajasthan were released by December 2014.

Table 2 summarises required investments for these states.

**Table 2: PFA estimates for Andhra Pradesh and Rajasthan**

Item	Andhra Pradesh	Rajasthan
Total Investment (Rs.)	54,000 crore	1.57 lakh crore
Magnitude comparable to	1.5 times funds released for RGGVY since inception	25% of State GDP*
Centre's Contribution	29%	16%
State's Contribution	23%	10%

\*For the year 2014–15 at current prices

By April 2015 consultants were appointed to draft plans for the other states. They are expected to prepare three to four state plans every two months till December 2015. Each plan document is to be reviewed by the central and respective state government before being finalised. Plans for Goa, Meghalaya and Uttarakhand were released in September 2015, and the plan for Bihar is to be finalised soon.

The Ministry of Power has also been monitoring the progress of implementation in Andhra Pradesh and Rajasthan in order to provide necessary support. It has also created a virtual dashboard ([www.powerforall.co.in](http://www.powerforall.co.in)) where progress on measurable parameters in different states can be reviewed and compared.

### **PFA – Key Concerns**

While an integrated approach is welcome, there are many concerns about the way the programme is being formulated and executed. It is clear that the major challenge in PFA is in providing quality, affordable power to rural areas and small consumers. However, the PFA plans do not adequately address challenges in this crucial area. Based on a study of publicly available state PFA plans and documents, we raise some key concerns. These are organised under three broad heads: (a) planning, (b) implementation and monitoring and (c) sustainability challenges.

## Planning

It is unfortunate that for such a massive nation-wide effort and investment, the planning process was hasty, non-transparent and without public participation. There have been no debates in state assemblies and State Electricity Regulatory Commissions (SERCs), which have been given a clear mandate of oversight of the state power sector, are not part of the process. SERCs could have provided space for state-wide consultations through discussion papers, public hearings etc. This would have helped to account for state realities, and added rigour, ownership and legitimacy to the plan. Our key concerns in the planning of PFA are briefly described below.

- a. *Extent of central government interventions and plan in case of limited support:* State plans have a wish list of interventions expected from the centre with respect to financing, fuel linkages and project facilitation. The centre is still considering many of these proposals. It is uncertain how these aspects, crucial to the success of PFA will be addressed by the states without the Centre's support.
- b. *Uniform targets across states:* Ground realities, institutional capabilities, infrastructure constraints, and challenges differ across states. Thus, it seems unreasonable to have a uniform target year of 2018-19 for electrification and 24x7 supply across state plans. Under PFA, Rajasthan plans to connect 5 lakh rural households on an annual basis. This seems infeasible given that under RGGVY, Rajasthan provided about 2 lakh connections annually.
- c. *Questions on demand and generation capacity estimation:* It is a welcome move that rather than using consumption norms like 1 unit/day, PFA plans consider newly electrified households as having growing requirements on par with other electrified rural households. However, for all other demands, historical growth rates have been used to estimate future consumption. Given the proliferation of high paying industrial and commercial consumers opting to tie up their own supply via open access or captive generation, the method of using historic trends for projecting demand needs to be re-evaluated. Moreover, with increased availability of power or with state-specific policies like tariff concessions, use of solar energy to meet agricultural demand, subsidised provision of appliances and tax rebates, consumption patterns could change drastically. Such scenarios have not been considered in projecting demand and generation capacity addition. The methods used for incorporating energy efficiency savings and for assessing the contribution from new generation capacity leave many doubts. Hasty decisions on these without detailed studies could lead to high cost surplus power with no buyers.
- d. *Strategy for uptake of APL household connections:* DDUGJY provides free connections only to BPL households. Given its ambitious targets, it is unclear how the state will provide connections to APL households. It is not clear if they have to take connections on their own or through state-sponsored programmes.
- e. *Strategy for uptake of non-household connections:* A key implicit assumption of the scheme is that productive activities will burgeon in rural areas due to reliable power supply which will in turn ensure revenue recovery. However, there has been no assessment of present and latent demand for productive activities in rural areas and its growth potential. Moreover, there is no provision within this plan to encourage such demand.
- f. *Strategy and support for private utilities especially with proposed Electricity Act amendment:* Today, distribution in a few cities and towns is managed by private companies. Discussions on amending the Electricity Act have been in progress and separation of carriage and content has been strongly suggested. This could lead to several companies (many private) supplying power in the same area (Prayas (Energy Group) 2015). Considering the significant state support to be provided, It is unclear how PFA will be implemented in areas where distribution is managed by private companies.

## Implementation and monitoring approach

The PFA programme involves multiple actors (central, state and private) at multiple levels (national, state, district and village). The available documents do not give sufficient details on co-ordinating of their efforts to ensure smooth progress of PFA.

Lessons from previous electrification programmes have shown that effective monitoring at all levels is essential. This applies to the PFA as well, if delays and cost overruns are to be avoided. Similar to RGGVY, the monitoring mechanism seems to be driven by a top-down approach, with a key role for the central government. The district level review seems to focus only on facilitating logistics aspects like land and other local issues.

It is unfortunate to note that SERCs are not given any role in monitoring<sup>9</sup>. This is surprising since they have the mandate to monitor supply quality under Section 59 of the Electricity Act. Additionally, no steps have been taken to link the PFA targets and investments to the existing Multi-Year Tariff (MYT) determination process conducted by SERCs. Consonance with MYT can help hold utilities accountable for performance under PFA before SERCs.

### **Sustainability challenges**

For the PFA programme to be sustainable, quality of supply and service should be equally good for all consumers in all areas, for years to come. One-time creation of infrastructure or generation capacity will not automatically lead to PFA. Institutional mechanisms should be in place to manage and maintain the infrastructure created and ensure reliable supply. Consumers should have the capacity to pay for electricity, and if they do not have it, the DISCOMs and the government should have the financial capacity to subsidise them.

The short time span for implementation and the quantum of investments required could have serious impacts on tariffs and the financial position of DISCOMs. Therefore, it is still unclear if reliable power provided by 2019 will be affordable for all. Tariff impacts due to investments proposed under PFA is unclear due to the limited information provided in the documents. Tariffs are already high, mostly due rising cost of power purchase which accounts for about 80% of total costs. Even though one of the strategies to be adopted under the PFA is to ensure low cost procurement of power, there is no indication that contracted capacity already in the pipeline or planned capacity addition will be low cost.

The available documents indicate a very low tariff increase due to PFA investments. This is based on the assumption that demand is bound to grow based on past trends and the high costs can be spread over the large number of units sold. As explained earlier, given the flux in the sector, demand growth may not be as expected. Unless power supplied is at an affordable rate through support or reduction in cost, small consumers may default on payment and get disconnected. Large consumers may choose other supply options such as open access, captive generation or purchase from other supply licensees. Therefore, massive investments for PFA may significantly increase the cost of supply.

Take the case of Rajasthan. PFA related investments which will need to be re- covered via consumer tariffs over the next five years amount to Rs 20,900 crore.<sup>10</sup> Given past trends, the average cost of power purchase in Rajasthan in 2018–19 could be Rs 6.13/unit. Operation and maintenance of present and additional infrastructure along with repayment of capital expenditure under PFA could drive costs to Rs 10–11/unit. With the cost of financing accumulated losses, the cost of supply can go up to Rs 12.5/unit which is unaffordable.

The present plan has no provisions to ensure that access to reliable power, especially for small consumers, is not hindered because of lack of affordability. Strategies to redesign tariff structures to ensure affordable access to small consumers should have been as much a part of the plan as large-scale investments. This is especially relevant if high-paying consumers migrate to other supply options as levels of cross-subsidy will reduce, and further increase the tariff burden on small consumers.

There is no provision for rural franchisees to operate and manage rural distribution systems. Strategies for institutional capacity building are conspicuous by their absence in state plan documents. It is not clear how DISCOMs, which are suffering from high financial losses, employee shortage and management challenges, will manage the newly created infrastructure and ensure revenue collection.

As mentioned in the previous section, there are no clear plans on how non-domestic demand will be promoted, especially in rural areas. Only a high growth of such consumers will lead to income-generating activities, raising people's capacity to pay and improving the financial health of DISCOMs. If that does not happen, the infrastructure created for PFA will not be sustainable in the long run.

### **Suggestions for Course Correction**

A few suggestions are proposed here to ensure that the goal of reliable supply for all is realised. These include public consultations through SERCs, improving demand estimation, taking up connection drives, making power for all affordable to all and improving the monitoring processes.

In order to ensure robust and feasible plans, they should be subject to wide public consultation before finalisation. Consequently, SERCs can approve plans by delivering orders with a detailed statement of reasons. Progress based on the PFA plan must also be subject to public scrutiny and can be part of the annual tariff determination process before SERCs.

As demand estimation is crucial for determining investments and the tariff impact, it is important that such an exercise also accounts for the possibility of a change in growth patterns due to reliable supply and increase in supply options for large consumers. Such an exercise should also account for progress of government development programmes, environmental factors, elasticity of sales to tariffs, change in appliances used, etc. Consequently, assumptions on capacity addition must be done carefully to avoid the possibility of high cost surplus capacity.

The key question of affordability remains unaddressed. It is important that innovations with respect to tariff design, measures to promote productive load in rural areas, and efforts to provide connections to all consumers are also delineated in the plan. To provide connections to APL and non-domestic consumers, the centre and state governments can jointly initiate large-scale connection drives (say, connections to all within 100 metres of the grid) without insisting on strict procedural compliance<sup>11</sup>. The central government, state government and the consumer can each share a part of the connection charges with the consumer paying her share in instalments.

Once connections are obtained, affordable tariffs are necessary to address the needs of small consumers. Small commercial and industrial consumers are not differentiated from large low-tension consumers and usually pay high tariffs at par with larger industrial and commercial consumers. PFA plans in conjunction with SERCs could propose an innovation in tariff design to address this. All consumers (domestic, commercial and industrial) with a connected load of less than 10 kW should be subject to the same telescopic tariff for up to 300 units of consumption per month. All these consumers can be charged different tariffs on the basis of consumption, but these will be uniform across types of consumers. This would go a long way in promoting productive activities in rural areas.

As the success of the programme hinges on effective monitoring, release of funds can be conditional on meeting targets. The monitoring mechanism should also document key learning to enable mid-course correction. It is equally important to strengthen all levels of monitoring especially the state and district levels. The central government must expedite its decision-making process to ensure clarity on the support given to states. The central government and respective state governments must review progress in implementation till 2017, and provide for mid-course correction by revising timelines and commitments based on feasibility, realities and constraints. Review and mid-course correction must be done after due public consultation.

Given the disincentive of DISCOMs to supply power in rural areas, it is imperative that the PFA programme includes regular monitoring of hours of supply at the feeder level using AMR<sup>12</sup> meters. Andhra Pradesh has

initiated such a process. Further, to overcome the disincentive to supply, adequate financial support or low cost power can be provided by central and state governments conditional on the provision of 24x7 supply to all households. Independent initiatives for monitoring supply hours at the consumer end like the Electricity Supply Monitoring Initiative<sup>13</sup> can validate feeder level information provided.

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<sup>1</sup>Announced in the Conference of Chief Ministers in 2001

<sup>2</sup> RGGVY followed more thorough definition of village electrification according to which a village would be declared electrified if basic infrastructure is provided in all inhabited localities including *dalit bastis*, there is electrification of public places, and at least 10% of households are electrified. Earlier definitions focussed on the use of electricity within the village boundary for any purpose whatsoever. Villages without significant load development or access could also be deemed electrified.

<sup>3</sup>This is based on data from the two rounds of the India Human Development Survey.

<sup>4</sup> CEEW conducted a survey to assess on access to clean cooking and electricity in 6 states in India (Bihar, Madhya Pradesh, Uttar Pradesh, Odisha, West Bengal and Jharkhand) covering over 8500 households. The report was released on September 29<sup>th</sup> September 2015 by Union Power Minister

<sup>5</sup> Assuming additional power purchase cost at Rs.5 per unit, 20% T&D losses, distribution cost of Rs.1.25 per unit. The utility would be spending about Rs.7.25 per unit while recovering Rs.2.5 per unit from newly electrified households.

<sup>6</sup> DDUGJY also includes works to have separate feeders for agricultural load to manage their demand and ensure 24x7 to other rural consumers.

<sup>7</sup> On 3<sup>rd</sup> December 2014, the Ministry of Power issued an Office Memorandum on DDUGJY according to which the RGGVY program approved by previous UPA government for the 12<sup>th</sup> and 13<sup>th</sup> plans would be carried forward to DDUGJY.

<sup>8</sup> The Forum of Regulators set up under the Electricity Act consists of chairpersons of all electricity regulatory commissions. They have been preparing model regulations and reviewing policy implementations.

<sup>9</sup>The Rajasthan Plan mentions the need to adhere to SERC's Standards of Performance but does not mention any role of the SERC in the document.

<sup>10</sup> Authors' estimations based on estimated investment costs as per PFA documents.

<sup>11</sup> Rajasthan has recently started a programme, "DISCOMs at your door step", where they plan 1 lakh connections per month

<sup>12</sup> Automatic meter readers record data without any need for manual intervention.

<sup>13</sup>An Initiative by Prayas (Energy Group) to provide independent verification of power quality at the consumer end. Devices which provide data on a minute by minute basis on voltage and power interruptions are installed in various locations across the country .Currently 100 such devices are installed. Data can be accessed at [www.watchyourpower.org](http://www.watchyourpower.org)

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