Review of APDRP and RAPDRP

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Energy Sector Structure, Policies and Regulations

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1. Introduction

The Power Sector in the country has grown manifold since independence. There is a continuous gap between the supply and demand, besides peaking shortage almost all times in a year. Despite of growth of sub-transmission and distribution sector, it could not match the investments in capacity addition. A section of our population is yet to see the electricity in their homes. In the monopolistic set up with state control, customer satisfaction is neglected and realization of revenue is not given due importance. There is a need to focus on commercial approach in the power sector to encourage investments in this vital infrastructure addition.

Government of India has taken into cognizance the need for commensurate improvements in the electricity distribution and committed itself to supplement the efforts of the State utilities and have ongoing Accelerated Power Development and Reform Program (APDRP) to provide investment assistance to bring about overall improvement in utilities along with incentives to turn around the utilities. The focus of the reforms has been to look at the distribution sector in the holistic manner and improve the performance in all business areas with introduction of Information Technology (IT) in this vital business chain.

2. Accelerated Development Programs

Power is the most critical element in the economic growth. The economic growth greatly depends on a commercially viable power sector that is able to attract fresh investments. However, the financial condition of the State Electricity Boards (SEB) had become a matter of concern considering that their aggregate losses had reached ₹26,000 crore during 2000-2001 which was equivalent to about 1.5% of GDP. To bring the losses and make the distribution sector commercially viable, Accelerated Power Development Program (APDP) was launched in 2000-2001 as a last means. Slowly, government realized that there is an urgent need not only for the development of the distribution sector, but complete reforms of the existing infrastructure. This led to the birth of Accelerated Power Development and Reforms Program (APDRP) during 2002-2003.

The objectives of APDRP were:

- Improving financial viability of State Power Utilities
- Reduction of AT & C losses to around 10%
- Improving customer satisfaction
- Increasing reliability &quality of power supply

APDRP was an ambitious program of government of India launched as a perfect business model. The thought was nice, as a distribution circle was identified as a Strategic Business Unit (SBU), where Superintending Engineer (SE) of the concerned circle was renamed as Chief Executive Officer, and Junior Engineer (JE) as the Feeder Manager. CEO was made accountable for implementation of the scheme from the start of framing of DPR to execution of the scheme; he has to enter MoU with the concerned DISCOMs'. MD in turn has to enter MoU with MoP, GoI that the targets as prescribed in the DPR would be achieved in the time bound manner as specified. The CEO will not be transferred until the completion of the scheme.

APDRP was thought as a six level intervention program to reform the distribution sector primarily to make it viable. Efforts were put in to focus on reforms in the distribution sector to improve accountability and revenue realization in the form of increased metering, conversion of un-metered connections to metered connections, addition of fresh connections, higher billing and collection efficiency. Technical, commercial, financial, IT, and organizational level interventions was thought as part of six level intervention strategy. These interventions for distribution reforms were to be made at the following levels:

1. **National level intervention**

   The basic issues at national level are related to policy, legislation, uniform standards, energy conservation, and accounting standards.

2. **State level intervention**

   The basic issues confronting the state level interventions are formation of SERc, issuance to regular tariff orders, providing legislative support for involving local bodies in management of distribution business, removal of tariff anomalies, subsidies and budgetary support.

3. SEB level intervention

Increase in income

To increase the income, the billing has to be increased, pilferage has to be reduced, more remunerative pricing of the commodity (energy) and optimum utilization of physical assets has to be made.

Reducing the Expenditure

To reduce the expenditure, the least cost energy has to be sourced simultaneously reducing the energy management or energy handling cost. In order to achieve the objectives of a retail business model it was proposed to convert the circle as an independent identifiable business unit of the DISCOM.

4. Feeder level intervention

11kV feeders are the basic source of income to an electricity utility. The issues confronting it are metering and billing, bill collection, abnormal voltage, segregation of losses and over all ensuring quality of power supply.

5. Consumer level intervention

The basic issues at consumer level are related to mandatory metering, compliance of billing, consumer satisfaction, and energy conservation

3. The Implementation of APDRP: Consultants

63 circles were identified for implementation of APDRP in the first phase. For the implementation, advisor cum consultants were appointed to assist states in formulation of DPR and oversee the implementation. During this phase advisor cum consultants also carried out capacity-building exercises. NTPC and PowerGrid were appointed for this purpose.

1. Role of NTPC and PowerGrid in APDRP

In November 2001, Ministry of Power identified NTPC and POWERGRID as the lead Advisor cum Consultants (AcCs) and brought CPRI and MECON under the charge of NTPC. WAPCOS, NPC and ERDA were brought under the charge of POWERGRID to bring in consistency of

approach amongst the AcCs. These two organizations were to directly look after the work of 28 circles and are oversee the work of other AcCs in 35 circles.

NTPC and PowerGrid's responsibility for new schemes were as follows:

- Advise and help SEBs/utilities in preparation of DPRs and wherever requested specifically by utility, they shall prepare DPR for States as consultant
- Assist SEBs/utilities in prioritization of schemes for urban areas in distribution circles and ranking of projects for improvement in revenue collection and increase in customer satisfaction
- Assist Monitoring Committee for review of techno economic appraisal of the DPR prepared by utilities
- Assist MOP in prioritization of available funds to be allocated to States/Utilities under APDRP scheme
- Monitor periodically the physical and financial progress of various distribution circles for which APDRP funds have been allocated and disbursed
- Advise MOP in devising guidelines for uniformity of approach in preparation and evaluation of project proposals, and disseminating information on best practices under APDRP scheme
- From financial year 2002-03, they would take the overall responsibility of implementation of GOI's APDRP scheme under the guidance of MOP

2. Role of Financial Institutions (FIs)

The FIs participated in financial vetting of the schemes for ensuring their bankability. They also reviewed the provisional and audited profit and loss accounts and balance sheets for the purposes of release of incentive. Schemes proposed should generate confidence in the FIs that the loss reductions claimed, as a result of investments would result in improved-metered energy and consequently revenue inflow. 25% of the scheme cost was funded by central Government under APDRP. The balance 75% was obtained by the SEB/DISCOM either from financial institutions or through their internal resources. The proposed method of funding the balance 75% was to be brought out clearly in the DPR.

3. Resource Institutions

Assistance of third party institutions was to be sought in implementing APDRP.

- Concurrent project monitoring & reporting
- Verification of technical specifications
- Capacity building
- Quality checks during execution
- Post project benefit evaluation
- The resource institutions could be NTPC, POWERGRID, any educational institution of eminence, etc.

4. What went wrong with APDRP?

If we review the plan formulation, everything looked in place for a smooth implementation and execution of APDRP. Yet, it failed miserably to deliver on all fronts. This raises the question, what went wrong with APDRP? Was it the execution or the initial planning and shortsightedness of the policy makers?

The concept of APDRP lost charm as soon as NTPC and PGCIL were entrusted with the task of imparting consultancy to the aspiring DISCOMS. Both the organization were novice in the field of distribution of electricity, having no exposure to the complexity of distribution network and working of distribution units with no knowledge of DISCOMS' constrains and ills. Neither NTPC, nor PGCIL had the expertise to implement this ambitious reform program. As a result, the APDRP could not achieve the desired goals within the stipulated time. The DPR (Detailed Project Report) were framed without actually knowing the concept of APDRP. Field units were not aware that they have to achieve above mentioned goals in accelerated manner and that by reducing the AT&C losses the investment would be recovered within certain time i.e. the scheme was with a certain payback period. The CEO was unaware of the benchmark parameters to be monitored during the implementation of the scheme. They initially thought it to be a scheme merely for the system improvement.

To achieve the benchmark parameters desired under APDRP the following work was covered under the scheme:

- Metering of all types of consumers
- Feeder metering
- Distribution Transformer (DT) metering
- Reliability and Maintainability (R&M) of power sub-stations
- Capacitor placement
- R&M of distribution transformers
- Service connection improvement
- IT enabling, including substation automation
- Construction of new sub-stations
- Construction of new lines
- Bifurcation of feeders
- Reconductoring

In the beginning of the scheme, different packages were made for award of turnkey contract; as a result, the process of awarding contract took a lot of time. Due to poor Pre-Qualifying Requirement (PQR) of bidding documents, small contractors got certain contracts with no ability to finish efficiently the desired task. The Different contractor for different work and difference in award of contract date resulted in further delay in executing the work in time bound manner. There was also lack of coordination between different working agencies. To begin with, the energy accounting should have been given priority, for this, the following task should have been completed on top priority:

- Metering of all types of consumers
- Consumer indexing
- Feeder metering
- DT metering

No thought was given to this important aspect. Further, to improve the reliability of power (Improved Reliability Index), the emphasis on smaller transformer in place of large capacity distribution transformers (11kV/433kV) should have been given but transformers with as high

capacity as 630kVA were provisioned. Initially no emphasis was given for the introduction of ABC i.e. Areal Bunched Conductor, which has proved its importance in reducing theft thus reducing AT&C losses and transformer overloading. The consultants realized after lapse of considerable period that these important aspects must be incorporated in DPR and a single package for all interrelated activity is must for desired acceleration.

The success or rather the lack of it can be gauged from the fact, that under the investment component projects worth ₹17,612.36 crore had been sanctioned by mid-March 2005. However, the total investment in APDRP projects over three years had been only ₹5,768 crore. Thus, despite recognizing the critically of the distribution sector to the efficiency of the power sector, actual investments in the distribution sector remained low. Moreover, the actual investments were well below the total funding made available for APDRP projects. According to an assessment by the plan panel, the performance of APDRP fell well short of the promise; it said that availability of baseline data and its reliability to measure results remain in doubt. Hence, an independent review of APDRP is essential and the program might have to be restructured to a completely outcome-driven one. The distribution sector has been neglected in the past and based on the experience so far with APDRP, it is reckoned that an investment exceeding ₹1,00,000 crore could easily be absorbed in the short to medium term to improve distribution efficiency.

Realizing the absolute failure of APDRP, government rethought its course of action and came up with another ambitious project, Restructured Accelerated Power Development and Reforms Program (RAPDRP) to overcome the shortcomings of APDRP.

5. Restructured Accelerated Power Development and Reforms Program (RAPDPR)

The Restructured- Accelerated Power Development and Reforms Programme (RAPDRP), the government's renewed attempt to revive power sector reforms, is set to take off. It seeks to eliminate many of the faults of the former avatar.

The government realizing that its flagship power sector initiative - Accelerated Power Development and Reforms Programme, which it launched at during the start of last decade with the objective of encouraging reforms, reducing aggregate technical and commercial loss and to

improve the quality of supply of power, has fallen short of targets, may have has finally got into its act.

For starters, thanks to the newfound political will, the state-run Power Finance Corporation, which has been appointed as the nodal agency by the Power Ministry under the aegis of the R-APDRP, called for expression of interest (EOI) for the appointment of capacity building consultant. The consultant responsible for the strategy document for implementation of capacity building under the program will collect data from different power utilities, prepare business and action plan to achieve the defined objectives.

Very clearly the former Accelerated Power Development and Reforms Programme has grossly underperformed as it has not been able to bring down the losses to 15 per cent by the end of 2007, as originally targeted in 2000-01. While India's power generation capacity is being enhanced, from 140,000 MW to around 213,000 MW by 2012, inefficiencies in power transmission and distribution are hurting the sector.

The appointment of the consultant may be just be the beginning of the reform journey but there is an ocean to be traversed before India power sector T&D woes can see a measure of solution. The APDRP scheme has been found wanting. The ambitious plan to cut T&D losses has come a cropper, prompting the Planning Commission to cast doubts on the program's efficacy. The case of the former power sector reform program gone awry can be witnessed in Bihar, among the country's poorest states. While the authorities there have expended up to Rs 200 crore on state-of-the-art power equipment for substations, very little of the money was spent on buying meters to measure consumption of electricity! It is instructive to know that there were five states in the north India, viz Haryana, Jharkhand, Punjab, Rajasthan and Uttar Pradesh where losses, have, in fact, increased under APDRP projects.

Power Ministry authorities however maintain that there has been a decrease in T&D losses in many of the states where the program was undertaken but since the decline in overall losses of the SEBs has been less than impressive, it has led to a feeling that the program was a failure. Another reason for the former projects failure is the lack of timely approvals. Of the ₹40,000 crore allocation only ₹17,000 crore worth of projects were sanctioned because the states did not come up with enough projects.

B N Mathur, a consultant at The Energy Resources Institute (Teri) who headed the group that reviewed the program in 2005-06 across seven states comments, "A major problem with the APDRP was the delayed release of funds by the states to the utilities that carried out the projects."

6. Positives for RAPDRP

What goes in favor of R-APDRP is that the focus will be on actual, demonstrable performance in terms of sustained loss reduction. The establishment of reliable and automated systems for sustained collection of accurate base line data, and the adoption of information technology in the areas of energy accounting will be necessary preconditions before sanctioning any regular distribution strengthening project. This will enable objective evaluation of the performance of utilities before and after implementation of the program, and will enforce internal accountability leading to pressure to perform pointers. Unlike the previous scheme, the latest version covers the overall performance of the states as against a particular area. Only if the performance of a state is satisfactory will the loan be converted into a grant. Under the new scheme, there would also be incentive for utility staffs in towns where AT&C loss levels are below 15 per cent. The distribution companies will be required to implement an incentive program for utility employees and a maximum amount of 2 per cent of the grant for the second part of the project is allocated for this purpose.

Proposed coverage

R-APDRP proposes to cover urban areas - towns and cities with population of more than 30,000 (10,000 in case of special category states). In addition, in certain high-load density rural areas with significant loads, works of separation of agricultural feeders from domestic and industrial ones, and of high voltage distribution system (11kV) will also be taken up. Further, towns / areas for which projects have been sanctioned in X Plan R-APDRP shall be considered for the XI Plan only after either completion or short closure of the earlier sanctioned projects.

Proposed scheme

Projects under the scheme are taken up in two parts – A and B.

Part A

This part's focus is on projects for establishment of baseline data and IT applications for energy accounting/auditing and IT based consumer service centers. It will include preparation of base-line data for the project area covering consumer indexing, GIS mapping, metering of distribution transformers and feeders, and automatic data logging for all distribution transformers and feeders and SCADA / DMS system (only in the project area having more than 4 lakh population and annual input energy of the order of 350 MU). It would include asset mapping of the entire distribution network at and below the 11kV transformers and include distribution transformers and feeders, low tension lines, poles and other distribution network equipment. It will also include adoption of IT applications for meter reading, billing and collection; energy accounting and auditing; MIS; redressal of consumer grievances; establishment of IT enabled consumer service centres etc. The base line data and required system will be verified by an independent agency appointed by the Ministry of Power.

Part B

This part's focus is on to include regular distribution strengthening projects like:

- Renovation, modernization and strengthening of 11 kV level substations
- Transformers/transformer centers, re-conductoring of lines at 11kV level and below
- Load bifurcation
- Feeder separation
- Load balancing,
- HVDS (11kV)
- Aerial bunched conductoring in dense areas
- Replacement of electromagnetic energy meters with tamper proof electronics meters
- Installation of capacitor banks, and mobile service centers

Eligibility criteria for R-APDRP assistance

The States / Utilities will be required to:

- Constitute the State Electricity Regulatory Commission
- Achieve the following target of AT&C loss reduction at utility level:
    - Utilities having AT&C loss above 30 per cent: Reduction by 3 per cent per year
    - Utilities having AT&C loss below 30 per cent: Reduction by 1.5 per cent per year
- Commit a time frame for introduction of measures for better accountability at all levels in the project area
- Submit previous year's AT&C loss figures of identified project area as verified by an independent agency appointed by Ministry of Power (MoP)

Funding Mechanism

The Government of India (GOI) provides 100% loan for part A of the R-APDRP schemes which includes projects for establishing base line data and IT applications for energy accounting/ auditing and IT based consumer services etc. GoI also provides up to 25 per cent (90 per cent for special category states) loan for Part B of the R-APDRP schemes which shall include regular distribution strengthening projects.

- The entire loan is routed through PFC/REC (FIs) for the respective schemes funded by them.
- The counterpart funding will be done by PFC/REC (FIs) as per its prevailing policy.
- PFC/REC will be the prime lender for funding these schemes. In case of default by the utility the commercial loan of PFC / REC will be recovered first (being the primary Lender) before that of any other lender for funding such schemes.

Conversion of loan to a grant

The entire amount of GoI loan (100%) for part A of the project shall be converted into grant after establishment of the required base-line data system within a stipulated time frame and duly verified by TPIEA.

Up to 50% (90 per cent for special category States) loan for Part-B projects shall be converted into grant in five equal tranches on achieving 15 per cent AT&C loss in the project area duly verified by TPIEA on a sustainable basis for a period of five years.

If the utility fails to achieve or sustain the 15 per cent AT&C loss target in a particular year, that year's tranche of conversion of loan to grant will be reduced in proportion to the shortfall in achieving 15 per cent AT&C loss target from the starting AT&C loss figure.

Nodal Agency

Under the Restructured APDRP Accelerated Power Development and Reforms Programme Power Finance Corporation Limited (PFCL) has been designated by the Government of India as the nodal agency for the program. The role of the nodal agency includes acting as a single window service under R-APDRP and coordinating with various agencies.

A major problem with the APDRP was the delayed release of funds by the states to the utilities that carried out the projects.

7. Will R-APDRP Fail?

IT has been defined as the solution to Distribution Losses. Therefore, R-APDRP defined a set of IT hardware, software and applications that will reduce losses. The government bureaucracy and PFC wrote the specifications after discussing with all vendors. The specification was done, after lobbying by IT companies and MNC's to put their specification, but not really looking at what are the results expected. An un-realistic time-line was set of 18 Months, with the expertise level and readiness of utilities not at all equipped to absorb and drive the project. Big and Major companies who could execute the project could not bid, and were forced out of bidding due to contractual issues. Consultants and Vendors were mixed, and consultant's mandate was to just execute, with no teeth on specifications or ensuring success of projects.

PFC drove the project as a finance project, with payment terms and other things that were aimed at protecting the money and not linked to supporting the vendor based on milestone progress. The moment the funding was approved, the Ministry moved to Smart Grid, not worrying how important it was to focus on ensuring that the execution is also successful and if required take course corrections.

The end-result is a large project, which has really benefited only foreign IT Vendors, who have dumped hardware and software into the utilities, and the struggling Indian System Integrators, who have to withstand the worst of the execution pressure.

If R-APDRP fails and most likely, it will, the failure would squarely rest on MoP and the PFC, who have goofed up the entire execution, stating that if we give utilities the right to think and act on their own, the projects will fail. PGCIL which was the earlier consultant failed in APDRP-I. A set of 5-6 consultant panels in APDRP-II or R-APDRP also has not had much success. In essence then, the reason for the failure of R-APDRP would be attributed to the wrong strategy and approach of MoP and PFC both on technical and contractual issues and empaneling of vendors and the confusing specifications that has been made, with no teeth to consultant, resulting in all Utilities facing the dire consequences of grant becoming loan, and thereby eroding their already weak financial position.

It would be no wonder then unless the MoP mandatorily convert the R-APDRP Part A as grant, Indian distribution sector would be more financially weaker than it started out to be, before the R-APDRP program. It is always better to let the market decide on winners and losers. MoP programs should be structured in such a way that, good and performing utilities benefit and others do not. Rather than creating programs of massive scale that is bound to fail, because of the inherent weakness of MoP to decide a technical solution for the industry, which is not what it's job, but just decide policies and enable individual utilities to decide their fate and give incentives to people who come forward to a plan and show results.

8. Conclusion

APDRP failed and failed miserably at it, not because the objectives were wrong. The government as always has been the case, tries to do everything on its own and the best it can do is create committees and panels for discussions. The government needs to understand that its function is to create positive environment in which solutions could be found out. Government has to act as a facilitator for private sector to solve the gigantic distribution sector problems. It cannot go to the level of deciding technology and equipment to be used and writing specifications. It is best left to the industry to decide. In addition, while appointing consultants it would be a better idea to hire and appoint some agency, which has experience in carrying out such work, rather than

appointing PowerGrid or PFC to carry out the task. These agencies have been learning on the job, something that India at this point of time cannot afford.

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