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POWER SECTOR REFORMS IN INDIA WITH REFERENCE TO RAJASTHAN

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Abstract: To Supply electricity to the consumers under the most efficient conditions in terms of quality and cost in order to support the economic development of the state. To take effective steps to enable the power sector to mobilise from within the sector, adequate financial resources for financing grid expansion requirement. To create operating and regulating environment conducive to investment and competition so as to develop/promote the entry of private participants in power generation/transmission and distribution and to attract the capital and expertise required to support upgradation, expansion and service quality improvement.

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INTRODUCTION

OBJECTIVES OF POWER SECTOR REFORMS (POWER SECTOR POLICY 1999)

- To Supply electricity to the consumers under the most efficient conditions in terms of quality and cost in order to support the economic development of the state.
- To take effective steps to enable the power sector to mobilise from within the sector, adequate financial resources for financing grid expansion requirement.
- To create operating and regulating environment conducive to investment and competition so as to develop/promote the entry of private participants in power generation/transmission and distribution and to attract the capital and expertise required to support upgradation, expansion and service quality improvement.

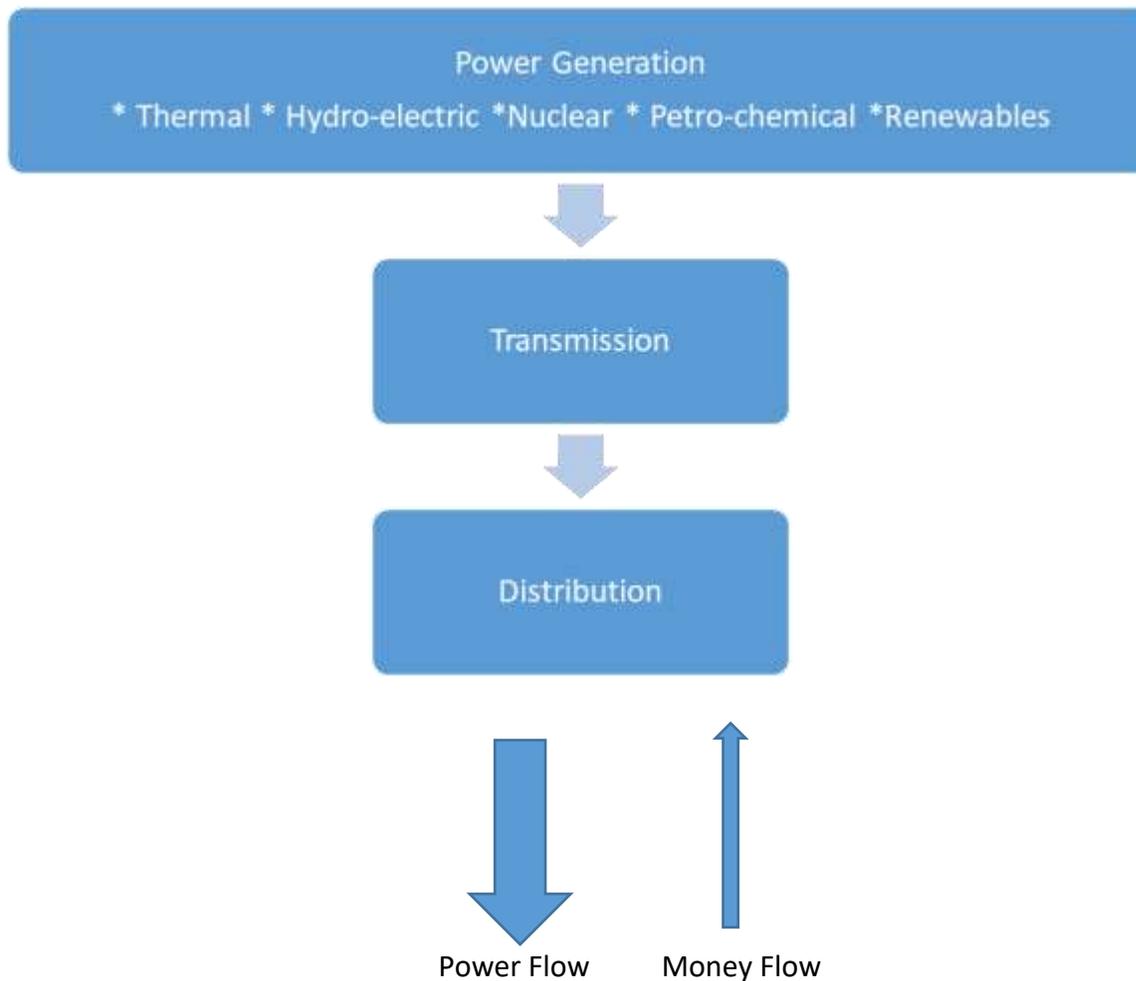
AGENDA OF REFORMS

- Replacing the policy statements of 1995, revised in 1997 and 1998.
- Establishment of independent Regulatory Commission at centre and correspondent states.
- Segregation of the generation, transmission and distribution functions into separate services to be provided by separate autonomous companies;
- Reconfiguration of the distribution system into distinct economically viable geographical zones each served by an autonomous distribution company;
- Corporatisation and commercialisation of the emerging power sector entities to ,make the power sector attractive for the prospective investors;
- Retention of the role of policy formulation with the State Government;
- Promotion of competition among various power sector entities;
- Management of demand to conserve and promote efficient use of energy and ensure environmental protection

HISTORY OF REFORMS

As we know, a successful organization has to face challenges in its environment by pursuing sound strategies and achieving positive results. The electricity sector in India in general are vertically integrated electricity supply setup in the states had adopted reforms to come out of the pool of problems such as sluggishness in operation of power generating stations, losses in transmission lines, anomalies in distribution and over staffing leading to colossal financial losses. Internationally the electricity sector had already adopted reforms in countries like US, UK and Nordic pool etc.

There were continuous thrust towards optimal performance and up gradation and remodelling of existing parameters. The reforms process is visible and continuous since the 1990s.



CUSTOMERS / CONSUMERS

(Vertically Integrated Electric Utility)

The power sector in India has evolved through three historic Acts. These are the Indian Electricity Act of 1910, the ES act of 1948 and the Electricity Regulatory Commission Act of 1998. All states, including Rajasthan, developed their electricity supply industry through a vertically integrated State Electricity Board-based on their respective statutory provisions. Their job was three-fold generation, transmission and distribution. The central Government, through its PSUs like NTPC, NHPC, and NPC etc. was mostly into generation and creating and maintaining a national grid through Power Grid Corporation of India Ltd and facilitated states by providing finance and also performed regulatory work. *But it was not into power distribution at all.*

Thus the government, through the SEB, took upon the role of the developer, promoter and regulator of electricity. Physical infrastructure for the power sector in India (incl. Rajasthan) showed appreciable growth from independence onwards.

Growth of energy infrastructure was made possible by four major policies –

- Centralized supply and grid expansion (through both the central and state Government PSU's and utilities).
- Large support from government budgets in the form of long term loans with little or no interest
- Development of the sector based on indigenous resources.
- Gross subsidization by charging industrial/commercial consumer a tariff above the cost of supply and charging agricultural/domestic consumers a tariff below the cost of supply.

India's Power Sector has grown tremendously since Independence in 1947, with installed capacity rising 8 per cent annually to more than 147965.41 MW as on 31st March, 2009. Despite this eighty-fold increase, the per capita consumption of electricity is only 631.5 kWh per annum, much lower than the world average of over 3,000 kWh/per annum. However, the Electricity Board could not generate adequate resources to sustain the development and growth in Power Sector owing to inadequate tariffs, political compulsions and socialistic welfare concerns for certain categories of consumers such as agriculture, water works, etc.

Implementation of Reforms

Since the early 1990s, the power sector in India has been going through a slow process of reforms and restructuring. As shown in Table 1-

Table 1

First phase	Second Phase
<ul style="list-style-type: none">• Focus on induction of private investment into power generation• In 1991, amendment to the ES(Act), 1948 to promote entry of Independent Power Producer	<ul style="list-style-type: none">• CMNAPP - December 1996• Amendment to facilitate private sector participation in transmission.• ERC Act (1998) led to the creation of the Central Electricity regulatory Commission and the state electricity.

During the 1990s, a package of liberalization and reform measures was started in response to the changing economic and political conditions. The opening up of the generation activity for the private sector was the result of a central government initiative in October 1991. This allowed private players participation in generation. Through elaborate power purchase agreements, the

independent power producers (IPPs) entered the generation sector. Gujarat, saw the entry of IPPs into the generation sector, (Essar group and GPEC group generating around 1,000 MW).

The Central Government also pursued inefficient generating stations belonging to the state utilities to go for extensive Renovation and Modernization (R&M) activities by extending soft loans through the state Power Finance Corporation. Regarding transmission, the Centre's role largely was to develop the national grid through a central transmission company and enforce grid discipline. Enforcing grid discipline through a separate institutional mechanism was useful in order to prevent states from overdrawing and preventing massive blackouts and tripping.

Regarding distribution of power to the consumers, done by the SEBs, the Centre tried to create a consensus through some commonly agreed principles between the Centre and the States.

The Central Government had two major conferences of the Chief Ministers of all the States in 1996 and 2001 on the issue of power sector reforms. In between, several meetings of the Power Ministers and the Secretaries' level meeting of the States were also held to develop a framework and certain agreed ground rules for reforms. In the 1996 Chief Ministers' conference, the

Common Minimum National Action Plan for Power (CMNPP) was adopted.

This included:-

- (a) finalization of national energy policy,
- (b) establishment of a central regulatory authority,
- (c) rationalization of a retail tariff wherein it was agreed to charge a minimum of Rs.0.50 paisa (half of a Rupee) per kWh by all states for agriculture and progressively it would be raised to fifty per cent of the cost to serve
- (d) gradual private participation in distribution and allow private participation in transmission,
- (e) improvement in all physical parameters including PLF etc.,
- (f) compulsory metering at all substations and all major feeders, including compulsory metering for all new connections including agricultural connections by 2002,
- (g) compulsory energy auditing,
- (h) Encourage cogeneration and captive generation (Abraham, 2003) *.

It was an important matter to have consensus for agricultural tariff which was too low to be viable, in the popular politics of democracy, it was difficult for any individual state government to agree to such principle for the agricultural sector, where farmers lobby is powerful .

In view of absence of consensus, it was decided by centre government to sign a memorandum of understanding between the centre and the respective state governments in order to consolidate the process of reforms. Majority of states signed MoU in order to receive the central help through a new programme Accelerated Power Development Programme (APDP). Simultaneously a waiver scheme of long standing dues of the state electricity boards (as

suggested by the Ahluwalia committee) was also introduced as an incentive for reforms and to improve the financial position of the state utilities, thereby reflecting the pro-reform mood prevailing in the country.

Norms were relaxed to encourage IPPs with 100 percent foreign equity participation, and higher rate of depreciation was allowed. The procedure of project approvals by CEA was streamlined in order to make the procedure faster and remove cumbersome procedures and delays. Along with generation, this made it possible to allow private

(* Abraham P., Power sector reforms: Focus on distribution, New Delhi, : Suryakumari Abraham Memorial Foundation)

Investment in the transmission sector. Provisions were made to encourage captive and Co-generation facilities to come up. Also it was made possible for the generators of captive and cogeneration to wheel the power to their preferred units using the transmission network by paying the" wheeling charges. (Dubash and Rajan, 2001)**

The later phase of reforms

The front-runner for structural reform was Orissa, one of India's poorer States. Orissa unbundled the SEB starting in 1996, and by 1998 it had created two Generation companies, one Transmission enterprise, and four Distribution companies. By the late 1990s several other States (Haryana, Andhra Pradesh, and Rajasthan among them) had undertaken power sector reforms.

This second phase of reforms also included the establishment of independent Electricity Regulatory Commissions (ERCs). Several States created ERCs from 1998 onwards under ERC Act adopted by the Central Government legislation. A primary motivation for creating independent Regulators was to introduce competition and rationalizes tariffs.

A third phase of reforms emerged at the end of the 1990s, as the Central Government attempted to coordinate a reform strategy for India as a whole.

The third phase of reform sought to improve the Distribution of electricity. This new phase of reforms aims to break this vicious circle with special central funding mechanisms such as the APDRP/APDP schemes that offset the cost of improvements that are pre-requisites for long-term viability with the Electricity Act 2003 providing the required policy and Regulatory frame work for national level co-ordination of reforms. The pace of reforms has been gradual rather slow. The slow pace has been blamed on the populist compulsions of democratic government and the deep-seated corruption.

However, it may be argued that the slow pace has made the process sustainable and has thus been supported by successive governments – the Congress (1991-95), the United Front (1996-97) and the BJP (1998-2003)), which had declared its intention to continue structural reforms.

Present status

A.P., Assam, Delhi, Gujrat, Haryana, Different companies mainly in distribution
Karnataka, M.P., Maharashtra, Orissa,
Rajasthan, T.N., U.P., UK,W.B.

Bihar, Chhattisgarh, H.P., Jharkhand, Kerala, Vertically Integrated, SEB/Electricity Dept.
Punjab North East States

(*Duvash N.K., & Rajan S.C., Power politics: Process of Power sector reforms in India, Economic and Political weekly, Delhi)

Major Private Layers are

Adani group, Tata group, Reliance group, Jindal group CESC, ESSAR,JP group etc.

Country's Thermal generation capacity is nearly 16,30,000 MW out of which 50000 MW form private sector.

India is third largest producer of electricity with 48% global share.

Power Scenario in Rajasthan

In 1949 when the installed capacity was merely 13.27 MW and power supply was limited to the princely States and few towns. With formation of RSEB on 1st July 1957 and planned growth in installed capacity, transmission network and rural electrification also commenced in gradual manner with the State investing 28-30% of its plan outlay in the initial years in the power sector.

In March 99, 3356 MW of electric power was available at the grid. Of this 1302 MW owned and operated by RSEB, whereas the State has a share of 949 MW in the inter-state partnership projects, both hydel and thermal, and has an allocation of 1105 MW in the central sector power stations. The transmission & distribution system covers a large area of 342,000 Sq. Kms, 2/3rd of which is desert with low population density, serving over 50 lac consumers The energy sales have been growing at an annual average of 11%. The unserved demand is significant, a backlog of over 6 lac applications in service connections were pending.

In the year 1999, RSEB being a vertically integrated State owned utility constituted under the Electricity Supply Act, 1948, is the sole supplier of electricity to consumers of the State. However, without Government's grant, RSEB has not been able to achieve the rate of return of 3% on net fixed assets after interest, as stipulated in the Electricity (Supply) Act 1948.

Like other States U.P., Haryana, Punjab and WB, the power system has been in experiencing frequent service interruptions, high system losses, unexpected voltage and frequency variations, restrictions on demand, poor cost recovery and heavy commercial losses. The State

has been facing chronic power shortage, both in terms of peak load availability as well as energy availability to the extent over 35% and 10% respectively.

Policy initiatives taken by the Government of Rajasthan

In 1993, Government of Rajasthan decided to reform for sustainable development of the power sector and improving efficiency and quality of service by allowing private participation particularly in generation, followed by a Broad Reform Policy Statement, issued in September 1995, with the objective of attracting private investment and expertise to expand and improve electricity services to gain access to capital markets and commercial financing.

Facilitating private power generation through IPP's and transfers of selected existing generating stations to the private sector adopting the international bidding route. Letters of intent were issued for liquid fuel based power plants of capacity ranging between 50 MW to 166 MW having low gestation period and Power Purchase Agreements (PPA's) were signed for 2646 MW capacity. PPA's were also signed for 702 MW naphtha based and 500 MW lignite based projects.

Further the State Government decided to take up the 2x250 MW Surathgarh Thermal Power Station Stage II in the State sector.

Government of Rajasthan had also announced a policy to encourage generation based on renewable energy sources, on 11th March 99- solar thermal and solar thermal voltaic in which a number of concessions have been offered..

8. Structural Changes in the Power Sector

The power sector will be restructured to encourage functional specialisation; decentralisation, autonomy and accountability in decision making; to facilitate and encourage private sector participation; to progressively promote competition in different segments of the sector; and to ensure an effective, efficient and independent regulation of the sector.

The functions presently being performed by the vertically integrated RSEB will be segregated into separate generation, transmission and distribution companies to be incorporated under the Indian Companies Act, 1956. Separate profit centres will be established within these companies to further promote productivity and efficiency.

The existing generation stations of RSEB will be grouped under a separate power generation company. Transmission of power will be entrusted to a separate transmission company. Power distribution will be assigned to a number of independent power distribution companies. The State Government has decided to set up the Rajasthan Electricity Regulatory Commission (RERC).

The State Government also intends to redefine its role in the power sector from an operator and regulator of utilities to a facilitator towards greater investment and promoting productivity & efficiency.

Power Generation

The existing power stations and those under commissioning in the State sector, will be transferred to a separate generation company to be registered under the Indian Companies Act, 1956. The company will start its operations, as a wholly State owned company and State Government may, at a later stage, invite private sector participation in this company. The company, like other IPPs, will sell power to the transmission company for further sale to the distribution companies. This Company will be responsible for generating power from all the existing generating stations of RSEB and complete the projects under commissioning by RSEB.

In future new power generation projects in Rajasthan will be mainly developed by:

- Independent Power Producers (IPPs) selected through international competitive bidding (ICB);
- Central sector generating corporations; or
- By the generation company itself or in joint venture with private partners, other States or Central undertakings

The Government of Rajasthan may make investments in power generation for extension of the existing power stations as well as to bridge the shortfall in the availability of power.

Power Transmission

A State owned transmission company, to be incorporated under the Companies Act, 1956, will be entrusted with the power transmission network of extra high tension lines including O&M of inter- state tie lines, in so far as they pertain to the State. The transmission company will be responsible for purchasing power from generating company and various IPPs in Rajasthan, importing and exchanging of power from and with central power generation corporations, jointly owned projects, regional projects, other SEB's, other power projects within or outside the country. The pooled power will be supplied to different distribution companies. The transmission company will be the principal transmission utility in the State.

Power Distribution

The State will be geographically divided into a number of distribution companies to be formed on considerations of viability and operational ease. These distribution companies will operate under a license to be granted by RERC. They will approach RERC individually for fixing their retail tariffs, and amongst the distribution companies, differential tariffs may progressively emerge based on relative costs and performance.

These distribution companies, though initially owned by the State Government will, in a phased manner, be converted into joint ventures (JVC) where the private partners will hold majority

shares and management control including the obligation to bring in the required investments and to meet the performance obligations under the license. The selection of the private partner will be done through a carefully designed international competitive bidding process to ensure selection of a technically and financially competent partner.

To motivate the employees, who are important stakeholders in growth of these companies, Government of Rajasthan considers it desirable to invite the employees of RSEB and its successor companies, to participate in the equity of these new companies. The entire process of forming JVC's and transferring the distribution business to them is expected to be completed by end of 2004, although a more rapid schedule is targeted.

Regulation of Power Sector

As stated earlier, Government of Rajasthan has already taken a decision to set up the Rajasthan Electricity Regulatory Commission (RERC) under the provisions of the Electricity Regulatory Commissions Act, 1998 enacted by the Government of India.

RERC will work as an autonomous regulatory authority, regulate power purchase and procurement process of the transmission and distribution utilities, determine tariff for electricity transmission and supply, promote transparency, efficiency and economy in the operation and management of the power utilities, encourage competition and help the power sector in Rajasthan to attract private capital for development

The Government of Rajasthan is committed to take all necessary steps to facilitate and ensure the independent functioning of the RERC.

Financial Restructuring for Reforms

Given the present financial situation of RSEB, major financial restructuring is critical to enable the new companies to start their operations on a financially viable basis. The financial restructuring will include rationalisation of tariffs; restructuring of the balance sheets of the functionally unbundled power sector entities through identification and write off of and provisioning for doubtful or non-performing assets; settlement of un-funded liabilities; and design and implementation of a suitable mechanism to clear the accumulated debt and overdue commercial liabilities.

Presently the agricultural sector, and to a lesser extent the domestic sector, are highly subsidised, resulting in annual revenue deficit over Rs.1000 crores. This shortfall is compensated by subsidies from the State Government and long term borrowings from the open market and financial institutions.

Power Sector Reforms Bill

In order to pave the way for the reform process Rajasthan Power Sector Reforms Bill, 1999 will be enacted create of an environment for the growth and efficient functioning of the power sector.

Human Resource Development

The Rajasthan Power Sector Reform Bill will provide for safeguarding the interests of the employees of the RSEB. All the existing employees of RSEB will be absorbed in the new power utilities.

The personnel policies would be suitable for attracting and retaining highly skilled staff and having provisions for upgrading their skills. The staff should be among the beneficiaries and not the losers of the reform program.

The key objective of restructuring is to create a culture where customer service and commercial functioning are paramount.

Intermediate Investment Plan

In fact, it may take few years before the full benefits of the reforms are experienced. In the short and medium term, there is a dire need to address the most urgent needs of the sector, improve the quality of power in the most critically affected areas, improve the interface with consumers and improve the safety and working conditions of staff. Corresponding Intermediate Investment Plan would be developed from time to time.

Communication Strategy

The success of the reform process depends on its acceptance by the stakeholders e.g. consumers, employees, investors, lenders, creditors, and above all the people of the State. The implementation strategy will use participatory approaches to address and balance the genuine concerns of the various stakeholders.

The Government and the management of RSEB and its successors will continue and intensify the communication campaign to educate and enlighten the stakeholders including consumers.

Demand Side Management

The programme will focus on the demand side management (DSM), All resources, including energy conservation and use of non-conventional and renewable energy sources, will be considered in the process of power planning to manage the power demand.

The main focus of the strategy for DSM will be on:

- Introduction of tariff linked demand side management
- Improvement of efficiency of agriculture tube wells and industrial installations
- Launching of consumer awareness campaign on various energy conservation measures.

Environmental and Social Aspects

The Government reaffirms its commitment to ensure a fair, efficient and transparent handling of all matters relating to land acquisition and involuntary resettlement, including loss of assets and other negative impacts on Project Affected Persons (PAPS)

Environmental impact will be fully integrated into planning and implementation of all generation, transmission and distribution projects. The renovation and modernisation of existing power generation stations, already undertaken, will minimise the adverse environmental impacts. Prevailing law of the land to be strictly followed.

Implementation Strategy

In order to guide and closely monitor the implementation of the reform programme, the Government will formulate a Project Implementation Plan (PIP) which will include the implementation actions, steps, resources, responsibilities, milestones and schedules and monitoring thereof.

A Reform Guidance Committee chaired by the Energy Minister would continue to guide the reform programme. This will be in addition to the existing Steering Committee under the chairmanship of the Chief Secretary. A Task Force headed by Chairman, RSEB would operationalise the policy decisions taken by the State Government, schedules and facilitate the implementation of the reform administration. Services of outside experts and consultants will be engaged to further professionalise the process.

Improved Consumer Interface

Consumers have often been the most neglected segment in the state owned and operated infrastructure sector. Ensuring better quality of service and protecting the interest of the consumer is one of the key elements of the reform process.

An Advisory Committee with representatives from consumer, agriculture, industry, commerce, trade, labour and licensees for transmission and distribution will be set up to advise the State Regulatory Commission on major policy issues and quality of service provided to the consumers.

Status of Restructuring of RSEB

State	Companies
Rajasthan	One Generation Company - Rajasthan Vidyut Utpaadan Nigam Limited (RVUNL) One Transmission Company - Rajasthan Vidyut Prasaaran Nigam Limited (RVPNL) Three Distribution Companies -

Jaipur Vidyut Vitaran Nigam Limited (JVVNL)
Ajmer Vidyut Vitaran Nigam Limited (AVVNL)
Jodhpur Vidyut Vitaran Nigam Limited
(JoVVNL)

The state desperately needs to cut transmission losses. The reform / restructuring / deregulation will lead to a quantum jump in the productivity, efficiency and significant reduction in transmission losses. Availability of ample power at competitive rates will have a multiplier effect on the economy of the state.

Beginning has been made more in distribution (disco.) than generation much lesser in transmission. Renewable sources particularly Solar and Wind can possibly do rescue work for controlling transmission losses capable of catering to local areas with the same infra structure in India a lot has to be done. Necessary awareness has now come at the level which matters i.e. central Govt. policy planning. Power being priority in present National Govt.'s pledge.

In order to continue borrowing from the banks and other institutions, the discoms have to lower their transmission losses from the current 25 percent to 15 percent

CONCLUSION

As a part of reform to reduce / cut transmission losses feeder renovation programme was taken up in 32 districts covering 8475 feeders in a gradual manner which has brought Rajasthan as a front runner, since even the rural areas are now in a position to enter the take off stage in terms of development. Bringing continuous lights in their lives, making the precious commodity drinking water available with the constant quality supply of electricity.

Renovation has resulted in loss reduction so far to the extent of 1000 MW equivalent to installation of Gen-set project. With the power availability in far flung areas, the use of computers and other information technological and other electronic devices has become possible. Even rural hospitals are able to serve /save the people.

The installation of solar thermal and solar PV (Bikaner and Bhadla- Phalaudi) have relieved the transmission lines of corresponding load and hence the power losses besides 0.3 percent renewable energy utilization giving opportunities for further expansion in this regard.

But there are some complaints from villagers regarding increase in their bills, though the quality of life and productivity from agriculture has improved.

With the incorporation of SCADA system in transmission and distribution area there is a favourable change in the quality availability of power.

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