

# Rajiv Gandhi Rural Electrification Program *Urgent Need for Mid-course Correction*

Discussion Paper by Prayas Energy Group

July 2011



प्रयास

आरोग्य, ऊर्जा, शिक्षण आणि पालकत्व  
या विषयांतील विशेष प्रयत्न

**Prayas Energy Group**

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## **About Prayas**

Prayas (Initiatives in Health, Energy, Learning and Parenthood) is a non-governmental, non-profit organisation based in Pune, India. Members of Prayas are professionals working to protect and promote the public interest in general, and interests of the disadvantaged sections of the society, in particular.

The Prayas Energy Group works on theoretical, conceptual and policy issues in the energy and electricity sectors. Activities cover research and intervention in policy and regulatory areas, as well as training, awareness, and support to civil society groups. The past work of the Prayas Energy Group includes an analysis of the power purchase agreement between the Dabhol Power Company and the Maharashtra State Electricity Board, an analysis of the SardarSarovar Project, the development of a least-cost, integrated resource plan (IRP) for the state of Maharashtra, an analysis of agricultural power consumption and subsidy, a critique of the activities of multilateral development banks in the energy sector in India, and the organisation of numerous capability building workshops. Since the last few years, the group has focused mainly on issues relating to power sector reforms, renewable energy, energy efficiency and climate change. Its work in the area of power sector reforms includes a study of the regulatory aspects of the Orissa model of power sector reforms, several policy and regulatory interventions at the Central and State levels, a survey based report on Electricity Regulatory Commissions, a report on the privatisation of distribution in Delhi, and a study of the Bhiwandi distribution franchisee model.

All publications, presentations and reports by the Prayas Energy Group are available at the Prayas website.

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# 1

## INTRODUCTION

Rajiv Gandhi Rural Electrification Program or Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) is one of the flagship programs of the central government. It is a part of Bharat Nirman, the rural infrastructure initiative started in 2005, which covers electrification, water supply, irrigation, housing, roads and telephone & internet. RGGVY is the biggest rural electrification program in the country and in terms of sheer numbers, also in the world. It is being implemented in nearly all districts of the country and in half of the total villages.

RGGVY was inaugurated in April 2005 and at that time 1.25 lakh villages (a quarter of the total) and 7.8 crore rural households (56% of the total) did not have electricity access. The objective of RGGVY was to electrify all the un-electrified villages and provide electricity connections to 2.34 crore un-electrified Below Poverty Line (BPL) households by 2009 at a cost of Rs. 16,000 crores.

The deadlines and costs have changed with the passing of years, but the progress reported by the Ministry of Power is impressive. As per these reports, by March 2011, in the course of the last six years, around 96,000 villages have been electrified, raising the level of village electrification from 74% to 91%. Around 1.75 crore rural households, largely BPL have been given connections, raising the level of rural household electrification from 44% to 56%. The cost estimate has more than tripled to about Rs. 52,000 crores and as of March 2011, nearly half of that is reported to have been spent. Looking at the pace and the targets, this phase of the program may close in 2012 with nearly 93% of the villages and 60% of rural households electrified. This claimed achievement is indeed impressive, with respect to grid extension, village electrification and rural household connections, though there are questions

on the quality of power supply, sustainability of infrastructure and the contribution of this initiative to rural development.

With significant resource allocation and high management attention, RGGVY has brought the focus back to the crucial issue of rural electrification, especially through grid extension. There have been a few papers on RGGVY [Bhattacharya 2009, Greenpeace 2009, Vasudha 2010, Loksabha 2009], covering certain aspects of the program and providing some critique. The objective of this paper is to present a public interest critique of RGGVY so as to identify weaknesses and challenges towards achieving the objective of universal access. It also attempts to identify possible mid-course corrections and ideas for better implementation in terms of meeting targets, sustaining the electrification and creating good rural development impacts.

This paper begins by briefly explaining the importance of rural electrification in the development context and then gives an overview of the rural electrification initiatives before RGGVY. It then introduces the main features of RGGVY and presents the progress in electrification, as reported by the Ministry of Power (MoP). The public interest critique looks at key issues from three broad areas, namely – planning, implementation and sustainable operation. In each of these areas, important aspects are examined and challenges of current implementation approach elaborated. Paper concludes by presenting a few suggestions for better implementation of RGGVY and steering it towards rural development outcomes.

### 1.1 Importance of rural electrification

The correlation between consumption of electricity and improvement in the Human Development

Index (HDI), especially at low levels of HDI, is well known<sup>1</sup>. This cause and effect relationship is two-way. Electricity consumption could lead to a higher HDI, or a rise in the HDI could lead to higher electricity consumption. However, even a small increase in the quantity of electricity supply can make a marked difference in the quality of life of the poor. Electricity supply meets the social needs (home lighting- for education, flexibility in cooking hours, health & hygiene, safety, mobile & battery charging, news update & leisure, fans; street lighting – safety & security which increases mobility, especially for children & women and offers some protection from dangerous wild life; drinking water supply; better working of community health centres & village offices etc.), avoids excessive cash expenditure for kerosene, increases productive working hours of the day, and promotes small economic activities (shops, cottage industries, etc.). It is true that electricity

access can be achieved through grid and non grid systems. In countries like India, where nearly 99% of the villages are proposed to be grid connected in the near future, grid electricity has a significant role to play in providing affordable electricity for social and economic needs of the rural population.

Indian and international development agencies have recognised the importance of this electricity – development linkage. The State Electricity Boards (SEBs) set up after independence had a clear mandate to extend electricity supply beyond the urban centres. The Electricity Act (2003) and subsequent national policies (National Electrification Policy -2005 and Rural Electrification Policy -2006) also emphasise the importance of rural electrification. The National Electricity Policy begins by stating: *“Electricity is an essential requirement for all facets of our life. It has been recognized as a basic human need. It is a critical infrastructure*

### Box 1 : Electricity – Development Indices [IEA 2010]

Various international reports, including the September 2010 report [IEA 2010] by the International Energy Agency (for the UN General Assembly) lament the sorry state of energy access, with 20% of the world population (85% of them in rural areas) not having electricity access in 2009. They re-emphasise the strong link between energy access and reducing poverty and the key role of electricity access in meeting the millennium development goals by 2015. They suggest indicators like Energy Development Index (EDI), derived from 4 energy related measures (2 of which are related to electricity) to quantify energy poverty:

a) Per-capita commercial energy consumption;

- b) Per-capita household electricity consumption;
- c) Share of modern fuels in household energy consumption
- d) Share of population with electricity access.

As per IEA, India has an EDI of 0.3, marginally below Bangladesh & Pakistan; much below China (0.55), Brazil (0.62) and South Africa (0.67).

India also scores low in the 'reliability of infrastructure services index' of the World Bank (2007). This index is calculated based on:

- a) Delay in getting an electricity connection;
- b) Electrical outages per year;
- c) Output loss (as a % of turn-over) lost due to electrical outages and
- d) Percentage of firms maintaining own generation equipment.

<sup>1</sup> For example, see: Global Energy Futures and Human Development: A Framework for Analysis, Alan D. Pasternak, US Department of Energy, 2000



on which the socio-economic development of the country depends. Supply of electricity at a reasonable rate to **rural India** is essential for its **overall development**". The Rural Electrification Policy begins with the same statement and has additional points like: "*Rural Electrification is viewed as the key for accelerating rural development. Provision of electricity is essential to cater for requirements of agriculture and other important activities including small and medium industries, khadi and village industries, cold chains, health care, education and information technology.*" (emphasis added). As described in the Box: 'Electricity – Development Indices', governments and development agencies have evolved various measures to capture this correlation. Electricity development linkage is not chief focus of this paper, which primarily looks at the planning and implementation of RGGVY. To provide the background, the next section gives a brief overview of the rural electrification initiatives before RGGVY.

## 1.2 Initiatives for rural electrification

As mentioned before, the SEBs had the mandate to take electricity beyond the major cities. Till 1970s, rural electrification was a by-product of connecting the towns with the grid and villages near the grid benefited. In mid - 1970's, based on farmer's demands, there was a trend to reduce agriculture tariff across many States. This led to large demand for agriculture connections and thus to rural electrification. [Sankar 2009, Subhes 2009]. Rural Electrification Corporation (REC) was set up in 1969 (as a Non-Banking Finance Company) to finance and promote rural electrification all over the country.

Household electrification towards 'electricity for all' was not a priority of these rural electrification efforts. Household electrification was considered as a by-product of the conventional electricity development

plans based on commercial considerations and the universal electrification of all villages and all households was expected to be achieved in some distant future as a result of the trickle-down effect. No wonder that many States with high village electrification levels have low household access [Sankar 2009]. However, starting from late 1980s, there were some initiatives supported by the Government of India to explicitly address the issue of low household electrification, especially the rural poor. These initiatives were all by the Government of India (GoI) and included grid options led by the Ministry of Power (MoP) and the off-grid options led by the Ministry of New & Renewable Energy (MNRE). The major ones are summarised here [Modi 2005, Sankar 2009, Subhes 2009].

The grid based initiatives include the **Minimum Needs Program**, started in the Fifth Five-year plan period (1974-79), which had rural electrification as one of the components. This scheme was discontinued in 2005 and merged with RGGVY. **Kutir Jyoti Program** was initiated in 1989 to provide single point light connection to all Below Poverty Line (BPL) households including SC/ST. This is the longest amongst all household electrification programs. This program provided 100% grant for one time cost of internal wiring and service connection charges. Norm for household connection was Rs. 180/household in 1990 and revised to Rs.1500/ household by 2002. As per REC, nearly 60 lakh households were covered under the scheme till 2004 at a cost of Rs.450 crores. A study by MoP noted that beneficiaries (especially in UP&Bihar) were reluctant to avail of this scheme due to the poor quality of supply. There were problems of estimation of electricity consumption

since connections were not metered and tariff was a flat rate one, often based on connected load. The scheme was merged into the Accelerated Rural Electrification Program in 2004. **Pradhan Mantri Gramodaya Yojana** (2001) had six components including rural electrification, which was started in 2002. The states were provided central government assistance for all the components and they had discretion of utilizing the funds for different components as per their own priorities. This scheme was discontinued from 2005 onwards. **The Accelerated Rural Electrification Program** (2003), initially offered an interest subsidy of 4% to states for rural electrification. This was combined with the Kutir Jyoti program in February 2004 to create the Accelerated Rural Electrification of one lakh Villages and one crore households. This program had the provision of 40% grant and 60% loan for projects related to rural electrification. This scheme covered UP, Rajasthan, Bihar and WB. **Rural Electricity Supply Technology Mission** (2002) had the aim of electrification of 1 lakh villages by 2007 and 1 crore households by 2012 using decentralised distribution systems (using renewable or conventional fuels) and grid extension.

The **Remote Village Electrification Program** (2003) is an off – grid program of MNRE to electrify the un-electrified remote villages and remote hamlets of electrified villages using non - conventional energy sources like solar, small hydro power, bio-mass etc. The target was to electrify all remote villages by 2007, remote hamlets by 2012 and all households by 2012. In 2003, it was estimated that 18,000 remote villages would be covered under this program, to be implemented with support from the respective State Renewable Energy agencies.

This program is still active, with nearly 5000 village projects implemented as of December 2009. The number of remote villages has been gradually reducing (with more of them opting for grid power) and as of December 2009, it is reported to be about 7,700, which is about 1% of the total number of villages<sup>2</sup>.

All the grid related operational programs were merged into RGGVY in 2005, a central government initiative with national coverage, high fund allocation and ambitious target of electrification of all rural households by 2009.

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<sup>2</sup> Annual report of the Ministry of New & Renewable Energy, 2009-10

## 2

### WHAT IS RGGVY?

This section gives a brief overview of RGGVY, details of the RGGVY continuation order for the XI<sup>th</sup> plan, quality monitoring mechanism envisaged, distributed decentralised generation initiative and franchisee scheme.

#### 2.1 Overview

The National Common Minimum Program of the United Progressive Alliance (UPA) in 2004 committed full household electrification in five years. RGGVY was launched in April 2005 by the Ministry of Power (MoP) with Rural Electrification Corporation (REC) as the nodal agency. The existing Minimum Needs Program and Accelerated Electrification programs were merged with RGGVY. The objective of RGGVY was to electrify 1.25 lakh un-electrified villages, augment the electricity system in electrified villages with low household electrification, provide electricity connections to 2.34 crore un-electrified BPL households free of charge and provide access to electricity to all households by 2009 at a cost of Rs. 16,000 crores, about 90% of which would be subsidy from the central government [MoP 2005].

The scope of RGGVY is:

- a. Rural Electricity Distribution Backbone: Construction of substations and lines in blocks where they do not exist
- b. Village Electricity Infrastructure: Electrification of un-electrified villages and habitations (with population more than 100 and which can be electrified by grid power), augmentation of distribution transformers in electrified villages/habitations<sup>3</sup>
- c. Decentralised Distributed Generation: Setting up

small generators and distribution network in villages where grid extension is not cost effective and which are not covered by the Remote Village Electrification program of MNRE

- d. Household electrification: Free connection to BPL households, which covers poles, service wire, meter, fuse, internal wiring and a bulb. APL households to approach distribution companies for connection

For items a) to c), the central government will provide 90 % capital subsidy and soft loans for the remaining portion. 100% capital subsidy will be provided for item d), connecting BPL households. The total expense was estimated to be Rs. 16,000 Crores in which the subsidy amount is Rs.14,750 crores. The program has an interesting provision of 1% of the total amount (i.e. Rs.160 crores) for research, technology development, capacity building, information system development, awareness building, pilot studies and complimentary projects.

The State Electricity Board or the Distribution Companies will implement the project, but if the States require, they can take support from Central Public Sector Units (NTPC, POWERGRID, NHPC or DVC) for implementation. The basic electricity infrastructure set up under RGGVY should be able to cater to the requirement of agriculture and other economic activities. States are expected to ensure adequate power supply to the rural network. To quote from the March 2005 Office Memo [MoP 2005b], *“States must make adequate arrangement for supply of electricity and there should be no discrimination in the hours of supply between the rural and urban households (emphasis added)”*. States are also expected to support

<sup>3</sup> As per RGGVY initial plan, only habitations with population of 300 or more were to be covered (see: <http://india.gov.in/govt/viewscheme.php?schemeid=1062>). This was modified to 100 or more in the RGGVY continuation order 2008.

setting up of franchisees to manage rural distribution and also provide the required revenue subsidies to the distribution companies to supply electricity.

The Electricity Act (2003) and the Rural Electrification Policy (2006) provide the legal and policy framework for RGGVY. Electricity Act (as amended in 2007) de-licenses rural electricity distribution and provides the mandate: *“The concerned State government and Central government shall jointly endeavour to provide access to electricity to all areas including villages and hamlets through rural electricity infrastructure and electrification of households.”* Aims of the Rural Electrification Policy are: Provision of access to electricity to all households by year 2009; quality and reliable power supply at reasonable rates and minimum lifeline consumption of 1 unit per household per day as a merit good by year 2012. The policy also gives brief outline of: RGGVY, definition of electrified village, monitoring mechanisms for rural electrification, franchisee schemes, community participation, promoting end use efficiency, stand-alone systems and the roles of State governments [MoP 2006].

## 2.2 Continuation order & revised estimates

In February 2008, MoP issued the continuation order for RGGVY in the XI<sup>th</sup> plan [MoP 2008]. Targets identified were electrification of 1.15 lakh villages and 2.34 crore BPL households by 2009. Rs.28,000 crores was provided for capital subsidy, which included Rs.540 crores towards Decentralised Distributed Generation (DDG). To be eligible for this subsidy, States were to commit at least 6-8

hours of power supply on the RGGVY network and operationalise rural franchisees. The cost estimate norms for household electrification and village electrification were revised upwards.

The 2005 cost estimate for the program was Rs.16,000 crores. Considering the capital subsidy (90% of total cost) estimate for 2 years of the X<sup>th</sup> plan of Rs.5,000 crores and the capital subsidy figure of Rs.28,000 crores in the continuation order, the revised cost estimate for the program in 2008 works out to Rs.36,667 crores. Another estimate is Rs.52,000 crores, prepared by the MoP in 2009, quoted in the Parliamentary Committee report [Loksabha 2009]. This is a high public investment, but is comparable to the figures for national programs, like R-APDRP (for urban electricity distribution improvement with an estimate of Rs.50,000 crore), Rural drinking water supply (Central share of Rs.25,300 crores), Rural roads (1,74,000 Crores) or renewable energy<sup>4</sup>. It may also be noted that the annual investment in power sector by Central & State governments and Private players in 2008-9 reported by the Central Electricity Authority (CEA) is about Rs. 1 lakh crores<sup>5</sup>.

## 2.3 Quality monitoring mechanism

It was in the RGGVY continuation order of 2008 that the three tier quality monitoring mechanism for RGGVY was elaborated. The first tier is the implementing agency in the State, the second tier the REC and third tier is the MoP. The Rural Electrification Policy elaborates the role of local institutions in monitoring rural electrification and supply.

<sup>4</sup> Estimates are from MoP and Bharat Nirman websites, accessed on 15/04/11. As for renewable energy, the reported subsidy for Phase-I of National Solar Mission is Rs.82,000 crores, half coming from higher consumer tariffs and half from budgetary allocation [Deshmukh 2010]. The total subsidy amount for RGGVY in 10th and 11th plan is equivalent to the subsidy for about 2000-3000 MW of solar power. This estimate is based on the tariff bids for Phase-1 of the National solar mission. and the exact figure would depend on discount rate, coal price escalation rate etc.

<sup>5</sup> From: [http://cea.nic.in/reports/articles/eandc/expenditure\\_power\\_sector.pdf](http://cea.nic.in/reports/articles/eandc/expenditure_power_sector.pdf), accessed on 4/7/11.

## **National three tier quality monitoring mechanism**

**First tier:** Project implementing agency (PIA, which could be a Distribution Company, Electricity Board or a Central Public Sector Undertaking) would be responsible for the first tier. PIA will engage third party inspection agency, whose responsibility will be to ensure that all the materials to be utilized and the workmanship conform to the prescribed specifications. It will be synchronized with phased release of funds under RGGVY and inspection and proof of corrective action will be mandatory requirement for release of funds. This inspection will cover approx. 50% villages on random sample basis for each project and 10% pre-despatch inspections of major materials.

**Second tier:** REC will manage the second tier and will have a senior officer as the REC Quality Control Coordinator. It will get the inspection done of the works/materials through its staff and by outsourcing it to individuals designated as REC Quality Monitors (RQM). The inspection will cover quality checks at pre-shipment stage at the vendors' outlet of major materials and 10% villages on random sample basis.

**Third tier:** MoP will manage this through independent evaluators engaged by it, designated as National Quality Monitors (NQM). They shall be given free access to all administrative, technical and financial records. Evaluation will cover 1% villages. They shall also report on the general functioning of the Quality Control mechanism in the District. The REC Quality Coordinator and Third party inspection unit shall be the authority to receive and inquire into complaints / representations in respect of quality of works and they would be responsible for sending a reply after proper investigation to the complainant within 30 days.

## **Local monitoring: District Committees and Panchayats**

The national Rural Electrification Policy (August 2006) suggested many measures to increase the participation of local community in monitoring rural electrification. This includes:

**District Committees:** State governments to set up district committees (as per Section 166(5) of Electricity Act 2003) within 3 months. This will be chaired by the Chairperson of the Zilla Panchayat/District Planning Committee or the Collector. Committee is to have representation from district agencies, consumer associations and stake holders. There is special emphasis on ensuring representation of women. District Committees are to monitor rural electrification (through grid extension or stand-alone systems), quality of supply, consumer satisfaction and energy efficiency.

**Panchayati Raj Institutions:** These have a supervisory/advisory role in rural electrification and supply. Role of these can be decided by the State governments. State should take steps to build awareness on generation, distribution, energy efficiency and energy-water nexus among elected Panchayat representatives.

## **2.4 Decentralised distributed generation**

Mention about decentralised generation for rural electrification was there in the 2005 RGGVY order. But detailed guidelines for this were issued only in January 2009 by the MoP as the "Guidelines for village electrification through Decentralised Distributed Generation (DDG)" [MoP 2009]. An amendment was issued in January 2011 [MoP 2011]. As per these, DDG projects can be taken up under RGGVY in remote villages where grid connectivity is either not feasible/cost effective and not expected

in next 5-7 years. Villages for which MNRE has made plans of electrification will not be covered. The RGGVY continuation order (2008) had set aside Rs.540 crores towards capital subsidy for DDG in the XI<sup>th</sup> plan. REC will be the nodal agency for implementation and State governments will be the owners. State governments will decide the implementation agency, which could be the State Renewable Development Agency (SREDA) or Central Public Sector Units (CPSUs). DDG projects can be based on conventional or renewable fuels. 90% of the project cost is provided as capital subsidy by the Government and cost of spares for 5 years after commissioning is included as project cost. All un-electrified villages and hamlets with a population above 100 are eligible. Identification of eligible villages shall be done by SREDAs in consultation with the state utility.

## **2.5 Franchisees**

To be eligible for capital subsidy, State governments are to deploy rural franchisees to manage the distribution system created through RGGVY. Franchisee can be Non-Governmental Organisations, User associations, Cooperatives or individual entrepreneurs, with Panchayat institutions associated with it. Franchisee could manage a feeder from a substation, from a Distribution Transformer or a geographical area. RGGVY website mentions six models of franchisees: Model A –revenue billing collection (billing, collection, complaint redressal, facilitating new connection); Model B –input based (input energy at 11 kV feeder is measured and revenue target set); Model C - input based -2 (franchisee purchases energy from utility and has a revenue target); Model D – Operations & Management (Model C and operations & management role);

Model E – rural electric cooperative society (covering an area - typically part of a district, owned and operated by members, bulk purchase from utility) and Model F (Model E with outsourced management) [MoP 2005, MoP 2008, RGGVY 2011].

# 3

## RGGVY – PROGRESS SO FAR

This section presents the progress of RGGVY at national and State levels. Data is consolidated primarily from the RGGVY website, Bharat Nirman reports at the MoP website, REC website, CEA reports, mid-term assessment report of the XIth plan and the Parliamentary Committee report on RGGVY. The base data of household electrification is from 2001 census. Most reports available on RGGVY websites are fortnightly, cumulative status reports. Such reports stored over a period of time have been used to prepare the progress reports. We have not been able to do exhaustive cross checking, across sources or from field surveys, to test the validity of this data.

### 3.1 Overview

Table 1 gives the key all India figures of RGGVY. It gives the progress in village electrification, franchisee deployment, household electrification and funds released in 2005 before RGGVY started and in 2011. Village electrification data is as per the revised definition of village electrification. In 2004, in a significant improvement, the definition of village electrification was changed to include minimum 10% household access and electrification of public places<sup>6</sup>. Household electrification data of 2005 is from the 2001 census, since there is no other reliable

source of data and there was no significant electrification before RGGVY started.

From the table, it can be seen that there has been significant progress in village and household electrification after RGGVY. With 96,562 villages newly electrified in the last 6 years, village electrification has grown by 17% to reach 90.6%<sup>7</sup>. With around 1.75 crore rural households newly electrified, rural household electrification has grown by 12.5% to reach 56%. Increase in rural household electrification is also supported by NSSO data<sup>8</sup>. Census 2011 is expected to give more reliable data. Last row of the table gives the estimates for 2012, when the current phase of RGGVY ends. A total of 1.13 lakh villages are expected to be electrified under RGGVY, raising % village electrification to 93%; 2.21 crore households newly electrified, raising the household access to 59.4%.

Growth of franchisees (just in terms of numbers, not necessarily in quality) has not been fast enough. 1.1 lakh franchisees cover only 38% of the RGGVY villages (un-electrified villages electrified and electrified villages in which household electrification have been taken up under RGGVY) and 19% of the total villages in the country. Commitment to deploy franchisees in RGGVY villages is a condition for

<sup>6</sup> Till 1997, the definition of village electrification was: "A village is classified as electrified if electricity is being used within its revenue area for any purpose whatsoever". Thus a village with even one agriculture pumpset would be considered electrified. This was revised in 1997 to ensure that electricity is used at least in one household: "A village will be deemed to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever". This was improved in 2004: a) Presence of transformer & lines in the inhabited area including a Dalit basti; b) Public places like Schools, Panchayat Office, Health Centres, Dispensaries, Community centers etc. should be electrified; c) At least 10% households should be electrified. The village Gram Panchayat is to certify electrification for the first time and in every year in March. If it fails to do annual certification, the State government may independently get it verified (from the MoP website and Rural Electrification Policy).

<sup>7</sup> The number of villages electrified from 2005-2011 is 96,562 as per RGGVY MIS report of 31/03/11, whereas from the table, it is 98,147. This difference of 1585 villages could be due to non-RGGVY electrification or data reporting issues between CEA and RGGVY.

<sup>8</sup> Rural household electrification from NSSO - % figures and NSSO reference in brackets: 60.2% (64<sup>th</sup> round, 2007-8), 56.1% (63<sup>rd</sup> round, 2006-7), 54.9% (62<sup>nd</sup> round, 2005-6)

sanction of projects. Funds released of Rs.25,355 crores is the cumulative 90% subsidy and 10% loan amount released by the central government to States. This is about half the total estimated amount.

Progress with DDG appears to be low, with no details available in the RGGVY reports. Some sources indicate that around 300 villages have been identified for DDG in the XI<sup>th</sup> plan<sup>9</sup>.

**Table 1: RGGVY key all-India figures**

Year	Villages Electrified		Franchisee	Rural Households electrified		Released Amount Rs Crores
	Number	%		Number Crores	%	
2005	439,800	74.1		5.97	43.4	
2011	537,947	90.6	110,790 (19%)	7.72	56.0	25,335
2012*	552,447	93.0	NA	8.19	59.4	NA

Source: RGGVY office memo [MoP 2005], CEA Annual General Review [CEA 2005], CEA Monthly Report [CEA 2011], Bharat Nirman site [Bharat Nirman 2011]. 2012\* figures are estimates prepared using the 2012 targets given in the 'Quarterly report to DMU-PMO' dated 31/03/2011, available at the Bharat Nirman site.

Table 2 shows the progress of all India village electrification from 2001 till 2011. The small drop in 2001-2 is due to the delayed reporting of reduction of electrified villages in UP after the 1997 change in definition. The 10% drop in 2004-2005 is due to the changes in definition of village electrification in 2004. From 2005, there is a steady growth in village electrification. Till 2011, about 98,000 villages have been electrified (as per CEA 2010-11), increasing the percentage of electrification from 73.8 to 90.6. As can be seen from Figure -1, there was one spurt of increase in 2006 and another in 2010. At this rate, nearly 93% of the villages may be grid connected by 2012.

**Table 2 : Progress in village electrification**

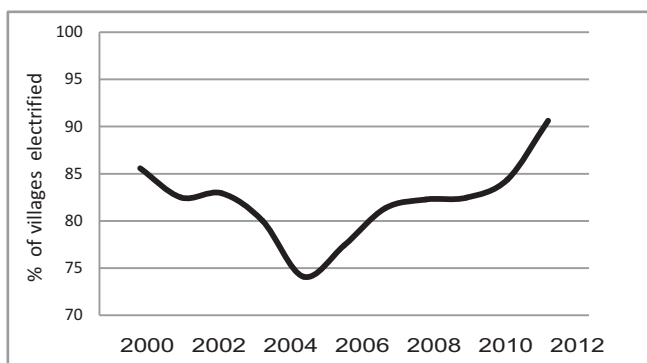
Year	No. of villages electrified	% of villages electrified
2001	508,043	85.6
2002	489,699	82.5
2003	492,325	82.9
2004	474,982	80.0
2005	439,800	74.1
2006	459,486	77.4
2007	482,864	81.3
2008	488,435	82.3
2009	489,527	82.4
2010	500,910	84.4
2011	537,947	90.6

Source: CEA Annual Reviews [CEA 2005-09] and Monthly Reports [CEA 2010-11]

<sup>9</sup> Chapter on DDG, India Infrastructure Report 2010, 3i Network



**Figure -1: Progress in all India village electrification**



Source: CEA Annual and Monthly reports [CEA 2005-11]

Table 3 tracks the progress in all India rural household electrification from 2005 to 2011. The first row gives the base line, 2005 status and plan. Subsequent rows give year-wise numbers and percentage figures for electrification of rural households, rural BPL households and rural APL households. Progress in BPL and APL household electrification is compared against the targets of 2.34 crore BPL and 5.46 crore APL rural households. It

can be seen that there is significant progress in rural household electrification after RGGVY, primarily due to BPL electrification, with 68.28% of the target met. It can be seen that the reported progress with APL household electrification is very slow (with only 2.68% of the target met), since they are expected to approach the distribution companies for connection. The number of APL household connection is zero in most States, except in MP, Maharashtra, Rajasthan and West Bengal<sup>10</sup>.

Figure 2 plots year-wise progress of all India rural household electrification. It can be seen the % electrification has grown by 12.5% in the last 6 years, but the growth has picked up from 2009, with annual growth rates of 5.8 and 4.6% in the last 2 years. But even assuming the current fast pace, it may take a decade to ensure universal access and that too only if drives similar to BPL connections are taken up for APL households too.

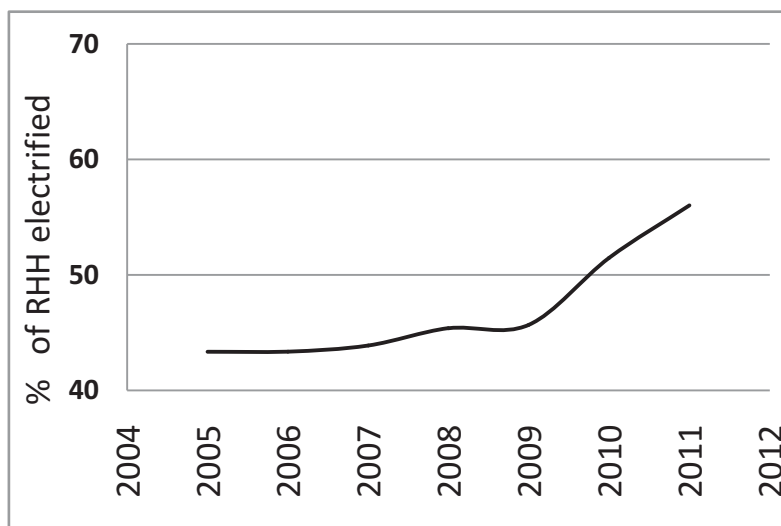
**Table 3 : Progress in all India rural household (RHH) electrification**

2005 Status Plan	RHH Cr	Electrified RHH %	RGGVY Target for BPL Rural HH Cr	RGGVY Target for APL Rural HH Cr		
	13.8	43.4	2.34	5.46		
Year	RHH electrified Cr	RHH electrified %	BPL HH electrified by RGGVY lakhs	% of BPL Target	APL HH electrified by RGGVY lakhs	% of APL Target
2005	5.97	43.4	0.0	0.00	0.0	0.00
2006	5.98	43.4	0.2	0.07	0.0	0.00
2007	6.05	43.9	7.1	3.02	0.0	0.10
2008	6.25	45.4	23.4	10.02	4.8	0.87
2009	6.30	45.7	26.7	11.39	5.6	1.03
2010	7.09	51.5	99.6	42.50	12.1	2.21
2011	7.72	56.0	159.8	68.28	14.6	2.68

Source: 2006 data from XI<sup>th</sup> Plan mid-term review [Planning Commission 2010]. Others from Parliamentary Committee Report [Loksabha 2009] and Bharat Nirman Website reports [Bharat Nirman 2011] accessed and stored.

<sup>10</sup> The data reported by RGGVY on APL connections may not be accurate, since many States add lakhs of household consumers every year. CEA General Review [CEA 2005-9] reports addition of 3.36 crore household consumers from 2005 to 2009. If one considers 60% of these to be rural, it amounts to addition of 2 crore rural household connections from 2005 to 2009. RGGVY reports indicate addition of 30 lakh rural household consumers till 2009 and 1.12 crores till 2010. Data from Census 2011, expected in 2012, may give reliable data on household connections.

**Figure 2 : Progress in all India rural household electrification**



Source: 2006 data from XI<sup>th</sup> Plan mid-term review [Planning Commission 2010]. Others from Parliamentary Committee Report [Loksabha 2009] and Bharat Nirman Website reports [Bharat Nirman 2011] accessed and stored.

### 3.2 State-wise progress

The all India progress hides the disparity across the States. Table 4 captures the state-wise changes in village and rural household electrification from 2005 to 2011. It also gives the total funds released by the central government (towards 90% subsidy and 10% loan) and percentage of villages in which franchisees are deployed. Goa, Delhi and other Union Territories are not included in this analysis.

This table is ordered in reverse order of fund allocation. It can be seen that 6 States with high funding (Bihar, UP, Jharkhand, Odisha, West Bengal and Assam) account for 65% of funds. The national increase in village electrification in this 6 year period is 17%, from 74 to 91%. States which have achieved progress in village electrification at or above this average rate are: Assam, Bihar, Chhattisgarh,

Jharkhand, J&K, Odisha, Rajasthan and UP. Increase in rural household electrification is 12.5%, from 43.4 to 56% and States which have made average or more progress are: AP, Assam, Bihar, Chhattisgarh, J&K, Karnataka, Odisha, Rajasthan, and Uttarakhand. Progress in rural household electrification has been low in Gujarat, MP, Kerala, Tamil Nadu and UP. It can be seen that 19% of the total villages are having some kind of franchisee. Franchisees have been formed in RGGVY and non RGGVY villages. In twelve States (including Bihar, Jharkhand and Odisha), there are no franchisees in RGGVY villages. It is interesting to see few States having more than the national average (19%) franchisees: AP, Bihar, Gujarat (91%), Haryana (91%), Karnataka (73%), Nagaland, UP and West Bengal.

**Table 4 : Progress in all India rural household electrification**

S. No	States	Village Electrification 2005 %	Village Electrification 2011 %	Villages having franchisees %	RHHE 2005 % (2001 census)	RHHE % 2011	Total amount Released till 2011 Cr
1	Bihar	51	78	21	5	19	3,575
2	Uttar Pradesh	58	88	20	20	24	3,273
3	Jharkhand	31	61	0	10	41	2,868
4	Odisha	55	76	18	19	52	2,841
5	West Bengal	85	100	35	20	33	2,113
6	Assam	17	96	17	17	30	1,814
7	Madhya Pradesh	96	97	1	62	68	1,153
8	Rajasthan	64	92	0	44	67	858
9	Andhra Pradesh	100	100	30	60	84	757
10	Chattisgarh	77	97	5	46	59	696
11	Karnataka	98	100	73	72	86	684
12	Uttarakhand	92	97	3	50	69	665
13	Jammu&Kashmir	98	98	0	10	41	662
14	Arunachal Pradesh	48	58	0	45	53	636
15	Maharashtra	86	98	10	65	75	529
16	Tamil Nadu	95	100	0	71	77	276
17	Himachal Pradesh*	97	100	0	75	77	270
18	Gujarat	99	100	91	72	86	255
19	Meghalaya	58	66	1	30	40	248
20	Mizoram	81	81	0	44	55	238
21	Manipur	82	86	0	53	56	217
22	Nagaland **	67	64	38	57	66	186
23	Haryana	100	100	92	94	95	156
24	Sikkim	94	94	0	75	83	132
25	Tripura	57	65	0	32	43	112
26	Kerala	100	100	0	66	66	63
27	Punjab	100	100	0	89	91	60
	<b>Total</b>	<b>74</b>	<b>91</b>	<b>19</b>	<b>43</b>	<b>56</b>	<b>25,335</b>

Source: Parliamentary Committee report [Loksabha 2009], Bharat Nirman Reports [Bharat Nirman 2011]

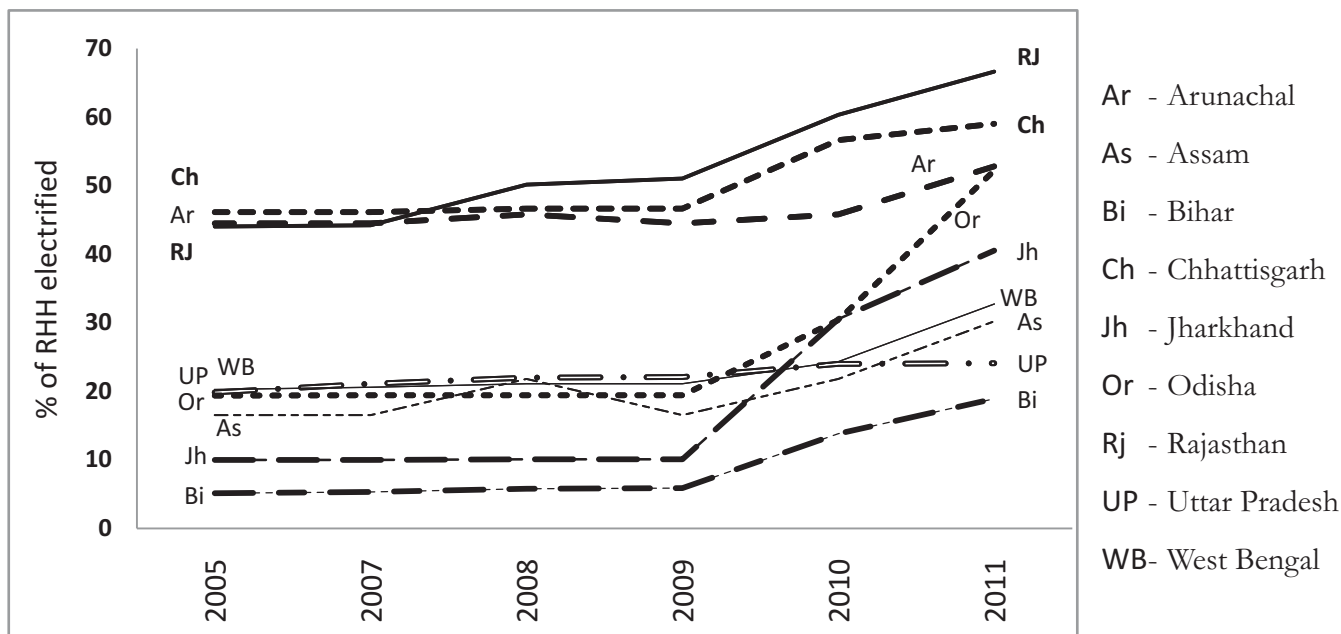
Notes: Census 2001 data has been used for total number of villages and rural households. Population increase and urban migration would change these, but that is not considered.

\*: For Himachal, 2006 data on village electrification has been taken since 2005 CEA data is very low at 68.3%, quite away from the trends of previous years.

\*\* : For Nagaland, the village electrification appears have reduced from 67 to 64% in 6 years. This could be due to data or village electrification definition issues

Figure 3 plots progress of state wise rural household electrification (%) in 9 states from 2005 to 2011. It can be seen that progress is high after 2009 and that it is not uniform across states.

**Figure 3: State wise progress of rural household electrification**



Source : Parliamentary Committee report [Loksabha 2009], Bharat Nirman Reports [Bharat Nirman 2011]

### 3.3 Aggregated analysis

The national picture hides major differences in the levels of village and household electrification across States and within the States, across regions. In 2001, only 5% of the rural households in Bihar were electrified. Figures for Jharkhand were 10%, Assam 17%, Odisha 19%, UP and West Bengal 20%. In terms of numbers, the three States of UP, Jharkhand and Bihar accounted for 65% of the un-electrified villages and 41% of the un-electrified households. If one adds Odisha, West Bengal and Assam to this list, these six states accounted for 82% of the un-electrified villages and 64% of the un-electrified households in the country. Low levels of household

electrification in States with high percentage of village electrification indicate the poor attention to household electrification. States like Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat and Maharashtra, which have achieved near complete village electrification more than a decade ago, had 30-40% un-electrified rural households. States like MP, Chhattisgarh and Rajasthan with more than 95% village electrification had 50-60% un-electrified households.

For aggregated analysis subsequent to RGGVY, we have grouped 27 States into 4 groups, using 2005 status of village and rural household electrification data, as shown in Table 5. The criteria we have

employed for dividing into groups are: a) a nominal boundary figure of three-fourth village electrification (close to the 2005 national average) & two-third rural household electrification and b) grouping small North East states together. Group-1 has states with below nominal village and household electrification, namely Bihar, Jharkhand, Odisha, Rajasthan and Uttar Pradesh (5 states). Group-2 has above nominal village electrification and below nominal rural household electrification. These states are: AP, Assam, Chhattisgarh, Kerala, Maharashtra, MP, Uttarakhand and West Bengal (8 states). Group-3 has above nominal village and rural household electrification. These states are: Gujarat, Haryana,

Himachal Pradesh, Jammu & Kashmir, Karnataka, Punjab, Sikkim and Tamil Nadu (8 states). All the small North East states (Assam is in Group-2) have been made into Group-4. These are: Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura (6 states).

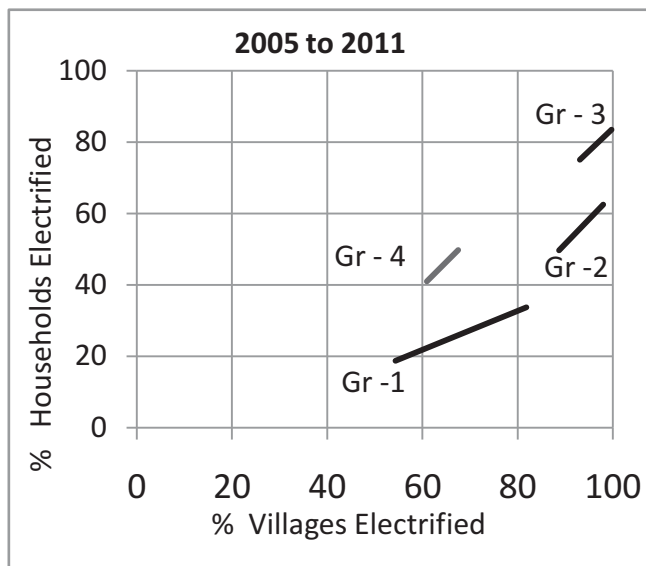
Details of groups are given in Table 5. It can be seen that Group-1 is the major group with 43% villages, 37% rural households and 44% funds. Group-2 is next with 37% villages, 41% rural households and 31% funds. Group-3 has 18% villages, 21% rural households and 19% funds. Group-4 is relatively small with 2% villages, 1% rural households and 6% funds.

**Table 5 : Grouping of States** (VE-Villages Electrified, RHHE-Rural Households Electrified)

Group Name	% VE range	% RHHE range	States	No of States	% Villages	% RHH	% Funds
Group-1	0-74	0-66	Bihar, Jharkhand, Odisha, Rajasthan, UP	5	43	37	44
Group-2	75-100	0-66	AP, Assam, Chattisgarh, Kerala, MP, Maharashtra, Uttarakhand, WB	8	37	41	31
Group-3	75-100	67-100	Gujarat, Haryana, Himachal, J&K, Karnataka, Punjab, Sikkim, TN	8	18	21	19
Group-4	Small North East States	Small North East States	Arunachal, Manipur, Meghalaya, Mizoram, Nagaland, Tripura	6	2	1	6

Source: Parliamentary Committee report [Loksabha 2009], Bharat Nirman Reports [Bharat Nirman 2011]

**Figure 4: Group wise progress of village and rural household electrification**



Source: Parliamentary Committee report [Loksabha 2009], Bharat Nirman Reports [Bharat Nirman 2011]

Figure 4 plots the village and household electrification status of the 4 groups in 2005 and 2011. From Figure 4, it can be seen that group-1 states have made significant progress after RGGVY, especially in village electrification. Village electrification has increased by 27% (as against the national average increase of 16%) and household electrification by 15% (national average is 12.5%) in this group. For such states, village electrification is indeed the first step. But the challenge is to complete the task and ensure quality electricity supply on the new network to sustain the electrification. Group-2 states have made moderate progress in village electrification (9% against national average of 16%) and average progress in household electrification (12.9% as against national average of 12.5%). Group-3 states (with 6.6% progress in village electrification and 8.4% progress in household electrification), have

understandably focussed on households. For these states, household electrification could also have been an exercise in legalising connections. Group-2 and Group-3 states have nearly achieved 100% village electrification. For Group-4 states, progress with village and household electrification has been below national average at 6.5% and 9% respectively.

We have not attempted to study the correlation of different factors which would have contributed to this progress in rural electrification and household connections. Factors would include: political support from the State; initiatives from State energy department and distribution companies; push by political leaders (like ministers, MLAs); demand from rural groups to speed up electrification; efficiency of implementation agencies; geo-climatic variations etc. Just as there are variations across States, there would be variations in progress across regions of the States. We have not attempted to study these.

### 3.4 Conclusions

This brief review of the progress in RGGVY shows that there has been good progress in quantitative terms. At the current pace, village electrification may reach target in a couple of years, though universal house hold access could take longer time. Progress with electrification of BPL households has been good with nearly 68% of the target met, but APL households have not come forward to take connections. Franchisee deployment has been slow in terms of numbers. It is seen that the pace of electrification has picked up from 2009 and that the progress is different across States.

## 4

### KEY ISSUES IN PLANNING, IMPLEMENTATION, AND SUSTAINABILITY OF RGGVY

Considering the political attention, ambitious targets and massive fund allocation, RGGVY is the most important rural electrification initiative. It also holds lot of promise to catalyse development by extending the reach of electricity. A program of such massive scale, implemented in a vast country like India, can be expected to have many short-comings. The objective of this critique is not to elaborate all the short-comings with a view to totally run it down. We have no intention of invoking all that could have been the “best” and thereby contributing to killing whatever is “good” in this program. But we do wish to place on the table many issues, to be considered by the governments (Central and State), regulators, distribution companies and civil society groups interested in the success of this program. By “success” we mean meeting targets, sustaining the electrification as well as creating good development impacts.

This public interest critique is based on a long term, pro-poor perspective. It looks at three broad areas of RGGVY – planning, implementation and sustainable operation. In each of these areas, different aspects are looked at, highlighting the current practices. Then we elaborate the implications of the current way of implementing RGGVY – both positive and not so positive. The final section 'Way forward' gives some suggestions.

#### 4.1 Area -1: Planning

This section examines different aspects of RGGVY planning – namely, the top-down approach, State plans, rigour of plan, watering down of commitments, quality monitoring plan and grid push. It can be seen that there are many limitations in the planning process, which have subsequently resulted in implementation and sustainability issues. It is not

correct to put all the blame on weak implementation for delays and problems.

##### a. Emphasis on top-down planning

RGGVY was designed and planned at the central government level, largely by the MoP and REC. It is not only the 90% of the funding that came from the central government but also the blue print of the whole program – targets, guidelines, involvement of CPSUs, managing the quality monitoring system, training etc. Perhaps this is a reflection of the perception of low capacity and credibility of State and local level institutions. States were expected to prepare comprehensive State rural electrification plans, but they were delayed with the first ones appearing in 2008 (see next section).

RGGVY planning is also characterised by a broad-brush approach and mission mode ambitious target driven implementation schedules. To cite a few examples: uniform estimates for village or household electrification; similar approach to franchisees across the country; or same target for universal access for all States.

##### b. Delayed State plans

All States were expected to prepare rural electrification plans within six months of notification of the national Rural Electrification Policy in August 2006. There was lot of delay in this with the first plans notified in 2008. As of December 2008, only 5 states (Gujarat, Tamil Nadu, West Bengal, Mizoram, & Nagaland) had notified plans and another five (Chhattisgarh, Haryana, Himachal Pradesh, Maharashtra & Punjab) had finalised plans [Loksabha 2009]. As of February 2011, thirteen States (AP, Bihar, Jharkhand, Haryana, J&K, Karnataka, Kerala, Manipur, Punjab, Rajasthan, Sikkim, Tripura and Uttarakhand) had not notified

their plans [MoPPG 2011]. Even today all State rural electrification plans are not available in the public domain.

The State rural electrification plans mostly based on a template prepared by MoP, give some details. A brief study of 3 State plans (Gujarat, Odisha and Maharashtra – GoG 2008, GoO 2009, GoM 2009), show that they give district-wise data of village and household electrification, including BPL households. They include the details of villages planned to be electrified through grid as well as stand-alone systems with MNRE support. There are detailed cost estimates and outline of other initiatives to strengthen rural distribution (like feeder separation, agriculture load management schemes, high voltage distribution system etc). The Odisha plan details the State scheme introduced in 2007, Biju Gram JyotiYojana, for electrifying hamlets with population less than 100<sup>11</sup>. The Maharashtra plan estimates the tariff impact of RGGVY implementation and finds it to be low at about 1 paise/Unit.

These State plans do not make sufficient efforts to customise the central guidelines on rural electrification to the local situation. For example, portions on franchisees are copied from general guidelines as prepared by the MoP. Statistics of different districts are given, but variation of approaches for rural electrification based on regional differences in the State is not attempted. There is also very little detail on the monitoring aspects.

### **c. Inadequate attention to detail and comprehensive approach**

It should have been clear at the very beginning that such an electrification program to be executed across the country would require massive preparation – technical, management and institutional.

While detailed technical specification for rural electrification has been prepared by REC, it has been reported that sufficient attention was not given to availability of person-power, contractors, material (poles, conductors, transformers etc), augmentation of sub-transmission system, land acquisition, availability of BPL lists, cultivation of agencies for taking up franchisees, training quality monitors at different levels or strengthening distribution companies for the increased rural operation & maintenance burden [Loksabha 2009, Sahani 2010, MoPPG 2011].

There are no details on the gearing up of distribution companies to cater to the large number of new rural small consumers. There are no details about enhancing the Operation & Maintenance (O&M) machinery of the distribution companies in terms of staff, spares, or fault repair systems. The existing rural distribution system is itself in a bad shape in terms of age; poor quality of equipment; obsolete database; overloading; low availability of qualified staff, spares & repair tools for fault repair and poor quality of service. For example, one has to depend on Census or NSSO data or sample surveys to understand key aspects of rural distribution like number of poor households electrified, hours of supply, consumption figures etc. The suggested silver bullet solution in RGGVY to address the rural O&M challenge is the development of franchisees. We return to this issue later.

RGGVY planning has not internalised the comprehensive idea of energy security described in the Integrated Energy Policy (IEP) document [Planning Commission 2006]. Chapter VIII of IEP states that energy security for the poor should go beyond providing energy for subsistence needs, and

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<sup>11</sup> Rajasthan also has a similar State supported plan



enhance livelihood opportunities. It also suggests redefining the scope of RGGVY to include electrification of all households, rather than providing connections to only BPL households and ensuring access to all households. It also recommends a policy that gives 30 units of electricity to each household as a matter of entitlement. The current plan of RGGVY does not incorporate these.

#### **d. Watering down of commitments**

It is sad to note the watering down of the commitments - of providing quality electricity supply to rural networks and of promoting economic activities.

On rural supply, the RGGVY Office Memorandum (2005) makes a bold commitment of equal treatment for rural and urban households: *“States must make adequate arrangements for supply of electricity and there should be no discrimination in the hours of supply between rural and urban households”*[MoP 2005]. The RGGVY continuation order (2008) reduces this to 6-8 hours of supply to be eligible for subsidy: *“Guarantee by State Government for a minimum daily supply of 6- 8 hours of electricity in the RGGVY network with the assurance of meeting any deficit in this context by supplying electricity at subsidized tariff as required under the Electricity Act, 2003”*[MoP 2008].

On economic activities, the 2005 Memo explicitly states that RGGVY infrastructure would support economic activities like agriculture, irrigation, small industry, khadi & village industry, cold chain, health care, education & IT to facilitate overall rural development, employment generation and poverty alleviation. This commitment is repeated in the August 2006 national Rural Electrification Policy. The 2008 order has a similar clause, but with a word “indirectly” added: *“Rural Electricity Distribution Backbone (REDB), Village Electricity Infrastructure (VEI)*

*and DDG would indirectly facilitate power requirement of agriculture and other activities ...”* (emphasis added) [MoP 2008].

#### **e. Weak and delayed quality monitoring plan**

One would think that for a program with high capital investment implemented all over the country, the quality monitoring mechanisms would be developed right at the beginning. The three tier quality monitoring system (described in section 2.3) was developed only in 2008 and invitation for expression of interest for National Quality Monitors was issued by MoP only in 2009. This mechanism, involving the implementation agency, Rural Electrification Corporation and the Ministry of Power is also far removed from the field of action. Plans to strengthen institutions at different levels (national, State, district and Panchayat) and from different areas (distribution, consultancy, regulation, civil society) to effectively play this role could have been better.

#### **f. High grid push**

It is to be noted that RGGVY has resulted in a high push for grid electricity as the only solution for electrification, perhaps at the cost of neglecting stand alone and grid interactive systems. The number of remote villages identified for stand-alone systems has been reducing over the years and now stands at 7700, as reported by MNRE. Progress in DDG has been slow. The present guidelines are suited for low capacity stand-alone systems and there are no provisions for guaranteed grid evacuation. Tariff subsidy support, spares support etc is assured for 5 years and it is not clear how the developer would manage after this period [World Bank 2010]. While it is true that grid extension has a significant role to play in rural electrification, an integrated approach with a mix of grid extension,

grid interactive and off-grid systems to meet the rural electricity requirements should be developed.

## 4.2 Area -2: Implementation

RGGVY implementation has many challenges, some of them having roots in planning. This section examines implementation aspects namely coordination challenge, quality monitoring and quality of construction.

### a. Co-ordination challenge

The number of agencies in RGGVY is indeed high – Central government agencies like MoP and REC for project approval, fund release and quality approval; Central Public Sector Units, which are implementing agencies in many States; State government for land, BPL lists, loan support (when required), revenue subsidy support, safety approval; distribution companies for implementation in some States and take over; Quality monitors for approvals; State and District Committees for progress review; Panchayats for certification; turn-key contractors; equipment suppliers, transporters and finally the consumers. Mechanisms to ensure coordination include: standardised procedures for project report preparation & approval; multi-party agreements signed by different actors; training programs at the initial stages of RGGVY and district & state level committees.

But reports indicate that coordination across these agencies has not been very good. As reported by the Parliamentary Committee and MoP, the state level coordination committees chaired by the Chief Secretary and district committees have not been very effective<sup>12</sup>.

### b. Weaknesses in quality monitoring

The website of the RGGVY, inaugurated in May 2008 (3 years after the programme started), provides a detailed status report up to the village level. This indeed has increased transparency, but it is not clear how close to field reality are these reports and how much are they used for monitoring. Authors had problems in accessing detailed reports on village electrification from the site. The public forum at the RGGVY website for feedback is a good facility, but the fact that there are only 100 entries in the last 34 months speaks for its effectiveness! Some responses are given within 1-2 months, but are often not very satisfactory.

Detailed reports by third party, REC or national quality monitors are not available for public review. Summary reports of third party inspection and REC quality monitors are available on the REC website, but they only give a statistical update on number of inspections, rejections etc. No report of national quality monitors is available. Hence it is not clear if the qualitative progress is satisfactory. From the list of third party monitors and RQMs available at the REC website, it can be seen that inspections are being held and a disturbing fact that implementation agencies like POWERGRID and NHPC are also playing the role of third party monitors. It is not clear if there are cases of poor implementation resulting in grant being converted to loan.

There are no participatory public processes to monitor progress at the State level. State level reports by State plan advisors of the Planning Commission do have some information and comments on

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<sup>12</sup> "... the Committee recommends that the role and responsibilities of State Coordination Committee/District Committee/State/State Utility may be clearly defined and necessary powers be given to them for effective implementation of RGGVY" Recommendation 13, Parliamentary Committee on RGGVY [Loksabha 2009]

RGGVY, but are mostly cursory in nature covering a few villages and reporting macro numbers<sup>13</sup>. Tariff submissions to regulatory commissions in few States and responses to few Parliament questions provide only some gross numbers about the progress in electrification.

There has been no detailed regulatory review of this program in any of the states. The national Rural Electrification Policy provides a mandate for the State Regulatory Commissions to ensure universal access, as suggested in the Electricity Act. *“Under proviso to Section 43 of the Electricity Act - 2003, the Appropriate Commission while giving additional time, if any, for discharge of the universal service obligations would ensure that the national goal of providing access to households by year 2009 is complied with”* [MoP 2006, Section 3.4].

There is a case of the Jharkhand Electricity Regulatory Commission (JERC) giving an order mandating Jharkhand State Electricity Board (JSEB) to provide universal access or pay compensation to those who have completed all formalities for new connections. This case was taken up on a suo-motto basis after JSEB issued a public notice in June 2007 saying that those who have applied for connection and cannot wait could take refund of the deposit, as JSEB is not able to provide connections. In this order, regulatory commission asked JSEB to withdraw the notice and provide a concrete time frame to provide universal access. (JERC order dated 11.01.2008, Case 20/2007). Regulatory review

should not be limited to progress in meeting electrification targets, but also on the quality of work, hours of supply, quality of service, proper use of central funds for rural electrification (i.e. ring fencing the funds) and impacts of rural electrification.

There are issues with local monitoring mechanisms. District committees are reportedly not functioning well to monitor the progress<sup>14</sup>. Role of Panchayati Raj Institutions has been low and social audit practices found in NREGA programs are unfortunately not present in RGGVY<sup>15</sup>.

### c. Issues with quality of construction

Shortcomings in quality monitoring can lead to poor quality of construction. There have been reports on transformer failure within days of installation; laying single phase 11 kV lines; installation of old distribution transformers; extension of lines from the existing distribution transformers (without enhancing capacity) to quickly meet the electrification targets and neglecting safety provisions [MoPPG 2011, Sahani 2010].

RGGVY projects were to be executed on a turn-key basis, but there have been reports of multiple levels of sub-contracting, which could be another reason for poor quality. The parliamentary committee [Loksabha 2009] notes: *“...the issue of contractor to sub-contractor is a very genuine problem”*. Or as stated by Jairam Ramesh, then Minister of State for Power in January 2009: *“It is shocking to find that everybody is keen on passing the buck, the central PSU like NHPC has engaged*

<sup>13</sup> Available at: <http://planningcommission.nic.in/reports/advstates/index.php?repts=advrep>, accessed on June 14, 2011. Most have updates up to 2009.

<sup>14</sup> “Though, all the 27 States participating under RGGVY have reported that notifications have been issued for setting up District level Committees, the meetings need to be more regular”, Ministry of Power to the Parliamentary Committee on RGGVY [Loksabha 2009]

<sup>15</sup> A recent initiative reported in March 2011 by Greenpeace India is the social audit of RGGVY in few villages of AP (Srikakulam district), Bihar (Madhubani and Saran), and UP (Azambag). See: <http://www.greenpeace.org/india/en/news/Greenpeace-invites-Bihar-government-to-witness-social-audit-of-RGGVY-scheme1/>. It is reported that public hearings and sample surveys were conducted in May 2011.

*a Kolkata based firm which in turn given contracts to as many as 30 contractors for RGGVY work in two districts of Orissa."*<sup>16</sup>

### **4.3 Area-3: Sustainable operation**

Sustainable operation appears to have received minimum attention from the planners and implementers. In the short run, a top-down, target driven approach has helped to get things moving. But in the long run, steps to strengthen other State organisations to gear up for the rural electrification are very important. If the state organisations (including state government, distribution companies, regulator, district committees, panchayats, potential franchisee operators and civil society organisations) do not own up the programme, there are bound to be problems, in sustaining the electrification.

This section examines aspects like ensuring power supply to RGGVY network, rural franchisee and revenue subsidy.

#### **a. Ensuring power supply and good quality of supply & service:**

Adequate, quality supply of power and good quality of service are important to sustain the RGGVY network. There are no indications to show that measures are being taken in a parallel fashion, to improve the quality of rural supply & service<sup>17</sup> RGGVY has indeed brought lines, transformers and service wires in rural areas, but the question remains if quality electricity supply has arrived.

#### **b. Limitations of rural franchisees**

The solution proposed in RGGVY to ensure quality of service in villages is rural franchisees. As mentioned before, there has been progress in

forming franchisees, but not in all RGGVY villages and there has not been much evaluation of their functioning, especially with respect to having a sustainable revenue model.

In 2007, REC had commissioned studies to evaluate the rural franchisee system. Reports were prepared by TERI and iRADE based on the study of franchisees in 6 districts of Assam, Karnataka, MP, Rajasthan and West Bengal [REC 2007]. The rural franchisee issue has also been discussed in a few workshops and meetings.

The REC commissioned evaluation reports note that there has been improvement in revenue collection, consumer base and quality of service. Areas for improvement include: transparency in franchisee selection; clarity in contract preparation & management; detailed baseline study of infrastructure, consumer base, loss levels etc; management support by distribution company by way of dedicated senior level staff and attention; capacity building programs for potential franchisees; increase in contract term from 2 years to 3-5 years. These reports as well as other analysts note that commercial viability is a tough or impossible proposition. It is perhaps necessary to develop franchisees over bigger area (rather than a DT, village or 11 kV feeder), with a good consumer mix to ensure operation without financial losses, if not profits. Response to public notices for taking up franchisees has been low. Some analysts<sup>18</sup> suggest a broader mandate of livelihood facilitation for the franchisees, rather than limiting to electrification. It is clear that this area needs more study. Rural franchisees are a key component of RGGVY. While targets of

<sup>16</sup> Reported in The Statesman, January 31, 2009

<sup>17</sup> Gujarat and Kerala may be the only states where the hours of supply in rural areas compare reasonably with that in urban areas

<sup>18</sup> These are from personal discussions with TL Sankar (ASCI) and M.Subbarao (Retired Managing Director, Uttarakhand Power Corporation)

establishing them have not been met, it is clear that there has been no success in establishing a sustainable revenue model in any State. There is a need to review the existing franchisee models and arrive at a workable solution<sup>19</sup>.

**c. Issues with revenue subsidy from the State government**

With the increase in rural electrification, the number of poor consumers with tariff less than the cost of supply would go up. Anticipating this, RGGVY order notes that “*prior commitment is to be taken from the State governments for providing the requisite revenue subsidy*” [MoP 2005]. Few State governments have been responsive to providing revenue subsidy, while there have been problems in other States<sup>20</sup>

For example, see: Electricity Reforms and Regulations -A Critical Review of Last 10 Years' Experience, Ajay Pandey, Sebastian Morris (IIM Ahmadabad) for the Forum of Regulators, 2009. This has been about the amount of subsidy as well as timely disbursal of the committed amount. There is also the challenge of ensuring that the revenue subsidy is utilised for the stated purpose of supplying electricity to the poor households. A related issue is the possible increase in aggregate technical & commercial losses, especially if the distribution system management is poor. Correct estimation of revenue subsidy, timely disbursement and ensuring that it is targeted well needs good metering, accounting and management practices.

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<sup>19</sup> For example, the Parliamentary Committee on RGGVY recommends: “The Committee, therefore, recommend that Ministry should review all aspects of development of franchisee system based on feedback obtained from functioning and performance of various models of franchisees and necessary re-modelling of the franchisee system should be undertaken in order to make it more effective.” [Loksabha 2009]

<sup>20</sup> For example, see: Electricity Reforms and Regulations -A Critical Review of Last 10 Years' Experience, Ajay Pandey, Sebastian Morris (IIM Ahmadabad) for the Forum of Regulators, 2009

# 5

## CONTINUING CHALLENGES AND THE NEED FOR MID-COURSE CORRECTION

As pointed out in the previous section, the current approach followed in planning, implementation and sustainable operation has challenges and shortcomings. It is worthwhile to examine the possible outcomes of this approach, thereby developing a case for mid-course correction.

### 5.1 Build-up of a massive rural electricity infrastructure

One positive outcome of this effort is that a massive rural electricity infrastructure with distribution substations, 11 kV lines, distribution transformers and LT network would cover most of the country. After years of stagnation, the last 6 years have witnessed allocation of funds and implementation support to ensure this. In a few years, almost all villages would be grid connected. The top down target driven macro planning, without getting caught up in details, has helped to break the deadlock of stagnating rural electrification, at least in the short-run.

### 5.2 Rise in rural household electrification

Another positive outcome is the significant increase in rural household connections across the country. It is currently limited to BPL households, but with the infrastructure in place, it is possible to extend this to APL households also. The success of RGGVY has been much better than the previous initiatives.

### 5.3 Target will not be met

Six years into the program and just 1 year away from the target year of 2012, it is evident that universal household access and minimum supply of 1 unit/household/day will not be met. There have been delays in electrification, operationalising franchisees (operational only in 19% of the total villages in 16 states with around 95% of them being revenue collection franchisees), ensuring quality

power and starting up DDGs. It is true that there has been progress in village electrification (91% electrified now) and giving connections to BPL households (68% of the target met). But the overall rural household electrification has gone up only by 13% from 43% to 56%. APL households are expected to approach distribution companies for connection and progress in this has been slow. The reported progress on APL connection is very poor with only 15 lakh household connected in the last 6 years. This is just 3% of the total APL target of 5.5 crores. As noted in sections 3.2 and 3.3, progress has been different in different states. There is a need to fine tune the strategy based on experience gained so far.

There is also the issue of electrification of small habitations. As mentioned in RGGVY overview (section 2.1) the initial plan was to electrify habitations with population more than 300 and this limit was changed in 2008 to 100. Progress in habitations with 100-300 population has been slow and work in those with less than 100 habitations is yet to pick up, except in States which have a separate program for these.

Delays have been due to numerous reasons: poor coordination across the multiple actors; low attention by state government or distribution companies; shortage in material or person-power; problems with right of way, non-availability of BPL lists, safety inspection and take over by Distribution Company etc. Parliamentary Committee mentions many of these and the mid-term review of the XIth plan [Planning Commission 2010] notes that “Non-availability of adequate sub-transmission system in States like Bihar, Jharkhand and Orissa would delay the implementation of the scheme”. The Parliamentary Committee report notes that in 2009,

only 57% of the electrified villages had received Panchayat certification. As per the RGGVY status report of January 15, 2011, of the total villages in which electrification was undertaken, only 42% were certified by the Gram Panchayats. Of the around 90,000 newly electrified villages, 80% were energised and 70% handed over to distribution companies [Bharat Nirman 2011].

There have been strong early warnings of the slow progress of RGGVY in the parliamentary committee report<sup>21</sup>[Loksabha 2009], parliamentary questions and press reports. Recent reports by CAG in Maharashtra and Karnataka have said that these states cannot meet the target of power for all by 2012, due to generation capacity planning and management problems<sup>22</sup>. It is not clear what steps are being taken to speed up the program.

#### **5.4 Cost over-run and associated delays**

The cost estimates for village and household electrification prepared in 2005 when RGGVY started were revised upwards by nearly two times in 2008, when the RGGVY continuation order was issued. In 2005, estimates for electrification were: Rs.6.5 lakhs/village and Rs.1500/household [MoP 2005]. This was revised to Rs.13 lakhs/village (Rs.18 lakhs for hilly terrain) and Rs.2200/household in 2008 [MoP 2008]. As mentioned in Section 2.2, the total cost estimates varied from Rs.16,000 crores

(2005) , to Rs.36,667 crores (2008) to Rs.52,000 Crores (2009). Some upward revision is understandable, but it would have been better if realistic estimates based on the ground situation were made in the beginning. Projects sanctioned before cost revision are based on the first estimates and some are reportedly having problems<sup>23</sup>.

The cost estimates may go up further and delays in sanction could lead to delays in implementation. For example, there was also nearly a year gap between end of X<sup>th</sup> plan (March 2007) and sanction of amount in XI<sup>th</sup> plan in September 2008. This resulted in slowing down of work in 2007-8, as noted by the Ministry of Power<sup>24</sup>.

#### **5.5 Sub-optimal and poor quality rural network**

Limitations of quality monitoring could lead to sub-optimal and poor quality of construction. This would lead to poor quality of supply and high operation & maintenance burden on the distribution companies.

#### **5.6 Doubts on rural consumers getting adequate quality electricity**

Even with the watering down of commitments (section 4.1), RGGVY network is expected to get 6-8 hours of power supply. But this may not be achieved, due to generation shortages and poor quality of supply & service.

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<sup>21</sup> Parliamentary Committee on RGGVY (2009) recommends: "At this backdrop, the Committee are deeply concerned to note that the Ministry have lost sight of their target of 100 per cent rural electrification due to unrealistic planning and poor programme implementation capacity. The Committee, while deploring the poor implementation of the RGGVY, expect the Ministry to review all aspects of implementation of RGGVY, to make realistic planning in future and to speed up the pace of implementation of the programme." [Loksabha 2009]

<sup>22</sup> DNA report (21/4/11) on Maharashtra and UNI report (15/3/11) on Karnataka

<sup>23</sup> Ministry of Power has reportedly requested States to pick up the difference in cost [Loksabha 2009]

<sup>24</sup> From the Parliamentary Committee report (2.7.16), as stated by Secretary – MoP: "...Unfortunately there was a gap for about a year between two sanctions. So, the activity came down."

RGGVY (along with high economic growth of course) is often cited as the justification for the current ambitious generation capacity addition plans, which aim to double the capacity in a decade. But it is tough to come across the details of additional generation capacity required to meet the RGGVY needs. The available estimates project a low figure of around 20,000 MW for the country, just 12% of the current installed capacity<sup>25</sup>. Of course it appears that this estimate is only for household electrification and the requirement for economic activities is not considered<sup>26</sup>. 20,000 MW, the generation needed to energise rural households is not high, but it is clear that without explicit provision of reserving cheap capacity for rural households, they will not get quality electricity supply. RGGVY planning has not addressed this aspect.

The Box “Has power come to villages?” based on some rural survey reports indicate that actual hours of rural supply vary from 2 – 10 hours (often not when it is most needed) and it takes weeks to repair failed distribution transformers. It is near impossible to depend on electricity to pursue any economic activity in a sustainable fashion. In fact, it is worth considering further refinement of the definition for village electrification with specifications for

minimum hours and appropriate periods of electricity supply.

### 5.7 Risk of de-electrification

The risk of de-electrification is high, if the network has many maintenance issues due to sub-optimal and poor quality of construction; if adequate electricity supply is not provided to consumers; or if the economic activities do not pick up, leading to increase in paying capacity of the rural population.

It is doubtful if the large number of BPL households connected under RGGVY will remain as legal consumers. Problems with high bills, poor metering & billing or bad quality of service can make them non consumers once again<sup>27</sup>. Measures like timely disbursement of State subsidies to distribution companies, improved BPL tariff schemes, innovations like load limiters to simplify metering low consumption households, third party audit of metering & billing etc are essential to retain these new consumers. It is also important to have connection drive to improve the APL connections<sup>28</sup>. APL households and commercial consumers (supported by parallel initiatives in coordination with other departments to enhance economic activity in RGGVY villages) can help to improve tariff revenue

<sup>25</sup> This is from 3 sources: a) the draft State rural electrification plan prepared by MoP gives 50W as the connected load for BPL household and 500 W for APL. With this, one gets a generation capacity requirement of 29,000 MW; b) Presentation by K Vidyasagar (ED, REC) at the meeting of the South Asian Forum of Infrastructure Regulators (2007), which mentions minimum of 20,000 MW for RGGVY needs and c) Vijay Modi [Modi 2005] mentions 100W as connected load for a household to consume 1 Unit/day and doubles this to calculate the required generation capacity. This gives a figure of 16,000 MW

<sup>26</sup> Prayas had estimated that energy generation of one UMPP (4000 MW) would be sufficient to make 100 backward districts load shedding free for LT consumers [Prayas 2010]. The point to note is that capacity availability is not the main challenge, but giving priority to rural supply is.

<sup>27</sup> The mid-term review of XIth plan notes: “It is important that household electrified under the scheme should also get energised at the earliest so as to avoid de-electrification of infrastructure created under the scheme” [Planning Commission 2010]. A Prayas field survey in 2007, in one sub-division in tribal Maharashtra had shown that nearly half the households which had connections were permanently disconnected due to various reasons [Prayas 2009].

<sup>28</sup> Business Standard (31/03/2011) reports an interesting initiative in West Bengal. The connection charges have been reduced by one-fourth to one-tenth and in February 2011, 7.5 lakh consumers mostly from rural areas across the state applied for connections.



## Box 2 : Lines yes, lights no: has power come to villages?

There has been growth in supply, grid and technical strengths in the electricity sector, but the neglect of rural areas in receiving electricity, the high quality energy resource, has not changed over the years. The absence of any strong lobbying force (except farmers with electricity powered wells), has not helped. There is shortage of reliable quantitative data to elaborate the poor quality of supply and service in the rural areas (hours of supply, consumption pattern, time of supply, feeder & DT failure rates, time to repair, availability of up-to-date database of consumers, fault repair staff, tools, spares). In fact lack of data itself is a part of the neglect -reports by the distribution companies or CEA on quality of supply are often limited to urban feeders and consumers. The few accessible sample surveys and anecdotal evidence indicate that power has not reached most villages to significantly transform quality of life and income generation. Lines may have reached many villages, but not light.

The quantum of electricity that reaches the villages is low. Even though 70% of the population lives in villages, they consume only 40% of the total household electricity consumption (Derived from NSS 55th Round, (July 1999- June 2000 data, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India). The average hours of electricity supply available to rural households is about 6 hours, though it could be as low as 2 hours or high as 22 hours depending on the State and the season. The time of this supply is most often during the afternoons and nights; rarely during morning or evening hours, when it is most needed. Flicker and low voltages are common, because of which tube-lights or CFLs do not work or fail frequently. Very often only single phase supply is available, which is sufficient only for small residential equipment. Power interruptions are high – due to faults (especially during rainy season) or load shedding (especially during summer and which is highly unpredictable). When there is an interruption, due to a problem with the distribution line or the transformer, it takes long time to restore supply. The Standards of Performance prepared by all States specify 48 hours as the upper limit for repair of rural distribution transformers. As against this, many distribution company reports and field surveys indicate 7 to 10 days for repair of distribution transformers. If there is no initiative from the villagers, this period is much longer. There are also many problems relating to metering, billing and payment. This includes: issue of wrong or average bills, delays in issue of bills; delay in correction of wrong bills and poor access of payment centres.

In many states, rural supply is linked to agriculture power supply, which is restricted to 7-9 hours in a day during off-peak hours. Surveys indicate that for 50-100 days in a year, there may be no electricity supply at all in the villages. No wonder that it is near impossible to depend on grid electricity to pursue any economic activity in a sustainable fashion. Some sources report that around 50,000 villages are powered by diesel generating sets (often with a distribution network and billing mechanism) and there are around 40-50 lakh diesel pumpsets in the country.

Some of these surveys were conducted before RGGVY, but there are no indications that quality of supply has significantly improved. The surveys conducted in Maharashtra & Haryana by TERI in 2009 (World Bank 2009) as well as the public hearings & sample surveys on RGGVY conducted by Greenpeace in May 2011 in AP, UP and Bihar also report similar problems. This includes low awareness of RGGVY, households having to pay for connections, low hours of power supply leading to continued use of kerosene and low economic activities (Greenpeace 2011). In fact, it is worth considering further refinement of the definition for village electrification with specifications for minimum hours, appropriate time periods and minimum quality standards of supply.

Sources: Lele 2004, Modi 2005, Greenpeace 2009, Greenpeace 2011, Oda 2010, Vasudha 2010, World Bank 2010

and thus support sustainability. The issue of low power availability for rural areas could be addressed through a dedicated UMPP or dedicated cheap generation options [Prayas 2010].

The newly created rural network is expected to be managed by the distribution companies or through franchisees with help of Panchayats. But there are miles to go before distribution companies and Panchayats gear up to manage rural systems or capable franchisees appear in the rural scene. It is quite important to explore alternates to small rural franchisees, which are projected as the one solution to improve quality of supply, but are unlikely to be sustainable. Either the distribution companies have to be incentivised and equipped to manage the rural distribution or alternates have to be found.

## 5.8 Doubts on catalysing rural transformation

Planning for just 6-8 hours of power supply, not having any specific initiatives to connect the APL households and weak emphasis on promoting economic activities create doubts on RGGVY catalysing rural transformation. Quality electricity access to improve quality of life and productive use of electricity - both leading to rural transformation - should be the emphasis of such a program - not just electrification. Weak rigor in planning and watering down of commitments makes one wonder if development of rural electricity infrastructure to cater to economic activities and for rural transformation were really intended by the RGGVY planners. A note prepared for the Chief Secretary's

meeting [MoPPG 2011) and the Lok Sabha Standing Committee on Energy [Lok Sabha 2007] raise the concern about the neglect of economic activities under RGGVY<sup>29</sup>.

No wonder a newspaper article by former senior MoP official notes: “*Urban India is now achieving double-digit growth rates with increasingly productive engagement and integration with the global economy. In the absence of electricity in our villages, economic activity has to be necessarily confined to the pre-industrial era.*” [Ajay Shankar 2010]

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<sup>29</sup> From Lok Sabha 2007: “The Committee strongly feels that rural electrification means not only electrification of households and villages but also catering to the needs of farmers and small scale industries which are the backbone of the rural economy. However, this aspect seems to have been ignored by the Government as no mention has been made about achievements in this regard under RGGVY. The Committee, therefore, recommend that in addition of electrification of households, electricity for agriculture and industrial activities should also be given due importance under RGGVY”.

# 6

## WAY FORWARD

Rural electrification is indeed a complex challenge in terms of planning, implementation and sustainable operation. RGGVY, the massive effort towards a quantum jump in the Indian rural electrification landscape, shares all these. Six years into the program, it has many achievements to its credit as well as short-comings. It also holds the promise that the high capital and human resource investment could result in rural transformation and not just grid extension. Many steps could be considered to enhance the chances of keeping this promise. One set of steps are fundamental in nature, at the macro, long term level and second set of steps are at the operational, mid-term level.

One fundamental step is questioning the wisdom of the top-down, 'one size fits all' approach that was followed in RGGVY, as opposed to letting States evolve their own strategies with the central government limiting its role to capital subsidy and technical support. Other such steps include incentivising distribution companies for better rural supply; exploring institutional alternatives to small rural franchisees; evolving policy & institutional measures to make grid based, grid interactive & off grid systems operate in a complimentary fashion; making long term provision for capital & revenue subsidy to support rural electrification; improving the definition of village electrification to include minimum hours of supply in a day & days in a year, electrification of vulnerable sections, minimum economic use etc; democratising governance by promoting informed participation of the rural poor; and planning parallel rural development activities consonant with rural electrification. These are no doubt crucial and need to be debated to evolve innovative workable solutions. But this would require wide consultations,

building institutional capacities, would take time and hence are not elaborated now.

The second set of steps, which are operational in nature, are easier to implement in the current framework and could result in immediate improvements. These are important since under RGGVY, a lot of work has already happened and money spent. But the work is not complete, all projects have not been handed over and only half the estimated amount has been spent. Hence it is not too late to make amends to ensure that rural electrification is also achieved, instead of just grid extension.

### 6.1 Suggestions

Suggestions on a few immediate steps are elaborated here. For some of these, we have built on ideas from an earlier Prayas paper, "Ten ideas towards electricity for all" [Prayas 2010]. Suggestions are organised under three sections – one time initiatives; process or policy shifts and governance measures.

#### a One time initiatives

##### **Ensuring the quality of rural network**

Making public the detailed third party quality monitoring reports, prepared by different quality monitoring agencies would increase accountability. Encouraging local community organisations to take up social audit of RGGVY scheme would put pressure on the implementation agencies to ensure quality of construction. State governments could take the lead in this along with distribution companies, enlisting support from district and village organisations as well as civil society groups. Local organisations, NGOs, Gram Panchayats etc should be trained and empowered to conduct social audits.

### **Strengthening the quality monitoring mechanism**

The quality monitoring reports could be made public and the RGGVY website improved to enhance accountability. Updated status at the village level should be available and public encouraged to monitor the website and give feedback. This could put pressure on all actors to improve the implementation of RGGVY

### **Organising connection drives for APL households**

As mentioned in the section on RGGVY progress, RGGVY would at best result in extending electrical connection to a large number of BPL households. Since universal access is any way the target, it is essential that distribution companies take up proactive connection drives (like the 100 x 100 drive, where all households within 100 meters of the power line are connected, as mentioned in Prayas 2010), to ensure that all APL households also avail electricity connection. This is the only way to raise the APL household connection numbers. This would also help to reduce losses (due to illegal connections or theft), increase revenue and help in better planning of distribution infrastructure.

### **Improving tariff schemes for the poor**

Every State should be having a separate tariff category for BPL households, and it should be ensured that all BPL households are covered. This category should have a low tariff (as indicated in National Electricity Policy) and the tariff should not have any fixed or minimum charges (which often become a source of problems). The energy consumption limit for this category (typically 30 units/month in most states) could be reviewed and the inclusion in BPL category decided based on annual consumption (and not monthly, which often causes problems during festivals or family events). Use of load limiters (as suggested in National Tariff

Policy) could be considered for such small consumers. Until the rural quality of supply & service improves, there is a strong case to have a low tariff for rural consumers, though this should not become an excuse to never improve rural quality of supply & service.

### **b Process and policy shifts**

#### **Adequate and quality power to RGGVY network**

It has been mentioned that generation shortage and poor operation & maintenance would result in the RGGVY network remaining power-less most of the time. Measures should be taken to ensure quality adequate power supply, especially during evening hours. It is important to reserve cheap generation capacity to serve the RGGVY network, especially in states where the consumer base has significantly grown due to RGGVY. This could be cheap hydro power, un-allocated central power or dedicated ultra power project. MoP could work with distribution companies for planning and implementation.

Consumer groups should be encouraged to monitor quality of supply and service by using innovative devices which could automatically record presence of power supply. Distribution companies should publish rural power quality reports including hourly 11 kV feeder data, distribution transformer failure data etc. Considering the shortages, load shedding protocols should be developed through participatory regulatory process, to make load shedding transparent and predictable. Long term measures to improve the quality of supply & service include ensuring dedicated rural wings for distribution companies and ideas like separation of agriculture feeders.

#### **Improving the metering & billing system**

One of the main reasons why poor consumers get

disconnected is problem with metering and billing. Metering & billing a large number of rural consumers spread over a large area with low consumer density is a big challenge for the distribution company. Innovations like use of load limiters for small consumers (where consumer is charged based on the connected load, which is automatically limited by using load limiters), photo-metering (where a photo of the meter with reading is printed on the consumer bill), third party audit of metering & billing systems are some measures for improvement.

### **Taking steps to make RGGVY network cater to productive loads**

Integrated Energy Policy, Loksabha Standing Committee on Energy and many other reviews mention the importance of RGGVY network catering to productive loads like agriculture. There is no doubt that this is crucial to rural transformation. Adequate infrastructure (lines, transformers etc) and three phase power supply for reasonable hours are required to cater to productive loads. If required, States and Distribution Companies should be given support to augment the system to increase the coverage of such loads. RGGVY reports should be modified to include progress in catering to productive loads.

### **c Governance measures**

#### **State level reviews of RGGVY**

Even if the funds and technical support are from the central government, the state distribution companies are expected to take over and maintain the network. The complexities of implementation vary from state to state. Considering this, it is crucial that transparent reviews with scope for public participation are organised at the state level, preferably by the State Electricity Regulatory

Commissions. Prudence of investment and good outcome should be the interest of Ministry of Power. MoP could provide the required policy clarity (in addition to the rural electrification policy provision mentioned in section 4.2b of this paper) and mandate to State Regulatory Commissions to initiate such reviews, which could cover the quantitative & qualitative progress; functioning of franchisees; issues of rural power supply; prudence of investment in substations, lines, distribution transformers and household electrification; safety aspects; functioning of district committees & State coordination committee etc. Forum of Regulators could provide a framework for review.

#### **National review of RGGVY**

State level reviews should feed into national reviews by Ministry of Power or the Planning Commission, which could undertake a national review of RGGVY. Independent surveys and studies should be organised at the national level. These could cover pattern of household connection, transaction costs for getting a connection (even when it is supposed to be free), actual cost/ connection, causes of delays (political ownership, coordination issues, role of pressure from grass root etc), cost/ km of network, electricity availability, use, impact, growth of small enterprises, linkages between electrification & overall development, innovations (on metering, supply monitoring, rural distribution management etc), comparative study of franchisees, sustainability of the electrified network etc. These could be undertaken by utilising the 1% fund of Rs.160 crores in RGGVY.

CEA and Forum of Regulators publish State-wise status of implementation of the provisions of National Electricity Policy and Tariff Policy<sup>30</sup>. Similar reports could be prepared with respect to

Rural Electrification Policy. Performance parameters with respect to rural electrification and rural supply could also be used to rate Distribution Companies.

## **6.2 Conclusion**

This paper has given a broad overview of RGGVY, reported the progress till March 2011 and developed a critique, elaborating the challenges towards turning RGGVY into a rural electrification program, rather than limiting it to grid extension. The final section has outlined some corrective steps for mid-course correction. Some of these are long term measures and some are mid-term. We hope that Central & State governments, Ministries, Planning Commission, Regulators, Distribution Companies and civil society organisations would immediately take up the mid-term measures and initiate discussion on the long term ones. This would also help to initiate corrective steps during the XII<sup>th</sup> five-year plan.

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<sup>30</sup> CEA has prepared such reports for 2011 and Forum of Regulators for 2007-8

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2. Electricity for all: Ten ideas towards turning rhetoric into reality, Prayas 2010
3. Need to realign India's national solar mission, Economic & Political Weekly, 20/03/2010
4. An overview of Indian Energy Trends: Low Carbon Growth and Development Challenges, Prayas, 2009
5. Review of the Distribution Franchisee model implemented by MSEDCL in the Bhiwandi circle, Prayas, 2009
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26. The Enron Controversy: Techno-Economic Analysis and Policy Implications, Prayas Monograph, 1995
27. Power Purchase Agreement (PPA) Between Dabhol Power Company and Maharashtra State Electricity Board: Structure and Implications, Economic and Political Weekly, June 17, 1995

Apart from these publications and many workshops, Prayas has been participating in the Power sector activities through several committees. This includes:

- Member: CERC Advisory Committee (from 1998), MERC State Advisory Committee (from 1999), APERC State Advisory Committee (from 2007)
- Member: Steering Committee on Energy for 12<sup>th</sup> Five year Plan (Planning Commission), Working Group on Power for 12<sup>th</sup> Five year Plan (2011), Working Group on Power for 11<sup>th</sup> Five year plan (2007), Energy Study Group, Government of Maharashtra for the preparation of power component of State's 11<sup>th</sup> Five year plan, (2007-8)
- Member, Planning Commission Expert Group on Strategy for a Low Carbon Economy ( 2010)
- Member, The National Mission on Enhancing Energy Efficiency - NMEEE,(2008)
- Member, Supreme Court Committee on Municipal Solid Waste (2006)

# Rajiv Gandhi Rural Electrification Program

## *Urgent Need for Mid-course Correction*

Discussion Paper by Prayas Energy Group

Rajiv Gandhi Rural Electrification Program or Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), inaugurated in 2005, is one of the flagship rural infrastructure programs of the Central Government in the tenth and eleventh 5-year plans. With a capital subsidy of Rs. 33,000 crores, RGGVY is the biggest rural electrification program in the country. This subsidy is no doubt large in absolute terms, but is comparable to the subsidy for urban distribution improvement or the promotion of just 2500 MW of solar power.

RGGVY is being implemented in nearly all districts and in half the villages of the country. Reports indicate significant achievements of connecting 96,000 villages and 1.75 crore households (amounting to 1 out of 5 un-electrified Indian households) to the grid. But the target of 'Electricity for all by 2012' is far from being met.

This paper presents a public interest critique of RGGVY so as to identify the challenges and weaknesses. It gives an overview of the rural electrification initiatives before RGGVY, introduces the main features of the RGGVY program and the reported progress. Although there has been significant progress in grid extension and household connections, questions on the quality of work and power supply, sustainability of the infrastructure and contribution to rural development remain. This paper identifies possible mid-course corrections for meeting the targets and sustaining the electrification.



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**Prayas Energy Group**