

# Failed Aspirations

## An inside view of the RGGVY

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## Executive Summary

India, a rapidly emerging economy with the world's second largest population, is facing a surging demand for energy. Almost 60 per cent of the country's total population, which is 114 million households, lives in rural India. There has always been a big question how to provide access and steady supply of energy to this large section of the society.

The current challenges facing the electricity sector in India can be summed up as: a) access to electricity for rural and urban poor, b) generation capacity that cannot meet peak demand and c) reliability of supply, in terms of predictability of outages and quality of power supply<sup>1</sup>. The central government also recognizes that the current state of energy services could significantly impede India's economic growth on a national scale.

In 2005 the government of India initiated the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) or Rajiv Gandhi Rural Electrification Scheme to bridge the urban-rural gap and provide reliable and quality power supply to rural areas. A flagship programme of Ministry of Power (MoP), the scheme aimed to accelerate the pace of rural electrification in the country. The scheme, under the National Common Minimum Programme (NCMP), targeted to provide access to electricity to all households by 2010. In 2009, the date was extended to 2012. However, this too, is not being achieved. Considering the slow pace of implementation, the government is now planning to extend it to the next Five Year Plan (2012-17).

The scheme has focused mainly on the development and extension of the centralised grid system for rural areas. This, however, has been far from successful. Moreover, a faulty definition of "village electrification" has diluted the scheme's aim significantly. According to state-wise data available on the RGGVY website, the provision of free electricity connection to all "below poverty line (BPL)" households has not materialised in most states of the country. While it has been easy to certify villages as being electrified by the establishment of rural feeders, distribution lines and transformers under the RGGVY, household electrification (APL and BPL) has proved to be a challenge.

The scheme has failed to effectively implement and scale up the Decentralised Distributed Generation (DDG) system, which has the potential to supply reliable and localised electricity. The limitation is that the issue of enhancing "access to electricity" (which has an infrastructure as well as a service quality dimension) is not being addressed and instead only creation of infrastructure for rural electrification is being catered to<sup>2</sup>.

To understand the socio-economic impacts of the RGVVY and aspirations of rural India with regard to electricity, Greenpeace along with local civil society partners conducted independent social audits in the states of Andhra Pradesh, Bihar and Uttar Pradesh. Comprehensive surveys and awareness meetings were conducted in 31 villages of the aforementioned states. During the survey case studies investigating people's perception of the scheme, the impact of the scheme on their lives and their aspirations with regards to electricity, were documented.

The survey results were then shared and discussed in 4 public hearings across these states in which key stake holders were involved. The recommendations from the public hearings were then taken forward through regional consultations in Bihar and Uttar Pradesh, followed by a national consultation in New Delhi. The consultations were attended by representatives from implementing agencies, local government agencies, Ministry of Power, Planning Commission representatives and key civil society groups. The aim was to understand which improvements were needed in the RGGVY to make it stronger in the next Five Year Plan.

The results of this extensive process clearly indicated the need for a serious review of the current scheme. The beneficiaries have been disappointed with unreliable electricity supply, which was due to bad implementation combined with low awareness about the scheme.

There was an overwhelming demand to incorporate in the scheme a support system for the overall development of the village economy, in the form of an assured supply for irrigation and micro-enterprises. Another need highlighted was to involve local agencies such as Panchayati Raj Institutions (PRIs), NGOs

<sup>1</sup>Modi V (2005) Improving Electricity Services in Rural India- An initial assessment of recent initiatives and some recommendations. Working Paper No 30, Centre on Globalisation and Sustainable Development, The Earth Institute at Columbia University.

<sup>2</sup>South Asia Energy Unit (2010). Empowering Rural India: Expanding Electricity Access by Mobilizing Local Resources. Sustainable Development Department, The World Bank.

etc. for ensuring speedy implementation and close monitoring of the scheme. People were also in favour of institutionalising the social audit component in the scheme to enhance accountability and to strengthen the implementation system, besides providing a platform to voice their needs and aspirations.

The report also underlines the awareness and perceptions of households with regard to the centralised electricity system, which has failed them time and again. The public hearings saw an extensive demand from the electricity department to be more attentive towards rural needs. In the regional consultations, utilities (distribution companies) expressed constraints on resources with extensive grid spread and lack of resources to tackle the same.

Finally, alternatives to ensure electricity supply, when they needed it most, were proposed in the form of Decentralise Distributed Generation (DDG) or Decentralised Renewable Energy for more reliable supply and more active local participation. While people in Bihar and Uttar Pradesh have seen successful DDG projects providing quality and reliable electricity, demand for DDG in Andhra Pradesh was based on experiences of up and coming thermal power plants, which threatened people's lands and livelihoods. People were encouraged with the grid extension but demanded a more comprehensive outlook towards rural electrification.

Thus, a set of recommendations was derived from surveys, public hearings and consultations for effective rural electrification under RGGVY in the next five year plan.

We believe that it is imperative that the RGGVY takes into consideration people's demands and aspirations to ensure that the scheme fulfils its mandate of giving access to quality power to millions of Indians who are currently deprived of it. What is needed is combining distributed supply with centralised grid and not just grid extension to achieve targets. Consequently, a broader outlook towards rural electrification would spawn inclusive and sustainable growth of rural India. We believe that the RGGVY needs to not just electrify villages, but also energise villages.

## Background

Whilst launching the RGGVY Smt. Sonia Gandhi, Chairperson of the National Advisory Council, had stated: "Rural electrification in all its aspects forms a key - I would say the key component - of Bharat Nirman. The diversification of the rural economy, so very essential to manage the demographic pressures in the countryside, depends critically on the easy availability of reliable power<sup>3</sup>."

In spite of the RGGVY being executed since 2005 and major achievements in grid extension almost 56% of rural households (approximately 78 million) do not have access to electricity<sup>4</sup>. In many areas, despite grid availability, households have chosen not to connect, frequently because of the insufficient and unreliable supply of electricity. With the demand for power outstripping its availability, rural areas face major challenges of very low per capita consumption and inadequate power supply, made worse by poor quality of service<sup>5</sup>. It is apparent that the current centralised delivery mechanism has failed to reach the rural masses.

With a per capita consumption of 733 kWh, India still has a lot to achieve if it has to reach the consumption levels of Canada (18,359 kWh), USA (14,057 kWh) and China (2,560 kWh). If India were to achieve a reasonable level of economic prosperity, a simple calculation suggests that India's electricity generation would have to increase from the present 700 Billion kWh to 5,000 Billion kWh. Or, the installed generation capacity will have to increase to almost 925,000 MW<sup>6</sup>. However, the additional capacity required for the RGGVY will have to be compared to the same capacity that has been added since 2002. These requirements would be over and above any additional generation that would be needed to fuel the increase in electricity demand that results from robust economic growth and the demand that would result, if reliable 24X7 grid power were actually available<sup>7</sup>.

Furthermore, the assumptions that such capacity additions will benefit rural population, is debatable. The urban-rural divide in the supply of electricity is stark as even after 64 years of independence about 40% of the households, mostly in rural areas, are still without electricity. The urban areas have almost 100% electrification and a small section of the urban population is even approaching the per capita consumption levels of developed countries<sup>8</sup>. Lastly, the power situation in many states in India is deplorable. The main problem has been the power supply during peak hour demand. The table below highlights the power situation of three states, which were surveyed during the audit.

Table 1: Power situation in surveyed states (April 11- June 11)

States	Installed capacity of state (MW)	Installed capacity including allocated shares in joint and central utilities (MW)	Power Supply Provision (Provisional)			Peak Demand/Met (Provisional)		
			Requirement (MU)	Availability (MU)	Deficit (MU)	Peak demand (MW)	Peak met (MW)	Deficit (MW)
Andhra Pradesh	9020.86	15574.58	21,314	20,727	-587	12,636	11,579	-1,057
Bihar	588.30	1921.93	2,917	2,297	-620	2,031	1,426	-605
Uttar Pradesh	4619.40	10457.63	19,341	17,600	-1741	11,445	10,537	-908

<sup>3</sup>[http://recindia.nic.in/download/RGGVY\\_brochure.doc](http://recindia.nic.in/download/RGGVY_brochure.doc)

<sup>4</sup>[http://www.powermin.nic.in/whats\\_new/pdf/ENERGY%20MARKETS%20&%20TECHNOLOGIES-REVISED1.pdf](http://www.powermin.nic.in/whats_new/pdf/ENERGY%20MARKETS%20&%20TECHNOLOGIES-REVISED1.pdf)

<sup>5</sup>South Asia Energy Unit (2010). Empowering Rural India: Expanding Electricity Access by Mobilizing Local Resources. Sustainable Development Department, The World Bank.

<sup>6</sup>Note for GSP, Version 2 (2011) Universal Energy Access by 2030: Technology, Economics, Policy. Prepared for Ministry for Environment and Forests, India by Centre for Study of Science, Technology and Policy.

<sup>7</sup>Modi V (2005) Improving Electricity Services in Rural India- An initial assessment of recent initiatives and some recommendations. Working Paper No 30, Centre on Globalisation and Sustainable Development, The Earth Institute at Columbia University.

<sup>8</sup>Greenpeace India. Still Waiting: A report on energy injustice. October 2009.

Given such deficits in power supply and peak hour supply, it is no surprise that rural areas are de-prioritised to meet the demand of the urban areas. Meanwhile, the scope of work in the RGGVY has no consideration for the problems plaguing the power sector in these states and this rigidity in approach has meant that the RGGVY may not deliver on its mandate. The scope of work in the RGGVY in Andhra Pradesh includes intense electrification or further strengthening of villages already electrified. The RGGVY is covering un-electrified and de-electrified villages in Bihar and UP as well.

Table 2: Status of RGGVY in surveyed districts as on 15 July 2011<sup>9</sup>

State	District	Total project Cost (in crores)	No of villages electrified <sup>10</sup>	No of connections to BPL households
Andhra Pradesh		840.11	27, 481	25,92,140
	Srikakulam	55.17	1,819	1,94,941
Bihar		3,727.69	29,862	27,62,455
	Madhubani	116.66	1,133	2,13,640
	Saran	82.85	925	39,644
Uttar Pradesh		3,003.87	34,049	11,20,648
	Azamgarh	158.19	1,940	1,04,603

A Comparison of power situation with the RGGVY work especially in Bihar and Uttar Pradesh shows the mismatch between distribution and supply and electricity infrastructure development in rural areas. Additionally, poor financial health of distribution companies (discoms)/utilities worsens the scenario for rural electrification<sup>11</sup>. The discom for Bihar, Bihar State Electricity Board (BSEB) reportedly had incurred a loss of INR 7,000 crores due to unpaid power dues in December 2010<sup>12</sup>. Similarly, Uttar Pradesh Power Corporation Limited (UPPCL), in its annual revenue requirement report (ARRR), has assessed its losses to the tune of INR 6,809 crores by the end of fiscal year 2011-12<sup>13</sup>. However, the discom for Srikakulam, Eastern Power Distribution Company of Andhra Pradesh Limited has cited a profit of INR 18.33 crores for the fiscal year of 2009-10<sup>14</sup>.

The losses severely restrict the operations and resources of the discoms, especially for rural electrification, which involves grid maintenance and supply over long distances. Lack of adequate and trained manpower, limited equipment and operational resources, low tariffs for rural areas and pressure to show recoveries mean that rural areas are least prioritised by the discoms<sup>15</sup>. Consequently, the transmission and distribution (T&D) losses are high as well.

Table 3: T&D losses for the three states<sup>16</sup>

State	Year	T&D losses
Andhra Pradesh	2008-2009	18.63%
Bihar	2008-2009	46.37%
Uttar Pradesh	2008-2009	29.88 %

In such a scenario, specifically for discoms in Bihar and Uttar Pradesh, grid extension is severely constraining their meagre resources. Additionally, the economics of grid extension rely on spreading high costs over maximum density of customers in a given region combined with a certain level of consumption.

<sup>9</sup><http://rggvv.gov.in/rggvv/rggvportal/index.html>

<sup>10</sup>Includes electrified, un-electrified and de-electrified villages

<sup>11</sup>The Annual Reports and ARRR for BSEB and UPPCL are unavailable in the public domain and could not be sourced.

<sup>12</sup><http://timesofindia.indiatimes.com/city/patna/Coal-price-rise-hits-thermal-power-plants-in-state/articleshow/9462763.cms>

<sup>13</sup><http://www.dailypioneer.com/334031/UPPCL-set-to-purchase-of-additional-electricity-of-Rs-4000-crore.html>

<sup>14</sup>Eastern Power Distribution Company of Andhra Pradesh Limited (2009) 10th Annual Report.

<sup>15</sup>Modi V (2005) Improving Electricity Services in Rural India- An initial assessment of recent initiatives and some recommendations. Working Paper No 30, Centre on Globalisation and Sustainable Development, The Earth Institute at Columbia University.

<sup>16</sup>UP Power Corporation Ltd. (2011) Statistics at a Glance 2009-2010. Planning Wing, Lucknow.

This would imply grid extension targeting all rural households, regardless of their demand level, willingness to pay or ability to pay<sup>17</sup>. Thus grid extension is best suited when most households have significant power demands and the ability to pay for it. Low per capita consumption coupled with low returns due to subsidised tariffs in rural areas, make rural distribution unviable for discoms. This in turn creates a conflict of objectives for utilities between financial performance and access, and means that rural electrification is both a low priority and possibly a losing proposition<sup>18</sup>. Many studies suggest that the cost of delivery to rural areas can be around three times the cost of the generation. As the distance from the grid increases, the cost of grid connection rises considerably. It increases costs by roughly Rs1/kWh per kilometre of expansion to individual villages<sup>19</sup>. Low per capita consumption in rural areas, coupled with low returns due to subsidised tariffs, make rural distribution unviable for discoms.

Given such a scenario, it is important to understand whether the approach of the RGGVY of providing electricity access through centralised grid extension has translated into real access and whether it has made any impact on the rural population of India. This attempt hopefully would enable policy makers to holistically view rural electrification and strengthen the scheme in the coming five year plan.

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<sup>17</sup>Zerriffi H (2007). Making Small Work: Business models for electrifying the world. Working paper, Program on Energy and Sustainable Development.

<sup>18</sup>Foley, G. (1992b). "Rural Electrification: The institutional dimension." Utilities Policy

<sup>19</sup>James Cust, Anoop Singh and Karsten Neuhoff (2007). Rural Electrification in India- Economic and Institutional aspects of renewables. EPRG 0730 & CWPE 0763



## Objectives and Methodology of the Social Audit

Even though the RGGVY is being implemented from 2005, no comprehensive assessment has been done to understand its impact on the ground. Given the energy scenario in the country, it becomes imperative that the scheme is reviewed by the people before it is continued in the next five year plan period. Besides, people's concerns and suggestions should be taken into consideration to ensure that the scheme delivers quality energy to the millions in India, currently deprived of it.

### Objectives

The social audit was conducted keeping the following objectives in mind-

- Assess whether the RGGVY has achieved its stated mandate of accelerating rural development, generate employment and eliminate poverty.
- Understand the socio-economic impact of the scheme in villages where it has been implemented.
- Understand and highlight people's views and the demands on electricity and effective implementation and monitoring of the RGGVY.

The states of Bihar, Uttar Pradesh and Andhra Pradesh were chosen on the basis of-

- Priority status of Bihar and Uttar Pradesh under the RGGVY with significant budgetary allocation.
- Understanding the impact of intensive electrification in Andhra Pradesh.
- State of electrification in the three states.
- Geographical representation.

### Survey Methodology

Random sampling technique was applied in order to choose the villages, blocks and districts where village electrification work under the RGGVY scheme had been completed as per government records. In March/April 2011, a total number of 31 villages were surveyed in these three states; 15 villages from Madhubani and Saran district in Bihar, 8 villages in Azamgarh district in Uttar Pradesh and 8 villages in Srikakulam district in Andhra Pradesh. A total number of 919 households were surveyed across the states, 65 of which belonged to the Above Poverty Line (APL) category. A list of BPL connections, proposed and released, was verified in the selected sample villages. Both BPL beneficiaries and APL households and those who could not get benefited from the scheme were interviewed. Awareness generation meetings were held to inform people about their entitlement under the scheme and awareness was raised on alternative pathways available to generate electricity through renewable sources.

### Data collection

Secondary data was gathered through the Right to Information Act, the RGGVY website and from the implementing agencies. This included the following-

- List of BPL connections (proposed and released) of BPL consumers in the selected villages.
- Gram Panchayat Certificates (GPC) for the selected villages.
- Certified photocopy of the original infrastructure details (proposed and completed) of electrification work in the selected villages.
- Certified photocopy of in-built drawings of 11KV and LT lines of selected villages.

### Survey

The government data was cross checked by doing a door to door survey of the villages selected for the study. The social survey included the following-

- Verification of the list of BPL connections/consumers (proposed and released) in the selected sample villages.
- One to one interviews with villagers (both APL and BPL), who were either the beneficiaries or were excluded from the scheme.
- Interviews were based on a survey questionnaire focusing on seven approaches – speed of provision, quality of supply, inclusion, affordability, security of supply, rural development index and awareness on climate protection.
- Group discussions and awareness generation meetings were held in the villages (stressing on their entitlement under the scheme and alternative pathways to generate electricity through renewable sources).
- Compilation of case studies on the basis of interviews and discussions during meetings and on the experience of beneficiaries under the RGGVY.

## Jan Sunvais (Public hearings)

After the completion of the surveys, public hearings were held in Saran (May 2, 2011), Madhubani (May 5, 2011), Azamgarh (10 May, 2011) and Srikakulam (12 May, 2011).

## Regional consultations

The findings and recommendations from the survey and public hearings were further taken to regional consultations in Lucknow, Uttar Pradesh (31 May, 2011) and Patna, Bihar (10 June, 2011).

## National Consultation

A national consultation was held in New Delhi on 1 July 2011 and the findings and recommendations were subjected to further rigorous assessment.

# Social Audit: Rural India demands reliable electricity

## Key Findings from the survey

### Socio-economic profile of the respondents

Majority of the respondents were male who were the heads of the households surveyed. 78% of the respondents belonging to BPL category reported monthly income of INR 2000 and less.

Figure 1: Sex profile of the respondents in the surveyed states

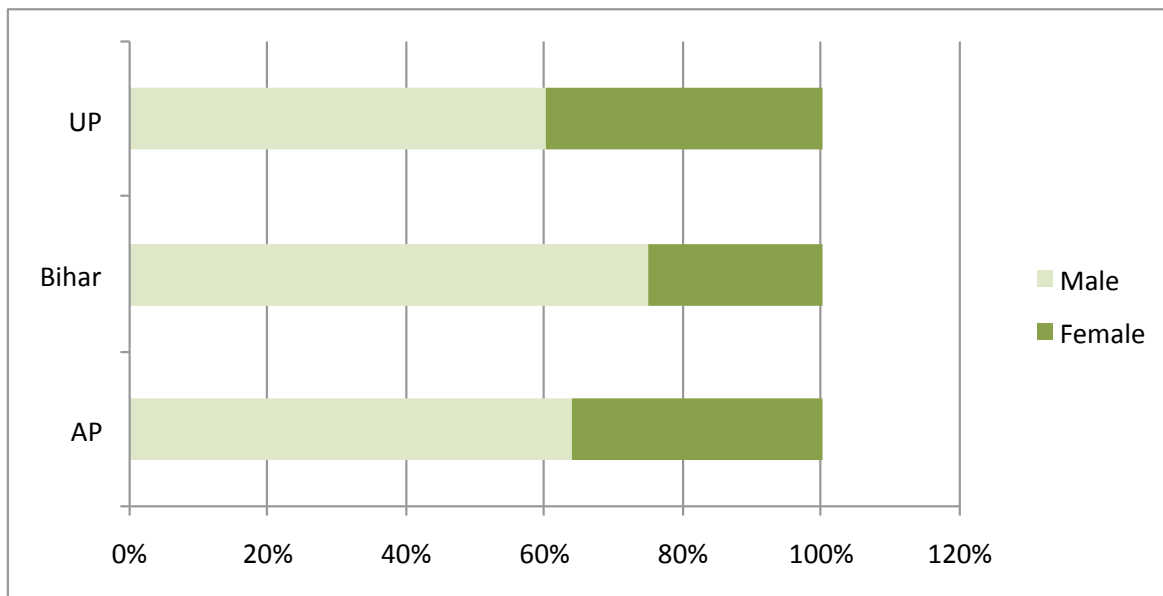
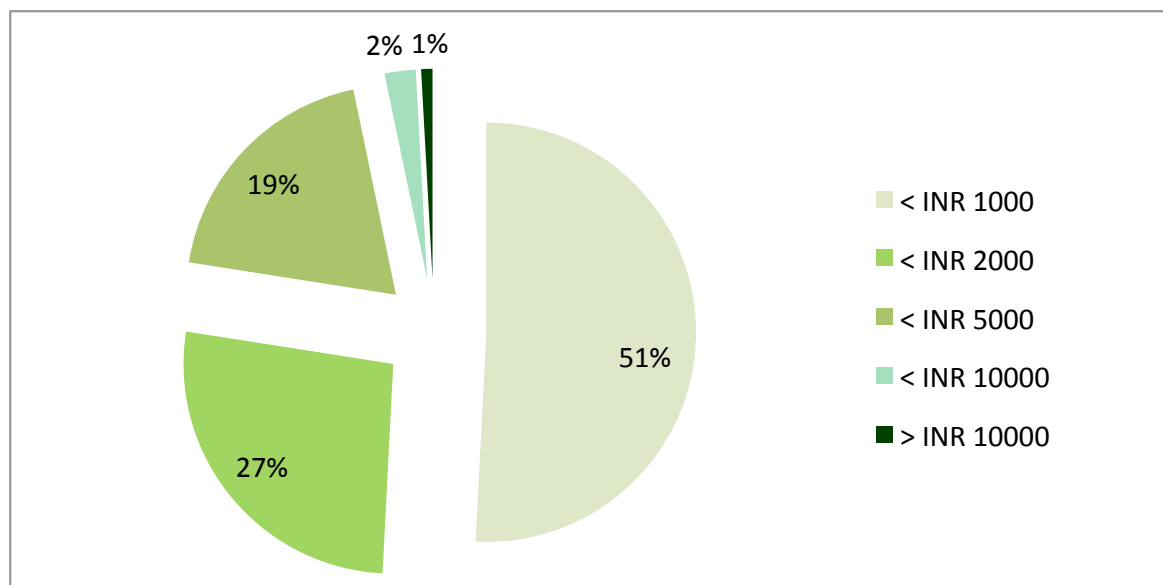


Figure 2: Economic profile of the respondents: Monthly income

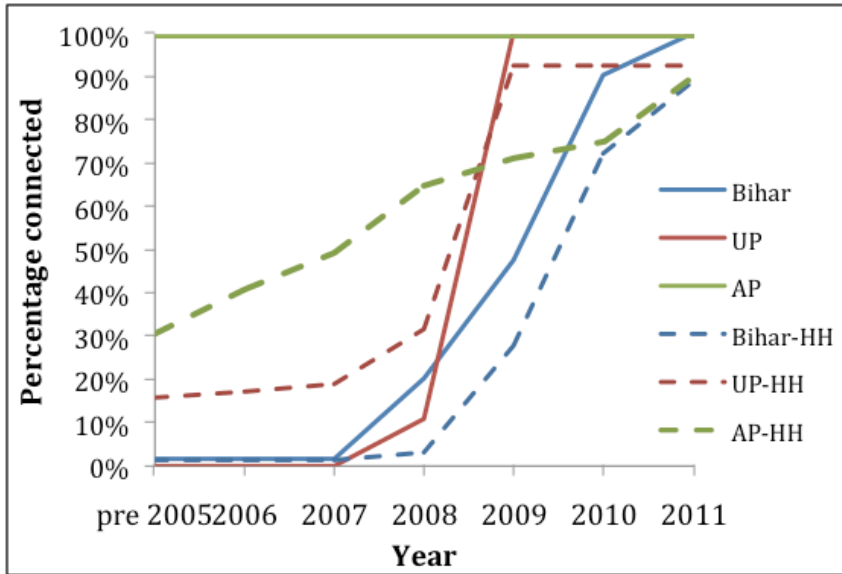


### Village versus household electrification

The social audit processes in Andhra Pradesh, Bihar and Uttar Pradesh highlighted the difference between villages and households reportedly connected to the grid and lack of supply.

The figure below shows the electrification status in three states as per the responses of people surveyed. Villages in Uttar Pradesh and Bihar show electrification status after the advent of the RGGVY in 2005 whereas Andhra Pradesh had already recorded 100% village electrification through previous state schemes. Conversely, households in Andhra Pradesh and Uttar Pradesh had been electrified under previous state electrification schemes while households in Bihar experienced electrification process under the RGGVY.

Figure 3: Rate of connection in the sampled houses in three states



While it has been easy to certify villages as being electrified by the establishment of rural feeders, distribution lines and transformers under the RGGVY, household electrification has proved to be a challenge. This can be attributed to the faulty definition of “electrified village”, which states that “the number of households electrified should be at least 10% of the total number of households in a village.” Electrification work in Bihar and Uttar Pradesh was started with Accelerated Rural Electrification Programme (AREP) which was later merged with RGGVY in 2005. This means that in villages with more than 10% of BPL population in Bihar and Uttar Pradesh, many BPL families have not got the connections whereas the scheme mandates free connection to all BPL families.

As the Parliamentary Standing Committee on Energy (2008-2009) observed in its report, “The Committee feels that the implementing agencies of RGGVY projects shall experience difficulties in implementing the provision of free electricity connection to all BPL households in case of villages where the number of un-electrified BPL households is more than 10 per cent.”

It was also observed during the survey that even the specified limit of covering 10% of the BPL families was not achieved in many villages of the three states. Additionally, low awareness about the scheme and centralised system coupled with low confidence on the grid meant that in some villages even the APL families did not apply for connections despite village electrification. On the other hand, surveyors observed that a large number of APL families in many villages of Uttar Pradesh and Bihar illegally hooked to main distribution lines, which in turn led to overloading and damage to transformers. Another reason for such damage was attributed to installation of low capacity transformers under the scheme. Given the density of population in Bihar and Uttar Pradesh, a need was perceived to install high capacity transformers, especially keeping in mind the additional demand generated through household electrification.

**Electricity supply in electrified villages**

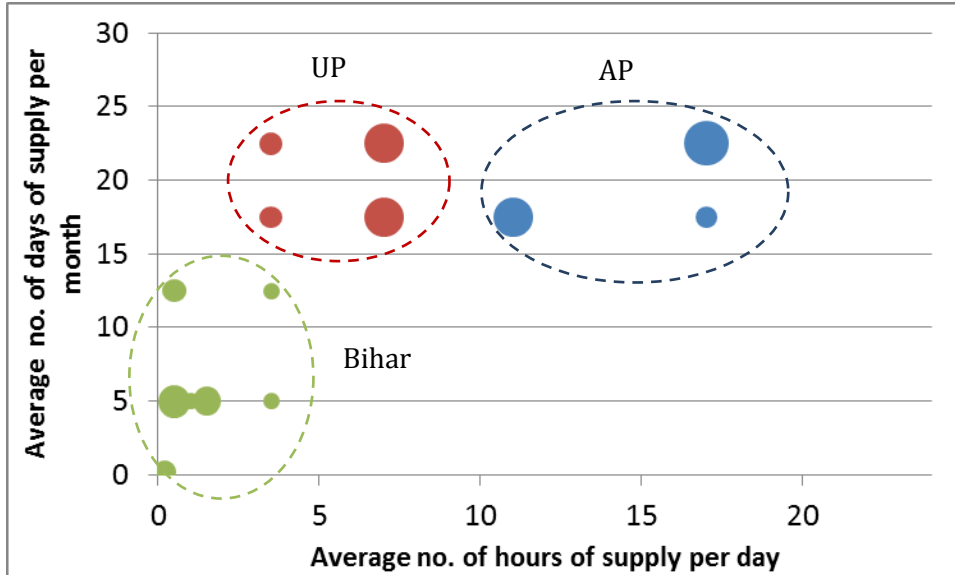
The RGGVY stipulates that for projects to be eligible under it, prior commitment should be taken for “Guarantee by State Government for a minimum daily supply of 6-8 hours of electricity in the network with the assurance of meeting any deficit in this context by supplying electricity at subsidised tariff as required under the Electricity Act, 2003.” However, projects were approved and funds disbursed with sanction letters<sup>20</sup> from states even though there was evidence highlighting that the states would never be able to meet the requisite supply. Therefore, it is not surprising to see that while Andhra Pradesh with better grid infrastructure for more than two decades fares better on this score whilst the situation in Bihar and Uttar Pradesh remains dismal.

The result, especially in the case of Bihar, is a damaging blow to the RGGVY grid network due to non-appreciation of its infrastructure in absence of adequate supply. Surveyors observed damage to RGGVY

<sup>20</sup>Standing committee on energy (2008-2009), 14th Lok Sabha, Ministry of power, Implementation of RGGVY, 31st report, Lok Sabha Secretariat, New Delhi. Feb 2009/Magha, 1930 (Saka)

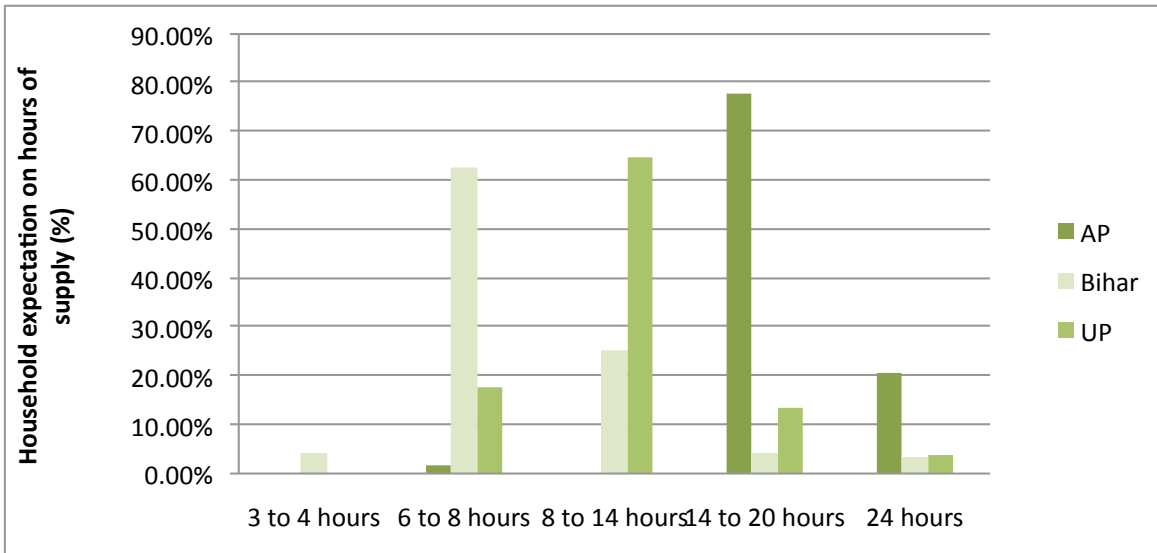
grid network due to stealing and irregular supply rendered newly electrified villages into de-electrified ones. People from the state reported a highly unreliable, erratic and low voltage supply. Besides this the supply was not available when people required it the most.

Figure 4: Quantum of supply- in hours per day and in days per month. Size of the circle represents the fraction of sampled villages from each state corresponding to the supply



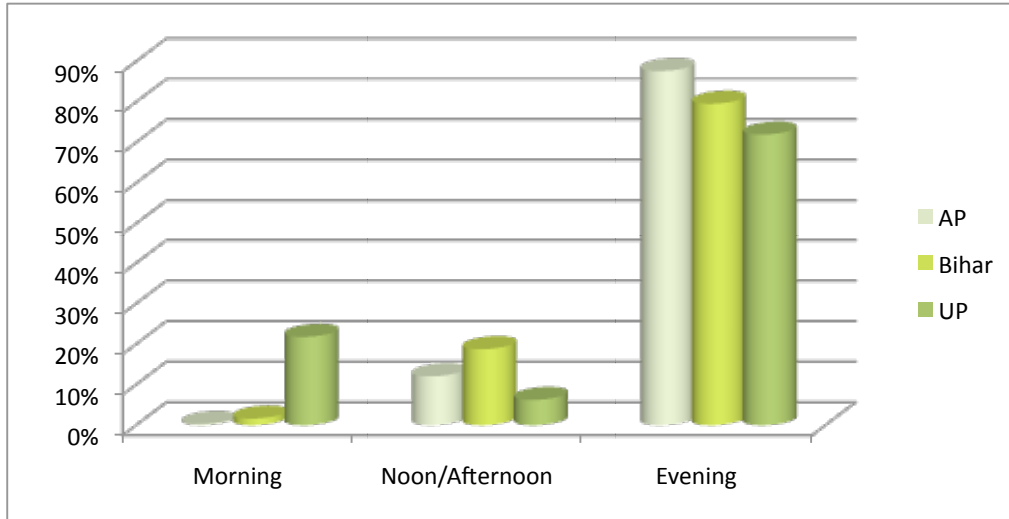
Preferences on electricity supply

Figure 5: Expected hours of supply across the three states



The above figure illustrates how rural aspirations of getting quality and reliable electricity supply increases with more electricity supply. 62.78% of the respondents in Bihar faced with none or less than an hour of electricity supply aspired for 6-8 hours of supply. The demand for electricity supply increased to 8-14 hours for 64.83% of the respondents of Uttar Pradesh and 14-20 hours for 77.67% of the respondents in Andhra Pradesh. Thus, the minimum guarantee of 6-8 hours of supply needs to be modified depending on the state and regional variations. Besides, there should be provisions for reliable supply at the time when the rural population needs it the most.

Figure 6: Times of demand across the three states<sup>21</sup>

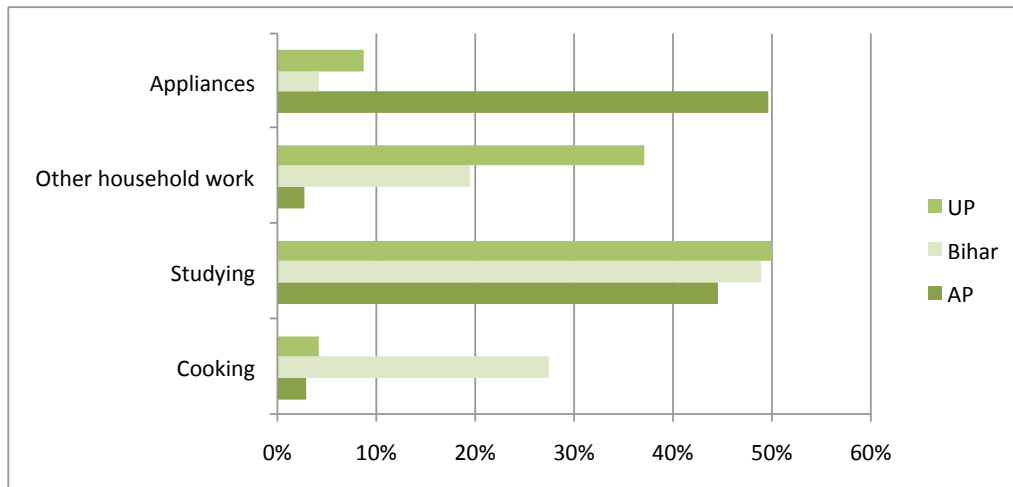


Respondents across the three states required electricity primarily in the evening and night. However, none of the villages surveyed were receiving regular supply after sunset.

**Purposes for which electricity supply was required**

Respondents understood the need for reliable supply of electricity to enhance their quality of life and productivity. The most important need for electricity at night was to enable children to study. Also in Andhra Pradesh, where there is a better supply, people require additional electricity to run their electrical appliances.

Figure 7: Demand for electricity for various purposes<sup>22</sup>



This clearly points out that any rural electrification scheme cannot be just limited to access if it has to have any holistic impact on the rural populace. A rural electrification scheme would have to be custom-made in order to address the need and aspirations of the beneficiaries and be flexible to satisfy productive end use loads.

**Inclusion of rural population in electrification**

A centrally administered programme being implemented in rural areas can prove to be ineffective due to awareness on its functions. Therefore, many flagship programmes in India such as the Mahatma Gandhi National Rural Employment Guarantee Act (MNRGA) and the National Rural Health Mission (NRHM) emphasise on decentralisation in planning and implementation, along with information, education and communication (IEC). Such a component is missing in the RGGVY and hence people have been socially and economically excluded from the scheme.

<sup>21</sup>Evening refers to the time from 6 pm to 12 pm and can be taken as evening/night. Shading in the figure indicates preferences of states.

<sup>22</sup>Appliances refer to the use of TV, fans, coolers, music system etc. Other household works involved cleaning the house, repairing equipment etc. Electricity was demanded for lighting during cooking and not for cooking purposes in Bihar.

Awareness about the RGGVY scheme was very poor with 74.10% of the respondents across the three states reported to have no knowledge of the scheme. Consequently, awareness regarding entitlements under the scheme was also very poor.

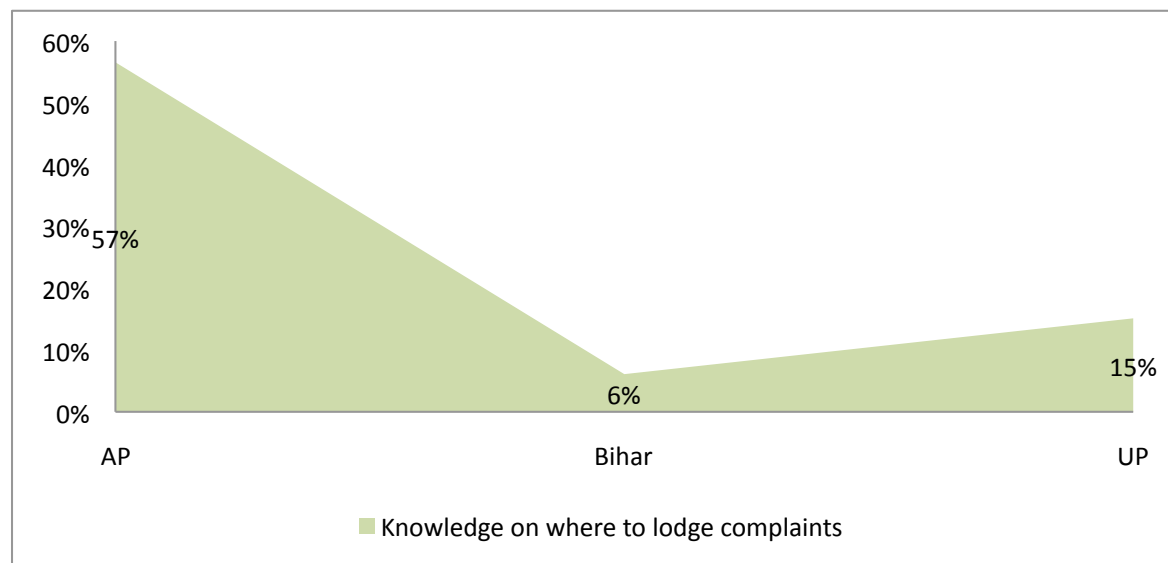
**Table 4: Awareness regarding entitlements among the BPL households surveyed, who had received connections post 2005**

State	Not aware of free connection	Paid for the connection	Money paid to		
			Contractor	Electricity Company	Other <sup>23</sup>
Andhra Pradesh	69%	99%	0%	99%	1%
Uttar Pradesh	59%	42%	72%	1%	26%
Bihar	60%	54%	69%	1%	30%

In Bihar and Uttar Pradesh, many APL families were not informed about the process of applying for a connection. This led to confusion amongst villagers about the mandate of the scheme and thus resulted in illegal hooking of lines, which in turn damaged the transformers. No information was given to the villagers by either the Panchayats, distribution companies or the implementing agencies about how the scheme operated. Panchayat sarpanch and mukhiya reported nil or minimal involvement in the scheme.

This underlines that inadequate information about the scheme and its grievance redressal mechanisms has not been provided, especially in the case of BPL families. Similarly, people were not aware of whom to contact in case of repairs or breakdowns or where the nearest electricity board office was located. They also complained of slow or delayed response from the electricity department.

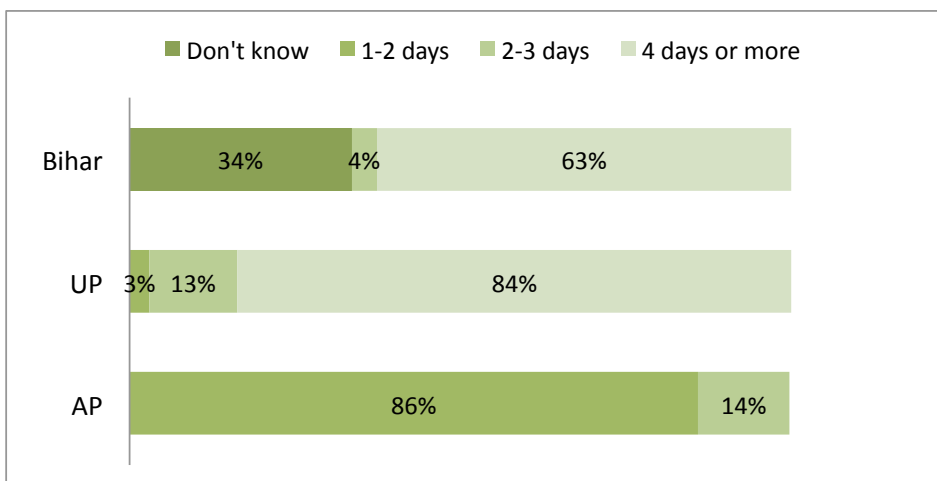
**Figure 8: Knowledge on where to lodge complaints**



Lack of knowledge about grievance redressal mechanism resulted in delays in repairs. Respondents from Bihar and Uttar Pradesh reported apathy from the local electricity board office in terms of maintenance and repair.

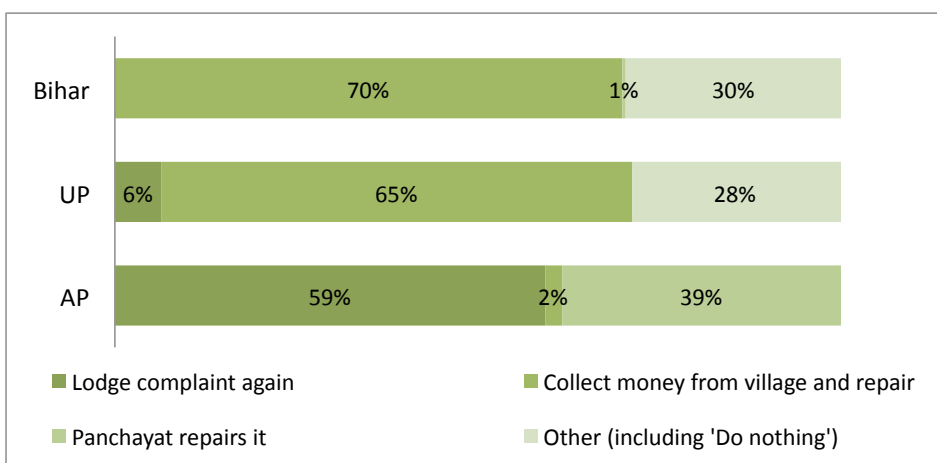
<sup>23</sup>Other was defined by the respondents as middlemen and other key stakeholders in the village such as PRI members etc.

Figure 9: Time required for repair



Transformers had been damaged in many villages and in some villages the transformers had not been repaired at all even after frequent complaining. Respondents in Bihar and UP reported that they were eventually forced to collect money on their own and get it repaired.

Figure 10: Means of redressal if no action is taken by the utilities



### RGGVY and Rural development

The scope of the RGGVY scheme envisages that provision of Rural Electricity Distribution Backbone (REDB) and Village Electrification Infrastructure (VEI) will facilitate power requirement of agriculture and other activities. This include irrigation pump sets, small and medium industries, khadi and village industries, cold chains, health care, education and IT etc<sup>24</sup>. It is also stated that panchayat bhavans and schools be given connection under the scheme.

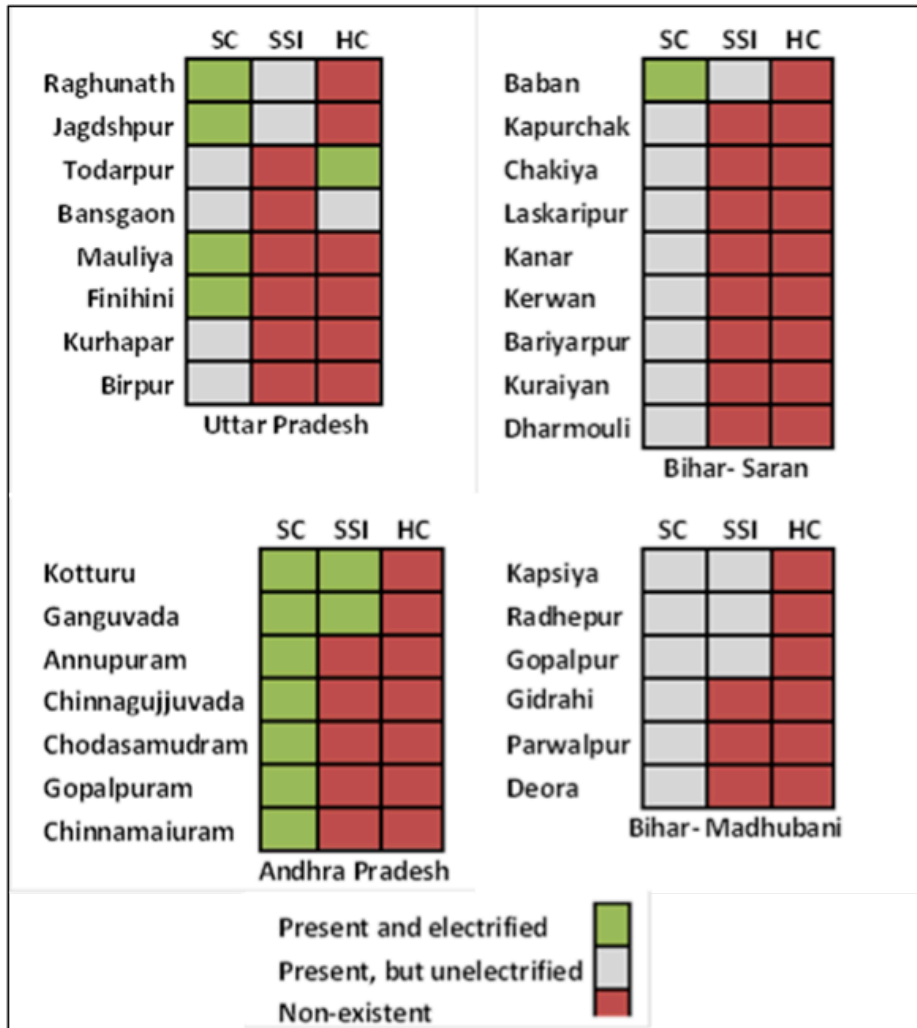
### Electrification status of institutions in villages

It can be seen in the chart that most of the villages in Bihar and Uttar Pradesh do not have electricity connection for schools, health centres or for employment generating activities. Andhra Pradesh has a better access to electricity for schools and industries. None of the villages surveyed in Bihar and Uttar Pradesh, which had Panchayat Bhavans, reportedly had access to electricity.

<sup>24</sup><http://rggvv.gov.in/rggvv/rggvportal/index.htm> |



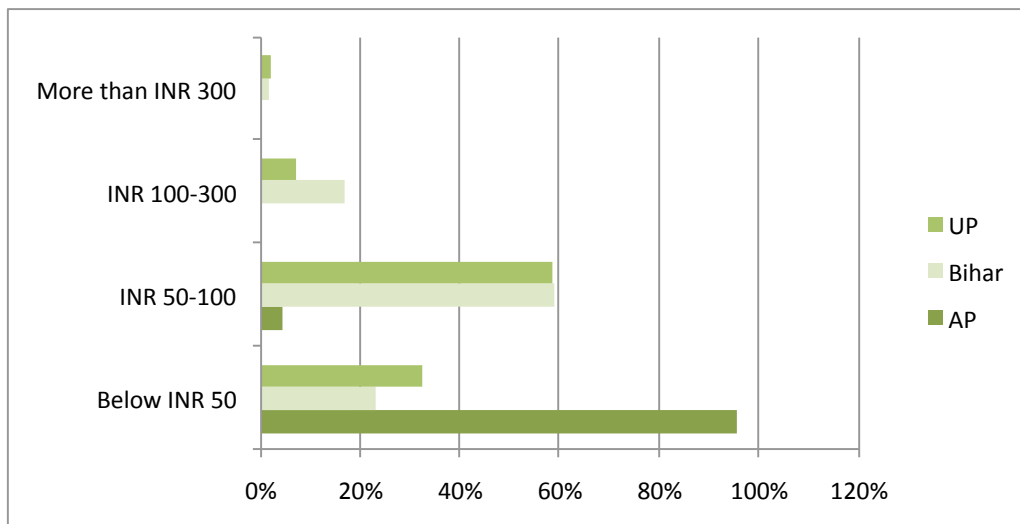
Figure 11: Existence of schools (SC), small scale industries (SSI), and Health Centres (HC) in the villages surveyed and their electrification status



Electrification status of institutions in villages

In the absence of a reliable supply of electricity across the states, 96.4% of the respondents reported usage of kerosene for lighting purposes. It was quite evident from the survey that people have the willingness and ability to pay for energy resources. However, even with grid infrastructure reaching their villages under RGGVY, respondents were forced to depend on alternative sources for their daily energy requirement.

Figure 12: Amount spent on alternative sources of lighting per month (in INR)

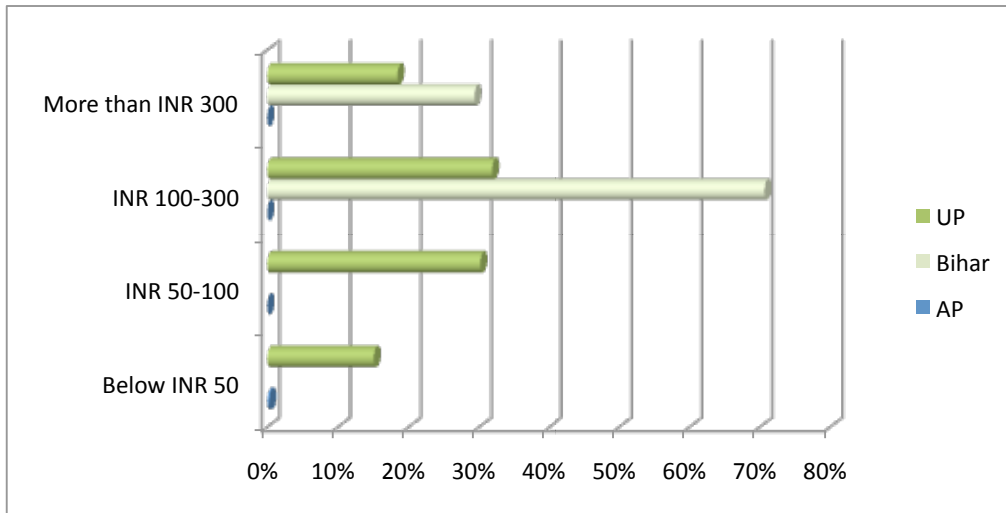


**Provision of irrigation**

It is widely acknowledged that irrigation enables agricultural productivity. It reduces poverty, increases employment, incomes and real wages and thereby reduced food prices. In un-irrigated districts of India (less than 10% area is irrigated), 69 % of people are poor, while in irrigated districts (more than 50% area is irrigated), poverty level drops by 26%. Agricultural performance is fundamental to India’s economic and social development and will critically determine the success of efforts in poverty reduction<sup>25</sup>. Therefore, any rural electrification programme should support sustainable irrigation practices.

87.46% of the respondents reported having no connection for irrigation. While Madhubani (Bihar) reportedly had canal systems for irrigation, most of the respondents, whose occupation was farming, were largely dependent on rains. However, 25.5% of respondents in Bihar and 75.2% respondents in Uttar Pradesh reported spending huge sums on irrigation by using diesel generator sets. Andhra Pradesh however, reported no expenditure on irrigation.

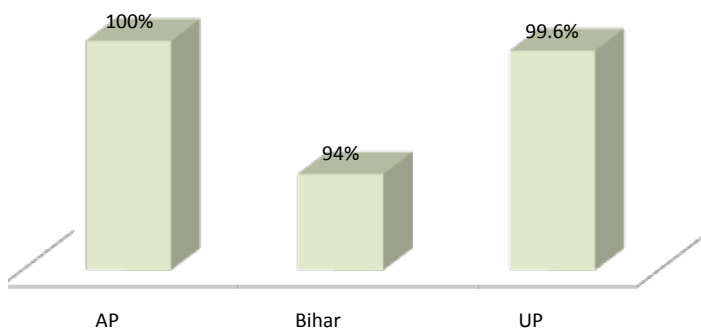
**Figure 13: Amount spent on irrigation through diesel generator sets**



**Aspirations on rural electrification**

The audit also tried to understand the preferences and aspirations of villages on electricity. Even though 42.6% of the respondents reported water to be a source of electricity, 27.6% of the respondents did not know about their source of electricity. On the other hand, 97.6% of the respondents favoured renewable energy over conventional sources. The preference seemed to stem from people’s experience and perception of renewable energy sources as being more reliable than grid based electricity. Bihar and Uttar Pradesh have experienced large scale investment in renewable energy - from solar lanterns and solar street lights to rural cooperatives and private companies providing reliable electricity through micro-grids, such as Husk Power System (Bihar) and solar power system in Rampura (Uttar Pradesh). Respondents in Srikakulam preferred it as an alternative to thermal power plants, which were threatening their bio-diversity, lands and livelihoods. Thus, even with high cost of supply and lack of regulatory mechanisms on tariffs and services, people overwhelmingly voted for renewable energy.

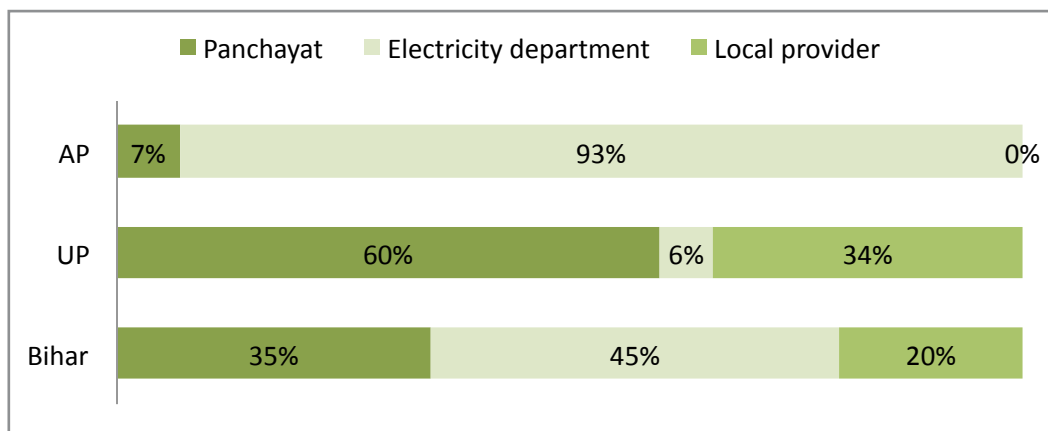
**Figure 14: Preference of renewable energy across the three states**



<sup>25</sup>Ramesh Bhatia, President, Resources and Environment Group, New Delhi for InfraPoor Workshop , 27-29 October 2004 in Berlin, organized by DAC/POVNET Task Team on Infrastructure for Poverty Reduction.

The audit also tried to gauge people's preferences on service providers across the three states. While there was a demand for more decentralised approach towards rural electrification, the survey revealed each state had different preferences according to their respective regional variations and experiences.

Figure 15: Preference of the service provider



Andhra Pradesh with better distribution infrastructure and better functioning discoms has been able to successfully retain the confidence of the people. In Bihar 55% of the respondents espoused confidence in local agencies but more faith was shown in the Panchayats. Uttar Pradesh showed the lowest confidence in the distribution companies for quality and reliable electricity. The respondents in Uttar Pradesh preferred Panchayat to take over the responsibility of providing quality and reliable electricity.

### Public Hearings

The survey results were compiled and presented to the people of the villages surveyed, during the public hearing. The four public hearings (one for each district) saw more than 500 people attend with more than 1000 people attending in Uttar Pradesh. Respondents from each district participated in the proceedings and presented their testimonies before the panel, media and people present. The panel comprised of civil society representatives, intellectuals, media representatives, local politicians and members of Legislative Assemblies from each district. Participation from implementing agencies in the public hearings was poor in Bihar.

People complained of issues relating to implementation and corruption in availing electricity connections. Those who were not getting benefited spoke of lack of information about the scheme and difficulty in getting connections. People pointed out how the whole electricity paradigm was biased towards urban areas while rural areas always suffered from unreliable supply and bad services. Case studies were presented in the form of testimonies highlighting various issues under RGGVY. Many people came forward to share their experiences and views on their need for electricity besides suggesting the best way forward.

Decentralisation of power along with renewable energy was discussed and mooted for localised generation and handling of electricity supply. People handed over written complaints to the panel to highlight the problems they were facing. The panel responded with recommendations based on the testimonies and discussions during the public hearing and demanded that RGGVY be re-structured in the next Five Year Plan for effective results.

### Regional Consultations

Regional consultations were held in Bihar (Patna) and Uttar Pradesh (Lucknow) with participation from implementing agencies, civil societies, decentralised renewable energy implementing agencies, social activists and media. Discussions on the best way forward for rural electrification for the respective states underlined the need for a holistic view on electrification. The state electricity departments pointed out that large scale grid extension was burdening their already meagre resources, and decentralised generation and supply would help them manage electricity infrastructure in a better way. There was an agreement on inclusion of local agencies in the process of electrification. There was also a consensus that states should implement the scheme as per the regional variations and demands. The recommendations of the public hearings were further discussed and strengthened. At the end of these consultations, a set of demands were developed in the form of a charter to be taken forward at the national level.

## National Consultation

The national consultation in Delhi saw representation from implementing agencies, energy and policy experts, Ministry of Power (MoP), Planning Commission, civil society organisations and so on. There was discussion on grid extension in the absence of adequate supply and solutions to tackle the same. Feeder separation, as done in Gujarat, was also discussed. However, it was realised that many states did not have enough irrigation pump set connections and adequate electricity infrastructure to embark on an ambitious feeder separation exercise.

Decentralised Renewable Energy (DRE) or Decentralised Distribution Grid (DDG) was considered an option as it would be based on rural needs and demands, and hence would enable a more holistic rural electrification process. The cost of DRE projects and non-utilisation of funds (INR 540 crores), earmarked for DDG by Ministry of Power, was cited as a deterrent for large scale implementation. However, discussions also indicated that a long term perspective on DDG would make it more viable.

A short period of two years with no push to DDG has not enabled its deployment (the guidelines for DDG had been released in 2009). Besides Ministry of Power and Ministry of New and Renewable Energy (MNRE) are not in sync but function in contradiction to each other, which was effecting rural electrification.

Involvement of PRIs, NGOs, and SHGs etc. in the scheme for enhancing community ownership and effective implementation was also discussed. It was realised that social audits would go a long way in enabling such a process. It was advised that capacity building of local communities on electricity and other such issues should be incorporated in the scheme.

## Conclusion

Access to electricity is considered a basic indicator of rural development. It affects all aspects of development -- social, economic and environmental - including livelihoods, access to water, agricultural productivity, health, population levels, education, and gender-related issues. Energy services are essential to both social and economic development and much wider and greater access to energy services is critically important in achieving all of the Millennium Development Goals (MDGs)<sup>26</sup>. Both the Government of India, Planning Commission's strategy for the development of rural India as well as the United Nation's MDGs, are inherently dependent on the integration of electricity services to achieve a set of varied development goals.

The energy paradigm in India was built on the principle that large centralised power plants could achieve economies of scale, which would make them the least expensive sources of electricity<sup>27</sup>. Access to electricity in rural areas has been regarded synonymous with rural electrification, implemented through the extension of the grid. The problems of high transmission and distribution losses; frequent disruption in supply of grid power, practical difficulties and financial non-viability of extending grid to remote and inaccessible areas; dispersed population in small villages resulting in low peak loads, poor financial health of the state electricity boards, etc. are plaguing the rural electrification programme in India<sup>28</sup>. Furthermore, there is a large body of evidence to show that the centralised system has not been able to balance demand and supply, resulting in inequities and environmental degradation, leaving over 40% of the Indian rural population with no access to power<sup>29</sup>.

While the RGGVY scheme has raised expectations of people with no access to electricity, lack of quality and unreliable electricity supply has underlined that the scheme has failed to deliver so far and has also failed to match the expectations created. The principle behind the planning of this scheme, which is to build a centralised electricity network to ensure access to power, is flawed. With limited resources of fossil fuels, it would become an impossible proposition to supply both rural and urban fractions of this country with reliable and quality energy supply.

The findings of this study clearly debunk the theory that expansion of centralised grid infrastructure is integral to ensure quality and reliable access of electricity to intended beneficiaries. In future, even with significant capacity additions, the availability of quality and reliable power supply will continue to be a challenge and would in all likelihood, fail to deliver. Consequently, the scheme has not realised its vision on the ground, of fostering rural development by ensuring electricity access to irrigation, micro enterprises, schools and health centres. There is a significant mismatch between the aspirations of rural people and the current scheme, particularly on the issues relating to irrigation and micro-enterprises.

**The results of this study clearly indicate the need for a serious review of the current scheme. On the other hand, various DRE (decentralised renewable energy) projects in the surveyed state are working very effectively and the same was recommended by people during the survey and public hearings.**

They typically combine centralised grid connections as distribution franchises and decentralised distributed generation (DDG) or decentralized renewable energy (DRE) operated at the local level, which relies on renewable energy sources and technologies. DDG projects, if widely replicated, can ease the burden on both electricity supply shortfalls (by serving rural areas and subsequently feeding the grid) and reduce the urgency around costly grid extension. DDG, as a model of generation, offers the potential for affordable, clean and reliable electricity with minimal losses, effective maintenance and local cost recovery<sup>30</sup>. Most importantly, it offers communities an opportunity to locally manage, operate and maintain their own power systems.

As seen in the survey, people are already spending on alternative sources and hence have the capacity to pay. Decentralised energy from renewable sources has the advantage to ensure active participation of local people rather than playing the role of passive consumers. Policies, programmes and plans should aim to widen electricity access through decentralised renewable energy systems for their full exploitation as they create perfect opportunities for education, involvement and capacity building of the local people.

<sup>26</sup>Modi V, McDade S, Lallemand D (2005) Energy Services for the Millennium Development Goals. Millennium Project, UNDP, World Bank, ESMAP.

<sup>27</sup>MOP, 2003. Gokak Committee Report on distributed generation. New Delhi, India: Ministry of Power (MOP), Government of India.

<sup>28</sup>Nouni MR, Mullick SC, Kandpal TC. Providing Electricity Access to remote areas in India: Niche areas for decentralized electricity supply. *Renewable Energy* 34 (2009) 430-434.

<sup>29</sup>Kaundinya, Balachandra and Ravindranath, 2009

<sup>30</sup>James Cust, Anoop Singh and Karsten Neuhoﬀ (2007). Rural Electrification in India- Economic and Institutional aspects of renewables. EPRG 0730 & CWPE 0763

Wider use of distributed electrification in a manner that meets household and local needs requires a new vision, one that moves beyond a focus on basic area electrification and on particular technologies. Electrification should be based on the diversity of local needs, decision-making processes and area-specific requirements for electricity to improve productive activities. At the same time, new regulatory mechanisms have to take into account the particular nature of the distributed systems.

## The way forward...

There was overwhelming response from people that government must change its approach on the RGGVY programme. Based on the recommendations from various stakeholders, a few major policy approaches to make the RGGVY a success, are;

### 1. Decentralisation of electricity through decentralised renewable energy (DRE)

Throughout the social audit, there was a demand to incorporate decentralised planning and implementation in rural electrification and DRE was favoured in this regard. It was agreed that DRE could play a strong role in providing energy access to people and plug in the demand-supply gap that is experienced in rural areas. Consequently, a clear demand for rapid uptake of decentralised renewable energy generation units (off-grid & on grid) in the RGGVY operational areas, with a target of 25% of resources for these projects, emerged from the discussions. It was concurred that DRE should not be limited to off-grid areas but on-grid areas experiencing irregular supply and peak hour shortages, should also be considered for DRE. The lack of understanding on DRE, lacunas in policy for DDG/DRE projects and inadequate support for its implementation constrains its successful replication. Hence, DRE needs to be supported by creating appropriate regulatory framework for its better implementation. Thus, electrification should not aim only at top-down centralised grid extension but should also support bottom-up electricity infrastructure to aid the larger electrification process.

### 2. Holistic inclusion for better results

While on paper RGGVY has progressed well with village electrification, the household electrification is lagging far behind. The faulty convergence of AREP with RGGVY has left out many BPL families, and APL families too have found themselves outside the purview of the scheme. This has resulted in large scale theft and blow to the newly created infrastructure. Thus, the scheme should target 100% electrification of a village, instead of phase-wise electrification of villages. Furthermore, the latest census figures should be used for determining household electrification in a village. On the other hand, focus on household electrification and exclusion of other rural needs, has minimised the impact of RGGVY on rural populace. To have the desired impact on rural development, it is important to view electrification in the context of larger development patterns. Thus, inclusion of support to the overall development of village economy needs to be incorporated. Besides, provisions need to be made for energy requirement for irrigation and medium and small scale industries.

### 3. Strengthening the implementation

A centralised scheme such as RGGVY does not incorporate regional demands and variations. Therefore, regional consultations brought out the need for involving state governments in all stages of the programme, right from the designing to the implementation stage. The states should be allowed to incorporate changes according to their respective electricity situations and the role of the central government should be restricted to providing support in terms of resources and technology to the states. Involvement of Panchayati Raj Institutions (PRIs) should be made mandatory for better implementation and sustainability of the scheme. So far their role is restricted to providing the lists of BPL families and signing of electrification certificates. PRIs should be involved during planning, implementation, selection of franchisees and monitoring of the scheme.

### 4. Enhancing monitoring and accountability

Embedding the social audit component in the scheme is necessary to enhance accountability of the implementation system. Social audits should be strengthened by involving communities and civil society organisations in the process. Proactive display of information for public, such as budget outlay, number of beneficiaries, franchisee etc. should be made mandatory. Presently, the boards in the villages display only the electrification status of the village and while detailed information is uploaded on the website. Under Section 4 (1) b of the RTI Act 2005, proactive disclosure should be made available with each public authority/department. There should be separate cell for grievance redressal at the PRI and electricity board offices for RGGVY. Clear-cut guidelines should be issued for the action taken on the grievances.

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