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SAUBHAGYA YOJANA:  
From darkness to light

**Impact Assessment in Madhya Pradesh**

**November 2018**

*When light illuminates the vicinage,  
it shows path from darkness to brilliance.*

*She ceases to toil for continuance,  
she sets forth to attain greatness.*

*Power unbinds the tenacity of the little one  
who yearns to learn the workings of life;  
the impervious melts into the truth  
and the improbable manifests into certitude.*

## Foreword

India has embarked on an impressive journey in the area of rural electrification, culminating in Saubhagya Yojana, a mission to electrify every single household in India. Over decades, successive governments have launched several initiatives for rural electrification; it is however for the first time under SAUBHAGYA that the focus of the scheme is so targeted.

The foundation of the scheme rests in transforming the day to day life ensuring that it alters the common man's lifestyle for once. The scheme is so deeply impactful that on one hand it foments his growth in his immediate environment and on the other hand opening up the world of possibilities to him.

We at PPRC decided to undertake a 360-degree impact assessment with a belief that every scheme functions in a web of policy areas, and therefore may not be treated in isolation. An impact assessment of Saubhagya Yojana was carried out to understand various aspects of electrification and how it redesigns dynamics of a family and a society as a whole. There are several tangible and intangible benefits of any scheme which can be apparent only after several years but their advent can be felt at the very dawn.

Before embarking on a detailed study, the team went to a district in Uttar Pradesh to gain a vantage view of the impact electrification was having in the lives of beneficiaries. However, when the team returned, not only did they gain insights much beyond their reckoning, but also had a flurry of other insights which were not even under consideration earlier. With this detailed preparation, the team went ahead with a comprehensive study to assess the impact of the scheme on certain key parameters.

However, we are also fully aware of the fact that not all qualitative indicators have been adequately reflected in our report, which is primarily because of a limited time frame under consideration. To address this, we intend to undertake a similar survey spread over five years from now on. The exercise would help in creating a rich dataset for developing a model to assess in impact in the long term. This model would be used in studying similar social interventions.

Our report not only documents the immediate tangible benefits that people are experiencing in their everyday life, but also strives to assess the behavioural changes both at an individual level and also that of a community and also how electrification is fundamentally impacting the way people think and plan for their future.

The team has done an excellent field work in unearthing and documenting the case studies to bring forth the changing face of India. We all might take electricity for granted, but the simple facts that the study presents, remind us of the plight of the people living in darkness for over seven decades since the independence.

**Vinay Sahasrabuddhe**  
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## List of Abbreviations

ASHA	Accredited Social Health Activist
CPTED	Crime Prevention through Environmental Design
DISCOMS	Distribution Company
EOL	Ease of Living
GOI	Government of India
ITI	Industrial Training Institute
LED	Light Emitting Diode
PFA	Power for All
PM	Particulate Matter
SAMBAL	Saral Bijli Yojana
SDG	Sustainable Development Goals
TV	Television
UN	United Nations



# Introduction

**SAUBHAGYA & THE STUDY**

## 1.1. INTRODUCTION

The impact of electrification goes much beyond its functional benefits; its impact on the lives of people is transformative and enlightens a trajectory to growth and development. Lack of electrification keeps people trapped in subsistence activities and a loop of daily redundancy, barring them from growth and exploring prospects. Not just that, at a national level, it even hampers efforts towards poverty eradication.

Internationally, nations agree that access to modern energy services is essential for poverty alleviation and promoting prosperity. Sustainable energy is the seventh goal of the 17 UN Sustainable Development Goals (SDGs), which calls for “access to affordable, reliable, sustainable and modern energy for all.” A review of all SDG targets indicates that energy is interconnected with 125 (74 percent) out of the 169 targets, making it crucial for all societies to recognize the key inter-linkages of energy and the wider development agenda<sup>1</sup>.

In line with the global target to achieve universal electrification, the Indian government launched a new scheme, **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA)**, in September 2017 to achieve universal electrification for urban and rural households in India **by December 31, 2018**, which is 10 years ahead of the global target which in 2030 under Sustainable development goals.

### 1.1.1. SAUBHAGYA: Connecting the unconnected in India

Saubhagya Yojana is a paradigm shift in the history electrification in India. Whereas hitherto after independence, every initiative had defined electrification in narrow terms – like erection of an electric pole in a village or electrifying key institutions like schools and hospitals or a certain percentage of households – Saubhagya Yojana disrupts this realm and boldly defines electrification in its original tenor: providing electricity to every single household in India regardless of its geographical location or accessibility. It already covered 1.98 crore households by 12<sup>th</sup> November.

As per 2014 figures, India had the world’s largest electricity access deficit. It alone had a little less than one-third of the global deficit and figured on the top among the 20 countries of the world accounting for 81% of global access deficit.<sup>2</sup> The scenario called for focused governmental efforts towards improving access. The mandate of ‘Har Ghar Bijli’ under Saubhagya yojana seeks to overcome this very deficit by ensuring universal coverage.

### 1.1.2. Rationale for conducting the study:

Electricity forms a basic infrastructure parameter essential for smooth functioning of the economy. A reliable and affordable power sector is the key requirement for growth of the economy including

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<sup>1</sup> State of electricity access report, 2017 (World Bank group); Available: <http://documents.worldbank.org/curated/en/364571494517675149/pdf/114841-REVISED-JUNE12-FINAL-SEAR-web-REV-optimized.pdf>

<sup>2</sup>*ibid*

agricultural, industrial and others. Quality of life is inherently associated with access to electricity so that people could explore their fullest potential. 100% household electrification under Saubhagya supports equitable access of opportunities to all.

Access to electricity alters many other socio-economic parameters that induce long-lasting changes in the lives of people. As such, many studies have examined the welfare effects of grid connections on households (for example, Dinkelman 2011; Khandker, Barnes, and Samad 2012; Lipscomb, Mobarak, and Barham 2013; and Chakravorty, Emerick, and Ravago 2016). Electrification not only affects the households directly, but in myriad other ways that are not immediately relatable.

For instance, electrification substantially reduces indoor air pollution bringing down acute respiratory infections among children (Barron, and Torrero 2017). Samad and Zhang 2018 show that rural electrification results in 88% decrease in kerosene consumption, 37% gain in income, and 11% increase in expenditure and other improvements in girl child's education, increased women's labour force participation and decision-making power. Other studies like one by the Independent Evaluation Group of the World Bank conclude that rural electrification spurs the growth of home businesses that employ family labour.

Such studies have more often than not relied on linear mapping of the benefits through thematic approaches. In other words, few studies mapped - quantified or documented - the inter linkages among benefits that accrue through different policy areas. Moreover, even the linear studies that have been commissioned seldom examine the cascading impacts within the chosen area. They limit their scope within the first or second line of benefits abandoning numerous spill-over benefits. This comprehensive impact assessment intends to systematically map the benefits comprising secondary, tertiary and orders beyond.

This study intends to map this very impact by assessing the inter-linkages among benefits and how electricity is bringing about a transformative impact in lives of beneficiaries living in darkness until now. States like Bihar, Madhya Pradesh, Maharashtra and Gujarat have declared 100% saturation of household electrification.

An impact assessment in Madhya Pradesh was carried out, considering its marked improvement in provision of electrification. The state had 19,84,264 unelectrified households at the commencement of the schemes across 52 districts. Two months before the target date, Madhya Pradesh has been declared 100% electrified. Regardless of its hilly terrain and scattered habitations, success under the scheme has been both impressive and unprecedented both in terms of pace and efficiency.

Strategic interventions of the state government in collaboration with the centre have been instrumental in creating a resilient power infrastructure of the state. 24x7 Power for All (24x7 PFA), launched in 2015, is a Joint Initiative of Government of India (GoI) and State Governments which aims to provide 24x7 power for all households, industry, commercial businesses, public needs, any other electricity consuming entity and adequate power to agriculture sector by FY 19.

Also, under Deen Dayal Upadhyay Grameen Jyoti Yojana, segregation of agricultural feeders has been carried out which would further facilitate in providing 24x7 power supply to rural households with reduced losses.<sup>3</sup> For ensuring access of power to the poorest (those below the BPL category and power usage of 100 units or less), the Madhya Pradesh government launched the Saral Bijli Bill Yojana (Sambal) in June this year. The scheme targets labourers in the unorganized sector and has fixed their power bills at an upper limit of Rs 200. The amount exceeding the flat rate would be borne by the state. Sambal yojana seconds the mandate of Saubhagya of electric connection for each and every household.

The case study of Saubhagya Yojana implementation in Madhya Pradesh brings to the fore several socio-economic facets both in terms of the state's demography and terrain, which were a challenge to SAUBHAGYA's successful implementation and its dramatic impact on the lives of people who have been bereft of necessity as basic as electrification.

## **1.2. RESEARCH APPROACH**

A village is considered electrified if at least 10% of its households are electrified whereas Intensive electrification refers to deepening the electricity infrastructure to provide access to the remaining un-electrified houses. Evidently Saubhagya Yojana is a progressive step as it adopts a more intensive approach towards rural household electrification and seeks to achieve its mission of '*Har Ghar Bijli*'.

We considered this push for last-mile connectivity in the form of improvement in electrification percentage before and after the roll-out of Saubhagya Yojana. Through this research we analysed the impact of this intensive approach on several social economic variables key to functioning of any average household.

## **1.3. RESEARCH OBJECTIVES**

The central question that this project asks is: What is the impact of electrification on socio-economic status of rural households? Following are the core objectives, the study had under focus-

1. To map and document social impact value chain of Saubhagya Scheme.
2. To explore further the observed impact for secondary and tertiary spill-over benefits.
3. To qualitatively treat for the nature of benefits arising out of electrification

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<sup>3</sup> Government of Madhya Pradesh, Energy Department & Government of India; joint statement on 24x7 electricity for all.

4. To study specific sample households on case-study basis to establish benchmark trends on the line of impact.

## 1.4. METHODOLOGY

The methodology was designed to comprehensively measure the impact of household electrification on lives of the inhabitants. The research adopts both qualitative and quantitative approach to analyze the impact on various socio-economic dimensions.

Districts in Madhya Pradesh were divided in terms of Western, Central and Eastern regions similar to electricity department's distinction, which has three DISCOMs servicing each region respectively.

The districts were then ranked in terms of improvement in electrification percentage in these

District	Region	Total House - holds	Electrified Households before Saubhagya	Household Electrified	Balance Un-electrified Households	% Before	% After	Improvement
Alirajpur	West	122104	90211	31893	0	74%	100%	26%
Anuppur	East	116320	69778	33392	13150	60%	89%	29%
Ashoknagar	Central	88800	68010	20790	0	77%	100%	23%
Dindori	East	154294	122283	21137	10874	79%	93%	14%
Guna	Central	137083	76715	60368	0	56%	100%	44%
Jhabua	West	167991	119396	48595	0	71%	100%	29%
Umaria	East	110056	77728	32328	0	71%	100%	29%
<b>TOTAL</b>		<b>896648</b>	<b>624121</b>	<b>248503</b>	<b>24024</b>			

districts before and after Saubhagya Yojana. In the Western region, clear leaders are Jhabua and Alirajpur districts. In the Central region, we chose Guna and Ashokpur districts which was in third position due to logistical constraints to visit the districts in first and second positions. Finally, in the Eastern flank, we visited Umaria, Anuppur and Dindori districts.

We ensured a mix of households that are different in their energy consumption before electrification. **For instance, we studied households which were in 'dark habitations' – household clusters with no access to electricity in the past, some households where solar or other modes of energy were being used before, and finally households which were utilizing electricity, although informally.**

Saubhagya beneficiaries were interviewed through both a structured questionnaire and in-depth interviewing keeping in mind the complex nature of benefits that flow from electrification.

Madhya Pradesh was chosen as the area under study owing to its steady performance in terms of Saubhagya targets. Seven districts from across the geographical stretch of the state were chosen for

primary survey. Seven best performing districts were selected from each of the three geographic divisions of the state. The districts have been selected through stratified purposive sampling on the basis of drastic increase in rural household electrification under Saubhagya Yojana

## **1.5. DATA COLLECTION**

Data collection was done by using a Mixed Method Approach. The impact of various variables were identified through systematic qualitative and quantitative assessment.

Primary Survey: Semi-structured surveys were conducted amongst Saubhagya beneficiaries to gain certain quantitative insights into the changing trends post Saubhagya. Alongside, case study method was also employed to gain in depth understanding of how electricity is impacting the lives of beneficiaries and document change stories.

# OBSERVATIONS

## 1. EASE OF LIVING



## 2.1. EASE OF LIVING

Ease of living is an important development indicator that has profound impact on the lives of people. Ease of living (EoL) is the ease with which one leads life, and the control that one exerts on one's daily activities. Under the current dispensation, India took giant leaps in aligning its developmental aspirations with the principle of EoL.

### 2.1.1. Reducing Unproductive Efforts

Excessive efforts to perform minimal tasks is the order of the day for many poor households with no access to electricity. Previously, people had to perform a series of tedious tasks even for basic needs such as lighting, thereby, draining their time and energies on these mundane tasks. With advent of electricity through Saubhagya Yojana, these and many other necessities demand exponentially lesser efforts now, leaving out a huge block of productive time that could potentially alter lifestyles.

**Lighting** is the foremost benefit of electricity. It is an essential component of any modern household. Saubhagya yojana has transformed the role lighting played in the lives of people. Whereas previously people had to procure for and plan for their lighting needs every single day, power supply left them free to live their life after switching on the light, without giving it a second thought.

Without power, families usually resort to kerosene, supplied through Public Distribution System. They spend hours on end to, say, fulfil their lighting needs. Kerosene must be sourced from the nearest control point – which takes a few hours in the day. And every once in a while, the lamp needs to be cleaned of the black soot deposited, to improve the lighting. In addition, the tank under the wick needs to be refilled with kerosene.

If it is the firewood, it then takes even more time to go to the woods, locate the dried wood, chop and bring home the supply. Worse, the sourced material is worth not more than a few weeks if not days. The sheer physical efforts expended in arranging for the lighting saps away the energy and initiative for any productive and creative pursuits in most cases.

As our experience suggests, people prefer to use the firewood to kerosene due to its availability and intensity of heat and light generated by combustion.

Firstly, the problem with using firewood is that it takes heavy efforts to source firewood. Women and men have to forage the jungle to identify suitable trees or trunks that satisfy the requirements. They then have to axe the tree into logs of comfortable sizes, which then are bundled and carried all the way home. The firewood sourced with such hardship can meet the needs only for a few days, which needs to be replenished by same difficulty once again.

**Mobile phone** is one piece of technology that has transformed the communications realm of the country. The same is true for the poor and rural households that are in remote locations. Although

the number and the density of households that use the equipment is few and far between, the influence of mobile phone is beyond question.

Mobile phone needs its rechargeable battery charged every once in a while. The efforts required to charge a mobile phone battery when electricity is absent at home is humungous. In the case study recounted on a habitation called Kakadsela below, it is apparent the lengths that the households go to fulfil just this.

By cutting down the efforts required to keep mobile phone running, electricity facilitated intensive and extensive usage of mobile phone that was not possible prior to electrification. If efforts to charging the mobile phone are great, people tend to save the battery power and use mobile phone minimally. This results in underutilisation of the potential that mobile phone possesses. By electrifying such households, they can now use mobile phones to not only call, but to use them for gathering and processing information, news, entertainment, etc.

### **2.1.2. Case Study: Changing lives in Kakadsela**

Kakadsela is a village in the Sakraja gram panchayat of Alirajpur district. The district comprises the Vindhyan ranges, and the village is nestled in the mighty mountains on the banks of the River Narmada. Onto the opposite bank of the village lies the Satpura ranges of Maharashtra.

Kakadsela is a habitation of 9 households, which is one and half hour boat ride on the Narmada from the nearest village. The families in the habitation are predominantly dependent on fishing, and rainfed cultivation of maize and vegetables.

The hamlet has been electrified under Saubhagya yojana three months ago. Due to extremely hostile terrain, conventional power distribution proved to be impossible and solar panels and battery set to store power have been distributed to the households along the mountain ranges.

A major concern for the people in the habitation is lighting. They use kerosene lamps for indoors. They make an arduous journey by both land and water for 90minutes to source the kerosene from the nearest control.

When they venture outside, each person grabs a bunch of straw, prepared from the “Kath Bhindi” plant which is bulky yet porous enough to burn with bright light. A handful of straw is made as a torch, lit and they proceed. As the straw torch burns, it is reinforced by adding fresh straw on the go, so long as the bunch of straw is used up.

Mobile charging is nothing short of a day-long project. The men go cross the river and venture 9 kilometres into Maharashtra, to recharge their mobile phone batteries once in a week for ₹40. It takes 5 hours to recharge. Since battery charge is such precious, they save their phones only to communicate, and in emergencies only. They had no way to explore anything beyond the basic usage of a mobile phone.

Since Saubhagya, all of the households got a mobile charging point at home. Today, just one man goes to the same Maharashtra village once in a month, but not to recharge mobile phone batteries, but to fill the memory cards with movies, songs and games and distribute the material across the habitation.

Further, the straw torches were abandoned months ago, the mobile phone torch taking their place. With this, the night time activities are thriving, and safety from animals and reptiles is a given these days.

### **2.1.3. Pacing Household Chores:**

When asked about the new productive hours added after nightfall due to lighting, most people in Kakadsela replied that they now peel the skin off the corn cobs or chop the leafy vegetable, and some even said that they mash the maize into flour in the LED lit light. Importantly, the bank-side activity such as clearing the fish-nets for the next day are also being done during the night, whereas it was a strict daytime activity, leaving space for productive work in the daytime.

Without electricity at home previously, families went about their days daylight deciding their routine. For instance, they try to come home from work before sunset and prepare meal for the night, or any other chores that need some amount of light. This is how most of the hamlets that were dark function. This routine, however, almost always results in shortening the daytime productivity, as nightfall tacitly signifies the end of the productive time.

In developed communities, evenings are hardly more than a regular natural phenomenon that has no bearing whatsoever on productivity. Most often, work hours stretch into the night, three to four hours beyond the nightfall. This addition in productivity, accumulated through months and years, results in thousands of productive hours and consequently more prosperity.



Such inherent disadvantage is extremely unfair to the poorest households that have not seen electricity at home for decades. These families are extremely poor to begin with. In addition, they are robbed of productivity that is afforded to the rest. Electrification in that respect should also be seen as great unifying intervention because, in whatever limited context, it offers a level playing field for all irrespective of economic and social distinctions.

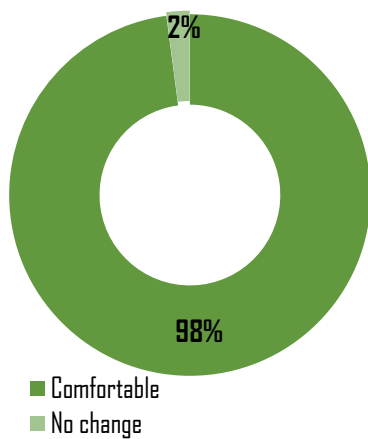
After electrifying the households, families typically have three to four hours of

illuminated hours every day that could be summoned for productivity. This stretch may be used directly by undertaking additional work during these hours at home like sewing clothes, or rolling beedis, etc. Or the working hours at the workplace may be extended as the need to reach home before nightfall is eased due to electric lighting provided at home.

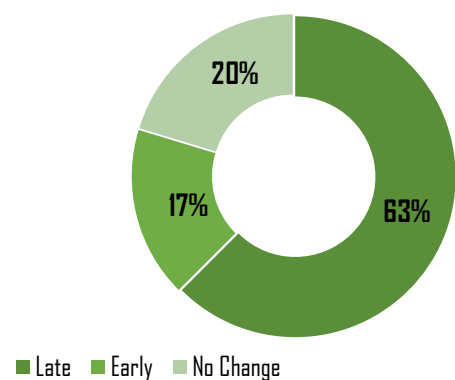
Men typically utilise these hours by trying to extend their working hours at farms or workplaces, coming home a little later post electrification. It is too early to quantify the additional income this generates as most households studied have received power not earlier than 3 months. However, in case of women, a very strong impact is evident, wherein, now they have the flexibility to work longer and resultantly reach home a little later.

Regardless of working status, women across do experience an element of discretion in their daily activities. Whereas daylight determined their routine and time table previously, now they have a choice in tasks they perform. In fact, quite a few women declared that they have more time in the day to start some productive activity and reorder mundane and routine chores into the evenings thereby creating opportunity that was non-existent before Saubhagya.

**Life After Saubhagya**



**Changes in Sleeping Time After Saubhagya**

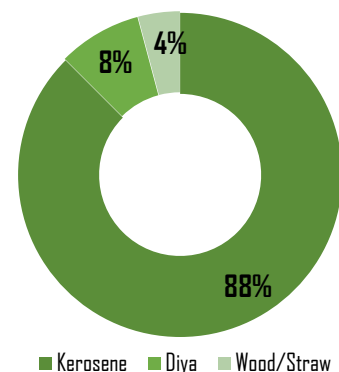


### 2.1.4. Survey findings:

When asked about the life after electrification, 98% households opined that their life has seen a definite shift towards increased comfort. that they feel “comfortable” after Saubhagya connection in their homes. This response is in line with our observation that Saubhagya does indeed improve the Ease of Living of the beneficiaries.

Kerosene constituted the primary lighting source before Saubhagya connection for 88% of the respondent households.

**Fuel Source before Saubhagya**



72% households have noticed either a decisive shifting of daily chores to the evening to extend work hours or have found productive time in the evening.

80% of the households said that they found significant change in the time they go to bed. Of them, 33 households said that they are sleeping early, while the rest of 63% said that they sleep late after electric connection.

# 2. Education



**SAUBHAGYA &  
SCHOOL-GOING  
CHILDREN**

## 2.2. Education

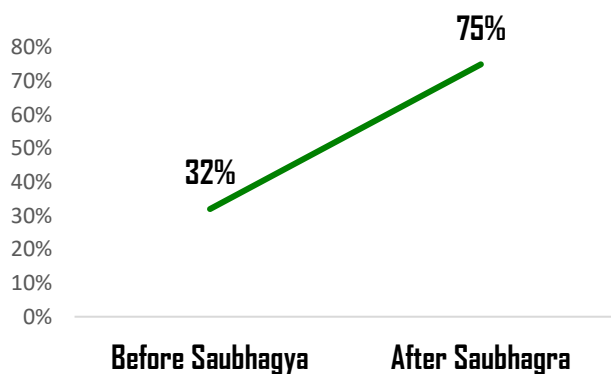
Education is a clear benefit of electrification, especially where the only source of lighting is through burning fossil fuel. The section explores the impact of electricity access on education in the previously dark villages of Madhya Pradesh. While doing so, the study captures minute details from beneficiary accounts and household surveys and establishes that there is a significant relation between availability of household electrification and education<sup>4</sup>. Education is not observed in isolation, but with consequent effects on people living in different geographical regions, cultural backgrounds and captures impact on children's education with respect to familial obligations and social structures.

A study conducted by Gustavsson, and Mathias (2007) in Zimbabwe reveals that children with access to electricity spend more time on doing homework when compared to unelectrified homes.<sup>5</sup> In yet another study conducted in Bangladesh (Barnes, DF., SR Khandker, A Hussain, A. Samad.), it was found that children belonging to homes with access to electricity spend at least two years extra in school as compared to those without electric connection.<sup>6</sup> A study in India revealed that electrification increases school enrolment by almost 6 percent for boys and 7.4 % for girls.<sup>7</sup>

Further reinforcing these findings from the world over, our research finds strong correlation between time spent studying and electrification through quantitative primary data and case studies, and evidence-based socio-psychological insights.

### 2.2.1. Survey Findings

#### Children Studying



**An average of 1.5 extra hours spent on studying at home:**

While education is the most direct benefit flowing from availability of household electrification, the beneficiaries of the Saubhagya scheme reiterated the fact. It was found that children spent between 60 to 120 minutes of extra studying time at home post electrification. The fact was

<sup>4</sup> Night time illumination as a benefit of electrification has been considered as one of the key aspects of the established correlation.

<sup>5</sup>Gustavsson, Mathias, 2007. Educational benefits from solar technology: access to solar services and changes in children's study routines, experiences from eastern province Zambia. *Energy Policy* 35, 1292–1299.

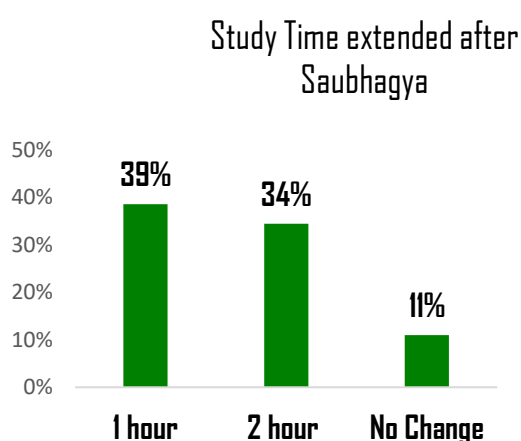
<sup>6</sup> Barnes, DF., SR Khandker, A Hussain, A. Samad. *Energy Access, Efficiency, and Poverty: How Many Households are Energy Poor in Bangladesh?* (Washington, DC: World Bank Development Research Group, June, Working Paper 5332, 2010).

<sup>7</sup>Shahidur R. Khandker, Hussain A. Samad, Rubaba Ali, Douglas F. Barnes, *Who Benefits Most from Rural Electrification? Evidence in India*, Paper prepared for presentation at the Agricultural & Applied Economics Association's 2012 AAEA Annual Meeting, Seattle, Washington, August 12-14, 2012.

directly correlated with availability of night time illumination. Further, the survey found out that 52% of the children were not studying in the evening before electrification and started doing so with availability of light at home. 32% of the respondents confirmed that their children were studying in the evenings under kerosene lamps. For another 11% of the respondents with school going children, there was no change in their studying time. This is phenomenon that is uniform around the globe: A study conducted in Peru establishes that a household's access to electricity increases children's time spent on studying by 94 to 137 minutes.<sup>89</sup>

A profound impact that was witnessed amongst the parents in electrified households is that most of them indeed expect that their children improve not only the time they allocate for studies, but also their performance in the classroom, now that they have electricity. Regardless of the findings, this conviction in time definitely leads to better education outcomes as parents are aware of the benefits that electricity potentially bestows on the capabilities to study.

Children who were studying prior to electrification had to make do with a poorly lit kerosene lamp commonly referred to as '*dibiya*'. The lamp can hardly run for a few hours and has a very small illumination range which strained their eyes and also impacted postures. Moreover, the light from the wick flickers vigorously with slightest of the air movement which added to the strain on the eyes. Electricity not only positively impacted their studying capabilities by providing them with



more productive hours every day, but also their motivation. Studying under a poorly lit kerosene lamp involved a lot of physical strain which inevitably only the most committed undertook.

It was evident in interactions with school teachers and children that, given their regular attendance and extra time to study at home, a slight improvement in grades and performance was noticed.

### **2.2.2. Pacing out time to accommodate education**

As dealt with, in the previous chapter, electricity is an important component of ease of living. It helps people pace out their daily schedules and automates daily redundant tasks for a more productive use of time and energy. Similar pattern can be seen in lives of school going teenage children. This factor was especially found to be of significance in case of girl children and female headed households. Girls in many villages reported that prior to electrification they had to accommodate several daily household chores such as cooking, cleaning and taking care of animals post school time while their mothers are out in farms. Now with electrification, they devote the

<sup>8</sup> Aguirre, J., The Impact of Rural electrification on Education: a case study of Peru, 2017.

<sup>9</sup> Other studies have found lesser increase in study hours: IEG (2008) (70 minutes) and the World Bank (2000) (48 minutes).

evenings or night time in studying and doing homework. Electricity also ensured enough relaxation time as some of them reported that they now study at dawn and devote evenings in relaxation or socializing.

### **2.2.3. Avenues for improving school infrastructure**

Impact of school electrification on education has been well documented and studied. Among the many benefits, it improves learning outcomes, provision of ICT in schools, retaining trained teachers and better school performance and attendance records etc. Studies have also proven the inverse to be true, i.e. schools without electricity perform poorly as compared to electrified schools.<sup>10</sup>

Saubhagya, due to its reach in the remotest corners of India has created potential for electrification of schools in such areas. Since electricity infrastructure has reached certain villages for the first time under Saubhagya yojana, it is being further used to electrify schools as well. In a couple of villages, who received electricity connection just over 3 months back have already applied for a connection in the village school. This is indeed going to improve the productivity and attendance rate of children and teachers akin.

### **2.2.4. Triggering usage of Mobile Phones and supplementing education**

While technology is redrawing contours of information and awareness for youngsters across the nation, people in dark villages had limited access to Information technology despite owning mobiles. Inability to charge mobiles at home limited its use to most urgent and emergency situations. Survey revealed that, now with electric connection at home children were using mobiles for accessing internet and supplement their school education. Apart from entertainment, children used internet for finding out meanings of certain words, answers to questions in different subjects etc. It was also found out that, while earlier their internet usage was limited but now with charging at home, internet is readily available for their needs.

### **2.2.5. Nurtures pro education sensibilities**

An insight derived from interviews was that a majority of parents with school going children, proactively mentioned the fact that their children were now able to study in the evenings which was either difficult due to poor lighting or not a possibility at all earlier. This finding is crucial from the standpoint that there is an inherent willingness among families towards children's education and hold school education in high esteem. However, with electrification now, they are seeing it as an opportunity for better academic achievements by their children. Electrification is underpinning familial priorities for education and triggers a larger culture conducive to it.

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<sup>10</sup>Ann Skelton, Leveraging funds for school infrastructure: The South African 'mud schools' case study, International Journal of Educational Development (in press, 2014).



### 2.2.6. Case study: The education ambassador

Simar Singha, a bright girl from a village near Jhabua, is perhaps the only college-educated woman of her village. Although well-connected to a road, her village was invisible in the darkness of the night. She is pursuing BA Sociology and is currently in her second year. Her family is supportive of her studies. Electrification has not just changed her schedule, but rewriting destinies of the many children in her village.



#### Challenges

- Earlier, she had to adjust her studies as per day light or study under kerosene which reduced her efficiency considerably.
- She owns a mobile, but could never use it much as the nearest charging facility was seven KMs away. So kept it just for emergency purposes.
- Due to darkness, Simar preferred staying indoors after sundown which reduced her mobility considerably.

#### Post electrification impact:

- She gets ample time to study now, even at night or evenings. Her grades have improved ever since.
- With extra time at her hands, she helps children of the village with their homework in the night. With both guidance and inspiration readily available, her village's perception towards the children's education is undergoing a favorable change.
- With mobile charging facility at home, she now listens to downloaded songs on her mobile for entertainment.

### 2.2.7. Case study: Juggling chores and studies

#### Background

Interacting with a family consisting of six daughters and a single mother, who works as an ASHA worker, brings forth importance of electricity in girl education and personal development. In a remote village near Alirajpur, we spoke to Shannu (name changed), one among the six sisters, studies in 9<sup>th</sup> grade and juggles between home and education. She vividly explained how electrification fundamentally changed her daily routine.

#### Challenges

- Earlier, her studies took the beating often for cooking and other household chores along with taking care of younger siblings.
- Finding time for studies was difficult as studying under just one kerosene lamp was not possible for all her siblings (four of them are school going). It strained eyes and often gave

up due to discomfort. As light flickers much when more than two people huddle around the lamp, they had to sit still again and again, taking away lot of time and energy.

- Cooking was also difficult under kerosene light and took more time.

#### **Post electrification impact:**

- Her mother fixed a bulb nearby the door frame, so that girls can study sitting outside, and mother can cook food inside. Shannu now rises around four in the morning to study for an hour, cooks for another hour and then leaves for school. After coming back she can cater to the animals and still have time for rest and entertainment. She studies for another hour at night and also helps her younger sisters with homework.
- Cooking is easier and weeding spoiled vegetables and stone from grain is easier. Food is hygienic now and no insects fall in.
- With electricity connection, the family got a music player on Ganesh Chaturthi this year (September). They danced on Visarjan and celebrated the festival with such zeal for the first time. Every year it used to be just rituals.
- With a player at home, they learn dance from their eldest daughter who stays at a hostel and takes dance classes there. She teaches them dance steps on latest songs.

Electrification is enhancing their potential and enables the family to express joy in many ways than one. Widowed 5 years back, the mother spares little time for her daughters, electrification has ensured that they juggle between their responsibilities and bond over creative activities now.

#### **2.2.8. Case Study: Electrifying schools**

Village near Ashoknagar district: With electricity infrastructure in place, the village community has taken a prompt decision to ensure electrification of the school. While the application has already been submitted, what grabs your attention is the vision and hopefulness of the community. Electricity in



schools is seen as a fundamental aspect which will go forward in attracting trained staff, impact the quality of education and bolster productivity. The case study holds importance not just from the Yojna reaching remote villages, but how electricity as a concept is bringing about a fundamental change in the thinking, behaviour and associated priorities, thereby laying down a foundation of a growth-oriented society.



# 3. Income Generation

## 2.3. INCOME GENERATION & EMPLOYMENT

Electricity infrastructure is a key consequence of Saubhagya Yojana. When there was no power supply to habitations altogether, there is no way for any sort of electricity infrastructure to be in place. With Saubhagya, electric poles have been erected for tens of kilometres just for a few households, creating a deeply penetrated power infrastructure, which would take decades in the normal scheme of things, but for a concerted and prestigious universal electrification project like Saubhagya.

One of the most immediate impacts of electrification in the context of enhanced income generation was scope for irrigation, previously unavailable in unelectrified villages. In one village, productivity had almost doubled post Saubhagya connection.

### 2.3.1. Case Study: Saubhagya & Agriculture

Madanlal is from Maer village in the district of Umaria. His village falls under the core area of the Bandhavgarh Tiger reserve, requiring development activities to be sensitive to ecological systems in the surroundings.

Since the terrain is undulated, acute need is felt for irrigating the crops on the rugged and uneven surfaces. Majority of the village's people make do with the rainfall, and little else to water their crops. And a few enterprising and well to do households relied



on the irrigation pumpsets run on diesel to lift water from the nearby water pond. However, with the 2 litre per hour diesel consumption of these pumpsets, the farmers endured a heavy price for irrigation, wiping out a significant portion of profits.

When Saubhagya connection was provided to Madanlal's home, he enquired with the electricity department about the feasibility of an electric motor to pump water into the fields. He was informed that he was eligible to procure an electric pumpset for free and the electricity consumption of such motor is exempted from billing due to his being from a tribal community. In essence, where he needed to spend ₹5000-6000 per month previously, in addition to the one time investment of around ₹60,000/- for the equipment, he is essentially provided with a pumpset for free and could use it for free. This is just unbelievable prior to Saubhagya connection in the hamlet, as infrastructure needed to run such a pumpset would have required Madanlal to pay over a lakh of Rupees.

## Increasing visibility & customer footfall for home-run businesses

A crucial uptake of household electrification has been for home run businesses such as vehicle service points, grocery shops, tea shops etc. Electrification has not only helped them increase their work hours but has also significantly increased their visibility and thereby customer footfall. Owners had to wind up their businesses with sun down or had to switch to kerosene lamps. In the later case, poor illumination hampered both, customer footfall and security of goods.

### 2.3.2. Case Study: Impetus to business I

Ramlal is an automobile mechanic and runs a vehicle repair workshop along a local highway in Dindori district. He earns ₹350-400 per day on an average. He works out of his home's frontyard. His home never had power supply before.

#### Challenges:

- After nightfall, it is difficult to identify the workshop in darkness. Not many vehicles stopped at Ramlal's workshop at night as a result denying him of some additional income.
- Even if he had vehicles to repair at night, due to his age, it is proving difficult to work on manifolds that are very narrow and deep, with precision parts and components.
- He complained that the kerosene lamp or even solar lamp he sometimes uses, the range of illumination is so poor that he could not notice when miscreant customers steal valuable components and spares from his kit.

#### Post-Saubhagya:

- He installed two bright LED bulbs at his workstation so that he could fully see the job he works on including tiny parts.
- He installed decorative series bulbs all along the roof so that his workshop is the most visible structure among the dark background. He claims that his income rose at least by ₹50 on average due to extra customers at light.
- He also claims that he could keep his tools and equipment safe now.

### 2.3.3. Case Study: Impetus to business II

**Background:** Ramnath and his wife stay on a secluded hill top on the outskirts of the Alirajpur districts. Such household location is a very typical attribute of the tribal district, where if there are about 20 households, each is about 1 to 2 miles away from the other. Ramnath runs a small grocery shop from his home and owns around 10 hens for his poultry business. With Saubhagya, there has been an increase in his monthly income as electrification has supported both of his income generation means.

#### Challenges

- Previously, he was dependent on kerosene which provided very poor illumination for his grocery shop thereby hampering his daily business activity.

- Incurred financial losses constantly on account of his hens being attacked by dogs and wild animals after dark

#### Post Saubhgya electrification

- His shop remains open for long even after sun down. Illumination has improved customer footfall and the visibility of his shop which can be spotted even in dark.
- He has now made a special structure for his hens on top of the hill with proper lighting to ensure that post sundown, they remain under illumination and also safe from predators.
- Ramnath has bought a new music player and has decorated his shop with cherry lights.



#### 2.3.4. Employment through Skill Development:

Infrastructure creation results in a host of developments not the least of which is an employment ecosystem. To be specific, since there was no such extensive infrastructure hitherto and does now, a brand-new skill set is in demand now, and an employment sector opens up that needs such skill set. As many of the households never had any experience with electricity, they inevitably need some assistance from trained personnel for minutest of tasks. Electrification is followed by numerous customizations and improvements at households which only a certified electrician can perform.

This opens up a vast and sustaining employment opportunity. Sure enough, the ITIs that were approached were of the view that electrician trade is in great demand and the duration of training in electricity-related trades is being shortened to meet the requirement of skill demand by the industry . This large-scale skilling and employment is a direct result of Saubhgya Yojana.

#### Opening Newer Avenues

Electricity infrastructure also enables another non-linear consequence that is related to income generation and growth potential. For instance, if a person in an unelectrified village wants to start a flour mill that runs on electricity, s/he needs to apply for a commercial electricity connection and pay for the electricity connection from the nearest tapping point of the feeder, including the poles, cables and transformers. This results in a massive expense of even 2.5 lakhs. Nothing else required over and beyond that can stem the initiative.

Saubhgya Yojana provided electricity supply to every household lacing cable all through the villages and habitations signifying their connectedness to the rest of the society. All that a person needs to do now is to apply for a commercial connection and get a supply wire into the facility from the feeder within a distance of 30 metres.

# 4. Health



**Health  
Outcomes &  
Electrification**

## **2.4. HEALTH**

Interviewing the beneficiaries of Saubhagya, it was consistently observed that a positive improvement in health-related aspects was felt from various aspects, such as greater awareness on hygiene and health related aspects, better protection from mosquitoes and other vector-borne insects, comfort and higher happiness in the case of pregnant women, and better illumination enabling hygienic cooking and protection from ingestion of harmful stuff, better indoor air quality etc.

### **2.4.1. Black carbon: Dangerous emission**

PM<sub>0.1</sub> – Particulate emissions that are smaller or equal to 0.1 microns, are the smallest particles emitted by burning Kerosene. A significant component of these emissions consists black carbon which is a cause of not only climate change, but is an active carcinogenic agent that results in lung cancer.

On an average, 7 to 8% of kerosene burnt through wick (kerosene lamp) converts into black carbon. To be precise, 1 litre equivalent of kerosene in terms of mass is 800gms. For every litre of kerosene used in burning lamps, 64 grams of black carbon is released instantaneously into the indoor air of the home.

The black carbon particles are so tiny that they could get through the skin, and the wall of lung, and settle in the bloodstream. Worse yet, they can pierce all the way through the placenta of a pregnant woman, affecting directly the embryo.

### **2.4.2. Case Study: Better maternal health**

#### **Background**

Detailed interviews with women of villages across the previously unelectrified belts of Madhya Pradesh, it was found that electrification has had a very positive impact on two of the most crucial dimensions of motherhood – Pregnancy and Post natal care. These are the two events in a women's life when she is in need of maximum care and comfort. Talking to a pregnant woman and a mother of a new born brought out these two impact factors and emphasize the important role of electricity in every aspect of life.

#### **Pre-Natal Care**

In her eighth month of pregnancy, Lata (name changed) is a mother of a 3 year old Shanker (name changed) and is eagerly waiting for her second. They are a family of four, with her husband who works as a driver and mother-in-law, who lives next door. Her home was electrified under Saubhagya connection around 6 months back and around 2 months back they even got a TV set.



Being in the critical stage of her pregnancy, she spends most of her time watching mythological programs for the unborn! However, with just 6 months down the line, she can feel the drastic difference between her two pregnancies. Following were the challenges identified –

Impact on her health was most significant, to put it in her own words, ‘पहले बहुत घबराहट होती थी गर्मी में, रात भर बाहर घूमना पड़ता था ठंडी हवा के लिए, पति को भी पूरी रात जागना पड़ता था, अब पंखे में काफी चैन की नींद आती है।’ She could easily figure out the difference between now and then. She said that prior to electrification, they had to use kerosene lamps, which caused suffocation and especially during pregnancy irked her a lot. With bulb light, she feels a lot better. Yet another aspect highlighted was availability of TV. She feels much relaxed, helps her pass her time during pregnancy, watches songs, gets information on child health and vaccines.



### Post Natal And Infant Care

Shanti (name changed) is a grandmother for the second time in two years. Two years back, her elder daughter gave birth to a son and now it is her younger daughter who gave birth to a girl just a month back. Recounting her experiences, Shanti said that life is much easier now with

electricity; the child also remains much peaceful.

Comparing the two times, shanty said, ‘पहले बच्चा बोहोत रोता था, मछर से भी बोहोत बछना पड़ता था, अब फरक है बिजली आने से, बच्ची आराम से सोती है।’ She expressed that earlier her grandson used to cry all night due to heat and darkness and remained very irritated, felt sick quite often. Now, we have fan and light bulb, the child sleeps very peacefully. The mother also said that she gets sufficient rest throughout the day as her new born sleeps peacefully.

Electricity was found to have a significant impact on mental and physical health of both the mother and child in the second case and the pregnant mother in the first. Health and comfort were found to be most direct consequences in the above two cases.

### 2.4.3. Incomplete combustion: Rising indoor air pollution

Any solid or liquid fuel when combusting directly under atmospheric oxygen fails to completely disintegrate. As such, kerosene combustion in lamps also has a thermal efficiency of just 10-15%, the rest of it turns to harmful gases.

These gases constitute not just the greenhouse gas of carbon dioxide, but also in significant amounts of Sulphur Dioxide, Carbon Monoxide, and other oxides of heavy metals that are seen in petrochemical substances that are fatal in long-term exposure. This results ultimately in poor indoor air quality.

# 5. Energy Conservation



**How Saubhagya  
provides clean energy**

## 2.5. ENERGY CONSERVATION AND ENVIRONMENT

A great consequence of electrification is the conservation of energy and environment through substituting inefficient and polluting energy sources with cleaner fuel such as electricity. For instance, a kerosene lamp with a wick converts 7-9% of kerosene volume into particulate matter called black carbon, an extremely dangerous compound<sup>11</sup>.

For every hour, a kerosene wick lamp consumes around 0.5 kwh equivalent of energy<sup>12</sup>, half a unit. Whereas an LED bulb consumes 0.00848 units per hour. In terms of emissions, a kerosene lamp emits 125gms of carbon dioxide per hour. Compare that with that of an LED bulb: 6.7 gms.

The luminous efficacy of a typical kerosene lamp is around 0.1 to 0.2 lumen/watt. To put it in a perspective, a typical LED bulb gives out 15 lumen/watt luminous efficacy. Most of the energy generated in burning kerosene is wasted in the form of heat, but not in the LED bulbs. In essence, an LED bulb is at least 150 times efficient in lighting for same amount of energy consumption. Modern grid-based lighting alternatives like LED, photovoltaic systems are brighter light, longer product lives and lower lifecycle costs.

Poor households, due to unavailability of electricity, end up spending the highest for one unit of energy or lighting. This is extremely disturbing as they are the ones that are financially most vulnerable. Electrification helps in providing power and lighting from sophisticated sources of energy that have been ensured to operate at their maximum thermal and other efficiencies.

Hence, electrification is not only helpful from the environment perspective, but much more importantly, electrification prevents from poor households spending the highest amount of money per unit of energy or lighting compared with that of the higher strata of the society. When this is the situation with kerosene, it is hardly difficult to fathom the problems with using biomass and firewood for lighting and other purposes.

Biomass and firewood are sourced directly from the nature unlike processed sources of fuel such as kerosene, a by-product of petroleum distillation. As a result, usage of biomass such as peat, agricultural wastes, firewood etc. as a source of fuel impacts the nature much more directly than other petroleum-related fuels.

Consumption of firewood directly from the forests could have devastating consequences such as deforestation, habitat loss, denuding of slope surfaces resulting in catastrophic natural events, and even desertification in a few instances. As such, shifting to cleaner fuels relieves stress from the forests. Kerosene is also almost completely eliminated as a primary source of lighting as intensive electrification is steadily on its way to saturation across the country.

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<sup>11</sup> Nicholas L. Lam et al., "Household Light Makes Global Heat: High Black Carbon Emissions From Kerosene Wick Lamps," *Environmental Science & Technology* 46 (2012): 13531-13538.

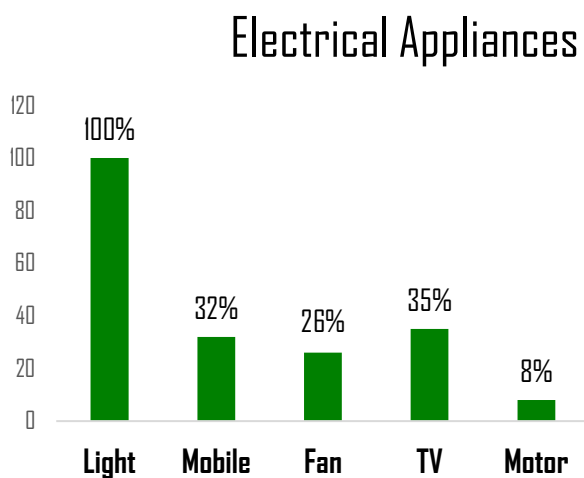
<sup>12</sup> Based on own calculations assuming 3 liters of kerosene consumption per month, 4 hours use per day

# 6. Social Change



## 2.6. SOCIAL CHANGE

### 2.6.1. Television: Agent of Change



Advent of small screen programming in the 1980s spurred a social and cultural revolution of sort. With the nation glued to Ramayana and Mahabharata on Doordarshan every Sunday, the power of mass media was just beginning to show. What was observed in the 1980s, a similar pattern can be observed in these previously unelectrified hamlets, 30 years later from the nationwide revolution. This observed change is triggering a similar

dominoes effect where collective viewing leads to discussions thereby positively impacting opinion formation. This progression, acts as a channel ultimately catalyzing knowledge sharing and cultural enrichment.

The impact in the surveyed villages was evident from their conversations around latest TV shows and current issues. It was interesting to mention that the broad mentions of Indian history and culture were being discussed in depth. With illiteracy still rampant in these areas, it was nothing less than a silver lining to observe that the discussion were now around separating the right from the wrongs, the discussions were now around differentiating facts from fictions, opinion sharing dissolved rigidity of belief. A new context of belief system is sure to arise when the vulnerable society is exposed to discussions which divorce their blind faith on age old rigidities and take them on a course to progress and growth.

Where TV/electricity has worked like an ally which has given larger perspective from historical and political angle, but has also enabled a psychological and behavioural change leading to happy relationships. A case in point: a woman in a previously unelectrified hamlet near Ashoknagar village expressed that after watching several TV shows and also from knowledge gained from *satsang* programs; she worked on bettering her relationship with her husband and in-laws. She feels that she gained a newer understanding of relationship dynamics and tries to implement those principles in life. Evidence of behavioural change was evident from conversations around Swachh Bharat Abhiyaan, constructing toilets in the village (referred to as *izzat ghar*) and girl education. Television and mobile are indeed acting as bridge with the rest of the world and lay the foundation for inclusive development.

With increased mobile penetration, many households had mobile phone even before electrification, but its use was limited due to unavailability of charging facility at home.

A 35% percentage of people have purchased TV sets post electrification in the last 3-4 months while a few households already had a TV set, gifted at the time of marriage or otherwise, lying unused for over 4 years. Impact of TV and mobile with respect to increase in their awareness and social inclusivity has been studied from three different perspectives; i.e. (1) Impact on men; (2) Impact on women; (3) Impact on children.

### **2.6.2. Entertainment & information ally boosting confidence**

In most of the households, men were primary owners of mobile phones while the device was being used by other members in case of any need. Women rarely owned any. With charging facility at home, mobile usage has considerably increased. While mobile usage was limited to calling purposes, people have started using it for entertainment purposes. While very few respondents had smart phones, most of them had feature phones that support multimedia. A few watched movies and listened to songs on the phones, but many used mobile phones only for calling. Interviewed respondents said that they feel much more confident watching movies without fear of losing charge and not have a phone in case of emergency.

While Mobiles are primary source of entertainment, a certain percentage considered TV as a primary source for information on current affairs. When interviewed about major national news and affairs, some of the people had a fairly good idea. As the population surveyed was mainly illiterate, audio/video sources of information and entertainment proved to be an important source of information and awareness. Many of them relied on TV and mobile for information relating to trade such as farmers.

### **2.6.3. Greater agency to women**

Household electrification has an important role to play in information & awareness of women. Most of the women had television as primary source of information and awareness. When interviewed a majority of them started watching daily soaps post electrification. Time slot between 8 to 11 pm is largely devoted to TV viewing by women. This time slot, before electrification, was either used in sleeping or talking. It would not be wrong to say that television unites the people in common experiences across the nation and the same was experienced when women of previously unelectrified households were interviewed. Women said that they were aware of the latest trends in clothing and hair dos.

As mentioned earlier, women spend many hours on drudgery, with electrification they have a lot of time saved. The freed time is used in a variety of ways and facilitates productivity at home. During the survey it was found that access to television programs was having an effect on shaping positive and transformative attitudes towards rights of women and against discrimination of women, such as realization of domestic violence decreasing tolerance for it, need for educating girl child through several public interest advertisements (like BetiBachaoBetiPadhao Abhiyan, family planning information etc).

With television at home many women felt that the knowledge gained from various shows and movies was helping them in several ways.

From political analysis, electricity larger A woman in Ashok Nagar district, expressed that TV programs such as soaps, *satsang* programs, she could ways and practices to better.

#### **2.6.4. Improved exposure of children**

Conversation with kids of a habitation near guna district, adds a perspective where we see their interface with social media. With electrification, there was a drastic increase in mobile usage, especially internet. Following were the key points identified

Entertaining videos on WhatsApp and Facebook and seeing what other people are doing and understanding the latest trends was what attracted the children most. When asked they spoke about the latest bollywood movies and parroted dialogues of latest bollywood blockbusters. Electrification was enabling them come at par with their school mates and they now had common experiences to share.

Children using internet for education, doing homework. earlier they had to rely on their elder siblings now if they are unavailable, they help themselves and get even better information.

#### **2.6.5. Case Study: Equitable access to entertainment**

##### **Background:**

For almost last 10 to 12 years people of Hilagana village near Guna district have a peculiar daily routine. Almost every day, at around 11 pm, all residents of the village hurriedly finish up their daily chores and walk up to the farm, about 5 Kilometers away, to watch TV. What makes them take



such a desperate step is lack of electricity in their village and the nearest and most feasible point is the farm with electric connection for water pump. All villagers, including men, women and children, locked their homes and walked till the farms for sake of entertainment. Many of them, mainly men, stayed there until 4 in the morning on certain days. People arranged CDs from various sources and watched only movies. That has always been a major source of entertainment for the village for more than a decade.

### **Challenge:**

Although the activity had over the years normalized and had become a part of their normal routine. People did realize that it was never easy and involved a lot of discomfort and also a risk of certain level. Following were some of the challenges recounted by villagers:

- On certain occasions, the entire village was left empty, with most of the men off in the fields all night, leaving only old, sick and some women. It increased the risk to their security considerably.
- Although people went to the farms in groups of 40 to 50 people, there was always a risk of fatal accidents due to poisonous creatures such as snakes and scorpions.
- Sometimes it broke into fights and arguments over adjustment or choice of program.
- Mainly men got to exercise choice of program/movies.
- Families got little time to spend with each other.

### **Post electrification impact:**

With electrification, entertainment has come to their doorsteps. Five more families have bought television sets since Saubhagya Connections. Following were major differences noticed by the residents.

- With electricity connection, people have taken cable connections and have access to TV programming such as news, daily soaps, etc. It has broadened their definition of entertainment.
- Women were particularly happy with this change. They said that earlier they were dependent on men's choice of program now they watch daily soaps and other programs of their choice. TV at home gave them more agency and decision making for their entertainment.
- People now adjust in each other's home and watch TV, increasing social bonding and neighborhood bon homie. With families along, choice of programming has also improved, as informed by men.

### **2.6.6. Case Study: Building faith and reliance in government:**

Many people had bought a TV set just a few years prior to electrification, as they expressed faith in the assurance given by the Prime Minister that their villages would be electrified soon. There was a strengthening hope and confidence in the government among the people.

Laung Singh, heads a family of 11, in small hamlet, Jwanpada near Jhabua district. it has been four months since the village got electricity. However, what makes his case interesting is that he was gifted a TV set about 5 years back but it remained packed ever since for lack of electrification. Today, he is one among the only two families in the village who have got a television set and host other families. They got a dish connection within four days of electrification. Interacting with the



women of the family, children and himself helped us gain insights into the rapid impact of electrification on information and awareness of the people.



### **Post Saubhagya impact**

Laung Singh said that he was updated with all that was happening in his state, neighbouring states and at the national level. Earlier, he had no source of news and information and had to depend on hearsay or visitors. Laung Singh discussed on several issues of national concern and expressed great interest in knowing more.

Interacting with his wife and sister, it was found that they had absolutely no source of entertainment earlier. They either spent talking with each other or most of the time was consumed in drudgery. She said that she watches daily soaps regularly along with some morning programs of sermons and vastu.

Children of the village, have a completely new dimension added to their lives. Today they are watching the same cartoons, the same educational animated series that a child in a big city is watching.

Social change is constant, but in case of these previously unelectrified villages, it appeared to have stagnated. Men, women and children are adapting to knowledge and information revolution in their own ways, the realm of communication is fundamentally changing the way they interact and make sense of the world.

# 7. SECURITY

## 2.7. SECURITY

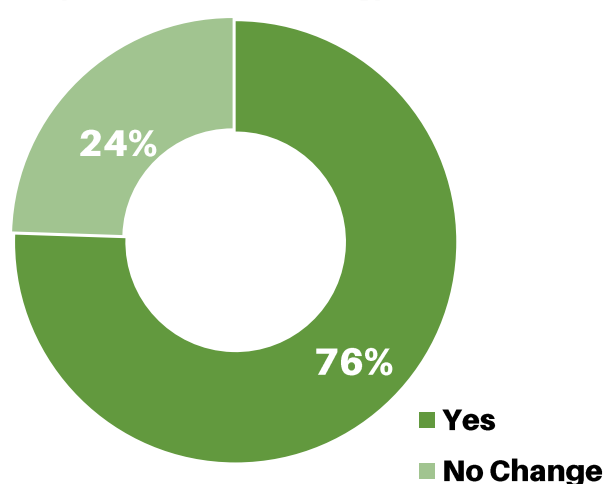
A feeling of security is fundamental in psychological maturity of a human being. He or she feels empowered and concentrate energies on better aspects of life. The survey revealed that the perceived impact of electrification on security was found to be considerably strong amongst the beneficiaries of Saubhagya Yojana. Lighting was found to discourage thieves and wild animals and ensure safety of villagers walking at night. The responses however varied as per the village's topographical features and distance from the city. This section delineates the experiences of beneficiaries in this respect.

During the field survey, it was found that most of the people had installed light bulbs outside their homes to lighten up the perimeter for better safety. It reinstates the strong link between safety and lighting that has been well documented through various sociological theories. The built environment has a strong influence on both crime and fear of crime. These factors have been studied under Crime Prevention through Environmental Design (CPTED) theory and stresses on the role of natural surveillance and access control as environmental determinants of crime.<sup>13</sup> The theory holds relevance in understanding the differences in impact of electricity in lives of people living in hilly terrains, forested areas, isolated habitations with limited means and those living near thriving cities and towns and exposed to different forms of crime. The nature of predatory influence is different in both contexts but night time lighting was observed to be equally beneficial for both.

Following are findings based on detailed accounts of people and their common experiences before Saubhagya connections.

### 2.7.1. SURVEY FINDINGS

#### Safety at Home after Saubhagya



#### Maximum respondents expressed feeling of safety with lighting

An overwhelming majority of respondents said that they feel safe with availability of lighting even after sun down. Many of them expressed that kerosene lamp was insufficient to ensure surveillance even in the perimeter of the house. For this very reason, most of the households had installed at least one

<sup>13</sup>Robinson MB. In: *Advances in Criminological Theory*. Laufer W, Adler F, editor. Vol. 8. New Brunswick NJ: Transaction Publishers; 1999. The theoretical development of CPTED: 25 years of responses to C. Ray Jeffery; pp. 427–462.

light bulb outside their homes for improving night time vicinity.

### **Illumination discourages criminal activity**

A considerable percentage of respondents living near urban areas expressed a feeling of safety from burglars at night. With their perimeters illuminated, they felt it was easier to keep a vigil after sundown. As has been dealt with earlier, lighting significantly discourages criminal activity as lighting increases the risk of being apprehended. Many women said that they sit outside their homes even at night. In one of the villages, a woman said that she now easily sends her children next door in case of some need in the evenings. With a light bulb outside every home, the area is well lit.

### **Bolster financial & emotional security**

One common finding among those living in forested and hilly terrain expressed that post electrification there were fewer instances of their domesticated animals (cattle, hens, other pets) being killed by wild animals at night. With light near the porch wild animals either avoid treading or are easily spotted by owners and timely action is taken. Many had a separate lighting arrangement for their animal shed. Ensuring cattle safety is an important dimension of their financial security as well as safety of their domestic animals is fundamental to their subsistence.

Another significant dimension is human security from wild animals and their improved mobility at night. In the middle of the jungle, walking up to their porch or till the next house involved a lot of danger from wild animals. However, with electrification, they use their mobile flashlight without fear of losing battery charge.

### **Reduction in unfortunate incidents**

Another aspect common to people in all locations and particularly in forested areas was ability to spot creatures such as snakes and scorpions entering inside their homes. Previously it was impossible to spot such things at night, which leads to an unfortunate incidents as recounted by a woman in Guna district where a child died of snake bite at home in one of the surveyed villages. Certain respondents residing near forested areas of Umariya and Annupur said that since electrification, they feel much safer, especially for their infant children who are much more vulnerable to such poisonous creatures.

### **2.7.2. Case Study: Securing lives**

In a village, just 20 kilometers away from Guna town area, there is village which was unelectrified until now. Interacting with the villagers gave a unique perspective of how electricity transformed their lives in small but significant ways.

### **Averting accidents**

Close to the city outskirts, there had been numerous instances of theft and accidental injuries in dark before electrification. An unfortunate incident that reigned in the minds of almost all the villagers was death of a young child who was bitten by a snake in the dead of the dark at night. The villagers said that the incident could have been averted if there was adequate lighting and the snake could have been easily spotted as it can be now owing to well-lit perimeters.



### **More socialization**

Being candid about their common experiences, women said that prior to electrification, they had forcibly put their children to sleep for fear of them wandering into the dark. Now, they said, the children play around the house, until late evening, neighbors also get more time to sit and chat or watch TV together.

### **Unearthing income potentials**

Sharing her experiences, Kiran Sheria, a young and vocal woman, said that earlier they had to prioritise their morning time between cooking food and going for work. Most of the time they had to stay back and cook as the men folk left for work. Now with electrification, they cook food in the evenings and utilize their mornings for work. Along with that, they also get ample time to rest. A group of women shared their plan of buying a sewing machine for supplementing monthly income.

# 8. Self Esteem



## **2.8. SENSE OF PRIDE & OWNERSHIP**

The Saubhgya scheme funds the cost of last-mile connectivity to willing households. While rural electrification programs have been carried out in past as well, Saubhgya Yojana ensure universal coverage and takes into account each and every household irrespective of location and project costs. The scheme has common man's welfare at its core. The maximum benefit of Saubhgya Yojana can be noticed in case of habitations situated miles away from revenue villages. Some of the habitations surveyed were in the most inhospitable terrains for electricity infrastructure to reach out. They were socially and geographically disconnected from rest of the nation and realizing the drastic impact in their lives. Electrification has added a crucial dimension to their lives connecting them to rest of the world in several ways.

Interviewing the beneficiaries it was found that there was an element of self esteem they attached to their Saubhgya connection, with a sense of ownership that came along with it. When surveyed, a around of the people said that they instantly contact the lineman in case of maintenance issues or power cuts. Being able to have a regular flow of connection was one of the factors highlighted by people, earlier they had to rely on different sources of lighting, such as kerosene, batteries, firewood and had to grapple with choices as per availability. The quality of light was poor and unreliable. Connection under Saubhgya has overcome this daily uncertainty.

An important dimension of their enhanced esteem was having a rightful ownership over a legally owned property. Prior to electrification were forced to rely on less viable and illegal sources of electricity due to unavailability of electric connection. In a case of villages near the core zone of Bandhavgarh national park, people had wood as the only option of lighting until now. However, cutting trees in a protected zone often landed them on the wrong side of forest officials and caused legal hassles for them. Despite this, people continued to cut trees for especially for lighting while trying not to get caught. People interviewed said that electrification came in as a sense of relief, as they no longer had to take the risk. It also impacted their self esteem as expressed by the respondents.

Electrification is also changing the social landscape of previously unelectrified villages. We witnessed a festive fervour in the villages and people are beginning to become more expressive about their festivities and lighting is now playing an important role in it. In certain villages we witnessed a Pandal for Navratri celebrations set up with elaborate lighting arrangements, certain households had instantly bought woofers and speakers for upcoming celebrations such as weddings and festivals. Electricity has become a means of enhancing and enriching their cultural expression and social cohesion. While electricity is a basic need available to all, it is also catering to an important dimension of human development, which is cultural expression and fulfilment.

### 2.7.3. Case Study: Saubhagya & social institutions

Another aspect of cultural change and enhanced self-esteem that was recurring throughout but best expressed in a village near Guna district was where young men were unable to find suitable marriage prospects due to unavailability of electricity. The men either had to move out to another place, or wait until a willing party settles for the proposal.

This is felt by the villages as a shameful phenomenon, where an air taboo is still noticed



even when the incidents are recounted by them to us. The finding adds an important dimension to the importance of electricity in the social and psychological well being of human beings in the modern-day world. With Saubhagya connections, the villagers expressed a sense of achievement and pride that their young men would now find good matches and a necessity as basic as electricity would not hinder their lives.

### 2.7.4. Case Study

#### Background:

Availing benefits under the Pradhan Mantri Awaas Yojana, a family is constructing a house in a previously unelectrified habitation on the outskirts of Ashok Nagar district. Four other families have already availed the benefits and are almost on the verge of completion. The construction process requires high amount of water for preparation of cement sand mortar. The owners had to source water from the nearest well, which was few kilometers away.. Post Saubhagya people have rented a pump to make things much convenient.

#### Challenge:

- The process involved a lot of time and energy, leaving all family involved family members, especially women, exhausted.
- The tedious process also slowed down the completion rate considerably.

#### Post electrification impact:

With electricity infrastructure in the village, people are using it to simplify their lives and cut down mundane and redundant tasks. For homes who finished before Saubhgya connection agreed that their work was quadrupled due water unavailability for construction. Following were the impacts observed based on people interactions-

- With water pump, process has become easier and has improved the completion rate.
- Women feel less tired and do not have do the tedious task of filling cans after cans from the well.



### 3. CONCLUSION

Saubhagya has been able to bring remote and secluded sections in a zone from which their social awakening, empowerment, growth is now a possibility and not a distant vision. It is the funnel through which all social awareness or social schemes can now percolate into this segment.

- **Education:** The impact has moved from a bare functional benefit and is playing a fundamental role in moulding community's attitude towards education.  
Children spend an extra 90 minutes on studying at home after electrification. Nearly about 75% of the children have started studying in the evenings as well.
- **Women Empowerment:** Electrification is imparting greater agency to women through better time management, sense of security, comfort and education for girls. Women socialize more, have flexibility in work hours and greater time for rest and entertainment. Girls pace out time to accommodate education
- **Enhanced Ease of Living:** Electrification has substantially impacted ease of living, cutting down mundane tasks involved in doing daily activities such as lighting, charging mobile etc. Bigger window for productivity due to flexibility in hours.
- **Better Security:** Electrification has a significant impact on security both in respect of crime and safety from wild animals. With electrification incidents of wild animals preying on cattle has gone significantly down.
- **Improved Income Generation Avenues:** With electricity infrastructure in place, better avenues for income generation activities have been created. Including, Support for informal/home-run businesses, enhanced for irrigation, previously unavailable in unelectrified villages.
- **Environment protection:** Electrification is not only helpful from the environment perspective, but much more importantly, electrification prevents from poor households spending the highest amount of money per unit of energy or lighting compared with that of the higher strata of the society.
- **Mass Media and social change:** Mobile charging at home and access to TV viewing is opening new frontiers of information and enhanced exposure. This exchange is having considerable impact in lives of people with greater awareness, cultural exchange, current

information, family entertainment and usage of mass media for education. It is also promoting social cohesion.

- **A sense of rightful ownership and pride:** A source of recognition and cultural expression is enhancing a positive outlook. It has been a step towards inclusion of the socially and geographically secluded sections. They are experiencing social change and upliftment after a lifetime of darkness.

#### **4. WAY FORWARD**

As clearly stated Saubhagya is that means through which all social awareness messaging can percolate into the segment, thus there is a need to strategically tap this productive window.

- The research reveals that post electrification; women have the choice of watching programs of their choice. This activity predominantly happens between 8 to 11 pm. This window should be strategically utilized for targeted communication around women empowerment, health, sanitation and hygiene programs.
- Similarly, advent of electricity in households offers the possibility of charging mobile phones thus ensuring the latter acts as an entertainment and information ally. This technology penetration should be leveraged by social awareness campaigns e.g. automated calls for awareness and information dissemination etc.
- With electrification the home run businesses have seen growth. At this juncture, it would be highly beneficial to leverage the change and encourage people to come forward and exploit the potential of income generation within their surroundings.
- Saubhagya has the capacity to sit in the middle of all the social awareness campaigns because of continuous interactions and fertile dependency of the villagers on department executives. Going forward, launch of Saubhagya in a specific village needs to strategically tap the social/skill set framework so that necessary in roads can be made and income generation possibilities can be furthered.



# ABOUT PPRC

Public Policy Research Centre (PPRC) is a research organization established under the Dr. Mookerjee Smruti Nyas. The Centre aims at constructively impacting the policy formulation process with emphasis on good governance practices, efficient implementation mechanisms and evidence-based policy-making including policy-audit and evaluation, in the larger interest of the nation.

Besides preparing policy insights and research notes on contemporary policy and legislative issues, PPRC has conducted several short-term and long-term, primary and secondary research studies, undertaken projects which were duly documented and deliberated with relevant stakeholders.

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