Evaluation of SAUBHAGYA (Universal Electrification) Scheme of Government of India

Submitted/Presented by:
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MD, Idam Infrastructure Advisory Private Limited
India’s commitment to climate change action

- Second most populous country
- 2.4% of the World Area
- 17.71% of World Population
- One of the lowest per capita emissions amongst G20
- Entered into 37 year demographic dividend period
- Renewable promotion 5th largest in RE installed capacity
- Climate Action Ambitious commitments under NDCs to UNFCCC
- Reduced the emissions intensity of GDP, by 21% below 2005 levels
- Energy Access Committed to SDGs, energy access to each and every household by 2020
Indian Power sector at a glance

Total installed capacity (362 GW)

- Thermal: 63%
- Nuclear: 2%
- Hydro: 13%
- Wind: 10%
- Solar: 8%
- Biomass: 3%

Power supply position

<table>
<thead>
<tr>
<th>Requirement (million MU)</th>
<th>Availability (million MU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY11</td>
<td>FY12</td>
</tr>
<tr>
<td>FY13</td>
<td>FY14</td>
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<td>FY15</td>
<td>FY16</td>
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<td>FY17</td>
<td>FY18</td>
</tr>
<tr>
<td>FY19</td>
<td>FY19 (aug 2018)</td>
</tr>
</tbody>
</table>

Generation and growth of conventional sources

- Growth (%)
- Electricity BU

<table>
<thead>
<tr>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
<th>FY19 (aug 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>8</td>
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</tr>
</tbody>
</table>

Generation and growth of renewable sources

- Share in generation (%)
- Electricity (BU)

<table>
<thead>
<tr>
<th>FY15</th>
<th>FY16</th>
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</tbody>
</table>
SDG 7 – Strong emphasis on energy access to poor rural and urban households

### SDG 7: Affordable and Clean Energy to All

#### Priorities of Government of India
- Achieve 100% rural electrification across India.
- Reduce the cost of light generated by using alternate sources like kerosene, coal etc., and offer least cost energy supply.
- Mainstreaming rural population in Indian Growth Story

#### Households by Source of Lighting in India, Census 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity</th>
<th>Kerosene</th>
<th>Other Sources</th>
<th>No Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>107,115,876</td>
<td>83,120,384</td>
<td>959,820</td>
<td>575,892</td>
</tr>
<tr>
<td>2011</td>
<td>165,777,472</td>
<td>77,461,497</td>
<td>1,973,541</td>
<td>1,233,463</td>
</tr>
</tbody>
</table>
India has been trying to achieve full electrification for long time…

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>Rural Electrification Corporation (REC)</td>
<td>Built upon the Tennessee Valley Authority (TVA) experience in the US. GoI used USAID assistance to create the Rural Electrification Corporation (REC)</td>
</tr>
<tr>
<td>2003</td>
<td>The Electricity Act</td>
<td>USO mandated supply of power to rural households by DISCOMs. Section 12 delicensed generation and supply to rural areas</td>
</tr>
<tr>
<td>2005</td>
<td>Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)</td>
<td>100% electrification of all villages and habitations in the country and building of essential electricity supply infrastructure including off-grid solutions</td>
</tr>
<tr>
<td>2015</td>
<td>Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)</td>
<td>Designed to provide continuous power supply to the entire rural India</td>
</tr>
<tr>
<td>2017</td>
<td>Saubhagya</td>
<td>24/7 power available to all households, industry, commercial, any other electricity consumer and agricultural farm holdings by FY 2019</td>
</tr>
</tbody>
</table>

DDUGJY to SAUBHAGYA
Natural progression from village to household electrification
Assessment of rural electrification programs (1/2)

Schemes - Targets & Achievements

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Target</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGGVY</td>
<td>2.27</td>
<td>2.12</td>
</tr>
<tr>
<td>DDUGJY</td>
<td>162.71</td>
<td>113.17</td>
</tr>
<tr>
<td>Saubhagya</td>
<td>24.58</td>
<td>24.56</td>
</tr>
</tbody>
</table>

Budget Allocations

<table>
<thead>
<tr>
<th>Year (FY)</th>
<th>RGGVY</th>
<th>DDUGJY</th>
<th>Saubhagya</th>
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<tbody>
<tr>
<td>FY11</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
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<td>400</td>
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# Assessment of rural electrification programs

## Objectives

(i) Provision of access to electricity to all households by year 2012
(ii) Quality and reliable power supply at reasonable rates.
(iii) Minimum lifeline consumption of 1 (one) unit per household per day as a merit good by year 2012.

## Merged all ongoing schemes

- Electrification of all villages
- Agri-Feeder separation
- Improvement of Sub-transmission and distribution network to improve quality and reliability of the supply
- Metering to reduce the losses

## Implementation mechanism

- 90% grant is provided by Govt. of India and 10% as loan to the Discoms via state governments
- 60% grant from GoI, 10% contribution from DISCOM, and 30% loan
  - 50% of loan converted to grant on achievement of target

## Implementing agency

- REC
- REC
- REC

## Expenditure per household (USD)

- 1194
- 29
- 71

## Key lessons

- Focus on village electrification than households led to dissatisfaction
- Slow pace and missed yearly targets
- Energy plus approach
- Top down approach
- Top down approach
- Focus on universal household electrification
- Carrot and stick approach for meeting targets

<table>
<thead>
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<th>RGGVY</th>
<th>DDUGJY</th>
<th>Saubhagya</th>
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<td><strong>Objectives</strong></td>
<td>(i) Electrification of all villages (ii) Agri-Feeder separation (iii) Improvement of Sub-transmission and distribution network to improve quality and reliability of the supply (iv) Metering to reduce the losses</td>
<td><strong>Subsumed RGGVY</strong></td>
</tr>
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<td><strong>Merged all ongoing schemes</strong></td>
<td><strong>Subsumed RGGVY</strong></td>
<td><strong>Energy access to all by last mile connectivity and electricity connections to remaining un-electrified households in rural as well as urban areas to achieve universal household electrification in the country by 2019</strong></td>
</tr>
<tr>
<td><strong>Implementation mechanism</strong></td>
<td>60% grant from GoI, 10% contribution from DISCOM, and 30% loan 50% of loan converted to grant on achievement of target</td>
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<td><strong>Implementing agency</strong></td>
<td>REC</td>
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<td>Focus on village electrification than households led to dissatisfaction Slow pace and missed yearly targets</td>
<td>Energy plus approach Top down approach</td>
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Providing Last Mile Connectivity and 24/7 Power - Saubhagya Scheme

DDUGJY was launched to electrify 18,000 villages across India by providing power to 10% of households and in public areas, DDUGJY was taken over by ‘Saubhagya’ to provide power to all households.

Announced
September 2017

Objective
• Universal household electrification
• 40 Mn connections by December 2018

Features
• Policy transition from electrification of villages to connecting households
• Free electricity connections in rural households and urban poor homes

• The ₹16,320 crore Saubhagya scheme funds the cost of last-mile connectivity to ‘willing households’
• 99.9% or 26.28 million of target households have got electricity connections as on 31 March 2019.
• The remaining 0.07% or 18,734 households yet to be electrified

Electrified 21,44,73,043 99.99%
Unelectrified 18,734 0.01%

Source: Saubhagya Dashboard
Implementation and monitoring arrangement under Saubhagya

Funding Structure of Saubhagya

<table>
<thead>
<tr>
<th>Agency</th>
<th>Nature of Support</th>
<th>Quantum of Support (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government of India</td>
<td>Grant</td>
<td>Other States 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spl Category States 85</td>
</tr>
<tr>
<td>Utility/State Contribution</td>
<td>Own Fund</td>
<td>Other States 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spl Category States 5</td>
</tr>
<tr>
<td>Loan (FIs/Banks)</td>
<td>Loan</td>
<td>Other States 30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spl Category States 10</td>
</tr>
<tr>
<td>Additional Grant (on achieving targets)</td>
<td>Grant</td>
<td>Other States 50% of total loan</td>
</tr>
<tr>
<td>Maximum Grant by GOI</td>
<td>Grant</td>
<td>Spl Category States 90</td>
</tr>
</tbody>
</table>

Monitoring of Implementation
- Daily updation of electrification data for each connection
- Online monitoring of progress through dashboards available on Ministry website
What helped India achieve the target?

- Robust institutional mechanism
- Strong legal and policy framework
- Strong political will
- Entrenched central sector power entities that implemented the scheme
- Targeted subsidy mechanism for the program
Challenges noticed during evaluation of scheme

• Discrepancy in data uploaded in SAUBHAGYA portal
• Electrification through VESP or other mini grid projects
  – Lacks sustainable supply infrastructure
• Census data was old (2011), created problems in ensuring authenticity of numbers
  – Distribution companies must carry out regular ground surveys to identify unelectrified households
• Need to ensure access; not only for lighting demand but also for appliances and productive loads
• Potential for large number of rural youth jobs as electricians for installation and then maintenance
  – Need to work effectively with Skill India to ensure skilling of local youth
• Utilities need to adopt innovative business models to manage dispersed low intensity electricity demand
  – Feeder level/ DT level franchisee models
  – Distributed generators and distributors
• While access has been established, 24X7 supply of power is challenge
  – Most consumer in this category are BPL, will not be able to pay electricity bills
  – Need effective DBT schemes to bring them into mainstream
## Policy Evaluation of SAUBHAGYA

<table>
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<tr>
<th>Area</th>
<th>Parameter</th>
<th>Assessment</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects</td>
<td>Effectiveness</td>
<td>Effective in creating access to intended beneficiaries.</td>
<td>Overall policy is successful in creating sustainable access to electricity to large number of intended beneficiaries. It has helped India in achieving SDG#7.</td>
</tr>
<tr>
<td></td>
<td>Unintended Effects</td>
<td>Increased sales to subsidised category consumers may impact health of utilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equity</td>
<td>Helps in improving societal and gender equity</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td>Cost</td>
<td>No significant, though unit cost is high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feasibility</td>
<td>One time cost provided by Central Govt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acceptability</td>
<td>High acceptability given social benefits</td>
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Conclusion

• One of the largest and the most successful household electrification programs anywhere in the world:
  – Whopping 26 million households got electricity access in short span of less than two years
• Barring a few pockets all villages and households have been electrified
  – Huge impetus to local economic development with availability of productive power
• Could be ‘Best Practice’ for many other developing economies struggling with access challenge
Thank You

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Abhishek Towers,
Balanagar,
Hyderabad – 500 042
Phone: +91 91369 20664
Result

Electrification of about 26 Mn households in remote parts of the country by way of grid expansion

Government of India
$2,300,000,000

Relevance –
Decreasing greenhouse gas emissions
Increasing electricity access

Depth of change –
System and market-level
(removing barriers for quality, affordable, clean, and safe electricity appliances)

Scale of change –
Countrywide

Sustainability –
Increased disposable income on hand
Self-sustaining market. Opens up market for electric appliances.
**Depth and scale of project objectives**

**Market Focus**
Aiming to transform markets associated with global environmental benefits

**System Focus**
Aiming to transform system components that affect the environment  
(economy, public sector, private sector, community)
Transformational mechanism

A mechanism to expand and sustain the impact of the intervention

Mainstreaming

Demonstration and replication

Catalytic effects
**Key Implementation Factors**

**Internal Factors**
- Quality of implementation
- Speed of execution
- Pre-intervention activities
- Involvement of state govts
- Involvement of third layer of governance

**External Factors**
- Government ownership and support
- Implementation capacity of local institutions
- Adequacy of the policy environment
- Private sector participation
- Economic and market conditions
OUTCOMES

Depth and scale  
Sustainability
Success factors for transformational change

- Clear policy ambition
- Addressing market and system changes through policies
- Concurrent implementation across country
- Quality of implementation and execution
- Effective use of IT Tools to monitor progress