Energy Opportunity Showcase in India:

Understanding Lighting Data

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What is the objective of the study?

- To increase knowledge about the clean energy access situation across various states of India using publicly available data.
  - *Analysis based on Census 2001 and 2011 data.*
- To educate clean energy companies about the best districts to base their operations in based on:
  - *Current state of un-electrification*
  - *Details on asset available across each household using proxy indicators*
- To help experts and administrators identify the top priority districts to focus on for energy access.

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Which are the states profiled ?

- *Orissa, West Bengal, Bihar, Uttar Pradesh, Tamil Nadu, Karnataka, Rajasthan, Madhya Pradesh, Assam, Andhra Pradesh, Himachal Pradesh, Jharkhand.*

How is this study relevant ?

- *Accurately estimate the market potential.*
- *Pinpointing specific operational locations.*

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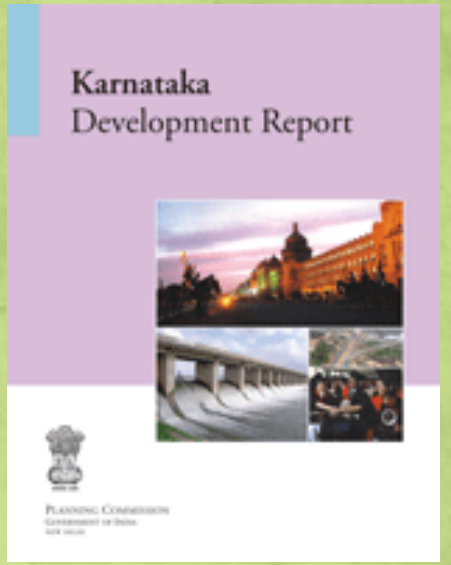
Sources of Data



Census Data 2001-2011



India Stat Website



Government Reports



Other Government Websites

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Methodology

Parameters for Analyzing Un-Electrification
Un-Electrified Extent - Rural
Un-Electrified Extent - Urban
Solar penetration - Rural
Solar penetration - Urban

Parameters for Analyzing Economic Growth
Rural HH Banking penetration
Rural HH TV penetration
Rural HH Vehicle penetration (2 and 4 Wheelers)

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Sample States Data

West Bengal and Orissa

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West Bengal: Snapshot

	2011	2001
Total Population	9,13,47,736	80,176,197
Number of Households	20,067,299	15,715,915
Number of Households - Rural	13,717,186	11,161,870
Number of Households - Urban	6,350,113	45,540,45
% of Rural Households to Urban Households	68.36%	71.02%
% of Rural Un-electrified Households	59.69%	79.73%
% of Urban Un-electrified Households	14.87%	20.44%

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West Bengal: Extent of Rural Un-Electrification

Districts that have maximum rural un-electrification rates

- In 2011, ***14 districts*** have more than 50% rural households (state average: 59.69%) which are un-electrified:

District	2011 Census Households that are un-electrified	Number of Rural Households in 2011
Koch Bihar	78.66%	6,04,602
Uttar Dinajpur	72.06%	5,29,416
Puruliya	71.63%	4,96,403
Murshidabad	70.76%	12,82,692
Maldah	70.11%	7,29,770

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West Bengal: Maximum Solar Penetration

- The 5 districts with the maximum solar penetration among rural un-electrified households are:

District	Solar penetration among un-electrified rural households
South Twenty Four Parganas	6.41%
Hugli	2.86%
North Twenty Four Parganas	2.45%
Haora	2.20%
Medinipur	2.09%

- Solar Penetration is very low across the districts.
- We need to overlay the data on maximum extent of un-electrification with maximum increase in economic activity to identify the best districts for promoting energy access.

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West Bengal: Target Rural Districts for Increasing energy access

- We rank the districts with the maximum extent of un-electrification against their ranking in asset penetration:

District with maximum rural un-electrification	Ranking in rural HH television ownership trend 2001-2011	Television ownership increase among rural HHs	Ranking in rural HH vehicle ownership trends 2001-2011	Vehicle ownership increase among rural HHs
Koch Bihar	14	4.44%	13	2.10%
Uttar Dinajpur	11	4.75%	6	3.15%
South Parganas	5	9.17%	17	1.54%
Nadia	9	6.80%	11	2.45%
Bankura	8	7.72%	2	4.25%

- What does this mean ? Nadia , Uttar Dinajpur and Bankura are the top 3 rural districts to focus on for energy access.

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Orissa: Snapshot

	2011	2001
Total Population	41,947,358	36,804,660
Number of Households	9,661,085	7,870,127
Number of Households - Rural	8,144,012	6,782,879
Number of Households - Urban	1,517,073	1,087,248
% of Rural Households to Total Households	84%	86%
% of Rural Un-electrified Households	64.45%	80.65%
% of Urban Un-electrified Households	16.90%	25.92%

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Orissa: Extent of Rural Un-Electrification

Districts that have maximum rural un-electrification rates

- In 2011, ***23 districts*** have more than 50% rural households which are un-electrified:

District	Percentage of Rural Households that are un-electrified in 2011	Number of Rural Households in 2011
Nabarangapur	91.51%	253,461
Kandhamal	89.06%	155,335
Malkangiri	86.57%	126,306
Koraput	85.06%	283,522
Baudh	84.66%	103,239

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Orissa: Maximum Solar Penetration

- The 5 districts with the maximum solar penetration among rural un-electrified households are:

District	Solar penetration among un-electrified rural households
Kalahandi	1.09%
Nuapada	0.98%
Sundargarh	0.95%
Nayagarh	0.92%
Kendrapara	0.91%

- The highest rate of solar penetration is a dismal 1.09 percent in the district of Kalahandi.
- We need to overlay the data on maximum extent of un-electrification with maximum increase in economic activity to identify the best districts for promoting energy access.

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Orissa: Target Rural Districts for Increasing energy access

- We rank the districts with the maximum extent of un-electrification against their ranking in asset penetration:

District with maximum rural un-electrification	Ranking in rural HH television ownership trend 2001-2011	Television ownership increase among rural HHs	Ranking in rural HH vehicle ownership trends	Vehicle ownership increase
Balangir	14	9.25%	17	4.55%
Bargarh	9	12.44%	12	5.86%
Jharsuguda	12	10.06%	7	7.22%
Jajapur	10	11.69%	5	7.40%
Puri	8	13.86%	6	7.28%

- What does this mean ? Puri and Bargarh are the key districts to set up energy operations in.

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How can you support ?

- *By providing feedback on the analysis and helping us understand some of the contextual data that is helpful in interpreting the report.*

Next Steps:

- *Beta Report and Data Analysis Release : Early July*
- *Reaching out to leading experts to cross validate the findings.*

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THANK YOU

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