

CURRENT STATUS OF RURAL ELECTRIFICATION AND ELECTRICITY SERVICE DELIVERY IN RURAL AREAS OF JHARKHAND

I. Status of Village Electrification in Jharkhand:

As on 31st August 2013, 3164 villages were yet to be electrified in the state of Jharkhand, out of a total of 29,354 villages in the state, as per the 2001 census.

Table 1: Status of Village Electrification in Jharkhand¹

States/UTs	Total inhabited Villages as per 2001 Census	Villages electrified as on 31/03/2013 as per new definition (Provisional)		Cummulative achievement as on 31/08/2013 as per new definition	%age of villages electrified as on 31/08/2013	Unelectrified villages as on 31/08/2013(V)
		No.	%			
Jharkhand	29354	26190	89.2	26190	89.2	3164

Source: Central Electricity Authority, 31.08.2013

Therefore the total number of electrified villages in Jharkhand accounts to 89.2 percent.

The following table gives the status of electrification of the villages district and block-wise which are covered under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) scheme.

Table 2: District and respective block-wise status of Village Electrification in Jharkhand

District	Block	No. of Villages covered under RGGVY	No. of Electrified Villages (RGGVY)	% Villages Electrified	No. of Unelectrified Villages	% Unelectrified Villages
Bokaro	Bermo	15	8	53.3	7	46.7
	Chandankiyari	98	63	64.3	35	35.7
	Chas	116	84	72.4	32	27.6
	Gumia	119	87	73.1	32	26.9
	Jaridih	41	24	58.5	17	41.5
	Kasmar	67	52	77.6	15	22.4
	Nawadih	74	57	77.0	17	23.0
	Peteruar	63	47	74.6	16	25.4
	TOTAL OF ALL BLOCKS	593	422	71.2	171	28.8
Chatra	Chatra	277	239	86.3	38	13.7
	Gidhaur	37	37	100.0	0	0.0
	Hunterganj	245	193	78.8	52	21.2
	Itkhori	241	142	58.9	99	41.1
	Kunda	76	14	18.4	62	81.6
	Lawalaung	93	15	16.1	78	83.9
	Pathalgora	30	29	96.7	1	3.3
	Pratappur	164	119	72.6	45	27.4
	Simaria	96	87	90.6	9	9.4
	Tandwa	84	63	75.0	21	25.0
	TOTAL OF ALL BLOCKS	1343	938	69.8	405	30.2
Deoghar	Deoghar	275	275	100.0	0	0.0
	Devipur	200	200	100.0	0	0.0
	Karon	198	198	100.0	0	0.0
	Madhupur	221	220	99.5	1	0.5
	Mohanpur	354	352	99.4	2	0.6

¹ CEA Monthly Report available at http://www.cea.nic.in/reports/monthly/dpd_div_rep/village_electrification.pdf

District	Block	No. of Villages covered under RGGVY	No. of Electrified Villages (RGGVY)	% Villages Electrified	No. of Unelectrified Villages	% Unelectrified Villages
	Palojori	263	263	100.0	0	0.0
	Sarath	344	342	99.4	2	0.6
	Sarwan	329	325	98.8	4	1.2
	TOTAL OF ALL BLOCKS	2184	2175	99.6	9	0.4
Dhanbad	Baghmara-Cum-Katras	200	139	69.5	61	30.5
	Baliapur	61	61	100.0	0	0.0
	Dhanbad-Cum-Kenduadih-Cum-Jagta	45	16	35.6	29	64.4
	Gobindpur	216	212	98.1	4	1.9
	Nirsa-Cum-Chirkunda	220	164	74.5	56	25.5
	Topchanchi	106	102	96.2	4	3.8
	Tundi	266	167	62.8	99	37.2
	TOTAL OF ALL BLOCKS	1114	861	77.3	253	22.7
Dumka	Dumka	258	249	96.5	9	3.5
	Gopikandar	127	124	97.6	3	2.4
	Jama	306	288	94.1	18	5.9
	Jarmundi	463	450	97.2	13	2.8
	Kathikund	183	183	100.0	0	0.0
	Masalia	289	289	100.0	0	0.0
	Ramgarh	316	312	98.7	4	1.3
	Ranishwar	189	177	93.7	12	6.3
	Saraiyahat	281	276	98.2	5	1.8
	Shikaripara	241	238	98.8	3	1.2
	TOTAL OF ALL BLOCKS	2653	2586	97.5	67	2.5
Garhwa	Bhandaria	62	45	72.6	17	27.4
	Bhawanathpur	58	57	98.3	1	1.7
	Chinia	30	30	100.0	0	0.0
	Dandai	28	28	100.0	0	0.0
	Dhurki	43	42	97.7	1	2.3
	Garhwa	117	94	80.3	23	19.7
	Kandi	78	77	98.7	1	1.3
	Kharaundhi	20	19	95.0	1	5.0
	Majhiaon	79	63	79.7	16	20.3
	Meral (Pipra Kalan)	73	68	93.2	5	6.8
	Nagar Untari	66	40	60.6	26	39.4
	Ramkanda	32	32	100.0	0	0.0
	Ramna	58	49	84.5	9	15.5
	Ranka	75	75	100.0	0	0.0
	TOTAL OF ALL BLOCKS	819	719	87.8	100	12.2
Giridh	Bagodar	128	84	65.6	44	34.4
	Bengabad	229	193	84.3	36	15.7
	Birni	170	170	100.0	0	0.0
	Deori	268	265	98.9	3	1.1
	Dhanwar	272	229	84.2	43	15.8
	Dumri	178	118	66.3	60	33.7
	Gande	262	250	95.4	12	4.6
	Gawan	135	110	81.5	25	18.5
	Giridih	212	145	68.4	67	31.6
	Jamua	300	298	99.3	2	0.7
	Pirtanr	188	174	92.6	14	7.4
	Tisri	181	109	60.2	72	39.8
	TOTAL OF ALL BLOCKS	2523	2145	85.0	378	15.0
Godda	Boarijor	294	216	73.5	78	26.5
	Godda	195	195	100.0	0	0.0
	Mahagama	236	201	85.2	35	14.8
	Meherma	136	92	67.6	44	32.4
	Pathargama	222	162	73.0	60	27.0
	Poreyahat	193	192	99.5	1	0.5
	Sundarpahari	201	132	65.7	69	34.3
	Thakur Gangti	132	116	87.9	16	12.1
	TOTAL OF ALL BLOCKS	1609	1306	81.2	303	18.8
Gumla	Basia	88	84	95.5	4	4.5

District	Block	No. of Villages covered under RGGVY	No. of Electrified Villages (RGGVY)	% Villages Electrified	No. of Unelectrified Villages	% Unelectrified Villages
	Bishunpur	68	61	89.7	7	10.3
	Chainpur	83	68	81.9	15	18.1
	Dumri	114	111	97.4	3	2.6
	Ghaghra	120	109	90.8	11	9.2
	Gumla	108	97	89.8	11	10.2
	Kamdara	73	73	100.0	0	0.0
	Palkot	73	62	84.9	11	15.1
	Raidih	61	45	73.8	16	26.2
	Sisai	88	82	93.2	6	6.8
	Verno	69	66	95.7	3	4.3
	TOTAL OF ALL BLOCKS	945	858	90.8	87	9.2
Hazaribagh	Barhi	99	96	97.0	3	3.0
	Barkagaon	84	75	89.3	9	10.7
	Barkatha	117	112	95.7	5	4.3
	Bishungarh	140	101	72.1	39	27.9
	Chauparan	256	189	73.8	67	26.2
	Churchu	87	72	82.8	15	17.2
	Gola	87	38	43.7	49	56.3
	Hazaribag	104	77	74.0	27	26.0
	Ichak	126	97	77.0	29	23.0
	Katkamsandi	125	115	92.0	10	8.0
	Keredari	82	67	81.7	15	18.3
	Mandu	79	28	35.4	51	64.6
	Padma	40	38	95.0	2	5.0
	Patraru	68	38	55.9	30	44.1
	Ramgarh	79	15	19.0	64	81.0
	TOTAL OF ALL BLOCKS	1573	1158	73.6	415	26.4
Jamtara	Jamtara	180	180	100.0	0	0.0
	Kundhit	256	230	89.8	26	10.2
	Nala	304	304	100.0	0	0.0
	Narayanpur	266	248	93.2	18	6.8
	TOTAL OF ALL BLOCKS	1006	962	95.6	44	4.4
Kodarma	Jainagar	138	99	71.7	39	28.3
	Kodarma	142	114	80.3	28	19.7
	Markacho	134	87	64.9	47	35.1
	Satgawan	113	111	98.2	2	1.8
	TOTAL OF ALL BLOCKS	527	411	78.0	116	22.0
Latehar	Balumath	164	161	98.2	3	1.8
	Barwadih	68	47	69.1	21	30.9
	Chandwa	83	79	95.2	4	4.8
	Garu	57	54	94.7	3	5.3
	Latehar	160	158	98.8	2	1.3
	Mahuadanr	98	77	78.6	21	21.4
	Manika	64	60	93.8	4	6.3
	TOTAL OF ALL BLOCKS	694	636	91.6	58	8.4
Lohardaga	Bhandra	56	56	100.0	0	0.0
	Kisko	90	66	73.3	24	26.7
	Kuru	75	75	100.0	0	0.0
	Lohardaga	42	42	100.0	0	0.0
	Senha	88	86	97.7	2	2.3
	TOTAL OF ALL BLOCKS	351	325	92.6	26	7.4
Pakaur	Amrapara	121	111	91.7	10	8.3
	Hiranpur	118	91	77.1	27	22.9
	Litipara	270	230	85.2	40	14.8
	Maheshpur	316	270	85.4	46	14.6
	Pakaur	155	117	75.5	38	24.5
	Pakuria	148	145	98.0	3	2.0
	TOTAL OF ALL BLOCKS	1128	964	85.5	164	14.5
Palamu	Bishrampur	131	103	78.6	28	21.4
	Chainpur	158	127	80.4	31	19.6
	Chhatarpur	214	174	81.3	40	18.7

District	Block	No. of Villages covered under RGGVY	No. of Electrified Villages (RGGVY)	% Villages Electrified	No. of Unelectrified Villages	% Unelectrified Villages
	Daltonganj	44	37	84.1	7	15.9
	Hariharganj	133	103	77.4	30	22.6
	Hussainabad	231	161	69.7	70	30.3
	Leslieganj	109	90	82.6	19	17.4
	Manatu	138	121	87.7	17	12.3
	Pandu	61	41	67.2	20	32.8
	Panki	170	128	75.3	42	24.7
	Patan	139	121	87.1	18	12.9
	Satbarwa	59	56	94.9	3	5.1
	TOTAL OF ALL BLOCKS	1587	1262	79.5	325	20.5
Paschimi Singhbhum	Bandgaon	81	53	65.4	28	34.6
	Chaibasa	72	60	83.3	12	16.7
	Chakradharpur	163	104	63.8	59	36.2
	Goikera	144	60	41.7	84	58.3
	Jagannathpur	78	48	61.5	30	38.5
	Jhinkpani	45	40	88.9	5	11.1
	Khuntpani	88	66	75.0	22	25.0
	Kumardungi	75	63	84.0	12	16.0
	Majhgaon	76	66	86.8	10	13.2
	Manjhari	57	51	89.5	6	10.5
	Manoharpur	131	73	55.7	58	44.3
	Noamundi (Barajamda)	55	46	83.6	9	16.4
	Sonua	128	56	43.8	72	56.3
	Tantnagar	75	70	93.3	5	6.7
	Tonto	62	31	50.0	31	50.0
	TOTAL OF ALL BLOCKS	1330	887	66.7	443	33.3
Purbi Singhbhum	Baharagora	371	223	60.1	148	39.9
	Chakulia	237	188	79.3	49	20.7
	Dhalbhumgarh	123	83	67.5	40	32.5
	Dumaria	88	64	72.7	24	27.3
	Ghatshila	139	92	66.2	47	33.8
	Golmuri-Cum-Jugsalai	70	38	54.3	32	45.7
	Musabani	43	19	44.2	24	55.8
	Patamda	150	120	80.0	30	20.0
	Potka	274	179	65.3	95	34.7
	TOTAL OF ALL BLOCKS	1495	1006	67.3	489	32.7
Ranchi	Angara	84	50	59.5	34	40.5
	Bero	114	94	82.5	20	17.5
	Bundu	87	63	72.4	24	27.6
	Burmu	93	84	90.3	9	9.7
	Chanho	67	37	55.2	30	44.8
	Erki (Tamar II)	95	71	74.7	24	25.3
	Kanke	100	74	74.0	26	26.0
	Karra	178	147	82.6	31	17.4
	Khunti	124	91	73.4	33	26.6
	Lapung	78	68	87.2	10	12.8
	Mandar	69	49	71.0	20	29.0
	Murhu	141	75	53.2	66	46.8
	Namkum	93	52	55.9	41	44.1
	Ormanjhi	88	35	39.8	53	60.2
	Rania	66	22	33.3	44	66.7
	Ratu	83	58	69.9	25	30.1
	Silli	106	84	79.2	22	20.8
	Sonahatu	101	89	88.1	12	11.9
	Tamar I	128	117	91.4	11	8.6
	Torpa	95	87	91.6	8	8.4
	TOTAL OF ALL BLOCKS	1990	1447	72.7	543	27.3
Sahibganj	Barhait	190	187	98.4	3	1.6
	Barharwa	155	142	91.6	13	8.4
	Borio	264	240	90.9	24	9.1
	Mandro	179	118	65.9	61	34.1

District	Block	No. of Villages covered under RGGVY	No. of Electrified Villages (RGGVY)	% Villages Electrified	No. of Unelectrified Villages	% Unelectrified Villages
	Pathna	124	107	86.3	17	13.7
	Rajmahal	97	64	66.0	33	34.0
	Sahibganj	23	12	52.2	11	47.8
	Taljhari	195	122	62.6	73	37.4
	Udhwa	79	62	78.5	17	21.5
	TOTAL OF ALL BLOCKS	1306	1054	80.7	252	19.3
Saraikela Kharsawan	Chandil	90	54	60.0	36	40.0
	Ghamaria(Adityapur)	168	58	34.5	110	65.5
	Ichagarh	108	80	74.1	28	25.9
	Kharsawan	74	65	87.8	9	12.2
	Kuchai	49	40	81.6	9	18.4
	Nimdihi	65	59	90.8	6	9.2
	Rajnagar	186	171	91.9	15	8.1
	Seraikela	73	66	90.4	7	9.6
	TOTAL OF ALL BLOCKS	813	593	72.9	220	27.1
Simdega	Bano	93	71	76.3	22	23.7
	Bolba	26	24	92.3	2	7.7
	Jaldega	79	71	89.9	8	10.1
	Kolebira	53	44	83.0	9	17.0
	Kurdeg	45	45	100.0	0	0.0
	Simdega	89	72	80.9	17	19.1
	Thethaitangar	61	59	96.7	2	3.3
	TOTAL OF ALL BLOCKS	446	386	86.5	60	13.5

Source: Data compiled from RGGVY website²

II. Status of Household Electrification in Jharkhand:

The Census of India 2011, indicates that close to 67 percent of Jharkhand rural households continue to depend on Kerosene for lighting.

The table and figure below presents a comprehensive scenario of the sources of lighting in the state, which is as per the Government of India Census, 2011.

Table 3: Sources of Lighting in households of Jharkhand

District	Total No. of Households	Electricity	Kerosene	Solar energy	Other oil	Any other	No lighting	Electrified		Unelectrified	
								No.	%	No.	%
Garhwa	241,497	21,027	218,094	1,951	290	99	36	22,978	10	218,519	90
Chatra	170,239	19,196	148,659	1,745	492	97	50	20,941	12	149,298	88
Kodarma	90,207	41,961	47,338	326	330	124	128	42,287	47	47,920	53
Giridih	356,247	95,872	256,334	2,763	959	215	104	98,635	28	257,612	72
Deoghar	214,896	89,935	123,780	717	234	182	48	90,652	42	124,244	58
Godda	239,500	34,249	202,756	1,334	685	424	52	35,583	15	203,917	85
Sahibganj	193,809	16,515	175,523	972	553	177	69	17,487	9	176,322	91
Pakur	167,362	22,444	144,011	545	234	106	22	22,989	14	144,373	86
Dhanbad	207,157	153,837	51,985	627	428	113	167	154,464	75	52,693	25
Bokaro	204,021	110,216	90,896	1,802	970	96	41	112,018	55	92,003	45
Lohardaga	80,295	20,009	59,659	234	336	44	13	20,243	25	60,052	75
Purbi Singhbhum	215,676	146,987	68,012	361	125	49	142	147,348	68	68,328	32

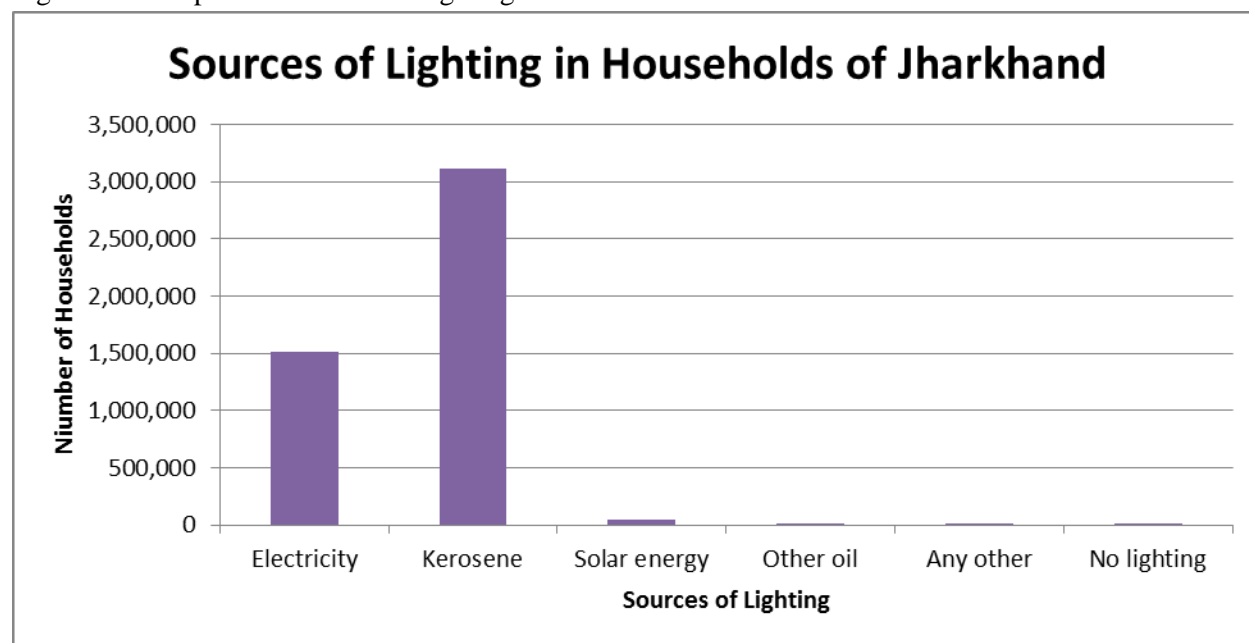
² Rajiv Gandhi Grameen Vidyutikaran Yojana, available at <http://rggvv.gov.in/rggvv/rggvvportal/index.html>

Palamu	316,135	41,155	272,061	1,485	944	260	230	42,640	13	273,495	87
Latehar	122,902	31,449	88,211	2,480	455	193	114	33,929	28	88,973	72
Hazaribagh	252,871	132,695	118,263	907	648	254	104	133,602	53	119,269	47
Ramgarh	97,889	75,611	21,781	241	183	46	27	75,852	77	22,037	23
Dumka	255,926	48,227	205,543	1,022	664	321	149	49,249	19	206,677	81
Jamtara	135,540	37,315	97,563	301	122	199	40	37,616	28	97,924	72
Ranchi	322,679	139,416	180,372	1,336	983	253	319	140,752	44	181,927	56
Khunti	93,762	22,098	67,194	4,117	294	46	13	26,215	28	67,547	72
Gumla	176,770	22,226	152,763	934	753	33	61	23,160	13	153,610	87
Simdega	108,683	11,520	96,333	692	72	47	19	12,212	11	96,471	89
Pashchimi Singhbhum	256,019	87,673	156,904	10,843	352	134	113	98,516	38	157,503	62
Saraikella-Kharsawan	165,883	92,417	69,244	3,988	152	62	20	96,405	58	69,478	42
Total	4,685,965	1,514,050	3,113,279	41,723	11,258	3,574	2,081	1,555,773	33	3,130,192	67

Source: Census of India 2011.

As can be seen from the above table, a number of districts particularly the remote district of Jharkhand have close to 90 percent of un-electrified households, while districts which are in and around the state capital or in high industrial belt such as Bokaro have a relatively lower level of un-electrified households.

Figure 1: A snapshot of sources of lighting in households of Jharkhand



Source: Census of India, 2011

III. Key Sources of Energy for Cooking and Heating in households of Jharkhand

As is the case with the rest of India, Jharkhand also has a very poor penetration of clean sources of energy for meeting the cooking and heating requirements of its communities.

Only 2 percent of Jharkhand's population has access to modern and relatively clean sources of energy for cooking and heating requirements, mainly LPG, Electricity and bio-gas plants.

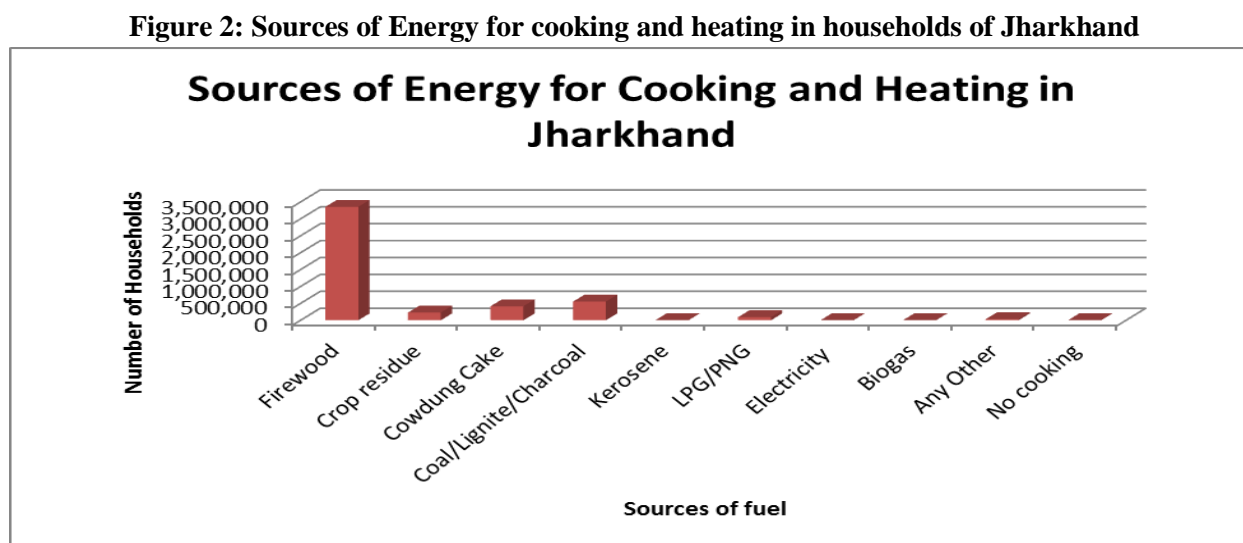
So in effect, close to 98 percent of its population depend on firewood and other related sources of energy for meeting their cooking and heating requirements.

The following table depicts the situation of energy sources for Jharkhand.

Table 4: Sources of Energy for cooking and heating in households of Jharkhand

Total No. of HH	Firewood	Crop residue	Cowdung Cake	Coal/Lignite/Charcoal	Kerosene	LPG/PNG	Electricity	Biogas	Any Other	No cooking
4,685,965	3,356,079	226,702	413,517	551,648	4,521	91,021	3,698	4,284	30,228	4,267

Source: Census of India 2011



Source: Census 2011 data

IV. Status of Assets availability in households of Jharkhand:

As can be read from the table below almost 72% of the households have access to personal assets and require electricity to operate them.

The table and figure below presents a comprehensive scenario of the assets in rural households in the state, which is as per the Government of India Census, 2011

Table 5: Availability of assets in households of Jharkhand

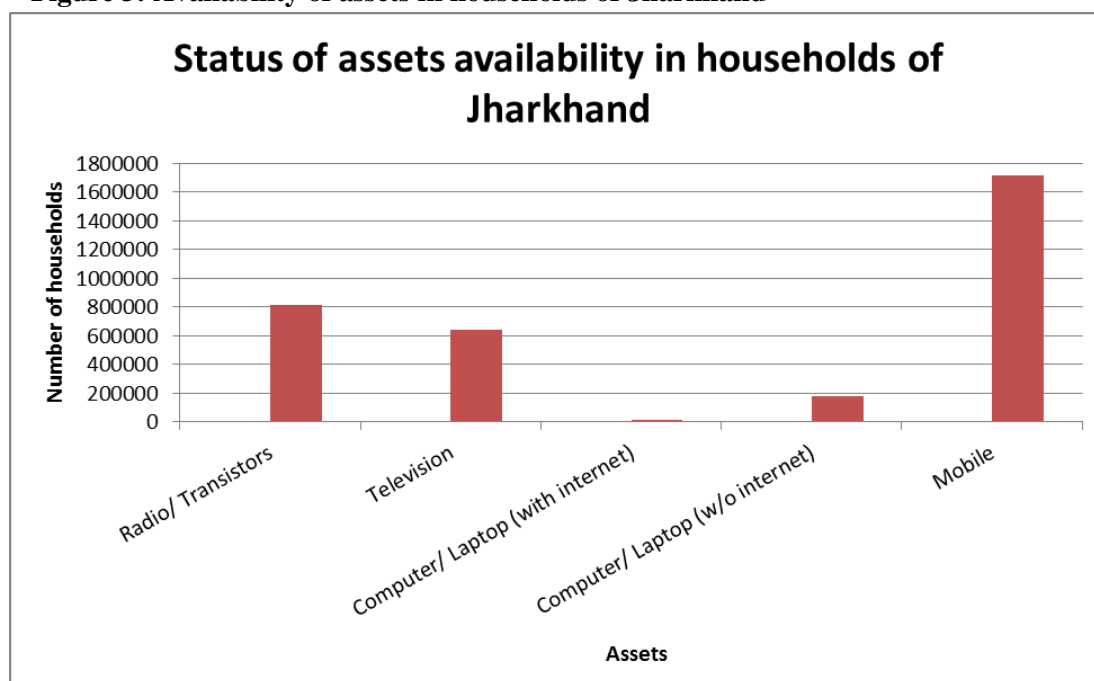
District	Total No. of Households	Radio/ Transistors	Television	Computer/ Laptop		Mobile
				With Internet	W/o Internet	
Garhwa	241,497	44,295	16,018	316	7,404	88,403
Chatra	170,239	41,668	12,466	304	7,848	71,252

Kodarma	90,207	13,622	15,134	276	4,631	57,248
Giridih	356,247	73,269	41,940	971	15,311	207,952
Deoghar	214,896	27,696	34,394	390	7,737	86,399
Godda	239,500	45,664	19,300	470	10,174	76,920
Sahibganj	193,809	40,538	11,935	236	7,339	45,666
Pakur	167,362	23,177	10,914	137	3,486	30,971
Dhanbad	207,157	19,427	84,169	1,358	9,980	102,508
Bokaro	204,021	29,520	47,635	731	8,518	84,644
Lohardaga	80,295	16,785	6,275	94	1,949	23,573
Purbi Singhbhum	215,676	26,461	39,284	871	7,407	63,084
Palamu	316,135	67,186	31,717	1,006	14,368	129,822
Latehar	122,902	26,528	6,485	174	5,473	30,999
Hazaribagh	252,871	45,634	51,667	1,247	10,063	155,116
Ramgarh	97,889	14,309	33,158	538	3,300	53,059
Dumka	255,926	34,639	21,910	655	8,073	59,003
Jamtara	135,540	19,426	21,689	476	3,304	41,981
Ranchi	322,679	70,119	70,127	1,650	17,354	128,939
Khunti	93,762	16,814	6,531	202	3,693	19,300
Gumla	176,770	34,953	11,904	491	6,191	42,857
Simdega	108,683	16,773	4,249	238	3,784	20,425
Pashchimi Singhbhum	256,019	37,558	15,771	604	7,351	41,857
Saraikella-Kharsawan	165,883	26,901	29,214	554	5,408	51,580
Total	4,685,965	812,962	643,886	13,989	180,146	1,713,558

Source: Census of India 2011

The table indicates that maximum households have mobile phones, television and radio/transistors in high numbers.

Figure 3: Availability of assets in households of Jharkhand



Source: Census 2011 data

V. Status of Electricity Supply in Jharkhand:

In the 2011-12 Jharkhand faced a shortage of electricity supply to the tune of 1338 Million units, which translates to a short fall in supply in relation to the demand by 17.9 percent. The short fall in electricity supply to meet the peak electricity demand was around 20 percent in the same year.

This has been the trend in the previous years too.

The following table gives an overview of the electricity demand and supply situation of Jharkhand in the year 2011-12

Table 6: Electricity Demand Vs. Supply Situation in Jharkhand (2011-12)

State / Region	Energy				Peak			
	Requirement	Availability	Surplus(+)/Deficit (-)		Requirement	Availability	Surplus(+)/Deficit (-)	
	(MU)	(MU)	(MU)	(%)	(MW)	(MW)	(MW)	(%)
Jharkhand	7486	6149	-1338	-17.9	1260	1005	-255	-20.2

Source: Load Generation Balance Report 2012-13, Central Electricity Authority

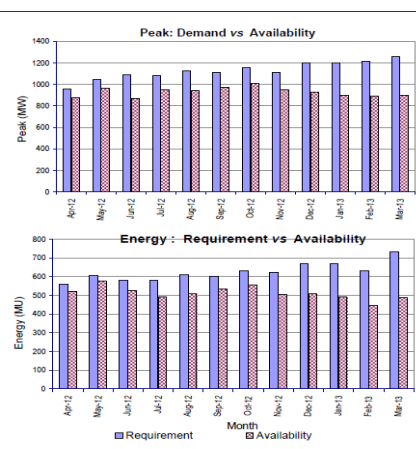
In a survey conducted by Vasudha Foundation and Synovate in 2011, to assess the “ability and willingness to pay for energy services” in rural areas, it was observed that the electricity supply in rural areas of Jharkhand was sometimes as low as just 2-4 hours of supply.

The study further revealed that in comparison to the tariff for electricity paid by the urban consumer, the rural consumer was paying 8 times more, despite a low electricity tariff for rural consumers, largely due to the low consumption pattern of electricity in rural areas due to inadequate supply of electricity.

Further, the assessment of the Central Electricity Authority on the supply versus demand for electricity for the year 2012-2013, indicates that in some months, the gap between supply and demand could be as high as 31 percent, which could potentially mean that the rural electricity supply would be affected even higher than business as usual.

Table 7: Anticipated Power Supply and Demand for Jharkhand for 2012-2013

Month	Peak				Energy			
	Demand	Availability	Surplus(+)/Deficit (-)		Requirement	Availability	Surplus(+)/Deficit (-)	
	(MW)	(MW)	(MW)	(%)	(MU)	(MU)	(MU)	(%)
Apr-12	960	876	-84	-8.8	557	522	-35	-6.4
May-12	1047	964	-83	-8.0	607	574	-33	-5.4
Jun-12	1090	868	-222	-20.4	580	524	-56	-9.7
Jul-12	1085	950	-135	-12.4	580	493	-87	-15.0
Aug-12	1125	941	-184	-16.3	610	510	-100	-16.5
Sep-12	1115	969	-146	-13.1	600	532	-68	-11.3
Oct-12	1155	1005	-150	-13.0	630	554	-77	-12.2
Nov-12	1115	947	-168	-15.1	620	505	-115	-18.6
Dec-12	1200	927	-273	-22.8	670	508	-162	-24.1
Jan-13	1200	896	-304	-25.3	670	491	-179	-26.7
Feb-13	1215	888	-327	-26.9	630	447	-184	-29.1
Mar-13	1260	900	-360	-28.6	730	488	-242	-33.2
Annual	1260	1005	-255	-20.2	7486	6149	-1338	-17.9



Source: Load Generation Balance Report – 2012-13, Central Electricity Authority