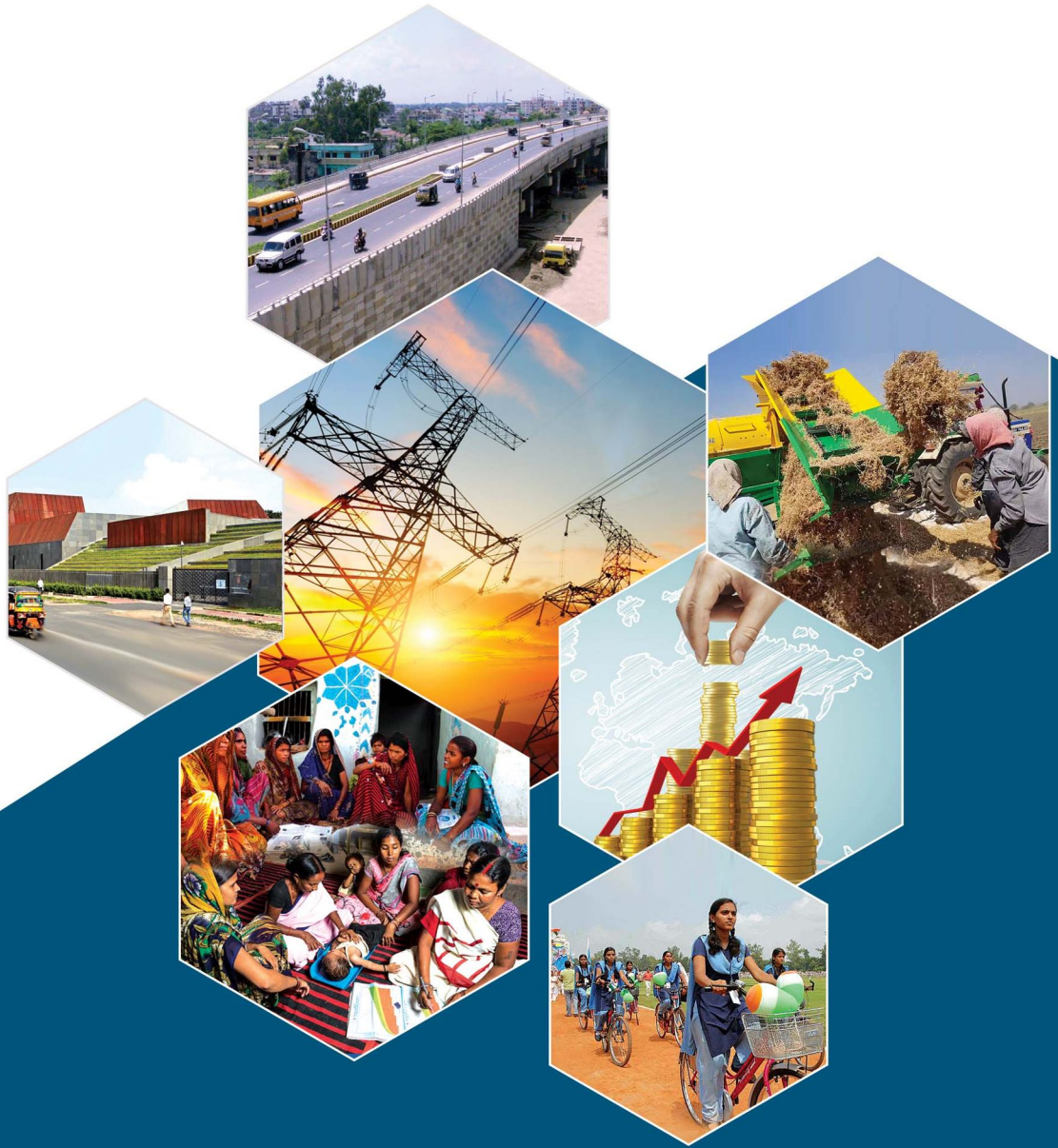
सत्यमेव जयते

बिहार सरकार

BIHAR ECONOMIC SURVEY
2018-19



FINANCE DEPARTMENT
Government of Bihar

CHIEF MINISTER
BIHAR

PATNA

बिहार सरकार

Message

As Bihar completes one more year of its steady development, both economic and social, it is only desirable that this growth narrative is properly documented. It is certainly true that Bihar has achieved immense economic progress in the recent past, but it is also equally true that the state has miles to go before it reaches the level of the developed states in the country.

Each year, the Economic Survey widens its scope in terms of issues, as well as information. I sincerely hope that the readers will find the survey useful.

(Nitish Kumar)

SUSHIL KUMAR MODI
Finance Minister, Bihar

बिहार सरकार

PATNA

Message

The journey of growth of Bihar's economy which had started about one and a half decades ago is still continuing. Indeed, the growth rate of Bihar's economy in 2017-18 was 11.3 percent, the highest among all the states in India. Among others, one of the principal factors that caused such a buoyant growth process was the high development expenditure by the state government, without compromising on its financial discipline. The Economic Survey presents the details of this prudent financial management, along with information on other valuable dimensions of the state's economy.

I sincerely hope that the readers of the survey would include policy makers, researchers and others concerned with the development of Bihar. I also hope to receive valuable suggestions from them towards preparing an effective development strategy for Bihar.

(Sushil Kumar Modi)

CHAPTER - VII

ENERGY SECTOR

For the process of fast economic growth, it is extremely necessary to provide for power. This is because power is not only a requirement for all non-agricultural activities, it is also important for agricultural operations, thanks to the use of power-based irrigation arrangements. As was discussed before, the economy of Bihar has been growing at a fast rate in the recent years and, as such, the development of energy sector is of utmost importance to ensure that the present growth momentum is maintained in the coming years. Apart from production activities, power is also needed for the households to ensure amenities that make life more comfortable and enjoyable. Indeed, under 'Saat Nishchay' of the state government, indicating its seven basic development commitments, 'Har Ghar Bijli (supply of power to all households) is the third component. To attain the objective of universal household electrification under this component, power companies in Bihar have been able to energise all unelectrified villages within the target of December, 2017 and all habitations by April, 2018. Further, the target of providing electricity connection to all willing households has been achieved by October, 2018, two months ahead of the target of December, 2018.

7.1 Availability of Power

There has been significant improvement in peak demand met in Bihar from 1712 MW in 2011-12 to 4535 MW in 2017-18, implying a growth of around 165 percent in six years (Table 7.1). The peak demand has reached a new high of 5139 MW during current financial year in the month of September, 2018. As is apparent from the table, the peak deficit in power has been around 30 percent for several years till 2012-13; by 2017-18, this deficit was reduced to around 9 percent. The availability of power has increased from an average of 6-8 hours to 18-20 hours in rural areas and from 10-12 hours to 22-24 hours in urban areas. The per capita consumption in the state has risen from 134 kwh in 2011-12 to 280 kwh in 2017-18, implying a growth of more than 100 percent in six years.

There is considerable variation across the districts in terms of power consumption (Table 7.2). In 2017-18, the top 3 districts in power consumption were — Patna (4965 MU), Gaya (1522 MU) and Nalanda (1008 MU). On the other end, 3 bottom most districts were — Sheohar (76 MU), Arwal (135 MU) and Sheikhpura (176 MU).

Table 7.1 : Power Scenario (2011-12 to 2017-18)

Characteristic	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Peak Demand (MW)	2500	2650	3150	3500	4112	4405	4965
Peak Met (MW)	1712	1802	2335	2831	3459	3769	4535
Peak Deficit/ Surplus (MW) (-/+)	-788	-848	-815	-669	-653	-636	-430
Peak Deficit/ Surplus (%) (-/+)	-31.5	-32.0	-25.9	-19.1	-15.6	-14.4	-9.4
Energy Requirement (MU)	14454	15321	18212	22226	25550	28245	30095
Energy Availability (MU)	12145	13267	15045	18731	21679	23978	26788
Energy Deficit/ Surplus (MU) (-/+)	-2309	-2054	-3464	-3495	-3871	-4267	-5296
Energy Deficit/ Surplus (%) (-/+)	-16.0	-13.4	-19.0	-15.7	-15.2	-15.10	-12.34
Per Capita Consumption (kwh)	134	145	160	203	258	272	280

Source : Department of Energy

Table 7.2 : District-wise Power Consumption

District	Consumption (MU)				District	Consumption (MU)			
	2014-15	2015-16	2016-17	2017-18		2014-15	2015-16	2016-17	2017-18
Patna	3959	4197	4713	4965	Darbhanga	381	482	522	570
Nalanda	672	813	940	1008	Madhubani	325	407	469	512
Bhojpur	380	494	601	715	Samastipur	343	453	501	572
Buxar	276	351	439	452	Begusarai	370	452	488	547
Rohtas	625	785	842	1004	Munger	255	310	368	382
Kaimur	358	432	546	712	Sheikhpura	114	136	165	176
Gaya	1003	1214	1365	1522	Lakhisarai	171	213	300	327
Jehanabad	216	273	337	363	Jamui	167	191	278	328
Arwal	69	95	120	135	Khagaria	134	180	194	218
Nawada	161	286	374	466	Bhagalpur	628	714	812	842
Aurangabad	321	497	759	877	Banka	161	215	308	296
Saran	459	605	661	740	Saharsa	185	282	309	300
Siwan	233	291	350	497	Supaul	185	264	284	294
Gopalganj	195	294	342	428	Madhepura	165	235	255	283
W. Champaran	260	402	438	543	Purnea	358	382	427	484
E. Champaran	341	428	466	654	Kishanganj	143	188	197	215
Muzaffarpur	735	916	937	986	Araria	161	207	269	306
Sitamarhi	201	270	295	409	Katihar	188	255	276	345
Sheohar	33	50	59	76					
Vaishali	444	586	636	640	**Bihar**	**15375**	**18845**	**21642**	**24189**

Source : Department of Energy, GOB

7.2 Projection of Power Requirement

Access to electricity on 24×7 basis to all the citizens is indeed synonymous with social equality. Thus, as mentioned above, the state government made 'Har Ghar Bijli' resolve targeted to achieve it by December, 2018. However as indicated earlier, this has already been achieved by October, 2018 which is two months ahead of the target. As of now, electric connection has been provided to all willing households in the state. In the next phase, connection is being provided to agriculture pumpsets, both new as well as existing pumps presently running on diesel. This has been taken up in a mission mode and the target for its completion has been set at December, 2019.

There will be a quantum jump in power demand in the state in the coming years, mainly due to large scale release of service connection in rural areas towards full electrification, substantial increase in agriculture consumers, rise in demand of existing consumers (because of widespread use of electrical gadgets), and industrialization of the state. Table 7.3 presents the estimated annual energy requirement for all consumers for the period 2018-19 to 2020-21.

Table 7.3 : Annual Energy Requirement for Rural and Urban Households

(Figures in MU)

Category of Households	2018-19	2019-20	2020-21
Existing Electrified Households	14518	16108	17408
New Households	372	848	916
Total Domestic Requirement	14890	16956	18324
Consumers other than Domestic	8204	9225	10492
New Agricultural Connections	750	1034	1551
Total	23844	27215	30367

Source : Department of Energy, GOB

Table 7.4 shows the projected energy requirement at the state periphery, considering distribution losses and intra-state transmission loss trajectory. The expected power demand of Bihar by 2020-21 shall be of the order of 6381 MW, with an annual energy requirement of 36894 MU.

Table 7.4 : Annual Energy and Peak Demand Requirement at State Periphery

Indicators	2018-19	2019-20	2020-21
Energy requirement as per demand projections (MU)	23844	27215	30367
Distribution losses (Percentage)	24	15	15
Intra-state transmission losses (Percentage)	3.92	3.92	3.92
Energy requirement at state periphery (MU)	32624	33048	36894
Peak demand at 0.734 Load Factor (MW)	5172	5868	6381
Peak demand at 0.734 Load Factor (MW) (Including Agricultural load upto 50% only)	5032	5624	6091

Source : Department of Energy, GOB

The power capacity availability in the state was 3889 MW in March, 2018. In order to meet the increased demand, the state government has already planned for additional capacity of 2522 MW from different sources in a phased manner by 2020-21. These sources are — own generating stations, central generating stations, renewable energy sources, and long/ medium term Power Purchase Agreements (PPA) through competitive bidding. The source-wise details of this additional capacity is presented in Table 7.5. As per the present generation plan, the additional capacity of 2522 MW is expected to be added by 2020-21 (either from new projects, or from those which are under construction, or from those old projects which are being renovated or modernised). The total available capacity for Bihar by 2020-21 is expected to be 6411 MW, of which 5053 MW will be conventional and the remaining 1358 MW non-conventional.

Table 7.5 : Year-wise and Source-wise Details of Capacity Expansion

(Figures in MW)

Sources	March 2018	Cumulative Proposed Capacity		
		2018-19	2019-20	2020-21
State Sector				
State Thermal	110	0	0	0
State Small Hydro	10	10	10	10
Central Generating Station Share				
CGS Thermal	2596	3178	3708	3945
CGS Hydro	469	719	719	719
IPPs Projects (Case1)	260	537	537	537
JV/ Partnership (Thermal)	220	521	571	571
NCE/RNES	224	229	629	629
Total	**3889**	**5194**	**6174**	**6411**

Note : IPP = Independent Power Producer; JV = Joint Venture; NCE = Non-Conventional Energy; RNES = Renewable Energy Source

Source : Department of Energy, GOB

Table 7.6 : Estimated Availability of Power and Energy (2018-19 to 2020-21)

Year	Total Capacity (MW)	Estimated Peak Availability at State Periphery (MW)	Estimated Energy Availability at State Periphery (MU)
2018-19	5194	4965	26190
2019-20	6174	5665	32124
2020-21	6411	5902	36635

Source : Department of Energy, GOB

With the availability of additional generation capacity, the deficit in peak availability of 1.33 percent during 2018-19 will be compensated during 2019-20, with surplus availability of 0.73 percent. However, the deficit is projected to increase slightly to 3.10 percent during 2020-21, which will be met by short term power purchase. The gap between energy requirement and availability is expected to go down continuously from 19.72 percent in 2018-19 to 0.70 percent in 2020-21. This gap will be met by power purchase through open market.

Table 7.7 : Projected Surplus/ Deficit in Power and Energy (2018-19 to 2020-21)

Power Supply Position	2018-19	2019-20	2020-21
Estimated Peak Requirement with 50 percent agriculture load (**) only (MW)	5032	5624	6091
Estimated Peak Availability as per State Generation Plan (MW)	4965	5665	5902
Peak demand Surplus (+) / Deficit (-) (MW)	(-) 67	(+) 41	(-) 189
Peak demand Surplus / Deficit (Percentage)	(-) 1.33	(+) 0.73	(-) 3.10
Estimated Energy Requirement at State Periphery (MU)	32624	33048	36894
Estimated Energy Availability at State Periphery as per State generation Plan (MU)	26190	32124	36635
Energy Surplus (+) / Deficit (-) (MU)	(-) 6434	(-)924	(-) 259
Energy Surplus (+) / Deficit (-) (Percentage)	(-) 19.72	(-) 2.80	(-) 0.70

Note : (**) 50 percent agriculture load will be supplied in rotation
Source : Department of Energy, GOB

7.3 Institutional Structure of Power Sector

In April, 1958, the Bihar State Electricity Board (BSEB) was originally constituted under Section 5 of the Electricity (Supply) Act, 1948 and was mandated for the management of generation, transmission, distribution and other electricity-related activities in Bihar. Under the new Bihar State Electricity Reforms Transfer Scheme 2012, the BSEB has been unbundled into five companies in November, 2012 — (i) Bihar State Power (Holding) Company Limited (BSPHCL), (ii) Bihar State Power Generation Company Limited (BSPGCL), (iii) Bihar State Power Transmission Company Limited (BSPTCL), (iv) North Bihar Power Distribution Company Limited (NBPDCL) and (v) South Bihar Power Distribution Company Limited (SBPDCL). The responsibilities of the newly-formed companies are briefly described below.

Bihar State Power (Holding) Company Limited (BSPHCL) : This Company owns shares of the newly-incorporated, reorganized four companies — Bihar State Power Generation Company Limited, Bihar State Power Transmission Company Limited, South Bihar Power Distribution Company Limited, and North Bihar Power Distribution Company Limited. It is vested with the

assets, interest in property, rights and liabilities of the erstwhile Bihar State Electricity Board (BSEB). The Company will primarily be an investment company. It will co-ordinate the activities of other companies, handle disputes and provide all necessary support to them.

Bihar State Power Generation Company Limited (BSPGCL) : This company is responsible for coordinating and advising other companies and concerns, including subsidiaries, engaged in the generation of electricity. The coordination and advisory roles include all matters concerning the construction, operation and maintenance of generating stations and associated facilities. It is also responsible for procuring fuel and its transportation to various sites and settling pending disputes.

Bihar State Power Transmission Company Limited (BSPTCL) : This company is responsible for the transmission of electricity and is vested with the transmission assets, interest in property, and rights and liabilities of the erstwhile BSEB. Besides planning and coordination activities, this company is expected to develop an efficient system of intra-state transmission lines for electricity, connecting load centres to the generating stations.

North and South Bihar Power Distribution Companies Limited (NBPDCL and SBPDCL) : These two companies undertake the activities of distribution of electricity to all consumers, trading of electricity, and implementation of rural electrification schemes — under Deen Dayal Upadhyay Gram Jyoti Yojana (erstwhile Rajiv Gandhi Grameen Vidyutikaran Yojana), special Backward Region Grant Fund (BRGF), Integrated Power Devolvement Scheme (IPDS), State Plan, and schemes funded by the Asian Development Bank (ADB), the last one being an Externally Aided Project (EAP). The introduction of open access in distribution as per the Electricity Act, 2003 and the directions of the regulator is also the responsibility of these two companies. They also tender, finalise and execute Power Purchase Agreements (PPA) and other agreements for sale or purchase of electricity.

The allocation of fund for BSPHCL and its subsidiary companies, Bihar Renewable Energy Development Agency (BREDA) and Bihar State Hydroelectric Power Corporation (BSHPC) was Rs. 3110.92 crore in 2013-14, which increased to Rs. 8271.59 crore in 2017-18. The outlay for 2018-19 is Rs. 6185.63 crore. The breakup of this amount under various heads is given in Table 7.8.

Table 7.8 : Allocation of Funds under BSPHCL

(Rs. in crore)

Year	BRGF	State Plan						BSHPC (RIDF)	EAP	Mukhya Mantri Vidyut Sambandh Nishchay Yojana	Total
		BSPHCL	Genera-tion	Transmi-ssion	Distribu-tion	BREDA	BSHPC				
2013-14	2125.00	367.35	25.00	25.00	215.00	50.00	15.00	63.57	225.00	-	3110.92
2014-15	1650.00	369.21	61.68	661.00	1099.18	20.00	38.93	69.92	220.00	-	4189.92
2015-16	2274.00	64.43	181.01	448.99	486.00	60.00	15.00	67.80	66.26	-	3663.49
2016-17	1329.40	127.50	1155.00	700.00	3126.65	150.00	10.00	67.80	260.91	587.38	7514.64
2017-18	2600.00	1576.10	592.50	510.00	1680.00	249.90	10.00	67.80	235.29	750.00	8271.59
2018-19	2013.83	1399.14	61.85	500.00	1450.00	75.00	20.00	5.80	100.00	560.00	6185.63

Source : Department of Energy, GOB

7.4 Distribution Companies

Distribution is an extremely important component of the whole electricity supply chain, as this is the only arm that generates revenue. This revenue enables the state government to improve the entire supply chain, by purchasing more electricity from the central sector. Thus, a major challenge of the power sector reforms lies in the efficient management of the distribution sector. The distribution system in Bihar is being served by two distribution companies — North Bihar Power Distribution Company Limited (NBPDCL) and South Bihar Power Distribution Company Limited (SBPDCL). As on March, 2018, these companies are serving more than 115 lakhs of electricity consumers.

Table 7.9 : Category-wise Number of Effective Consumers (As per billing data)

Year	Number of Effective Consumers								
	Domestic	Commercial	Industrial (LT)	Industrial (HT)	Public Lighting	Traction	Agriculture	Public Water Works	Total
2012-13	3773077 (91.3)	279879 (6.8)	18816 (0.5)	1317 (0.03)	399 (0.01)	17 (neg.)	57838 (1.4)	1098 (0.03)	4132441 (100.0)
2013-14	3900733 (91.9)	273466 (6.4)	15851 (0.4)	1422 (0.03)	389 (0.01)	19 (neg.)	51989 (1.2)	1192 (0.03)	4245061 (100.0)
2014-15	5174585 (92.5)	346375 (6.2)	19599 (0.4)	1582 (0.03)	511 (0.01)	19 (neg.)	52980 (0.9)	1302 (0.02)	5596953 (100.0)
2015-16	7407609 (92.5)	488690 (6.1)	31405 (0.4)	1922 (0.03)	1237 (0.02)	19 (neg.)	75087 (0.9)	1760 (0.02)	8007729 (100.0)
2016-17	9499943 (91.9)	616512 (6.0)	57433 (0.6)	2050 (0.02)	679 (0.01)	22 (neg.)	162188 (1.6)	2030 (0.02)	10340859 (100.0)
2017-18	10616565 (91.8)	672149 (5.8)	79489 (0.7)	2541 (0.02)	2199 (0.02)	23 (neg.)	186436 (1.6)	3173 (.03)	11562575 (100.0)

Note : Figures in bracket indicate percentage shares; neg. in negligible
Source : Department of Energy, GOB

The two distribution companies are already implementing several schemes for expanding and strengthening their distribution networks. These ongoing schemes include transformer replacement, procurement of new transformers, replacement of old conductors of existing high tension (HT) and low tension (LT) lines, and construction of new HT and LT lines, Power Sub Stations (PSS) and bays.

7.5 Operational and Financial Status

The generation and purchase of power (net of central transmission loss) in Bihar increased from 14,002 MU in 2013-14 to 25,559 MU in 2017-18. With increase in sales, the revenue collection has increased. The cost coverage was above 90 percent up to 2016-17; however, this was 80 percent in 2017-18. The financial status of the two distribution companies is described in Table 7.10.

Table 7.10 : Financial Status of Power Sector

Item	2013-14		2014-15		2015-16		2016-17		2017-18	
	NBPDCL	SBPDCL	NBPDCL	SBPDCL	NBPDCL	SBPDCL	NBPDCL	SBPDCL	NBPDCL	SBPDCL
Generation and Purchase (MU)	5381	8621	7029	10388	8929	12748	9647	13380	10983	14576
Sales (MU)	3605	4637	5004	5814	6505	7199	7195	8661	8745	9503
Losses (Percentage)	33.0	46.2	28.8	44.0	27.4	43.5	25.6	35.6	20.38	34.80
Average Revenue (Rs./Unit)	4.17	4.86	4.19	4.37	4.14	4.45	4.02	4.58	5.48	6.02
Sale of Power (Rs. crore)	1503.66	2254.77	2095.00	2540.28	2696.24	3202.37	2890.80	3971.21	4797.74	5717.51
Total Income (including subsidies) (Rs. crore)	2723.69	4190.81	3559.74	4610.37	4475.11	6309.15	4620.48	6754.77	5073.21	6189.13
Total Cost (Rs. crore)	2797.95	4459.50	3856.53	5357.92	4814.55	7043.32	5133.91	7527.08	5813.70	8519.72
Cost Coverage (Total Income/ Total cost) (Percentage)	97.4	94.0	92.3	86.0	92.9	89.6	90.0	89.7	87.3	72.6
Financial Loss (Percentage)	2.6	6.0	7.7	14.0	7.1	10.4	10.0	10.3	12.7	27.4

Source : Department of Energy, GOB

During the recent years, the demand for electricity has been increasing continuously in the state, because of the fast economic growth at one hand and the growth of population on the other. This has resulted in high AT&C (Aggregate Technical and Commercial) loss, specially due to large scale rural electrification (Table No. 7.11). In 2017-18, it was as high as 30.22 percent. Earlier in 2016-17, it was even higher (40.60 percent). The distribution companies have been trying to address this issue by improving the billing and collection system, along with the metering of all consumer connections. Energy accounting and auditing at feeders and distribution transformers

(DT) are essential for reducing these losses and the distribution companies have already started this exercise.

Table 7.11 : AT&C losses – Table with Time Series Data

Year	AT & C Loss (Percentage)
2011-12	59.24
2012-13	54.63
2013-14	46.33
2014-15	43.82
2015-16	43.54
2016-17	40.60
2017-18	30.22

Note : AT&C loss is estimated using PFC formula (excluding Nepal)
Source : Department of Energy, GOB

7.6 Programmes for Electrification and Distribution Schemes

Three important programmes of the central government for expanding the coverage of electricity supply are — Integrated Power Development Scheme (IPDS) (Erstwhile Restructured Accelerated Power Development and Reforms Programme — R-APDRP), Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) (Erstwhile Rajiv Gandhi Grameen Vidyutikaran Yojana - RGGVY), and Special Plan (Backward Regions Grant Fund). The progress of these programmes is presented below:

Integrated Power Development Scheme (IPDS)

The earlier scheme of R-APDRP has been subsumed in the newly launched Integrated Power Development Scheme (IPDS). It has several components — IT enablement of distribution sector, strengthening of distribution network for completion of targets, strengthening of sub-transmission network in urban areas and metering of distribution transformers/feeders/ consumers in the urban areas.

Under Part-A of the erstwhile R-APDRP scheme, the work in 67 towns (excluding 4 franchise towns) has been completed. Strengthening of distribution system under Part-B of the scheme in 60 towns and under the ADB-funded scheme in 7 towns has also been completed. The aim is to provide real-time monitoring and control, minimizing losses, balancing load, and improving voltage profiles.

The newly launched scheme of Integrated Power Development Scheme (IPDS) is being implemented in 133 towns of Bihar for strengthening of sub-transmission and distribution network, installation of solar panels on government buildings, metering of feeders/ distribution transformers/ consumers and IT implementation in distribution system in urban areas. The details of capital expenditure under R-APDRP and IPDS are presented in Table 7.12.

Table 7.12 : Capital Expenditure of R-APDRP & IPDS

Project Component under R-APDRP	Outlay (Rs. crore)	Expenditure incurred (Rs. crore)
R-APDRP — Part A	253.68	156.29
R-APDRP — Part B	1155.21	988.55
R-APDRP — SCADA	38.00	15.91
IPDS (IT & ERP)	67.68	0.00
IPDS (System Strengthening)	2144.36	674.84
Total	**3658.93**	**1835.59**

Source : Department of Energy, GOB

The central government has further sanctioned a scheme under IPDS for six towns in Bihar — Muzaffarpur, Bhagalpur, Kahalgaon, Gaya, Bodhgaya and Ara for system strengthening and other allied works. This scheme would cost Rs. 529.97 crore. Further, it has also sanctioned a scheme for GIS Power Sub-Stations in different towns, costing Rs. 179.80 crore. Presently, tendering process is on for the second scheme.

Village Electrification

The scheme of RGGVY, as approved by the central government for implementation during Twelfth and Thirteenth Plans, has now been subsumed in the new scheme of the central government, called Deen Dayal Upadhyay Gramin Vidyutikaran Yojana (DDUGVY). This scheme has the following objectives :

(i) Separation of agriculture and non-agriculture feeders, facilitating judicious restoring of supply to agricultural and non-agricultural consumers in the rural areas.

(ii) Strengthening and augmentation of sub-transmission and distribution infrastructure in rural areas, including metering of distribution transformers/feeders/consumers.

(iii) Rural electrification for completion of the targets laid down under RGGVY by carrying forward the approved outlay of RGGVY to DDUGJY.

Bihar, with 88.7 percent of its population living in rural areas (2011 census), remains the most ruralised state in India, the national average being around 68.9 percent. Thus, improving

connectivity of rural areas to the grid power is of great importance. In view of this, the rural electrification work has been completed in all 38 districts of the state under DDUGJY. The progress of rural electrification under DDUGJY is given in Table 7.13.

Table 7.13 : Progress of Work under DDUGJY (Erstwhile RGGVY)

A				B					
Agencies/ Targets/ Achieve-ments	Tenth Plan	Eleventh Plan	Total	Agencies/ Targets/ Achieve-ments	Eleventh Plan Phase II	Twelfth Plan	Under DDG	DDG converted into UEV	Total
Electrification of Un-electrified Villages (UEV)				Electrification of Un-electrified Villages (UEV)					
Target				Target					
NBPDCL	5954	4108	10062	NBPDCL	384	1403	59	153	1999
SBPDCL	10627	697	11324	SBPDCL	757	327	154	68	1306
Total	16581	4805	21386	Total	1141	1730	213	221	3305
Achievement				Achievement					
NBPDCL	5954	4108	10062	NBPDCL	384	1403	59	153	1999
SBPDCL	10627	697	11324	SBPDCL	757	327	154	68	1306
Total	16581	4805	21386	Total	1141	1730	213	221	3305
Intensive Electrification of Partially Electrified Villages (PEV)				Intensive Electrification of Partially Electrified Villages (PEV)					
Target				Target					
NBPDCL	-	5969	5969	NBPDCL	3510	14819	0	0	18329
SBPDCL	-	106	106	SBPDCL	9534	7030	0	0	16564
Total	-	6075	6075	Total	13044	21849	0	0	34893
Achievement				Achievement					
NBPDCL	-	5969	5969	NPDCL	3510	14819	0	0	18329
SBPDCL	-	106	106	SBPDCL	9534	7030	0	0	16564
Total	-	6075	6075	Total	13044	21849	0	0	34893

(Figures for no. of villages)
Note : DDG = Decentralised Distributed Generation
Source : Department of Energy, GOB

Special Plan (Backward Regions Grant Fund)

The Backward Regions Grant Fund (BRGF) of the central government is designed to redress regional imbalances in development. This is a fully funded scheme of the central government. The fund provides financial resources for supplementing and converging existing developmental inflows into identified backward districts. It aims to bridge critical gaps in local infrastructure and other development requirements that are not being adequately met through existing inflows. The fund will facilitate participatory planning, decision making, implementation and monitoring,

reflecting the locally felt needs. It also helps to improve the performance of critical functions by the state government. The scheme is divided into four parts — Phase-I, Phase-II, Phase-II (Part-C) and Rural Electrification (RE). The cost of the above schemes is Rs. 6309.56 crore. Till December 2018, the expenditure incurred is — Rs. 2863.90 crore (under NBPDCL) and Rs. 2091.02 crore (under SBPDCL), totalling to Rs. 4954.92 crore.

Har Ghar Bijli under SAUBHAGYA

'Har Ghar Bijli' is one of the seven resolves of the Saat Nischay (Seven Resolves) of the state government, with an aim to provide electricity connection to each willing household. As all rural BPL households are covered under DDUGJY and there was no scheme for providing service connection to rural APL households, a scheme has been sanctioned by the state government for releasing new service connection to APL Rural households under Mukhyamantri Vidyut Sambandh Nischay Yojana (MMVSNY). Meanwhile, in October 2017, the Union Ministry of Power had issued a memorandum conveying approval of SAUBHAGYA (Sahaj Bijli Har Ghar Yojana) to provide electric connection to each willing household across the country. Under this scheme, the central government has sanctioned Rs 3000 per household for connection, and Rs 1500 per household for last mile connectivity.

The scheme has the provision that the state governments which have already taken up household electrification programme on their own will also be eligible under the scheme from the date it comes into vogue, provided the scheme of the state government is aligned with SAUBHAGYA and follows all guidelines of the scheme. The state government has adopted SAUBHAGYA and the Mukhyamantri Vidyut Sambandh Nishchay Yojana (MMVSNY) has been subsumed under SAUBHAGYA. The scheme has been completed in October, 2018 by providing 32,59,041 electricity connection to all willing households in rural areas; in urban areas, connections are being given on demand.

Reconductoring Scheme

A new scheme of R&M (Renovation and Modernisation) for replacement of existing old and dilapidated conductors, poles, brackets, insulator etc. of 33 KV, 11 KV and LT Lines has been sanctioned by the state government to strengthen the electrical infrastructure. It has sanctioned Rs. 3070.23 crore to replace 1062 CKM of 33 KV Line, 25,272 CKM of 11 KV Line and 45,339 CKM of LT Line. The shares of two distribution companies in this amount are — Rs. 1652.15 crore (NBPDCL) and Rs. 1418.08 crore (SBPDCL). Circle-wise Turn key Agencies have been selected through e-tendering in March, 2018, and work has already started to complete the scheme within a period of three years. The scheme gained momentum after completion of 'Har

Ghar Bijli' scheme in the month of October, 2018. The progress report of the scheme is given in Table 7.14.

Table 7.14 : Status of Reconductoring Schemes

Sl. No.	Line (In CKM)	NBPDCL		SBPDCL		Total	
		Scope	Achieve-ment	Scope	Achieve-ment	Scope	Achieve-ment
1	33 KV Line	684	4.30	378	5.00	1062	9.30
2	11 KV Line	13357	499.30	11915	315.94	25272	815.24
3	LT Line	25500	1567.33	19839	772.26	45339	2339.59

Source : Department of Energy, GOB

7.7 Transmission

Power is supplied to various categories of consumers through a transmission network, which also involves the transformation of high voltage power to lower voltage. The transmission network serves as an important link between the generation and distribution of electricity. The challenges pertaining to the transmission process are, thus, mostly related to the growing needs of the other two segments — generation and distribution. To meet the growing demand of power, a robust and reliable transmission network is required, for both inter-state and intra-state transmission. The existing transmission system is, therefore, being strengthened with proper planning to cater to the demand for 24 hour availability of power by all categories of consumers.

Presently, about 15,707 circuit km EHV (Extra High Voltage) transmission line, 142 grid sub-stations with total transformation capacity of 7710 MVA at 220/132 KV level and 12,680 MVA at 132/33 KV level comprise the transmission system in Bihar. The projection for 2018-19 is 16,000 circuit km transmission line, 150 grid sub-stations with 9790 MVA transformation capacity at 220/132 KV level and 14,220 MVA at 132/33 KV transmission capacity. The required capacity for 24 hour power supply for the period 2018-19 to 2020-21 has been projected, as presented in Table 7.15. The plan of action to meet the projected demand in 2018-19 to 2020-21 has been shown in Table 7.16. The peak demand met was 2831 MW in 2014-15, which increased to 5139 MW in September 2018, implying an increase of 81 percent in four years.

Table 7.15 : Projected Required Capacity for Power (2018-19 to 2020-21)

Demand / Capacity	2018-19	2019-20	2020-21
Peak Demand (MW)	4904	5308	6016
Transformation Capacity needed to meet Peak Demand (MW)	9195	9953	11280
Available Capacity MVA at			
220/132 KV level	11090	14510	15200
132//33 KV level	14450	15290	15490

Source : Department of Energy, GOB

Table 7.16 : Plan of Action for Strengthening Transmission

Year	Nos. of New Grid Sub-Stations	New Transmission Lines (Circuit km)
2018-19	▪ 400/220/132/33 kv-0 No. ▪ 400/220/132 kv-0 Nos. ▪ 220/132/33 kv -02 Nos ▪ 132/33 kv-06 Nos.	▪ 400 kv-0 ▪ 220 kv-110 ▪ 132 kv-315
2019-20	▪ 400/220/132/33 kv-0 Nos. ▪ 400/220/132 kv-0 No. ▪ 220/132/33 kv-03 Nos. ▪ 132/33 kv - 02 Nos.	▪ 400 kv-0 ▪ 220 kv-500 ▪ 132 kv-190
2020-21	▪ 400/220/132/33 kv-02 Nos. ▪ 400/220/132 kv – 01 Nos. ▪ 220/132/33 kv-07 Nos. ▪ 132/33 kv - 0 Nos.	▪ 400 kv-390 ▪ 220 kv-400 ▪ 132 kv-250

Source : Department of Energy, GOB

7.8 Generation

The total generation capacity of power as on March 2018 for the state was 3889 MW. Out of this, 81.9 percent is from coal-based thermal power, 12.3 percent from hydro power, and the balance 5.8 percent from renewable energy sources. In terms of ownership, central sector has the largest share of 79.1 percent, followed by the private sector/IPPs (17.8 percent) and state sector (3.1 percent). The details of existing generating capacity in Bihar are shown in Table 7.17.

Table 7.17 : Existing Generation Capacity (March 2018)

(Figures in MW)

Ownership/ Sector	Thermal				Nuclear	Hydro (Renewable)	RES(MNRE)	Grand Total
	Coal	Gas	Diesel	Total				
State	110	0	0	110	0	10	0	120
Private/ IPPs	480	0	0	480	0	0	214	694
Central	2596	0	0	2596	0	469	10	3075
Total	3186	0	0	3186	0	479	224	3889

Note : RES = Renewable Energy Sources; MNRE = Ministry of New and Renewable Energy;
IPP = Independent Power Producers
Source : Department of Energy, GOB

The present status of the three generating units that remained in Bihar after the bifurcation of the state in 2000 is as mentioned below :

(i) Barauni Thermal Power Station (BTPS)

BTPS has 7 different units, 5 of them have already run through their working life and are not in service anymore. Unit 7 has started generation after completion of Renovation and

Modernisation (R&M). Further R&M work of Unit 6 is in progress. The construction works of two new units (Units 8 and 9) of 250 MW each is also going on under the extension project of BTPS. The coal linkage and environmental clearance have been obtained for these two new units. Capacity addition of Unit 8 has been achieved in January, 2018 and of Unit 9 in March, 2018. Further, the state government has transferred the ownership of Barauni Thermal Power Station to National Thermal Power Corporation (NTPC) to reduce the cost of generated power from these units by utilizing expertise of NTPC.

(ii) **Kanti Bijlee Utpadan Nigam Limited (KBUNL)**

The KBUNL is a joint venture of NTPC and BSPGCL, having equity partnership ratio of 65:35. It has two units of 110 MW each. The power production has started in both the units after renovation and modernization. The construction work of two units (Units 3 and 4) of 195 MW each has also been completed and has started generating power. Further, as per the decision of the state government, 100 percent equity share has been handed over to NTPC.

(iii) **Kosi Hydel Power Station (KHPS)**

The Kosi Hydro Power Station (Kataiya), Birpur, consisting of 4 units of 4.8 MW each was commissioned during 1970-78. This project was handed over to the Bihar State Hydroelectric Power Corporation (BSHPC) in November, 2003. The renovation work of 3 out of 4 units has been completed and power generation has started.

(iv) **Eastern Gandak Canal HE Project**

The Eastern Gandak Canal HE Project in Valmikinagar, West Champaran was commissioned during 1996-97, consisting of 3 units of 5 MW.

(v) **Sone Western Link Canal HE Project**

Sone Western Link Canal HE Project in Dehri-on-Sone, Rohtas, consisting of 4 units of 1.65 MW, was commissioned during 1991-92.

(vi) **Sone Eastern Link Canal HE Project**

Sone Eastern Link Canal HE Project in Barun, Aurangabad, consisting of 2 units of 1.65 MW, was commissioned during 1996-97.

(vii) **Agnoor HE Project**

Agnoor HE Project, Arwal, consisting of 2 units of 0.5 MW, was commissioned during 2004-05.

(viii) **Dhelabagh HE Project**

Dhelabagh HE Project in Rohtas, consisting of 2 units of 0.5 MW, was commissioned during 2006-07.

(ix) **Triveni Link Canal HE Project**

Triveni Link Canal HE Project in West Champaran, consisting of 2 units of 1.5 MW, was commissioned during 2007-08.

(x) **Nasriganj HE Project**

Nasriganj HE Project in Rohtas, consisting of 2 units of 0.5 MW, was commissioned during 2007-08.

(xi) **Sebari HE Project**

Sebari HE Project in Rohtas, consisting of 2 units of 0.5 MW, was commissioned during 2008-09.

(xii) **Jainagra HE Project**

Jainagra HE Project in Rohtas consisting of 2 units of 0.5 MW, was commissioned during 2007-08.

(xiii) **Shirkhinda HE Project**

Shirkhinda HE Project in Rohtas, consisting of 2 units of 0.35 MW, was commissioned during 2009-10.

(xiv) **Belsar HE Project**

Belsar HE Project in Arwal, consisting of 2 units of 0.5 MW, was commissioned during 2011-12.

(xv) **Arwal HE Project**

Arwal HE Project in Arwal consisting of 1 unit of 0.5 MW, was commissioned during 2011-12.

At present, the work is in progress for some more generating units in Bihar. On completion of all these projects, the dependence of Bihar on the central sector for power will be lessened. The details of these new projects are presented below:

1. **Nabinagar Stage-1 Plant** : This project is located in Aurangabad district. The NPGC is a joint venture of NTPC and BSPGCL, having equity partnership ratio of 50:50. For this power project, the construction work of 3 units of 660 MW each is in progress. After sustained efforts of the state government, coal linkage has been allotted by the union Ministry of Coal. The expected date of completion of all the 3 units are December, 2018, March, 2019 and October, 2019 respectively. Further, as per the decision of the state government, 100 percent equity share has been handed over to NTPC.

2. **Power Project in Buxar** : An agreement was signed with Satluj Jal Vidyut Nigam Ltd. (SJVNL) for construction of greenfield power projects at Chausa (Buxar), having 2 units of 660 MW each. Topographical survey of the project area, erection of boundary pillars and barbed wire fencing work for the project is completed. By now, 1035.74 acres of land has already been transferred for this purpose. Amrapali coal block has been allocated to SJVNL. The Power Purchase Agreement (PPA) has been signed with distribution companies of Bihar and 85 percent power has been allocated to Bihar. Environment clearance has also been obtained. Consultancy service for main work has been awarded to a reputed private company and is expected to be completed by 2022.

3. **Ultra Mega Power Project (Banka)** : A proposal has been sent for the establishment of a ultra mega power project in Banka (approximately 4000 MW), for which 2500 acres of land has been identified. The Central Water Commission has given consent for 120 cusecs of water from the Ganga river. The Power Finance Corporation (PFC) has incorporated two Special Purpose Vehicles (SPV) for carrying out the pre-award project activities. The Union Ministry of Power has allotted Barhat and Dhulia Nala Coal Blocks having a reserve of 731 MT. Bihar has been allotted 2000 MW of power from this project.

Table 7.18 : Details of Existing and Planned Generation Units

Thermal Plan	2016-17	2017-18	2018-19 (Under progress)	2019-20	By 2022 (Upcoming Projects)	Beyond 2022
KANTI TPP (2x110 MW) (2x195 MW)	220 MW	195 MW Unit 3	195 MW Unit 4 completed	—	—	—
BARAUNI TPP (2x110 MW) (2x250 MW)	—	110 MW Unit 7: Nov. 16	500 MW Unit 8- Capacity addition achieved in Jan' 18 Unit 9- Capacity addition achieved in Mar' 18 (250 MW each) Unit 6- Dec' 18 (likely) (110 MW)	—	—	—
NABINAGAR TPP (3x660 MW) 1980 MW	—	—	Unit 1: Feb' 19 660 MW	1320 MW Unit 2: May' 19 Unit 3: Oct' 19 (660 MW each)	—	—
BUXAR TPP (2x660 MW) SJVNL	—	—	—	—	MoU signed on 20.11.15 1320 MW	—
BANKA UMPP (4000 MW)	—	—	—	—	—	4000 MW
Total Installed Capacity	**220 MW**	**525 MW**	**1990 MW**	**3310 MW**	**4630 MW**	**8,630 MW**

Note : Renewal of MOU with NTPC and NHPC for Kajra and Pirpainti Project is under process
Source : Department of Energy, GOB

7.9 New Schemes / Projects

Integrated Power Development Scheme (IPDS)

The project covers works relating to strengthening of sub-transmission and distribution network, provisioning of solar panels on government buildings, including net-metering, metering of feeders/ distribution transformers/ consumers in 133 statutory towns (excluding 6 towns in distribution franchise area) of Bihar. The project will ensure 24X7 power supply and reduction in AT&C losses. The total approved cost of the scheme is Rs. 2100.50 crore. The ongoing scheme of R-APDRP has been subsumed in it. The work has been awarded after tendering and is under progress.

The central government has further sanctioned two schemes under IPDS for six towns in Bihar — Muzaffarpur, Bhagalpur, Kahalgaon, Gaya, Bodhgaya and Ara. The first scheme is meant for system strengthening and other allied works at a cost of for Rs. 529.97 crore, and the second scheme is meant for GIS Power Sub Station in different towns at a cost of Rs. 179.80 crore. The central government will provide 60 percent of the project cost as grant and the remaining 40 percent is to be arranged by the state government and the distribution companies.

Deendayal Upadhayay Gram Jyoti Yojana (DDUGJY)

The central government launched Deendayal Upadhayay Gram Jyoti Yojana (DDUGJY), whose objectives have already been mentioned before. The work is under progress and the target month for completion is December 2019. The total sanctioned cost of the project is Rs. 5827.23 crore. The central government will provide 60 percent of the project cost as grant and the remaining 40 percent is to be arranged by the state government.

Ujjwal Discom Assurance Yojana (UDAY)

For operational and financial turnaround of power distribution companies (DISCOM), the Union Ministry of Power had brought the UDAY scheme. The scheme includes various activities for improvement in operational and financial efficiencies which ultimately aims at — (a) Reduction in AT&C Loss to 15 percent, and (b) Reduction in gap between Average Cost of Supply (ACS) and Average Revenue Realized (ARR) to zero, both by 2019-20. A tripartite agreement among Government of Bihar, Union Ministry of Power, and DISCOMs (NBPDCL and SBPDCL) was signed on February 22, 2016.

The scheme also provides for taking over 75 percent of the debt of DISCOMs by the state government over 2 years (50 percent in 2015-16 and 25 percent in 2016-17). Out of the total debt of Rs. 3109.05 crore on both the DISCOMs of Bihar, Rs. 2332.01 crore has been taken over by the state government under UDAY Scheme.

Presently, all the parameters aiming to reduce AT&C Loss and ACS-ARR gap have been made online through UDAY website portal (www.uday.gov.in), where every participating DISCOM has to upload the progress on monthly/quarterly basis. The marks are assigned to each activity and marks obtained on the basis of achievement monthly/quarterly decide the ranking of DISCOMs among the participating states. Both DISCOMs of Bihar together have reduced AT&C loss from 43.5 percent (2015-16) to 30.22 percent (2017-18) and also reduced ACS-ARR gap from 89 paise per unit (2015-16) to 58 paise per unit (2017-18).

7.10 Recent Developments in Power Sector

Spot Billing : Spot Billing has been implemented for all electricity consumers of the state through android mobile and bluetooth printer.

Tariff Rationalization : Bihar became the pioneer state in the country to implement 'Tariff Rationalization'. The tariff order for 2017-18 has been issued on 'Zero Subsidy' basis to reflect the true cost of supply, upfront subsidy to be provided to consumers and, assistance, if any given to discoms as a measure to enhance transparency and accountability.

V-Wallet : Revenue collection work has also been outsourced to billing and collection agencies including RRF through V- wallet in all rural areas in the state. However, in urban areas, the collection is being received at companies' own POS counters.

Power Theft Redressal through WhatsApp : A separate and dedicated mobile number (70333-55555) has been introduced for power theft information by consumers throughout the state.

Project Monitoring App : For intensive and real time monitoring of different projects going on in the power distribution companies in the state, a Mobile App 'DC-Nine' has been developed. Through this app, the latest status of the project and information regarding its inspection can be uploaded on the mobile from the spot itself by the field project officers. Officers at headquarters get this information through MIS, resulting in continuous monitoring of the project.

Toll Free Number 1912 : To resolve the complaints of consumers, one Toll Free number (1912) has been started in the state on 24×7 basis. Upon lodging a complaint on this number, the consumers will get a call and SMS regarding their complaint. Arrangement has been made for time to time interaction of the top management with consumers.

Remote Meter Reading : Remote meter reading of High Tension (HT) and Low Tension (LT) industrial consumers is being done from the headquarters.

Prepaid Metering : For better metering in Patna, prepaid metering has been started in the Vidyut Board Colony which will be extended to other consumers in a phase-wise manner.

New Techniques in Transmission System : In the new projects of transmission system, most advanced techniques in electricity like Sub-station Automation System (SAS), Optical Ground Wire (OPGW), High Temperature Low Sag (HTLS) conductor and Gas Insulated System (GIS) have been introduced.

GIS Mapping : GIS mapping of Power Lines, Power Sub-stations and Grid Sub-stations at 33 KV, 132 KV, 220 KV and 400 KV level has been completed.

7.11 Bihar Renewable Energy Development Agency (BREDA)

Most of Bihar's installed generation capacity is concentrated in thermal power plants. This not only leads to a concern about the clean generation of electricity, it also puts a fiscal burden on the state, given that the prices of coal may be very volatile. Thus, aside from promoting hydel power projects, the state government has also created an agency called Bihar Renewable Energy Development Agency (BREDA), which is responsible for the development of projects that would use non-conventional energy sources for production of electricity. The state government provides funds to BREDA for expenditure on subsidies for the schemes and also for the expenditure on establishments.

Table 7.19 : Achievements of BREDA (2016-17 to October 2018)

2016-17		
A. Solar Photovoltaic Scheme	Physical Achievement	Financial Outlay (Rs. crore)
Solar Water Pumping Systems installation under *Mukhyamantri Naveen & Naveekarniya* irrigation scheme	34 nos.	1.00
Installation of 1kWp solar rooftop off-grid power plant systems under *Mukhyamantri Naveen & Naveekarniya* scheme	186 nos.	2.78
Solar electrification at District Collectorate, Hospital, Guest House of 25 kWp	35 nos. (875kWp)	15.45
Installation of 2 nos. of 25kWp off-grid roof top solar power plant under e-court mode mission project at Hon'ble Civil and Session Court buildings of Sheikhpura and Jehanabad districts	2 nos. (50kWp)	0.88
B. BEE (Bureau of Energy Efficiency) Schemes		
Draft of ECBC as per geographical condition of State		0.0475
Awareness campaign on Energy Conservation	3 nos.	0.04
Establishment of Energy Club in School	5 nos.	0.0165

2017-18		
A. Solar Photovoltaic Scheme	Physical Achievement	Financial Outlay (Rs. crore)
Solar Water Pumping Systems installation under *Mukhyamantri Naveen & Naveekarniya* irrigation scheme	280 nos.	8.63
Installation of 1kWp solar rooftop off-grid power plant systems under *Mukhyamantri Naveen & Naveekarniya* scheme	2135 nos.	32.00
Installation of 2 nos. of 40kWp solar off-grid power plant at Hon'ble Civil and Session Court buildings at Bhagalpur and Muzaffarpur districts under e-court mode mission	80 kWp	0.88
Installation of 23 kWp solar power plant at Hon'ble CM House, NEK SAMVAD BHAWAN	23 kWp	0.276
Solar Street Lighting System in Katihar district under District Minority Welfare Department	1425 Nos. (57.01 kWp)	2.19
Installation of 3.6 kWp off grid solar power plant at 27 locations LWE affected Police Stations	97.2 kWp	1.21
Installation of Solar Street Lighting System	157 nos.	0.274
B. BEE (Bureau of Energy Efficiency) Schemes		
Establishment of Energy Club in School	8 nos.	0.0264
Distribution of LED bulbs in selected 8 villages of Samastipur and Saran districts	8 nos.	0.059
Model Energy Efficient Village Project	1 no.	0.025

2018-19 (Upto October 2018)		
A. Solar Photovoltaic Scheme	Physical Achievement	Financial Outlay (Rs. crore)
Installation of 1kWp solar rooftop off-grid power plant systems under *Mukhyamantri Naveen & Naveekarniya* scheme	490 nos.	7.34
Installation of 2 nos. of 40kWp solar off-grid power plant at Hon'ble Civil and Session Court buildings at Gaya and Nalanda districts under e-court mode mission	80 kWp	0.88
Installation of 5 kWp off grid solar power plant at 62 locations of BSEIDC	310 kWp	3.875
Installation of 3.6 kWp off grid solar power plant at 44 locations LWE affected Police Stations	158.4 kWp	1.98
Installation of 40 kWp off gird roof top solar power plant and 04 nos. of Solar Street Light at Mangal Talab, Patna under CSR initiative	40 kWp	0.446
Installation of 500 Wp off gird roof top solar power plant with 04 nos. of 9 W Street Lights at 25 nos. Police Stations in Gaya	12.5 kWp	0.31
Solar Water Pumping Systems installation under *Mukhyamantri Naveen & Naveekarniya* Irrigation Scheme	32 nos.	0.658
B. BEE (Bureau of Energy Efficiency) Schemes		
Energy Efficiency in Government Schools : Provision of free appliance to the schools	18 nos.	0.013
Awareness campaign on Energy Conservation	4 nos.	0.07
Energy Efficiency Workshop for SME	1 no.	0.025

Source : BREDA

7.12 Bihar State Hydroelectric Power Corporation Limited

Aside from thermal power, Bihar also has the potential for generating power from water resources and, presently, this is being exploited through a number of hydroelectric power projects. The Bihar State Hydroelectric Power Corporation Limited (BSHPC) was established to oversee expansion of hydroelectric power projects in the state. During the Tenth Plan, BSHPC started exploring possibilities for major hydel projects, besides its earlier mandate for minor hydel projects. There are 13 minor hydel projects that are currently operational in the state, with a total installed capacity of 54.3 MW. Presently, the construction work is in progress for 11 more schemes, the details of which are presented in Table 7.20.

Presently, BSHPC is also engaged in exploring the possibilities of Dagmara and Indrapuri projects in the state. Regarding these hydel projects, preparation of DPR of Indrapuri HEP (300 MW) is in progress. For Dagmara (130 MW) an expression of interest is in progress for surveying and preparation of PFR/DPR.

Table 7.20 : Minor Hydel Projects under Construction

Sl. No.	Project	District	Capacity (MW)
Work progress more than 75 Percent			
1	Amethi (1x500 KW)	Rohtas	0.5
2	Tejpura (2x750 KW)	Aurangabad	1.5
3	Paharma (2x500 KW)	Rohtas	1.0
4	Rajpur (2x350 KW)	Supaul	0.70
Work progress between 50 to 75 Percent			
5	Mathauli (2x400 KW)	West Champaran	0.80
6	Rampur (1x250 KW)	Rohtas	0.25
7	Natwar (1x250 KW)	Rohtas	0.25
8	Sipha (2x500 KW)	Aurangabad	1.0
9	Dehra (2x500 KW)	Aurangabad	1.0
10	Walidad (1x700 KW)	Arwal	0.70
Work progress less than 50 Percent			
11	Barwal (2x800 KW)	West Champaran	1.6
Total			**9.3 MW**
		Capacity addition	54.30 MW + 9.30 MW
		Grand Total	**63.60 MW**

Source : Bihar State Hydroelectric Power Corporation Limited