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Review Article

The Role of Economic Policies in Energy Sector Transformation in India

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Abstract

India's economic development and increasing energy demand necessitate a robust policy framework to ensure sustainable growth and inflation stability. This study examines the interplay between fiscal and monetary policies, inflation control, and power sector transformation with a specific focus on Bihar. Over the past decade, Bihar's per capita electricity consumption has risen from 134 kWh in 2011-12 to 329 kWh in 2021-22, a 145.5 percent increase, reflecting rapid economic expansion. Additionally, the state's peak power demand surged from 4,965 MW in 2017-18 to 7,576 MW in 2023-24, demonstrating an escalating need for reliable power infrastructure. The research is based on secondary data from government sources, including the Bihar Economic Survey 2023-24, Indian Economic Survey 2023-24, and reports from the Department of Energy, Government of Bihar (GoB). It evaluates the effectiveness of various government schemes such as Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA), and Mukhyamantri Krishi Vidyut Sambandh Yojana (MKVSY) in improving power accessibility. The study also assesses the impact of inflation control measures on energy pricing and financial sustainability in the power sector. Notably, Bihar has reduced Aggregate Technical & Commercial (AT&C) losses from 54.63 percent in 2012-13 to 24.32 percent in 2022-23, resulting in a ₹215 crore profit for DISCOMs. The findings highlight significant progress in energy accessibility, economic stability, and policy-driven power sector reforms while identifying challenges in demand-supply balance and inflation management. The study concludes with policy recommendations to enhance energy security, improve fiscal-monetary coordination, and promote sustainable energy solutions for long-term economic stability.

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1. INTRODUCTION

Economic Growth and Energy Demand in India

Energy is a fundamental driver of economic growth, supporting industrialization, infrastructure development, and overall socio-economic progress. India's energy demand has surged in recent years due to rapid urbanization, population growth, and economic expansion. Bihar, in particular, has witnessed remarkable progress in the power sector, with per capita electricity consumption rising from 134 kWh in 2011-12 to 329 kWh in 2021-22, an increase of 145.5 percent in a decade. The state's peak power demand has also grown significantly, from

4,965 MW in 2017-18 to 7,576 MW in 2023-24, reflecting the increasing need for reliable electricity supply.

Government Policies and Power Sector Reforms

The Indian government has introduced several fiscal and monetary policies to control inflation and support the power sector. Notable schemes such as Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA) have played a crucial role in rural electrification, ensuring that all villages and human habitations receive electricity. Additionally, the Mukhyamantri Krishi Vidyut Sambandh Yojana (MKVSY) has facilitated agricultural power connections, with the number of agriculture consumers rising from 2.28 lakh in 2018-19 to 4.95 lakh in 2022-23, a 117 percent increase. These initiatives have significantly improved power accessibility and economic productivity in Bihar and other states.

Inflation Control and Energy Pricing

Controlling inflation is critical for economic stability, and energy pricing plays a crucial role in this aspect. The state government of Bihar has implemented various reforms to improve the financial sustainability of power distribution companies (DISCOMs). The Aggregate Technical and Commercial (AT&C) losses, which were 54.63 percent in 2012-13, have been reduced to 24.32 percent in 2022-23, helping DISCOMs achieve a profit of ₹215 crore in the same year. Moreover, the introduction of smart prepaid meters and improved billing efficiencies have further strengthened revenue collection. These measures ensure stable power tariffs, reducing inflationary pressures on consumers and industries.

In this research paper, we analyze the impact of fiscal and monetary policies on inflation control and power sector growth in India, focusing on Bihar's achievements and challenges. The paper explores policy frameworks, energy accessibility, pricing strategies, and the role of government interventions in balancing economic growth and energy sustainability.

2. REVIEW OF LITERATURE

The study by Pradhan, Ghose, and Shabbiruddin (2024) [1] explores the profound impact of the COVID-19 pandemic on India's renewable energy sector, emphasizing both present disruptions and future challenges. The pandemic-induced economic downturn, supply chain disruptions, and fluctuating oil prices have significantly hindered the renewable energy transition. Lockdowns led to delayed project executions, financial instability among investors, and reduced energy demand, all of which slowed India's ambitious renewable energy expansion plans. Despite these setbacks, India remains proactive in advancing sustainable development. The study highlights how policy interventions and regulatory support could mitigate the adverse effects of COVID-19 on the sector. The Ministry of New and Renewable Energy (MNRE) has introduced revised policies, financial incentives, and flexible regulations to maintain growth momentum. However, uncertainties persist regarding the long-term resilience of the renewable energy industry in the face of future global crises. Chatterjee, R. (2024) [2]. The literature on energy transition in Indian agriculture underscores the critical need for a paradigm shift towards sustainable governance frameworks. Chatterjee (2024) highlights how current governance structures fail to fully integrate renewable energy transitions in agriculture, thereby limiting their effectiveness. The research identifies state-level governance as a key driver for successful energy transitions, emphasizing the role of decentralized policies and region-specific strategies. Additionally, it points to gaps in current research, particularly regarding the socio-economic implications of transitioning from fossil fuels to renewable energy in agricultural settings. While federal policies like PM-KUSUM aim to promote solar adoption in farming, state-level governance mechanisms remain underexplored. The study introduces a new "state energy transition paradigm" as a foundation for future policy interventions. Overall, the literature suggests that a well-structured, inclusive governance framework is essential for ensuring a just and effective energy transition in Indian agriculture. Mohanty, M., & Sarkar, R. (Eds.). (2024) [3]. The transition from coal dependency to a sustainable energy mix in India presents complex challenges and trade-offs. The literature underscores the intricate interplay between economic growth, energy security, and environmental sustainability. India's shift towards renewable energy is shaped by political, economic, and social factors, necessitating a multidisciplinary approach. While decarbonization commitments are in place, the transition process involves navigating vested interests, infrastructural limitations, and socio-economic impacts on coal-dependent communities. Studies highlight the importance of an inclusive policy framework that considers the roles of central and state governments, private entities, and local stakeholders. The literature also emphasizes the need for a just transition that mitigates economic disruptions while ensuring energy accessibility. Future research should explore policy instruments, technological innovations, and financial mechanisms to facilitate a smoother energy transition. The study by Vats and Mathur (2022) [4] provides a comprehensive assessment of India's pathway toward achieving a net-zero emissions (NZE) energy system by 2050. The research identifies transformative electrification, energy efficiency improvements, and decarbonized fuels—such as green hydrogen, bioenergy, and renewable electricity—as critical elements for full decarbonization. However, it highlights significant technological and infrastructural challenges in the heavy freight and industrial sectors, which may leave around 1.3 gigatonnes of residual CO_2 emissions. The study underscores the necessity of carbon sequestration strategies, both technological and nature-based, to bridge the gap. Sulich, A., & Sołoducho-Pelc, L. (2022) [4]. The study provides an extensive review of the transformation strategies in the energy sector, emphasizing the interplay between sustainability and business strategies. The literature highlights the slow pace of change in the sector despite increasing global urgency to transition towards renewable energy. Systematic literature review (SLR) and classical literature review (CLR) methodologies were combined to

examine trends, challenges, and gaps in energy sector transformation. Key findings indicate a disparity between theoretical sustainability commitments and practical implementations, driven by factors such as technological constraints, policy limitations, and economic pressures. The study underscores the necessity for a holistic approach, integrating business strategies, technological advancements, and regulatory frameworks to accelerate the transition. Future research avenues include exploring policy-driven strategic transformations and the role of emerging technologies in enhancing sustainable energy systems. The study by Gulagi *et al*. (2022) [6] provides a comprehensive analysis of India's renewable energy transition and its feasibility across different states. The research highlights that a renewable-based power system by 2050 is not only technically viable but also more cost-effective than the current coal-dominated system. By leveraging solar, wind, and hydropower, complemented by battery storage and synthetic fuel-based engines, India can ensure affordable, sustainable, and accessible energy while reducing its greenhouse gas (GHG) emissions to zero. A key finding is that solar PV will contribute nearly 73% of India's electricity generation by 2050, with wind energy playing a crucial role during the monsoon season. The study also emphasizes the declining cost of renewable energy, showing that the levelized cost of electricity (LCOE) will decrease from 71 €/MWh in 2020 to 38 €/MWh by 2050. Additionally, the gradual retirement of coal plants and the avoidance of new fossil fuel-based power plants are critical steps toward achieving India's net-zero emissions target.

The study by Ram *et al*. (2022) [7] highlights the technical feasibility and economic benefits of transitioning Delhi to a 100% renewable energy system. As a megacity within the North Indian grid, Delhi plays a crucial role in driving regional energy transitions. The research presents a multi-sectoral and cost-optimal energy transition pathway, demonstrating that Delhi can significantly reduce primary energy consumption by 40%, energy costs by over 25%, and greenhouse gas (GHG) emissions, while also creating three times more direct energy jobs.

A key insight from the study is that megacities must lead the global energy transition, as they consume two-thirds of global energy and contribute 70% of global GHG emissions. While North American and European cities have already established climate action targets, many developing megacities, including those in India and China, are yet to fully embrace long-term climate strategies. This research underscores the importance of integrating renewables across power, heat, transport, and desalination sectors to achieve net-zero emissions by 2050.

The study by Vishwanathan & Garg (2020) [8] provides a comprehensive analysis of India's energy system transformation in alignment with the Nationally Determined Contributions (NDCs) and global climate commitments. The findings highlight that achieving the 2°C and well below 2°C targets requires a transition away from fossil fuels, particularly by retiring coal-based power plants older than 30 years under the NDC scenario and older than 20 years for deeper CO_2 mitigation. The research further underscores that renewable energy capacity must increase to 225–280 GW by 2050, backed by battery storage and smart grid infrastructure, while nuclear energy must expand to 27–32 GW. Additionally, carbon capture and storage (CCS) technologies must be deployed across power and industrial sectors to facilitate decarbonization.

Need for the Study

The rapid economic growth and increasing energy demand in India, particularly in states like Bihar, necessitate a deeper understanding of the interplay between fiscal and monetary policies, inflation control, and power sector development. With Bihar's per capita electricity consumption rising by 145.5 percent in a decade and peak power demand reaching 7,576 MW in 2023-24, there is a pressing need to evaluate the effectiveness of government policies in ensuring energy security and economic stability. Additionally, the reduction in AT&C losses from 54.63 percent in 2012-13 to 24.32 percent in 2022-23 highlights the impact of policy reforms on financial sustainability. This study aims to assess these trends, identify challenges, and provide policy recommendations for a balanced approach to inflation control and power sector growth.

3. OBJECTIVE OF THE STUDY

This study aims to analyze the impact of fiscal and monetary policies on inflation control and power sector development in India, with a specific focus on Bihar. Given the state's rising energy demand, growing per capita consumption, and significant power sector reforms, it is essential to evaluate how policy interventions have shaped energy accessibility, pricing stability, and economic growth. The study seeks to identify key challenges, measure the effectiveness of government schemes, and propose strategies for sustainable power sector expansion while maintaining economic stability.

4.1 Specific Objectives

- To examine the role of fiscal and monetary policies in controlling inflation and their impact on energy pricing.
- To analyze the growth and performance of Bihar's power sector, including demand, supply, and consumption trends.
- To assess the effectiveness of government schemes in enhancing energy accessibility and the financial sustainability of DISCOMs.
- To provide policy recommendations for balancing economic stability, inflation control, and sustainable energy growth.

4. RESEARCH METHODOLOGY

This study is grounded in secondary data sourced from authoritative government publications, notably the Bihar Economic Survey 2023-24 and the Indian Economic Survey 2023-24. These comprehensive documents provide detailed insights into economic indicators, policy impacts, and sectoral performances at both the state and national levels. By systematically analyzing statistical data, policy frameworks, and trend analyses presented in these surveys, the research evaluates the interplay between fiscal and monetary policies, inflation control, and power sector development in India, with a particular

focus on Bihar. This approach ensures a robust and evidence-based assessment, facilitating informed conclusions and policy recommendations.

5. RESULT AND DISCUSSION WITH DATA ANALYSIS

Power Availability in Bihar: Demand and Supply Trends

Bihar has made significant strides in ensuring adequate power availability to meet the growing demand in recent years. The state's projected peak power demand increased from 4,965 MW in 2017-18 to 6,880 MW in 2022-23, marking a growth of 38.6 percent over five years. The per capita energy consumption has also risen from 280 kWh in 2017-18 to 329 kWh in 2021-22, reflecting a 17.5 percent growth. A crucial achievement has been the substantial increase in peak demand met, which surged by 48.6 percent to 6,738 MW in 2022-23 from 4,535 MW in 2017-18. Notably, the peak demand met reached a record 7,576 MW in 2023-24 (as of July 2023), showcasing Bihar's enhanced power infrastructure and supply capabilities. A closer look at the demand-supply scenario reveals that the gap between projected demand and peak demand met has been narrowing. The state recorded a peak deficit of just 2.06 percent in 2022-23, indicating near-complete fulfillment of power requirements. Furthermore, Bihar reported a surplus of 9.8 percent in energy availability compared to the projected requirement in the same period. These improvements highlight the effectiveness of Bihar's power sector policies and infrastructure development, ensuring reliable electricity access for households, industries, and businesses across the state.

Table 1: Power Scenario (2017-18 to 2022-23)

Indicator	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Peak Demand						
Projection (MW)	4965	5300	5900	5995	6475	6880
Met (MW)	4535	5139	5891	5932	6627	6738
Peak Deficit/Surplus						
Deficit/Surplus (MW)	(-)430	(-)161	(-)9	(-)63	152	(-)142
Percentage	(-)9.4	(-)3	(-)0.1	(-)1.05	2.3	(-)2.06
Energy						
Requirement Projection (MU)	30095	32257	32300	34171	36245	41102
Availability (MU)	26788	29472	31540	34018	35857	45136
Deficit/ Surplus (MU)	(-) 3307	(-)2785	(-) 760	(-) 153	(-) 388	(+) 4034
Deficit/ Surplus (percent)	(-) 12.3	(-)8.6	(-) 2.4	(-) 0.45	(-) 1.1	(+) 9.8
Per Capita Consumption (kwh)	280	311	332	316	329	-

Source: Department of Energy, GoB

Table 1 presents Bihar's power scenario from 2017-18 to 2022-23, highlighting key indicators such as peak demand, energy availability, and deficit/surplus trends. The projected peak demand has steadily increased from 4,965 MW in 2017-18 to 6,880 MW in 2022-23, reflecting growing electricity consumption. However, the actual peak demand met shows a fluctuating trend, reaching 6,738 MW in 2022-23. The deficit/surplus data indicates that while Bihar faced a peak power deficit in earlier years, it improved significantly, with a surplus recorded in 2021-22. However, a slight deficit of 2.06 percent reappeared in 2022-23, indicating a minor supply gap.

In terms of energy availability, the state's requirement projection increased from 30,095 MU in 2017-18 to 41,102 MU in 2022-23. While Bihar faced a persistent energy deficit in the initial years, the gap gradually narrowed. By 2022-23, the state recorded a surplus of 9.8 percent, demonstrating an improvement in power generation and procurement. Per capita energy consumption also saw a steady rise from 280 kWh in 2017-18 to 329 kWh in 2021-22, indicating better access to electricity for households and industries. The overall trend suggests significant progress in Bihar's power infrastructure, though minor challenges in peak demand fulfilment remain.

Trend of Energy Requirement and Availability (in MU)

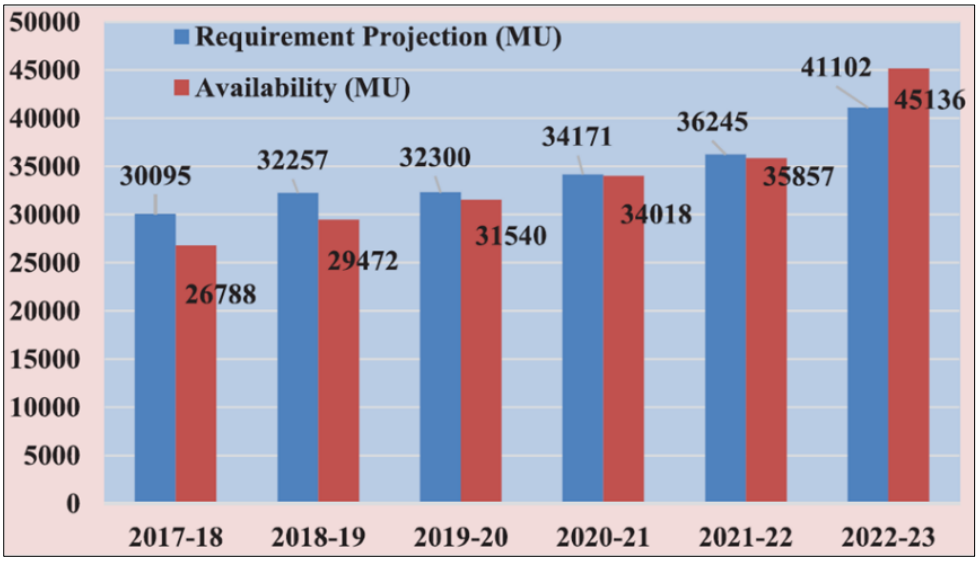

Figure 1: Trend of Energy Requirement and Availability in Bihar (in MU)

Bihar has significantly improved power availability, with urban areas receiving 23-24 hours and rural areas 21-22 hours of electricity supply. The state's total electricity consumption grew by 34.3 percent from 26.8 thousand MU in 2018-19 to 36.0 thousand MU in 2022-23. Consumption varies across districts, with Patna (6021 MU), Gaya (2250 MU), and Muzaffarpur (1590 MU) leading in energy use, while Sheikhpura, Arwal, and Sheohar recorded the lowest consumption. Notably, Sheikhpura (19.7%), Kaimur (17.6%), and Nawada (15.9%) registered the highest growth rates in energy consumption between 2021-22 and 2022-23, reflecting regional development trends.

Growth and Changing Consumer Trends in Bihar's Power Distribution Sector

The electricity distribution sector in Bihar has witnessed significant growth, with the total number of consumers increasing from 145.7 lakh in 2018-19 to 189.6 lakh in 2022-23, reflecting a 30 percent rise over four years. The domestic sector remains the largest consumer, accounting for 88.5 percent of total consumers, although its share has started to decline as commercial and industrial consumption rises—an encouraging sign of Bihar's economic progress. The number of domestic consumers grew by 24.4 percent from 134.8 lakh in 2018-19 to 167.74 lakh in 2022-23. Additionally, agricultural electricity connections saw a remarkable 117 percent growth, driven by the implementation of the Mukhyamantri Krishi Vidyut Sambandh Yojana (MKVSY), increasing from 2.28 lakh in 2018-19 to 4.95 lakh in 2022-23. This shift in consumption patterns indicates expanding economic activities and improved rural electrification in Bihar.

Table 2: Category-wise Number of Effective Consumers (2018-19 to 2022-23)

Categories	2018-19	2019-20	2020-21	2021-22	2022-23
Domestic(lakh)	134.8 (92.5)	145.41 (91.5)	153.26 (90.4)	160.49 (89.6)	167.74 (88.5)
Commercial	762438 (5.2)	893570 (5.6)	1071971 (6.3)	1243174 (6.9)	1425348 (7.5)
Industrial(LT)	90671 (0.6)	105242 (0.7)	125608 (0.7)	143398 (0.8)	163703 (0.9)
Industrial(HT)	2806(neg.)	3040(neg.)	3220(neg.)	3644(neg.)	3976(neg.)
Public Lighting	2483 (neg.)	2420(neg.)	2738 (neg.)	4003 (neg.)	4504(neg.)
Traction	23 (neg.)	5(neg.)	12(neg.)	8(neg.)	14(neg.)
Agriculture	228423 (1.6)	314606 (2.0)	359295 (2.1)	395790(2.2)	495348 (2.6)
Public Water Works	3700(neg.)	4212(neg.)	4585 (neg.)	4989 (neg.)	5261 (neg.)
Har Ghar Nal	—	13090(0.1)	50699(0.3)	76055 (0.4)	82867(0.4)
Total(lakh)	145.7(100.0)	158.8 (100.0)	169.4 (100.0)	179.2 (100.0)	189.6 (100.0)

Source: Department of Energy, GoB

The table 03 presents the category-wise distribution of electricity consumers in Bihar from 2018-19 to 2022-23. The domestic sector remains the largest consumer, accounting for 88.5 percent of total consumers in 2022-23, though its share has gradually declined from 92.5 percent in 2018-19. The number of domestic consumers increased from 134.8 lakh in 2018-19 to 167.74 lakh in 2022-23, indicating a steady rise in household electrification. Meanwhile, commercial consumers grew significantly, from 5.2

percent in 2018-19 to 7.5 percent in 2022-23, reflecting economic growth and an expanding business sector.

The industrial sector, including both low-tension (LT) and high-tension (HT) consumers, also showed consistent growth. LT industrial consumers rose from 90,671 in 2018-19 to 1,63,703 in 2022-23, while HT consumers increased from 2,806 to 3,976 in the same period. The agriculture sector saw remarkable growth due to schemes like Mukhyamantri Krishi Vidyut Sambandh Yojana (MKVSY), with agricultural consumers increasing from 2.28 lakh in 2018-19 to 4.95 lakh in 2022-23, marking a 117 percent rise. The number of consumers under the Har Ghar Nal scheme also expanded, reaching 82,867 in 2022-23, ensuring water supply projects receive adequate electricity.

Other categories, such as public lighting and public water works, also recorded incremental growth, supporting infrastructure development. The total number of electricity consumers in Bihar increased from 145.7 lakh in 2018-19 to 189.6 lakh in 2022-23, reflecting a 30 percent growth in four years. This increasing demand across all sectors indicates a positive shift in Bihar's power distribution, supporting industrialization, commercial expansion, and rural electrification.

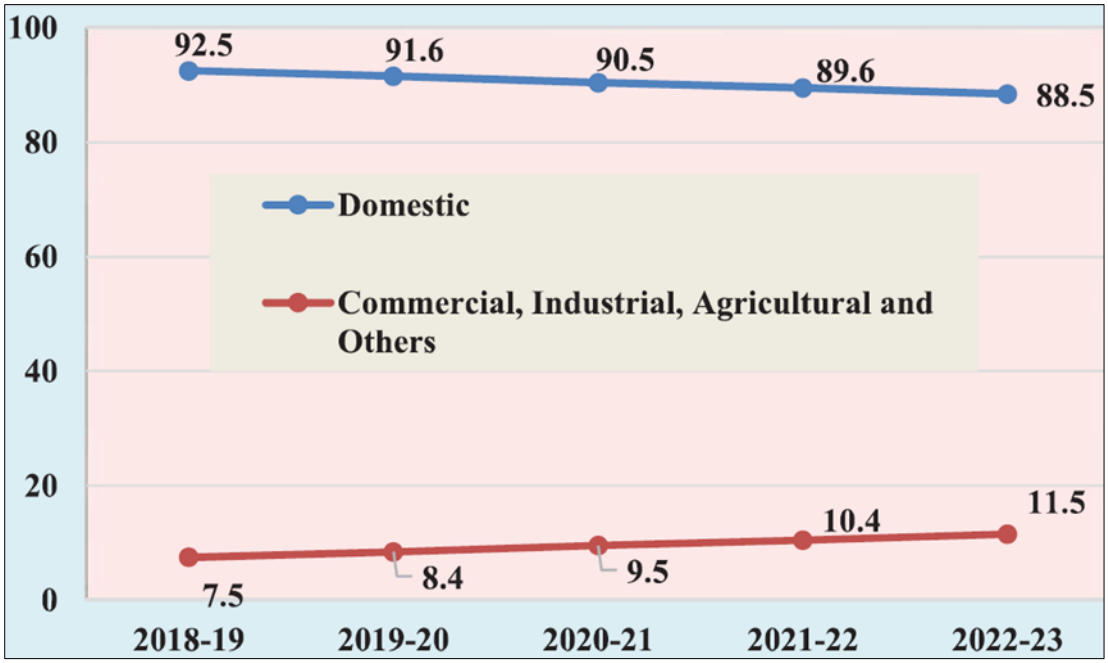

Figure 2: Growth of Electricity Consumers in Bihar by Category (2018-19 to 2022-23)

Power Sector Schemes: Central Government Initiatives in Bihar

Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY): The DDUGJY scheme was launched to strengthen rural electricity infrastructure and improve power supply reliability in Bihar. It focused on feeder separation for agricultural and non-agricultural consumers, strengthening sub-transmission and distribution networks, and providing electricity access to rural households. This initiative played a crucial role in enhancing rural electrification and ensuring uninterrupted power supply for villages.

Rural Electrification - Deen Dayal Upadhyaya Gram Jyoti Yojana (RE-DDUGJY): Previously known as the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), this scheme aimed to electrify villages and provide free electricity connections to below-poverty-line (BPL) households. The initiative covered two phases (2007-12 and 2012-17) and was instrumental in increasing electricity access in Bihar's rural areas, improving socio-economic conditions and facilitating rural development.

Restructured Accelerated Power Development and Reforms Programme (R-APDRP): The R-APDRP was designed to enhance power distribution efficiency by integrating Information Technology (IT) into the electricity system. It focused on reducing power losses, improving billing and collection processes, and ensuring real-time monitoring of power consumption. This scheme helped in modernizing Bihar's urban power distribution infrastructure and improving financial viability.

Integrated Power Development Scheme (IPDS): The IPDS aimed to strengthen power distribution networks in urban areas by improving substations, transformers, and underground cabling. It focused on reducing power losses, ensuring 24x7 electricity for all, and facilitating smart metering. In Bihar, the scheme played a significant role in upgrading urban electricity infrastructure and ensuring efficient power distribution.

Real-Time Data Acquisition System (RT-DAS): The RT-DAS initiative was launched to implement real-time monitoring and

data collection across Bihar's power infrastructure. By providing accurate and timely data on electricity usage, power generation, and system faults, this scheme improved operational efficiency, reduced downtime, and enhanced grid stability.

Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA): The SAUBHAGYA scheme was introduced to achieve universal household electrification by providing free electricity connections to poor families. This initiative accelerated the electrification process in Bihar, ensuring last-mile connectivity and significantly increasing household access to electricity, thereby improving overall quality of life.

Bihar State Power Sector: Structure and Functions

Bihar State Power (Holding) Company Limited (BSPHCL): BSPHCL primarily functions as an investment company and holds the assets, interests, rights, and liabilities of the former Bihar State Electricity Board (BSEB). It coordinates the activities of power companies, resolves disputes, and provides necessary support. BSPHCL owns shares in four major companies, namely 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.

Bihar State Power Generation Company Limited (BSPGCL): BSPGCL is responsible for generating and supplying electricity in Bihar. It engages in the purchase, production, and trading of electric power while supporting companies involved in power generation and distribution. Additionally, BSPGCL oversees the maintenance, modernization, and expansion of power-generating stations and associated infrastructure to ensure a steady electricity supply across the state.

Bihar State Power Transmission Company Limited (BSPTCL): BSPTCL is tasked with the transmission of electricity within the state. It manages transmission assets and ensures the efficient planning and coordination of intra-state transmission lines. The company aims to develop a robust transmission network that connects generating stations to load centers, facilitating the smooth flow of electricity across Bihar.

North Bihar Power Distribution Company Limited (NBPDCL) and South Bihar Power Distribution Company Limited (SBPDCL): NBPDCL and SBPDCL handle the distribution and trading of electricity for consumers across Bihar. They are responsible for implementing rural electrification schemes under various government initiatives, including the Deen Dayal Upadhyay Gram Jyoti Yojana and Integrated Power Development Scheme. Additionally, these companies manage power purchase agreements (PPA) and ensure compliance with the Electricity Act, 2003, including open access distribution regulations.

Table 3: District-wise Energy Consumption (2018-19 to 2022-23)

District	Energy Consumption (MU)				
	2018-19	2019-20	2020-21	2021-22	2022-23
Araria	334	369	443	472	489
Arwal	166	178	214	221	234
Aurangabad	908	927	1025	977	1131
Banka	320	369	440	464	506
Begusarai	603	673	733	773	881
Bhagalpur	901	994	1079	1127	1266
Bhojpur	756	804	898	948	1083
Buxar	483	533	658	693	777
Darbhanga	635	712	833	891	931
E.Champaran	828	950	1105	1168	1259
Gaya	1633	1707	2031	2018	2250
Gopalganj	492	545	597	635	663
Jehanabad	428	430	482	494	533
Jamui	423	442	472	489	532
Kaimur	715	741	751	720	847
Katihar	409	478	544	609	667
Khagaria	256	269	308	323	350
Kishanganj	212	265	288	314	354
Lakhisarai	335	349	353	420	443
Madhepura	299	324	357	369	391
Madhubani	565	642	747	826	869
Munger	385	397	431	451	482
Muzaffarpur	1202	1370	1444	1474	1590
Nalanda	1128	1170	1295	1254	1408
Nawada	559	611	689	705	817
Patna	5236	5495	5211	5437	6021
Purnea	549	603	649	705	743
Rohtas	1099	1139	1360	1412	1524
Saharsa	312	333	364	378	402
Samastipur	687	772	868	891	1000

Saran	877	996	999	1081	1116
Sheikhpura	190	241	247	249	298
Sheohar	86	104	115	128	142
Sitamarhi	480	507	603	652	727
Siwan	641	705	720	789	830
Supaul	320	361	424	461	496
Vaishali	733	799	892	914	1011
W.Champaran	615	684	770	825	894
Bihar	26800	28988	31439	32757	35957

Source: Department of Energy, GoB

Table 3 presents district-wise energy consumption trends in Bihar from 2018-19 to 2022-23, highlighting an overall increase in electricity usage across the state. Bihar's total energy consumption grew from 26,800 MU in 2018-19 to 35,957 MU in 2022-23, reflecting a 34.3 percent increase over five years. This rise indicates expanding economic activities, increased electrification, and higher power demand from households, industries, and businesses. The highest energy-consuming district consistently remains Patna, with consumption rising from 5,236 MU in 2018-19 to 6,021 MU in 2022-23, followed by Gaya (2,250 MU), Muzaffarpur (1,590 MU), and Nalanda (1,408 MU) in 2022-23. These districts, being economic and administrative hubs, exhibit higher electricity usage due to commercial and industrial growth. Several districts recorded remarkable growth in electricity consumption, reflecting infrastructural expansion and rural electrification. For instance, Sheikhpura witnessed a 56.8 percent increase in energy consumption from 190 MU in 2018-19 to 298 MU in 2022-23, followed by Kaimur (18.5 percent growth) and Nawada (46.2 percent growth). The substantial increase in electricity usage in these districts suggests improved access to power and growing industrial and agricultural activities. Conversely, smaller districts like Sheohar continue to have relatively low energy consumption, increasing gradually from 86 MU in 2018-19 to 142 MU in 2022-23, indicating scope for further electrification and economic expansion. The increasing trend in electricity consumption across all districts aligns with Bihar's development trajectory, driven by government initiatives in rural electrification, industrial promotion, and infrastructure expansion. Schemes like Mukhyamantri Krishi Vidyut Sambandh Yojana (MKVSY) have contributed to increased agricultural electricity usage, while urban growth has led to higher demand in commercial and industrial sectors. The steady rise in power consumption reflects a growing economy, improved quality of life, and a strengthening power infrastructure in Bihar.

Recommendations for the Government

Strengthen Energy Infrastructure: The government should invest in modernizing transmission and distribution networks to reduce energy losses and improve power availability, ensuring a reliable electricity supply for all sectors.

Enhance Renewable Energy Adoption: Expanding solar, wind, and hydro energy projects can help reduce dependency on conventional power sources, promote sustainability, and meet growing energy demands efficiently.

Monetary and Fiscal Policy Coordination: A balanced approach between fiscal spending and monetary control is essential to curb inflation while supporting economic growth, ensuring stable prices, and enhanced industrial productivity.

6. CONCLUSION

The study highlights the crucial link between monetary and fiscal policies, inflation control, and power sector growth in India, with a special focus on Bihar. Over the past decade, Bihar has made significant progress in the expansion of electricity infrastructure, reduction of power deficits, and enhancement of energy accessibility. The per capita electricity consumption rose from 134 kWh in 2011-12 to 329 kWh in 2021-22, while the peak demand met increased from 4,535 MW in 2017-18 to 7,576 MW in 2023-24, showcasing the state's growing energy needs and improved supply capabilities. Government initiatives such as DDUGJY, SAUBHAGYA, and MKVSY have played a vital role in electrification, especially in rural areas. One of the major findings of this study is the impact of inflation control measures on energy pricing and financial sustainability in the power sector. Bihar successfully reduced Aggregate Technical & Commercial (AT&C) losses from 54.63 percent in 2012-13 to 24.32 percent in 2022-23, improving revenue collection and ensuring the financial viability of DISCOMs. However, challenges remain, including minor energy deficits, demand-supply imbalances, and the need for further infrastructure upgrades. The study underscores the need for continued policy reforms that integrate renewable energy expansion, power distribution efficiency, and inflation management strategies. A well-coordinated approach between monetary and fiscal policies is essential to sustain economic stability while ensuring reliable energy availability. Moving forward, Bihar and other states must focus on modernizing the power grid, increasing renewable energy adoption, and strengthening financial mechanisms to support the sustainable growth of the energy sector. These efforts will be key in achieving long-term economic resilience, energy security, and overall development in India.

REFERENCES

1. Pradhan S, Ghose D, Shabbiruddin. Present and future impact of COVID-19 in the renewable energy sector: A case study on India. Energy Sources, Part A: Recovery, Utilization, and Environmental Effects. 2024;46(1):13226–13236. https://doi.org/10.1080/15567036.2020.1801902
2. Chatterjee R. How state governance can offer a new paradigm to energy transition in Indian agriculture? Energy Policy. 2024;185:113965. https://doi.org/10.1016/j.enpol.2023.113965

3. Mohanty M, Sarkar R, editors. The role of coal in a sustainable energy mix for India: A wide-angle view. Routledge; 2024. https://doi.org/10.4324/9781003433088
4. Vats G, Mathur R. A net-zero emissions energy system in India by 2050: An exploration. Journal of Cleaner Production. 2022;352:131417. https://doi.org/10.1016/j.jclepro.2022.131417
5. Sulich A, Sołoducho-Pelc L. Changes in energy sector strategies: A literature review. Energies. 2022;15(19):7068. https://doi.org/10.3390/en15197068
6. Gulagi A, Ram M, Bogdanov D, Sarin S, Mensah TNO, Breyer C. The role of renewables for rapid transitioning of the power sector across states in India. Nature Communications. 2022;13:5499. https://doi.org/10.1038/s41467-022-33048-8
7. Ram M, Gulagi A, Aghahosseini A, Bogdanov D, Breyer C. Energy transition in megacities towards 100% renewable energy: A case for Delhi. Renewable Energy. 2022;195:578–589. https://doi.org/10.1016/j.renene.2022.06.073
8. Vishwanathan SS, Garg A. Energy system transformation to meet NDC, 2 °C, and well below 2 °C targets for India. Climatic Change. 2020;162:1877–1891. https://doi.org/10.1007/s10584-019-02616-1
9. Sarangi GK. Green energy finance in India: Challenges and solutions (No. 863). ADBI Working Paper Series. 2018.
10. Lawrenz L, Xiong B, Lorenz L, Krumm A, Hosenfeld H, Burandt T, *et al*. Exploring energy pathways for the low-carbon transformation in India—A model-based analysis. Energies. 2018;11(11):3001.
11. Moallemi EA, de Haan F, Kwakkel J, Aye L. Narrative-informed exploratory analysis of energy transition pathways: A case study of India's electricity sector. Energy Policy. 2017;110:271–287.
12. Let's Crack UPSC CSE. Energy Resources | Coal, Petroleum, Wind and Solar Energy | Indian Geography | IPL |Anirudh Malik [Internet]. YouTube; 2023 Feb 25. Available from: https://www.youtube.com/watch?v=HQHILgRZnZk
13. Let's Crack UPSC CSE Hindi. Energy [ऊर्जा] for UPSC Prelims 2024 : Most Imp Topics by Madhukar Kotawe | Science & Tech [Internet]. YouTube; 2024 May 8. Available from: https://www.youtube.com/watch?v=dDpnDXESqfs
14. OnlyIAS UPSC. Energy: Renewable & Non-Renewable Full Chapter | Science and Tech - Chapter 5 | UPSC Preparation [Internet]. YouTube; 2024 Oct 12. Available from: https://www.youtube.com/watch?v=CrDhJHaydSE
15. Sansad TV. The Big Picture: India's Renewable Energy Plan [Internet]. YouTube; 2020 Nov 28. Available from: https://www.youtube.com/watch?v=JDZBY4K2kKY

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