



# ROADS TO RENEWAL: INVESTIGATING THE SOCIO-ECONOMIC INFLUENCE OF THE YAMUNA EXPRESSWAY ON ALIGARH-JEWAR REGION

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## ABSTRACT

Infrastructure projects often claim to transform the communities through which they cross. This study investigates the social and economic implications of the Yamuna Expressway in India's Aligarh-Jewar region. Through the utilization of a combination of methods, the research examines the impact of this extensive infrastructure project on local job opportunities, trends in urban growth, and alterations in people's means of living. The highway has greatly decreased commute times and has facilitated economic and social changes throughout the area. The results indicate that despite significant economic growth and infrastructure improvements, issues like environmental damage and social inequities also emerge. This study adds to the knowledge of how transport infrastructure affects regional development, providing important information for decision-makers and those involved in similar projects. It also examines the role of policy in managing these outcomes, emphasizing the need for sustainable practices and inclusive growth strategies. This paper contributes to understanding the dualistic impact of transport infrastructure on regional development, offering insights that are vital for policymakers and stakeholders engaged in similar infrastructure projects.

**KEYWORDS:** Regional development, social dynamics, urbanization effects, socio-economic impact, environmental implications, government policies, road development, infrastructure development

## 1.0 INTRODUCTION

The Yamuna Expressway project's objective extends beyond simply reducing travel time between New Delhi and Agra. It intends to boost economic and urban development in the region, establishing the framework for the convergence of tourism and related businesses (Yamuna Expressway Project – Yeida, 2024). Yamuna Expressway project is not just a transportation route to reduce travel time between New Delhi and Agra. Its main aim is to spark economic growth and promote urban development in the region, acting as a catalyst for wider socio-economic change. The expressway not only aids in smooth travel but also sets the foundation for tourism and related industries to merge, paving the way for the region to become a thriving economic center. The project aims to boost investment, create jobs, and improve infrastructure by linking significant cities and tourist spots, making the region attractive for both leisure and business.

## Background Information on The Yamuna Expressway Project

The Yamuna Expressway is 165 kilometres long and has a six-lane concrete pavement that could potentially be expanded to eight lanes. The Jaypee Group developed this large project using a Public-Private Partnership approach, with a 36-year concession duration. With an estimated cost of around Rs 13,000 crores, it is an essential infrastructure project. Mr. Akhilesh Yadav, the then-chief minister of Uttar Pradesh, officially inaugurated the motorway on 9 August 2012. One of its most remarkable aspects is its ability to cut travel time between New Delhi and Agra, home to the iconic Taj Mahal, providing unprecedented connection while also promoting economic and tourism prospects along the way. The Yamuna Expressway corridor is expected to have a significant impact on the growth of the economy and industry, not just in Uttar Pradesh but also in adjacent states like Rajasthan, Madhya

Pradesh, and Haryana. Regional growth is facilitated by the connection of large townships and economic hubs located on the eastern bank of the Yamuna River (Yamuna Expressway Project – Yeida, 2024).

Yamuna Expressway was built to improve connectivity to the Taj Mahal. At present, Agra is about 210 km away from Delhi by car. Still, the motorway cuts down on travel time considerably, giving tourists more time to spend at the Taj Mahal and other historical sites.

It is expected that this integrated road network will unleash significant possibilities for overall growth in many regions:

- 1) Providing growing urban centres in NOIDA and Greater Noida easy access to Aligarh, Jewar, Mathura, and Agra.
- 2) It is expected that the Yamuna Expressway's increased safety and reduced travel times will promote planned land development for residential, commercial, industrial and institutional uses.



Figure:

Source: Yamuna Expressway Project ( Expressway in red color) , Source: Yeida, 2024

### Importance Of Studying the Socio-Economic Impact on The Aligarh-Jewar Region

Specific features and concerns make studying the socioeconomic impact of the Yamuna expressway on the Aligarh-Jewar region even more essential. Starting with the distribution of land parcels for residential and commercial constructions along the motorway, particularly in the jurisdictions of Gautam Budh Nagar, Aligarh, Mathura, and Agra, highlights the project's potential for economic growth and urbanization. These projects have not just immediate economic consequences, but they also impact the region's long-term development trajectory (ET Online, 2012).

In addition, the Yamuna expressway is an important link connecting Agra and the National Capital Territory (NCT) of Delhi, as well as rapidly expanding cities like Noida and Greater Noida. A direct route between major metropolitan centres and Agra is important for promoting connectivity and boosting commercial interactions. In addition to benefiting commuters, this connection creates opportunities for more trade, tourism, and investment activity, which will boost the economy of Uttar Pradesh.

Thus, it is important to investigate the socioeconomic effects of the Yamuna expressway on the Aligarh-Jewar region



in order to understand not only how it affects local communities directly but also how it influences greater regional dynamics, promotes economic growth, and supports sustainable urban development (Noida YXP, 2024).

## 2.0 OBJECTIVES OF THE STUDY

The objectives of this study are as follows:

- 1) To analyze the socio-economic impact of the Yamuna Expressway on the Aligarh-Jewar region.
- 2) To assess the implications of the expressway on employment opportunities, urbanization trends, and local livelihoods in the region.
- 3) To provide insights and recommendations for policymakers, planners, and stakeholders regarding the sustainable development and management of infrastructure projects like the Yamuna Expressway in similar contexts.

## 3.0 LITERATURE REVIEW

The development of expressway often indicates major socioeconomic transformations in the areas they pass through. One such infrastructure project that has generated discussion about its effects on the socioeconomic conditions of the areas it travels through, especially the Aligarh-Jewar region, is the Yamuna expressway, which links Greater Noida with Agra. Analyzing past research and studies relevant for understanding the socio-economic impact of the Yamuna Motorway on the Aligarh-Jewar region is the aim of this review of the literature.

### Socio-Economic Impacts of Road Development

The transportation sector is one of the most important sectors of the economy and has a huge impact on population well-being and development. The improved capacity to commute for work, within the community and to larger towns, is another significant advantage resulting from reduced travel and transportation costs, and it also helps reduction in poverty. In addition to providing easy access to employment opportunities, this improved mobility also helps to reduce poverty by encouraging social connections and making it easy to acquire resources for healthcare and education (Richards, 2019).

There are two primary methods that roads may influence development, according to the "Theory of Transport and Development." In addition to the first role, which involves generating economic opportunities, he emphasizes a second social function which is defined by how people respond to these economic opportunities (Wilson, 1973)

Numerous analysts propose that rural road infrastructure facilitates individuals in broadening the scope of their livelihood options (Greiner, 2013).

Among other advantages, a new pattern of land use could result to easier access to healthcare, education, and employment opportunities. This might thus generate investment for the improvement of telecommunications, electricity networks, roads, and other types of connection, ultimately giving locals better access to markets and necessary infrastructure. There are two perspectives from which to examine the impacts of highway development: local and regional/national. Locally, the impact is anticipated to be limited to regions that are adjacent to the roadway, usually within a 5-to 10-kilometer radius. But the development should also have a positive impact on the larger regional or national economy, expanding its sphere of influence beyond the immediate area. Key effects of road development in a region include increased residential growth, alterations in access to amenities, shifts in land utilization, and the emergence of informal settlements. (Sengupta et al., 2007).

Urban development has been increasingly popular in cities all over the world, encompassing initiatives like road infrastructure and comprehensive spatial planning. These programmes attract investments, improve connectivity, and increase urban competitiveness (Sackey et al., 2023).

### Evidence from India

India has launched a programme aimed at enhancing its national highway infrastructure. The construction and development of road infrastructure provides significant socioeconomic benefits to both rural and urban areas, serving as an essential framework for the agricultural economy. The importance of roads in India has been emphasized in several planning documents (NRIDA, 2020). Improved highway and road networks in India will quickly generate employment, especially by encouraging industry expansion. With improved connection throughout the country,



travelling between states will be easier, benefitting residents and easing the transfer of products and services. Furthermore, these initiatives will reduce local pollution, improve environmental safety by reducing traffic congestion, encourage leisure travel, and relieve traffic congestion. Furthermore, positive impacts of growth will spread to places away from major highways over time, adding to overall regional development and eliminating regional inequities in India (Invest India, 2019).

### **Roads matter at the periphery: India's post-liberalization road projects in the Northeast**

This research examines how road construction in Northeast India affect the region's economy and people's lives. It emphasizes how roads improve people's lives by promoting socioeconomic integration, reducing poverty, generating jobs, and creating income. Numerous road projects were completed in Northeast India to improve connectivity and unite the region with the rest of India. These projects have had significant effects on the local economy and population. They have transformed the region's image from 'remote, inaccessible, and undeveloped' to an accessible area experiencing economic progress (Bhattacharya & Deka, 2021).

### **Socio Economic Impact of development of Highways [Indian Context]**

This paper investigates the social effects of India's transport industry deregulation. Highways increase access to social facilities, raising the level of living. It investigates how improved connection to local and international markets might boost wages, provide access to social services, and promote the growth of indigenous enterprises.

The research titled "Impact of road widening on socio-economic conditions along National Highway-44 from Nagrota to Jajarkotli in Jammu & Kashmir: A case study" discovers that infrastructure projects like as road widening may have both positive and negative effects on local people. While they speed up transit and economic progress, they may also disrupt the lives of inhabitants whose land has been acquired.

The study "Impact of road widening on socio-economic conditions along National Highway-44 from Nagrota to Jajarkotli in Jammu & Kashmir: A case study" finds that infrastructure projects like road widening can bring both benefits and drawbacks to local communities. While they facilitate faster transportation and economic growth, they can also disrupt the lives of residents whose land is acquired. Thus, careful planning, sufficient financial assistance, and efficient resettlement policies are important to minimize negative consequences and encourage overall socioeconomic growth in the region (Sharma, 2020).

The research "Impact of a Highway on the Socio-economic Well-being of Rural Households Living in Proximity" investigates how the construction of a highway impacts the level of poverty and socioeconomic well-being of people who reside nearby (Sengupta et al., 2007).

## **4.0 THEORIES AND FRAMEWORKS FOR ANALYZING INFRASTRUCTURE-DRIVEN DEVELOPMENT**

**Economic Base Theory** claims that constructing roads and highways, developing infrastructure—can boost economic growth by attracting in new companies and sectors that create jobs and boost revenue.

**Growth Pole Theory** proposes that the construction of infrastructure in one location may encourage economic expansion in adjacent areas. This tendency is frequently seen in the construction of highways and other transportation infrastructure, which can stimulate the expansion of nearby businesses and industries.

**Network Theory** emphasizes the significance of connection is to the development of infrastructure. It suggests that an area's likelihood of observing economic growth increases with the total number of roads, highways, or digital infrastructure connecting it. All of these theories emphasize how important infrastructure is for fostering economic growth.

**Sustainable Infrastructure Development Framework** prioritizes the environmental, social, and economic effects of infrastructure developments. It advocates for sustainable infrastructure solutions that benefit the community while minimizing negative environmental consequences.

**Infrastructure Impact Assessment Framework** is used to assess the socioeconomic impact of infrastructure developments. It takes into account a variety of aspects, including employment creation, revenue generation, and improved access to services, to provide a comprehensive overview of the project's impact.



**Meta-Analysis Approach** includes conducting a systematic analysis of several research to determine the overall influence of infrastructure on development outcomes. It enables an update of underlying parameters and infrastructure elasticities while controlling for publication bias and heterogeneity caused by research design and environment. This technique provides an in-depth examination of infrastructure's impact on development.

## 5.0 METHODOLOGY

### Research Design

This research utilized a mixed-methods approach to thoroughly examine the impact of the Yamuna Expressway on the socio-economic conditions of the Aligarh-Jewar region. The research plan involved gathering primary data from surveys and interviews, as well as analyzing secondary data from government reports, academic literature, and other sources. It combines quantitative and qualitative research methods for a thorough analysis of the phenomena.

### Data Collection Methods

- 1) **Surveys:** A structured questionnaire was designed to collect quantitative data on various socio-economic indicators, including household income, employment status, access to amenities, and perception of the Yamuna Expressway's impact.
- 2) **Interviews:** In-depth interviews were conducted with key informants such as local government officials, business owners, and community leaders to gather qualitative insights into the socio-economic dynamics of the region.

### Sampling Strategy

- 1) The population of interest comprised residents, businesses, and other stakeholders in the Aligarh-Jewar region.
- 2) A stratified random sampling technique was employed to ensure representation from diverse socio-economic backgrounds and geographical locations within the region.
- 3) Assuming a confidence level of 95% and a margin of error of 5%, a sample size of 200 respondents was targeted for the survey.

This methodical strategy guarantees a thorough investigation into the socio-economic effects of the Yamuna Expressway, producing dependable and credible findings that can influence local planning and policy decisions.

## 6.0 DEVELOPMENT OF A FRAMEWORK: GROWTH POLE THEORY

The Growth Pole Theory, introduced by François Perroux, argues that economic development is not evenly spread throughout a region but instead focuses around a particular pole or cluster. This model can be used successfully to examine how the Yamuna Expressway functions as a stimulant for local growth, changing the Aligarh-Jewar corridor into a vibrant economic centre.

### Growth Poles

**Central Pole:** The Yamuna Expressway provides high-speed connectivity and accessibility on its own.

**Secondary Poles:** Emerging developments like the Jewar Airport, the planned Defence Corridor, and upcoming industrial areas.

### Mechanisms of Influence

**Direct Impact:** Decrease in time and expenses for traveling, improving efficiency in logistics and making it more appealing for investment.

**Indirect Impact:** Spillover effects including increased property values, local demand for goods and services, and enhanced quality of life.

### Diffusion of Development

**Sectoral Diffusion:** Diffusion across sectors: Starting from primary sectors such as manufacturing and logistics to tertiary sectors like retail, hospitality, and professional services.

**Geographical Diffusion:** The transfer of economic advantages from specific points linked directly by the



expressway to the wider Aligarh-Jewar area and surrounding regions.

### **Economic and societal change**

**Urbanization:** refers to the speeding up of urban development, including enhancements in infrastructure like housing, schools, and healthcare services.

**Social Change:** Improved social systems that result in better educational and health results for the local community.

### **Implications for policy making and planning**

**Development of strategic infrastructure:** Targeted funding from both the government and private sector in essential sectors as outlined by the growth pole theory.

**Sustainable Growth Planning:** involves balancing economic growth with environmental and social sustainability to ensure inclusive development that benefits the entire population.

## **7.0 RESULTS AND FINDINGS**

Several major conclusions emerge from responses to a questionnaire conducted to 200 families about the Yamuna Expressway's socioeconomic impact on the Aligarh-Jewar region. The data shows that the Yamuna Expressway is mostly seen as having a positive effect on transportation in the Aligarh-Jewar region. With more than 70% of participants admitting to notable improvements in transportation links, it indicates that the highway has successfully enhanced accessibility and connectivity in the area.

**Correlation between Economic Growth and Expressway:** The relationship between the expressway and economic growth appears to be strong, as roughly half of the participants believe that the expressway has contributed to the growth of economic activity. This implies that infrastructure projects such as the Yamuna Expressway can stimulate regional economic growth.

**Job Creation:** The creation of new businesses or industries, mentioned by about 40% of participants, suggests that the expressway may have played a part in generating jobs in the area. Further exploration is needed to comprehend the industries that have developed and the job prospects they provide.

**Urbanization's Effect:** Approximately 42% of those surveyed believe urbanization is occurring along the expressway corridor, suggesting that infrastructure improvements could be influencing where people live and how land is utilized. This prompts inquiries about urban planning and management in the area.

**Social Connectivity:** Approximately 55% of participants feel that the highway enhances social connections. This indicates that the enhanced transportation connections offered by the expressway could be helping to increase social interaction and unity among communities in the area.

**Environmental Worries:** Data indicates that around 40% of participants are concerned about pollution and environmental harm linked to the highway. This underscores the importance of conducting environmental impact assessments and implementing strategies to lessen the adverse impacts of infrastructure development on the environment.

**Frequency of Usage Compared to Awareness:** Despite around 85% of participants knowing about the expressway's presence, only 57% utilize it weekly for their commutes. This gap between knowledge and practical application may be caused by reasons like availability, expense, or other modes of transportation available.

**Perception of Infrastructure Enhancement:** Approximately 60% of participants notice enhancements to infrastructure, suggesting that the expressway project could be viewed favourably for its influence on regional infrastructure development as a whole.

**Patterns of commuting:** Around 60% of participants indicate enhancements in their commute patterns. Comprehending these shifts in commuting behaviours may offer valuable information on how well the expressway is working to decrease travel delays and traffic congestion.

The data shows that around 40% of participants are concerned about pollution and environmental harm linked to the highway. This emphasizes the importance of conducting environmental impact assessments and implementing



strategies to reduce the adverse impacts of infrastructure development on the environment.

### **Influence on various socio-economic indicators**

**Employment Patterns:** Survey results show a significant change in employment from traditional sectors like agriculture to increasing businesses like manufacturing and services. Agriculture employed 60% of the workforce in 2010, but by 2020, that ratio had dropped to 35%. Conversely, the manufacturing and services industries have expanded, accounting for 55% of total employment in 2020, compared to 40% in 2010. The growth of real estate and companies along the expressway has created new employment opportunities for those living nearby.

**Infrastructure Development:** Infrastructure investments, especially in transport and utilities, have had a direct influence on regional accessibility and service quality. Yamuna expressway development has resulted in a 30% decrease in average commuting times for inhabitants, as well as a 20% improvement in access to reliable amenities like water and electricity delivery. Improved connectivity has led to a rise in both residential and commercial projects.

**Economic Growth:** Based on the data, the GDP per capita in the Aligarh-Jewar region has been increasing upward over the last ten years, which is consistent with the performance of a similar region in the Indian economy. In Aligarh-Jewar, the GDP per capita increased from ₹30,000 in 2010 to ₹61,300 in 2020 (Directorate of Economics and Statistics, Government Of Uttar Pradesh, 2022). This increase is indicative of consistent economic growth driven by a number of causes, including the introduction of new economic opportunities, industrial expansion, and infrastructure developments.

The construction of the Yamuna Expressway has spurred notable infrastructural and industrial progress in the Aligarh-Jewar area, particularly with the development of the proposed Defence Corridor, new industrial zones, and the Jewar Airport. These projects are about to revolutionize the socio-economic scene by generating significant job opportunities and revitalizing local economies. The upcoming Jewar Airport, set to be operational by 2024, is forecasted to create more than 100,000 jobs, enhancing local employment and notably raising household incomes in the area (Commercial Noida, 2023). Additionally, the Defence Corridor is expected to attract approximately ₹10,000 crores in investments and will create multiple manufacturing units, expanding the economic foundation and offering various job opportunities, both technical and non-technical (Defence Industrial Corridors, 2021). This growth in industry, made possible by the improved connectivity of the Yamuna Expressway, makes it easier to reach markets and resources, ultimately improving the business environment. Moreover, the growth of these initiatives is anticipated to raise property values and draw in related businesses like retail and services, ultimately boosting the local economy. Together, these advancements offer improved job opportunities and higher incomes, while also supporting the growth of infrastructure and quality of life, greatly improving the socio-economic status of the Aligarh-Jewar corridor.

### **Identification of Major Trends and Patterns**

- 1) **Economic Diversification:** There is a trend towards economic diversification, with the emergence of new industries alongside traditional sectors.
- 2) **Urban-Rural Dynamics:** There is evidence of ongoing urbanization, accompanied by shifts in population density and settlement patterns.
- 3) **Social Capital Formation:** Despite challenges, there is a noticeable trend towards the formation of social capital, fostering community resilience and collaboration.

Based on these trends, it appears that the region is undergoing not just economic diversification but also urbanisation, which is accompanied by the building of social capital, which promotes community resilience and collaboration.

The expansion of Noida International Airport (Jewar Airport), which is complimented by the Yamuna Motorway, has an unprecedented effect on the Aligarh-Jewar region's economy. This infrastructure surge promotes diversification by attracting investment in areas like aviation, tourism, and logistics, hence reducing dependency on traditional industries. Furthermore, it improves connectivity, encourages job creation, and accelerates general development, establishing the area as a hub of growth and opportunity in Uttar Pradesh.



## 8.0 RECOMMENDATIONS FOR POLICYMAKERS BASED ON RESEARCH FINDINGS

**Investment in Infrastructure:** Continued investment in infrastructure, like as transport networks and utilities, is essential for sustaining and expanding the Yamuna Expressway's positive impacts. This requires not just maintaining the expressway, but also enhancing access to dependable amenities like energy, water, and telephones.

**Support for Economic Diversification:** Policymakers should prioritize economic diversification by promoting the development of developing enterprises alongside existing ones. This might include giving incentives for firms to establish operations in the region, encouraging entrepreneurship, and investing in skill development programmes to fit with the changing employment market.

**Mitigation of Social Disparities:** Efforts should be undertaken to reduce the socioeconomic inequities that may result from fast growth and urbanization. This might involve developing social welfare programmes to assist disadvantaged communities, offering inexpensive housing alternatives, and guaranteeing fair access to healthcare and education facilities.

**Environmental Conservation:** Policymakers must prioritize environmental conservation initiatives in order to address concerns about pollution and habitat degradation. This might include enforcing stronger rules on industrial emissions and waste management, encouraging sustainable development practices, and investing in green infrastructure initiatives.

**Community Engagement and Participation:** Prioritizing community involvement and participation in development project decision-making should be a top priority for policymakers. To make sure that the views of locals are acknowledged and their interests are reflected, this may entail setting up procedures for meaningful engagement with community organizations, other stakeholders, and individuals.

**Balanced Development:** It is the goal of policymakers to achieve balanced development, which maximizes positive externalities and minimizes negative ones in infrastructure projects such as the Yamuna Motorway. To guarantee that development plans are inclusive, sustainable, and in line with the long-term objectives of the area and its citizens, comprehensive planning, monitoring, and assessment are required.

Policymakers are able to maximize the socio-economic advantages of the Yamuna Motorway while reducing potential challenges and promoting sustainable and equitable development in the Aligarh-Jewar area by including these ideas into the processes of formulating and implementing policies.

## 9.0 CONCLUSION

The Yamuna Expressway, a major development initiative in India, has clearly accelerated social and economic transformations in the Aligarh-Jewar area. Research on the economic and social impacts of the Yamuna Expressway has shown that there are various outcomes that connect economic progress with socio-environmental issues. This thorough research validates that the highway has played a major role in transforming the Aligarh-Jewar area, causing significant changes in economic, social, and infrastructural aspects. The highway has clearly boosted the economy in the area, as shown by the rise in per capita GDP and the growth of new businesses and industries. It has spurred the diversification of the local economy, shifting from mostly farming to a mix of industrial and service-based businesses. This shift has not just strengthened the economy, but also generated numerous job openings, transforming the job market. The growth of industries like manufacturing, services, and real estate near the expressway has helped create a strong economic environment that benefits both local communities and regional progress. The expressway has sped up urbanization with a noticeable rise in residential and commercial projects, thanks to improved connectivity. The upgrade involves better roads, utilities, and public services, leading to an improved quality of life for residents. Nevertheless, the fast growth of cities brings up issues like the necessity for sustainable city planning and the danger of overwhelming current infrastructural capabilities.

Even though the expressway has improved social and economic connections and increased movement, it has also caused significant social inequalities. Some communities receive more benefits from the expressway compared to others, showing unequal distribution of advantages. The unequal distribution of benefits has resulted in heightened social stratification, with affluent individuals and those in beneficial locations thriving, possibly leaving others at a disadvantage. The construction and operation of the expressway raise important worries about their environmental





effects. Rising number of vehicles on the roads has resulted in elevated levels of pollution and noise, negatively impacting the well-being of nearby residents and the surrounding environment. The changing of land forms and possible disturbance of native wildlife homes require immediate focus on environmental sustainability and conservation methods.

In conclusion, the Yamuna Expressway has acted as a transformative force in the Aligarh-Jewar region, embodying the potential of infrastructure to reshape regional landscapes. However, the lessons learned highlight the necessity for balanced development strategies that promote economic benefits while mitigating social and environmental impacts. By fostering policies that emphasize sustainable growth, community engagement, and equitable distribution of resources, the potential negative consequences of such massive infrastructure projects can be effectively managed. This approach will not only enhance the positive outcomes of current projects like the Yamuna Expressway but also inform future infrastructure initiatives, potentially leading to more sustainable and inclusive regional development.

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