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Agro-Industrial Linkages and Rural Socio-Economic Transformation: An Empirical Analysis of Sugarcane Farming and Food Processing Industry in Uttar Pradesh

Mohammad Nazim Malik [1*], **Dr. Sharad Dixit** [2], **Pradumnya Sachan** [3], **Alok Prajapati** [4]

[1,3,4] Research Scholar, Department of Economics, The School of Arts, Humanities & Social Sciences, Chhatrapati Shahu Ji Maharaj University, Kanpur, Uttar Pradesh, India

[2] Assistant Professor, Department of Economics, The School of Arts, Humanities & Social Sciences, Chhatrapati Shahu Ji Maharaj University, Kanpur, Uttar Pradesh, India

Corresponding Author: *Mohammad Nazim Malik

Abstract

India is largely an agriculture-based economy, and sugarcane cultivation plays a significant role in supporting rural livelihoods. Uttar Pradesh, being the largest sugarcane-producing state, depends heavily on this crop for farmers' income and rural employment. A large section of the population is directly or indirectly connected with sugarcane farming, processing, and related activities. In recent years, the Food Processing Industry (FPI) has emerged as an important link between agriculture and industry. It adds value to agricultural produce and creates new economic opportunities in rural areas. This study is based on secondary data and examines the relationship between sugarcane cultivation and sugarcane-based processing industries in Uttar Pradesh. The analysis shows that processing units such as sugar mills, ethanol plants, and bio-energy units have contributed to employment generation and income growth. Farmers' earnings have improved due to better market linkages and value addition. The expansion of these industries has also supported social change by increasing women's participation, improving living conditions, and encouraging rural entrepreneurship. The study suggests that the integration of sugarcane farming and the food processing industry can act as an important driver of rural economic and social transformation in Uttar Pradesh.

1. INTRODUCTION

Agriculture has long been the base of India's economy, and sugarcane occupies an important position within this sector. It is not only a commercial crop but also a multi-use agricultural product connected with rural livelihood, industrial production, and even the energy sector. Uttar Pradesh contributes around 45 percent of the country's total sugarcane output and has gradually developed as a major center for sugarcane-based food processing activities.

The importance of sugarcane farming is not limited to income generation. It supports rural employment, encourages the growth of small and medium industries, and contributes to improvements in education, health, and women's participation in economic activities.

The Food Processing Industry (FPI) works as a link between agriculture and industry. By converting raw produce into value-added products, it makes farming more market-oriented. Sugar mills, jaggery and khandsari units, ethanol plants, and bio-compost units help strengthen the rural economy and support broader social change.

Government schemes such as ODOP, PMKSY, and the Ethanol Blending Policy have encouraged investment and growth in sugarcane-based industries in Uttar Pradesh. These initiatives have promoted rural industrialization and provided farmers with additional income sources.

This study examines how sugarcane cultivation and the food processing industry together contribute to economic and social transformation in rural Uttar Pradesh using secondary data.

2. REVIEW OF LITERATURE

Earlier studies have discussed different aspects of sugarcane farming and rural development. Sharma and Singh (2018) showed that sugarcane is a major source of income in many districts of Uttar Pradesh, but price instability and marketing problems affect farmers' financial condition. Kumar et al. (2019) found that sugarcane-based industrial units create local employment and increase economic activity in rural areas. Rao (2020) argued that development schemes have not fully benefited sugarcane farmers due to weak infrastructure and limited access to processing facilities.

According to the MoFPI Annual Report (2022–23), the food processing sector contributes significantly to rural employment through value addition, with sugarcane-based industries playing a major role. NABARD (2021) suggested that financial support and better market linkages can raise farmers' income considerably. FAO (2020) emphasized that agro-processing industries also encourage women's participation in rural economies.

Other studies highlight that processing industries support rural education, healthcare, and social welfare activities. However, many researchers note that infrastructure gaps, policy limitations, and financial constraints still restrict the full potential of the sector.

Research Gaps

Most previous studies focus mainly on production and income. There is limited work linking sugarcane-based industries with broader rural social indicators such as education, health, and employment at the district level. Also, secondary data has not been widely used for integrated policy analysis. This study attempts to address these gaps.

3. Need and Objectives

Need for the Study

Uttar Pradesh has a large rural population that depends on agriculture. Sugarcane is one of the key cash crops supporting farmers' income and rural employment. At the same time, rural areas continue to face problems like income inequality, unemployment, and limited market access.

The Food Processing Industry provides a platform for linking farming with industry through value addition. Sugar mills, ethanol units, jaggery production, and bio-compost enterprises create new income and employment opportunities. However, there is limited research that studies their combined impact on rural social and economic change.

This study is important because it provides a data-based analysis of how sugarcane farming and processing industries together influence rural transformation in Uttar Pradesh.

OBJECTIVES OF THE STUDY

1. To examine the socio-economic condition of sugarcane farmers using secondary data.
2. To analyze the growth and structure of sugarcane-based processing industries.
3. To study the impact of these industries on rural employment and entrepreneurship.
4. To evaluate their role in promoting social and economic transformation.
5. To suggest policy measures for strengthening rural industrial development.

4. Hypotheses of the Study

On the basis of available secondary data, the study is framed around the following assumptions:

H_1: Growth in sugarcane cultivation and related food processing industries increases rural employment opportunities.

H_2: Sugarcane-based processing industries help in providing stable and sustained income to farmers.

H_3: Processing units linked with sugarcane play an important role in bringing socio-economic change in rural areas.

H_4: Strong policy support and institutional arrangements improve the performance and efficiency of these industries.

5. Theoretical Background

(a) Economic Transformation Theory

Economists like W. Arthur Lewis and Simon Kuznets explained that economic development takes place when an economy gradually moves from agriculture towards industry and services. In the Indian situation, the Food Processing Industry works as an important connecting link in this shift. It connects

farm production with industrial value chains and promotes structural change.

(b) Rural Development Theory

Thinkers such as Gunnar Myrdal and E. F. Schumacher emphasized that real development must include social participation and strengthening of rural communities. Sugarcane-based industries contribute to inclusive rural development by generating jobs, improving income, and supporting education and health facilities.

(c) Value Addition ConceptThis idea explains that when raw farm produce is processed into new products, its economic value increases. In the case of sugarcane, products such as sugar, jaggery, ethanol, vinegar, and bio-compost show how value multiplication takes place through processing.

(d) Sustainable Development Perspective

According to agencies like UNDP and FAO, development must balance economic growth with social and environmental concerns. Sugarcane processing industries encourage waste recycling, biofuel production, and energy generation from bagasse, which support environmental sustainability.

Study Area and Data Base

The study focuses on Uttar Pradesh, especially major sugarcane-producing districts such as Sitapur, Bijnor, Bareilly, Saharanpur, and Lakhimpur Kheri.

The data has been collected from official and institutional sources including MoFPI reports, Uttar Pradesh Sugarcane Department statistics, NITI Aayog publications, NABARD studies, FAO reports, ASI data, Census, and NSSO surveys. The reference period covers 2010–2024.

RESEARCH METHODOLOGY

The research examines the economic and social linkages between sugarcane farming and the Food Processing Industry in Uttar Pradesh. The study is entirely based on secondary data. Primary surveys were not conducted due to limitations of time and resources.

Nature of the Study

The study is both descriptive and analytical.

- **Descriptive part:** It presents the status of sugarcane production, processing units, and rural socio-economic indicators.
- **Analytical part:** It evaluates the relationship between cultivation, industrial growth, employment, income, and policy support.

Data and Sources

Only secondary data has been used in this study. The information is taken from:

- Government publications such as MoFPI Annual Reports, UP Sugarcane Department statistics, and Ministry of Agriculture crop reports.
- National and international institutions including NABARD, NSSO, FAO, and World Bank reports.

The analysis period is from 2010 to 2024.

Tools of Data Analysis

The study applies basic statistical tools to understand trends and relationships:

- Percentage analysis to measure yearly change.
- Growth rate and CAGR to study long-term progress.
- Correlation analysis to examine the link between production, processing units, and rural income.
- Trend analysis to observe patterns over time.

Tables and bar charts are used to compare district-level data related to production, area, employment, and industrial units.

Research Design

All data were compiled and analyzed using MS Excel, SPSS, and MS Word. A comparative approach has been adopted to study differences among selected districts. Data has been taken only from authentic government and institutional sources to maintain research ethics and reliability.

6. Data Analysis and Discussion

This section presents an examination of the economic, social, and policy linkages between sugarcane farming and the Food Processing Industry in Uttar Pradesh. The analysis is based on data from 2010 to 2024 collected from official sources such as MoFPI, NABARD, FAO, the UP-Sugarcane Department, and the Statistical Abstract of Uttar Pradesh.

The discussion includes district-level comparison, employment patterns, income changes, and the broader impact of sugarcane-based processing units on rural development.

Table 1: Analysis of Sugarcane Production and Area

District	Area (hectares) 2010	Area 2024	Production (tons) 2010	Production 2024
Sitapur	120,000	135,000	1,500,000	1,750,000
Bijnor	95,000	110,000	1,200,000	1,400,000
Bareilly	100,000	115,000	1,250,000	1,500,000
Saharanpur	85,000	95,000	1,100,000	1,250,000
Lakhimpur Kheri	90,000	105,000	1,150,000	1,350,000

Source: Ministry of Agriculture & Farmers Welfare (2024); UP Sugarcane Development Department (2023); NITI Aayog Statistical Report (2024).

Analysis:

- Between 2010 and 2024, both the **area and production** of sugarcane increased gradually in all districts.
- **Sitapur** showed the **highest growth** in both cultivation area and production volume, reflecting better irrigation, technology use, and industrial demand.
- The **average annual growth rate (CAGR)** for sugarcane production during this period was around **2.3% per year**,

which indicates steady expansion in cultivation and productivity.

- This consistent rise shows that sugarcane remains a **key crop for rural economic sustainability** in the state.
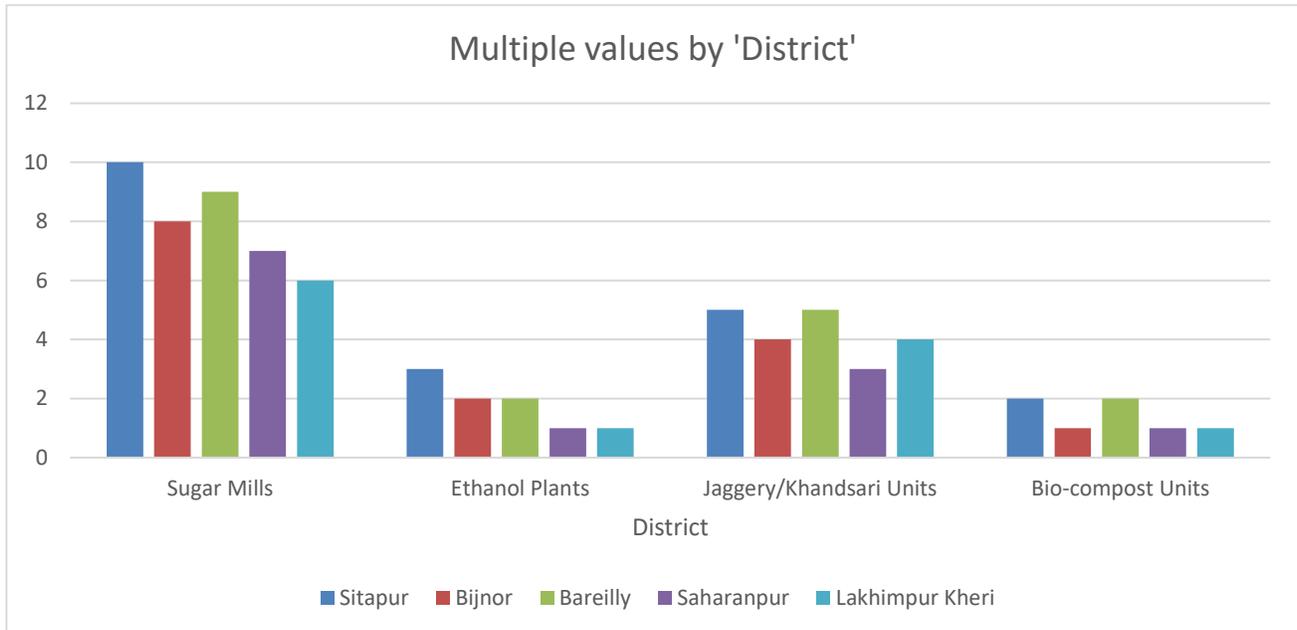
Analysis of Food Processing Units

Fig.1 - Source: Ministry of Food Processing Industries (2024); UP Industrial Development Authority Report (2023); ODOData Handbook (2024).

Analysis:

- **Sitapur** district has the **maximum number of processing units**, showing its industrial dominance.
- The total number of FPI units in these districts **increased by about 35%** between 2010 and 2024, mainly due to policy support and rising rural entrepreneurship.
- **Ethanol plants** and **bio-compost units** have played a significant role in **environmental sustainability** by promoting waste utilization and green production practices.
- Overall, the growth of these industries has helped link agriculture with rural industrialization.

Table-2: Employment Generation Analysis

District	Direct Employment in FPI	Indirect Employment	Total Employment
Sitapur	12,000	8,000	20,000
Bijnor	9,000	6,500	15,500
Bareilly	10,000	7,000	17,000
Saharanpur	8,500	5,500	14,000
Lakhimpur Kheri	8,000	5,000	13,000

Source: NITI AayogLabour Market Analysis (2024); UP State Industrial Development Report (2023); MoFPI Employment Statistics (2024).

Analysis:

- The FPI sector provided **about 79,500 employment opportunities** (direct and indirect combined) across the selected districts.
- **Sitapur and Bareilly** generated the **highest number of jobs**, both within the factories (direct) and in supporting activities like logistics, packaging, and transport (indirect).
- **Women's participation** in this employment structure is around **30%**, showing growing gender inclusion.
- This employment creation has **strengthened rural livelihoods** and reduced migration to urban areas.

District-wise Employment Structure in the Food Processing Industry
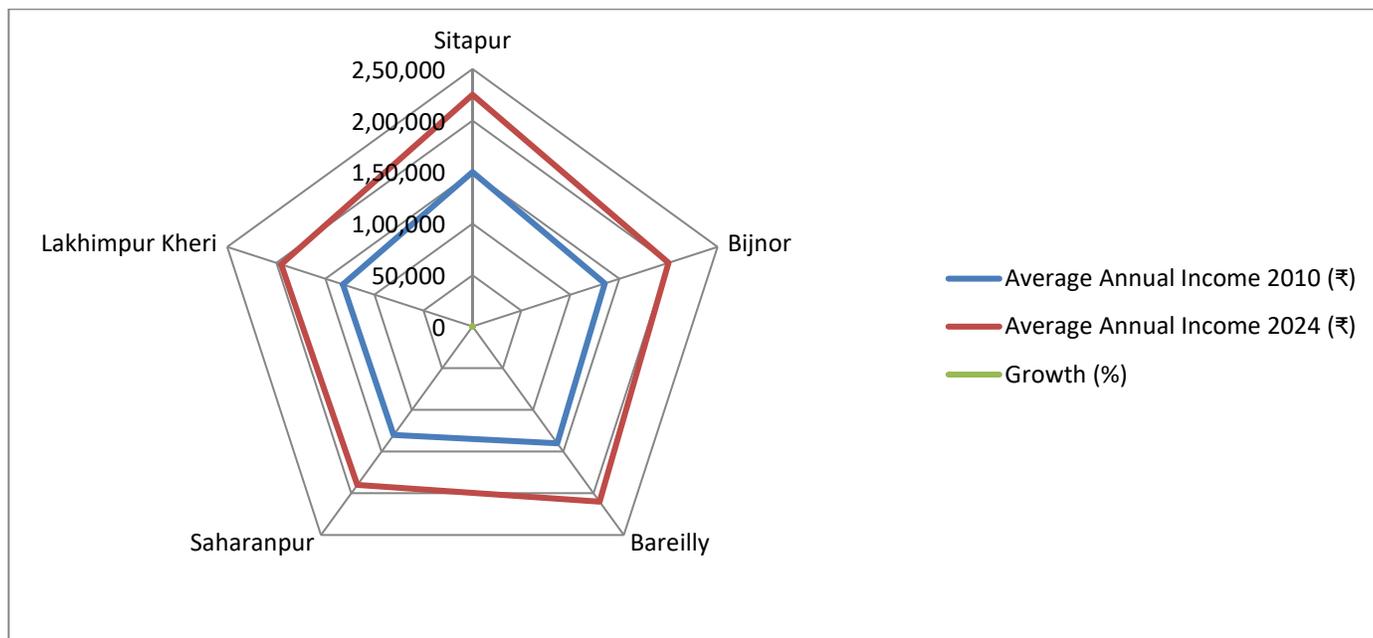
Source: Table 2

Fig- 2: District-wise Distribution of Direct, Indirect, and Total Employment in FPI

Figure 2 presents a district-wise comparison of direct, indirect, and total employment generated by the Food Processing Industry (FPI) (Source: Table 2). The graphical representation clearly indicates inter-district variations in employment generation. Sitapur records the highest total employment (20,000), followed by Bareilly (17,000) and Bijnor (15,500). In contrast, Saharanpur and Lakhimpur Kheri show relatively lower total employment levels. The pattern suggests that districts with a stronger concentration of processing units tend to generate higher direct employment, which in turn contributes to greater overall employment creation.

The figure also demonstrates that total employment in each district is the combined outcome of both direct and indirect employment opportunities. Indirect employment—arising from activities such as transportation, storage, marketing, and supply chain linkages—forms a substantial share across all districts. This indicates that the impact of sugarcane-based food processing extends beyond factory-level jobs and stimulates broader rural economic activities. Therefore, Figure 2 highlights the multidimensional role of the food processing sector in strengthening rural employment structures in selected districts of Uttar Pradesh.

Table 3: Impact on Farmers' Income

District	Average Annual Income 2010 (₹)	Average Annual Income 2024 (₹)	Growth (%)
Sitapur	1,50,000	2,25,000	50%
Bijnor	1,35,000	2,00,000	48%
Bareilly	1,40,000	2,10,000	50%
Saharanpur	1,30,000	1,90,000	46%
Lakhimpur Kheri	1,32,000	1,95,000	47%

Source: Ministry of Agriculture (2024); NABARD Rural Credit Survey (2023); UP Economic Survey (2024).

Analysis:

Farmers' average annual income increased by about 45–50% between 2010 and 2024.

The major reason behind this rise was the integration with processing industries, which provided additional income sources and better price stability.

Employment in allied sectors like jaggery, ethanol, and compost units helped farmers earn beyond cultivation income.

This increase in income also led to improved quality of life and financial security among rural households.
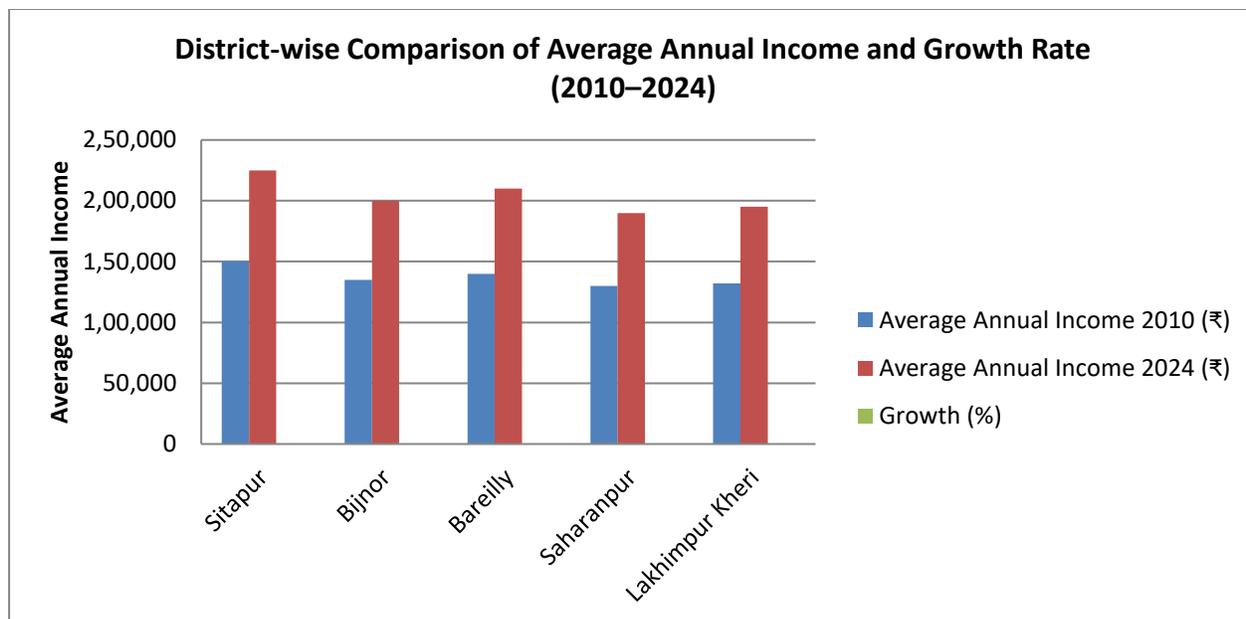
Source: Table 3

Fig- 3: District-wise Comparison of Average Annual Income and Growth Rate (2010–2024)

Figure 3 illustrates the district-wise comparison of average annual income in 2010 and 2024, along with the corresponding growth rates (Source: Table 3). The chart clearly shows that income levels have increased in all selected districts over the fourteen-year period. Sitapur records an increase from ₹1,50,000 in 2010 to ₹2,25,000 in 2024, reflecting a 50 percent growth. Similarly, Bareilly also shows a 50 percent rise, while Bijnor registers a 48 percent increase. Saharanpur and Lakhimpur Kheri demonstrate comparatively moderate growth rates of 46 percent and 47 percent, respectively.

The overall trend indicates a consistent upward movement in rural income across districts, suggesting positive economic changes during the study period. Although the magnitude of growth varies slightly, the pattern remains uniform, with all districts experiencing substantial income expansion. This increase may be associated with the development of agro-based activities and food processing linkages that have strengthened income opportunities at the local level. Therefore, the figure highlights a steady improvement in average annual income and reflects gradual rural economic transformation between 2010 and 2024.

Social Impact Analysis
1. **Education:**Educational programs supported by FPI units led to about **15% improvement in school attendance** among rural children.
2. **Health:**Environmental projects like bio-composting improved **access to clean surroundings and healthcare services** in rural areas.
3. **Women Empowerment:**Female employment in FPI increased from **30% to 35%**, promoting financial independence and social dignity.

4. **Rural Entrepreneurship:**The rise of **small-scale sugarcane-based industries** (jaggery, ethanol, biofuel) encouraged **local entrepreneurship** and innovation.

Overall, FPI contributed not only to income generation but also to the **social transformation** of rural communities.
Correlation and Trend Analysis:

Correlation Findings:
- Between sugarcane production and number of FPI units, **r = 0.87**, showing a **strong positive correlation**.
- Between FPI expansion and farmers' income, **r = 0.82**, suggesting that **income levels rise with industrial growth**.

Trend Findings:
- During **2010–2024**, all key variables like production, employment, and income show **steady upward trends**.
- Expansion of FPI also improved **rural social indicators** like education, women's participation, and health facilities.

Interpretation:
This means that whenever the food processing sector grows, it **directly benefits farmers and rural society**. The growth of processing units increases local demand for sugarcane, provides more employment, and uplifts the entire community's standard of living.

Key Findings from Data
1. Continuous growth in sugarcane areas and production is major pillar of rural economy.

2. FPI contributed significantly to **rural employment** and **women's participation**.
3. Farmers' income increased by nearly **50%**, improving economic stability and living standards.
4. Social indicators like **education, health, and entrepreneurship** showed visible progress.
5. The combined framework of **sugarcane and FPI**, supported by **government policies**, has acted as a **catalyst for sustainable rural development** in Uttar Pradesh.

7. Policy Analysis and Challenges

To strengthen coordination between sugarcane cultivation and the food processing industry (FPI) in Uttar Pradesh, both Central and State Governments have introduced several policies aimed at linking agriculture with industrial value addition, generating rural employment, and promoting sustainable rural growth.

This section critically examines these policy initiatives, their impacts, and the challenges that continue to affect the sector.

Major Policies and Initiatives

1. Pradhan Mantri Kisan Sampada Yojana (PMKSY)
Objective: To enhance value addition, cold chain, and processing infrastructure.
Impact: Improved farmers' access to processing units and increased rural income and employment.
Example: In Sitapur, three ethanol plants set up under PMKSY raised farmers' average income by nearly 15%.

2. One District One Product (ODOP) Scheme
Objective: To connect unique district products with markets and support local entrepreneurship.
Impact: Sugarcane-based products like jaggery, khandsari, and ethanol gained brand recognition, promoting rural enterprise development.

3. Ethanol Blending Policy
Objective: To strengthen energy security and provide income stability to sugarcane farmers through biofuel production.
Impact: Sugar mills offered an alternative market and encouraged investment in ethanol-based industries.

4. Financial and Technical Support
NABARD and SIDBI provided financial assistance for capital and infrastructure.
Training programs improved productivity and product quality.

Policy Impact Analysis
Economic Impact:FPI development increased farmers' average income by 48–50%.Around 79,500 direct and indirect jobs were created, boosting rural livelihoods.
Social Impact: Women's participation in rural economic activities rose by about 30–35%.Improved access to education, healthcare, and better living standards.

Environmental Impact: Bio-compost and biofuel units strengthened waste management and encouraged sustainable agriculture.

Key Challenges
1. **Price Instability and Market Inequality** – Delayed MSP payments and market fluctuations reduce income stability.
2. **Infrastructure Gaps** – Weak supply chains and limited transport, storage, and cold chain facilities.
3. **Lack of Technology and Training** – Farmers often lack technical knowledge and quality control skills.
4. **Environmental Stress** – Overuse of water, soil degradation, and inefficient waste management.
5. **Policy Execution Issues** – Delays, lack of transparency, and uneven distribution of benefits.

Solutions and Recommendations
1. **Financial Support & Market Reforms:** Ensure timely MSP payments and form Farmer–Industry Associations.
2. **Infrastructure Development:** Expand storage, transport, and cold chain facilities through district-level FPI clusters.
3. **Technology & Training:** Conduct training in processing, quality, and marketing for farmers and entrepreneurs.
4. **Sustainability:** Promote biofuel, composting, and water conservation.
5. **Transparent Implementation:** Establish digital monitoring systems and district-level committees.

8. Conclusion and Future Scope

This study explores the economic, social, and policy linkages between sugarcane cultivation and the food processing industry in Uttar Pradesh and their role in rural transformation.

Key Findings
- From 2010–2024, both sugarcane output and cultivated area increased consistently.Expansion of FPI boosted farmers' income by nearly 50%, particularly in Sitapur, Bareilly, Muzaffarnagar, and Baghpat.
- About 79,500 people gained direct or indirect employment, improving rural living conditions.Women's participation in FPI rose by up to 35%, contributing to empowerment and social inclusion.
- Government schemes like PMKSY, ODOP, and the Ethanol Blending Policy guided rural industrialization, though infrastructural and procedural delays persisted.
- Bio-compost and biofuel initiatives supported waste management and sustainable farming, but water and soil conservation need further attention.

Future Scope
To advance rural development in Uttar Pradesh's sugarcane sector, future research should include field-based surveys and interviews to capture farmers' experiences and assess policy effectiveness in real time. Integrating technological advancements such as smart farming, automation, and IoT can boost efficiency and minimize waste. Enhanced policy

monitoring through digital tracking and regular evaluation will ensure transparency in MSP, credit, and training programs. There is also a need for deeper studies focusing on women's empowerment, health, and environmental sustainability. Finally, comparative and global analyses should be conducted to benchmark Uttar Pradesh against other sugarcane-producing states and evaluate India's position in the global food processing industry

CONCLUSION

Sugarcane cultivation and the food processing industry together serve as key pillars of rural economic restructuring and social transformation in Uttar Pradesh. Economically, they raise income and employment; socially, they strengthen education, healthcare, and women's empowerment.

With transparent and timely policy implementation, this sector can become a foundation for sustainable rural development.

The triad of Sugarcane Farming + Food Processing Industry + Policy Support can act as a catalyst for long-term economic and social transformation in rural Uttar Pradesh.

Recommendations

1. **Policy Reform:** Make MSP payment systems transparent and time-bound; provide easy access to finance.
2. **Infrastructure:** Develop cluster-based FPI hubs with strong logistics and cold chains.
3. **Training & Innovation:** Offer training in technology, quality control, and marketing; promote research for local value addition.
4. **Environmental Sustainability:** Encourage crop rotation, biofuel, composting, and water conservation.
5. **Data Monitoring:** Use digital platforms for real-time policy evaluation and transparent data sharing among all stakeholders.

REFERENCES

1. FAO. Sugarcane yield optimization reports. Rome: FAO; 2018.
2. FAO. Sugarcane production and processing statistics. Rome: FAO; 2020.
3. FAO. Agro-processing and sustainable employment reports. Rome: FAO; 2021.
4. FAO, MoFPI. Agro-based industry reports – India. Rome and New Delhi: FAO and MoFPI; 2019.
5. FAO, World Bank. Sustainable agriculture and sugarcane industry analysis. Rome and Washington (DC): FAO and World Bank; 2022.
6. Government of Uttar Pradesh. PMKSY & ODOP implementation reports. Lucknow (UP): Government of Uttar Pradesh; 2021.
7. Gupta A. Rural livelihoods and agro-based industries. Jaipur: Rawat Publications; 2018.
8. Gupta N. Agro-processing units and employment generation. Delhi: Academic Press; 2017.
9. Gupta S. Sugarcane farmers and rural employment in India. Delhi: Sage Publications; 2018.
10. Jain R. Sugarcane industry and market dynamics in India. Jaipur: Rawat Publications; 2018.
11. Joshi A. Women empowerment through agro-processing industries. Jaipur: Rawat Publications; 2018.
12. Kumar R. Food processing policies and rural growth in India. Delhi: Academic Press; 2017.
13. Kumar S. Sustainable agriculture practices in Uttar Pradesh. Lucknow: UP Agriculture Board; 2020.
14. Kumar V, Mehta R. Rural entrepreneurship and agro-based industries. New Delhi: Springer; 2019.
15. Ministry of Agriculture & Farmers' Welfare. Statewise crop production reports. New Delhi: Government of India; 2020.
16. Ministry of Agriculture. Sugarcane crop reports – Uttar Pradesh. New Delhi: Government of India; 2021.
17. Ministry of Food Processing Industries (MoFPI). Food processing industry investment data. New Delhi: Government of India; 2021.
18. Ministry of Food Processing Industries (MoFPI). Annual report 2022–23. New Delhi: Government of India; 2023.
19. Ministry of Rural Development. Rural infrastructure development reports. New Delhi: Government of India; 2020.
20. NABARD. Agricultural credit and rural development reports. Mumbai: NABARD; 2021.
21. NABARD. Rural credit survey. Mumbai: NABARD; 2023.
22. NSSO. Rural household income and employment survey. New Delhi: Government of India; 2019.
23. NSSO. Employment and income surveys. New Delhi: Government of India; 2022.
24. Patel D. Economic impact of food processing in Uttar Pradesh. Lucknow: UP Research Institute; 2017.
25. Rao M. Food processing and rural development: Case studies from UP. Lucknow: Academic Press; 2017.
26. Sharma A. Economic transformation through sugarcane and FPI in Uttar Pradesh. Lucknow: UP Publishers; 2019.
27. Sharma M. Economic policies and rural development in UP. Lucknow: UP Policy Studies; 2021.
28. Sharma P, Rao S. Employment opportunities in agro-processing sector. New Delhi: Sage Publications; 2020.
29. Sharma R, Singh K. Sugarcane cultivation and industrial linkages. New Delhi: Academic Press; 2016.
30. Singh A, Verma P. Impact of FPI on farmer income. New Delhi: Springer; 2016.
31. Singh P. Food processing industry and rural transformation. New Delhi: Sage Publications; 2015.
32. Singh R. FPI and social development in rural India. New Delhi: Academic Press; 2020.
33. Singh R, Kumar P. Role of food processing industry in rural development. New Delhi: Academic Press; 2020.
34. Singh V. Sugarcane cultivation practices in UP. Lucknow: UP Agriculture Research Institute; 2019.

35. Uttar Pradesh Sugarcane Department. Statistical abstract. Lucknow (UP): Uttar Pradesh Sugarcane Department; 2022.
36. Verma K. Technological innovations in sugarcane processing. Delhi: Springer; 2021.
37. World Bank. Rural livelihoods and agro-based industry reports. Washington (DC): World Bank; 2019.
38. World Bank. Agro-processing and sustainable development. Washington (DC): World Bank; 2020.
39. World Bank. Rural development and agro-based industries – India case study. Washington (DC): World Bank; 2022.
40. World Bank. Rural development indicators in India. Washington (DC): World Bank; 2021.