вышению энергоэффективности на заводе по производству стали. В этом случае были выявлены следующие риски:

1) организационные риски сопротивление со стороны сотрудников при внедрении инновационных процессов.

2) экологические риски возможность загрязнения выбросами во время перехода на новые технологии. Примером успешного управления рисками является проект по повышению энергоэффективности на заводе по производству стали. В этом случае в результате проведенного обследования были выявлены следующие риски:

1) организационные риски – сопротивление со стороны сотрудников при внедрении инновационных процессов;

2) экологические риски – возможность загрязнения выбросами во время перехода на новые технологии.

Для минимизации организационных рисков команда проекта провела семинары и тренинги для сотрудников, объясняя преимущества новых технологий для их работы и окружающей среды. Чтобы избежать экологических рисков, были разработаны меры по контролю за выбросами в ходе внедрения новых технологий.

Таким образом, эффективное управление рисками в проектах по повышению энергоэффективности требует комплексного подхода и постоянного мониторинга. Успех таких проектов зависит от способности организаций адаптироваться к изменениям и минимизировать потенциальные угрозы.

Литература

1. Грачев, С. А. Оценка и управление рисками : учеб. пособие / С. А. Грачев, М. А. Гундорова ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Изд. 2-е, испр. и доп. – Владимир : Изд-во ВлГУ, 2020. – 287 с.
2. Тымуль, Е. И. Выбор метода качественного и количественного анализа рисков для предприятий энергетики / Е. И. Тымуль // Наука и техника. – 2021. – Т. 20, № 1. – С. 83–90.

RURAL DEVELOPMENT IN CHINA: STATE OF AFFAIRS AND MAIN PROBLEMS

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This study examines China's rural development challenges amid accelerating urbanization (2019–2023). Analysis reveals declining rural population (33.84 %), significant regional disparities, human capital deficiencies, and limited industrial diversification. Drawing on institutional economics and competitive advantage theory, the paper proposes approaches focusing on innovative service delivery, urban-rural resource flows, specialized industry development, and digital infrastructure enhancement to achieve sustainable rural revitalization.

Keywords: rural development, urbanization, digital rural economy, rural population transformation, regional development disparities.

Rural development represents a critical issue in the global modernization process. As industrialization and urbanization accelerate, developing countries commonly face challenges related to rural population structure transformation, economic transition, and social governance. As the world's largest developing country, China's rural development experience offers valuable reference for similar contexts worldwide.

According to official statistical data from the "Statistical Communiqué on the 2023 National Economic and Social Development of the People's Republic of China", China's rural population decreased to 476.80 million in 2023, accounting for only 33.84 % of the total population, while the urbanization rate rose from 62.58 % in 2019 to 66.16 % in 2023, demonstrating a clear inverse relationship [1]. This trend has not only altered the basic pattern of urban-rural population structure but also profoundly impacted rural economic development, labor mobility, and public service provision. Simultaneously, the unbalanced development between regions remains prominent; urbanization rates in eastern coastal areas generally exceed 70 %, while most central and western regions remain below 60 %, with some provinces even below 50 % [2]. Consequently, achieving sustainable rural development against the backdrop of shifting urban-rural population dynamics has become a focal concern for both academic researchers and policy makers.

From a theoretical perspective, institutional economist North emphasized the critical role of "institutional change" in economic development, arguing that institutions serve as important guarantors for improved production factor efficiency and resource allocation [3, p. 24]. Porter's "national competitive advantage" theory similarly highlights the significance of factor conditions, demand conditions, related and supporting industries, and firm strategy and structure in enhancing national or regional competitiveness [4]. However, for China, with rural areas representing a "shortcoming" in its modernization process, there is an urgent need not only for institutional reform and improvement but also for leveraging structural upgrade opportunities brought by emerging industries such as the digital economy and modern service sector. The World Bank report also indicates that digital technology possesses enormous potential for optimizing rural infrastructure, enhancing productivity, and promoting market connectivity, making it a key lever for rural revitalization [5]. Therefore, this study uses China's rural development status as an entry point to analyze the main challenges facing rural economic and social domains based on changes in rural population scale and structure, thereby providing reference for future policy formulation and implementation.

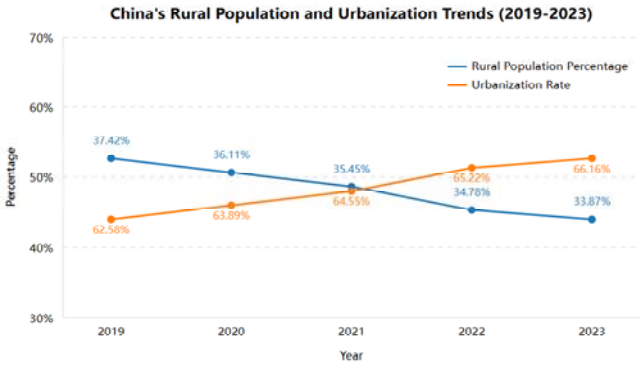

Fig. 1. China's Rural Population and Urbanization Trends (2019–2023)
Source. Based on data from the "Statistical Communiqué on the 2023 National Economic and Social Development of the People's Republic of China" [1].

This research aims to analyze the development challenges under China's rural population structural transformation and accelerated urbanization process, and to explore effective pathways for improving rural socioeconomic conditions. To achieve this objective, the study analyzes official data from the National Bureau of Statistics, comparing rural population size, urbanization rates, and regional disparities between 2019–2023; examines

the current state of rural human capital and industrial structure; and proposes policy recommendations for promoting sustainable rural development in China by integrating international theoretical frameworks and practical experiences.

To gain deeper insight into China's rural population and urbanization development trends, this study first analyzes urban-rural population changes over the past five years. The research selects core indicators from official statistical data to reveal the dynamic characteristics of rural population changes and their underlying causes. In recent years, China's rural population scale and structure have undergone profound transformation, as shown in Fig. 1.

As evident from Fig. 1, from 2019 to 2023, China's rural population proportion decreased from 37.42 % to 33.84 %, while the urbanization rate increased from 62.58 % to 66.16 %, demonstrating a clear inverse relationship. The continuous decline in rural population proportion coupled with the steady increase in urbanization rate reflects the significant impact of economic and social transformation and accelerated urbanization on rural population structure.

This trend exhibits notable differences between eastern coastal and central-western regions: urbanization rates in eastern coastal areas generally exceed 70 %, with developed regions such as Shanghai, Beijing, and Guangdong approaching or exceeding 85 %, while most central and western provinces remain below 60 %, with some provinces even below 50 %. The disparity in urbanization processes between regions not only affects the scale of rural population outflow but also determines the polarization of rural labor force in spatial distribution. Large numbers of rural laborers from central and western regions flow toward coastal urban agglomerations represented by the Pearl River Delta, Yangtze River Delta, and Beijing-Tianjin-Hebei area, creating a potential risk cycle of "population reduction–labor outflow–economic vitality weakening" in rural areas.

Notably, rural populations not only continue to decrease in number but also display structural characteristics of relatively lower education levels and higher average age. In 2023, the average years of education for rural males and females were 9.52 and 9.45 years respectively, significantly lower than their urban counterparts at 11.75 and 11.90 years; regarding age distribution, the average ages of rural males and females reached 41.85 and 39.45 years respectively, markedly higher than corresponding urban groups [2]. This gap indicates relatively insufficient human capital accumulation in rural areas and a more pronounced tendency toward aging population structure. Concurrently, the agricultural sector's competitiveness in industrial terms requires enhancement, with traditional farming and breeding industries offering limited employment absorption capacity, exacerbating challenges faced by elderly and low-skilled laborers during industrial transformation. Additionally, large numbers of young laborers with secondary and higher education tend to seek employment elsewhere, leading to dual pressures of "youth hollowing" and "talent deficit" in rural areas.

Labor mobility similarly reflects structural characteristics. Traditional sectors such as manufacturing and construction remain the primary employment domains for rural migrant workers, accounting for 28.4 % and 18.2 % respectively; wholesale and retail, accommodation and catering, and residential services also absorb considerable rural labor [6]. Notably, the absorption proportion of rural labor by emerging industries such as the digital economy and modern service sector continues to increase annually, reaching 15.6 % in 2023, indicating a gradual upgrading trend in rural labor employment structure.

However, corresponding to this employment structure upgrade, rural areas still face problems of singular industrial forms, weak infrastructure, and low resource allocation efficiency. Many rural areas in central and western regions still lack sufficient institutional

and technical support to accommodate modern service industries or digital economy sectors. This situation resonates with North's "institutional obstacles" theory and reflects the constraints of "insufficient factor conditions" on regional competitive advantage as emphasized by Porter [3, 4]. Although the digital economy offers an important opportunity to address rural development difficulties, the necessary elements of networks, data, and talent have not been effectively gathered in most rural areas, creating a "digital divide" that further widens the "resource-industry-talent" gap between urban and rural areas.

Based on the analysis of China's rural demographic shifts, urban-rural disparities, and regional imbalances, we propose the following recommendations to improve rural socioeconomic conditions: First, innovate rural public service delivery through digital means to enhance accessibility and quality in education and healthcare. Second, establish long-term incentives for talent, capital, and technology to flow into rural areas, addressing the challenges of "youth hollowing" and "talent deficits". Third, develop characteristic industries based on local resource endowments, breaking the previously mentioned industrial homogeneity. Fourth, strengthen rural digital infrastructure to bridge the "digital divide" and foster new digital economic models. Finally, improve rural social security systems to tackle aging challenges and provide reliable safety nets for rural residents.

China's rural development path offers valuable insights for developing countries. While learning from China's rural revitalization strategies, nations should adapt policies to their own contexts and avoid excessive urbanization, which risks population decline, labor outflow, and economic stagnation. Through systemic reform and innovation, countries can explore urban-rural integration pathways suited to their development stage, ensuring economic growth while promoting social equity and sustainable rural development.

References

1. Statistical Communiqué on the 2023 National Economic and Social Development of the People's Republic of China // The State Council of China. – 2024. – URL: https://www.gov.cn/lianbo/bumen/202402/content_6934935.htm (date of access: 19.02.2025).
2. China Human Capital Report 2024 // Sina Finance. – 2024. – URL: https://finance.sina.com.cn/jjxw/2024-12-18/doc-inczvwzc8002942.shtml (date of access: 19.02.2025).
3. North, D. C. Institutions, Institutional Change and Economic Performance / D. C. North. – Cambridge : Cambridge University Press, 1990. – 152 p.
4. Porter, M. E. The Competitive Advantage of Nations / M. E. Porter. – New York : Free Press, 1990. – 557 p.
5. World Bank. Digital Solutions for Rural Development. – Washington, DC : The World Bank, 2021. – 225 p.
6. 2023 Rural Migrant Workers Survey Report // National Bureau of Statistics of China. – 2024. – URL: https://www.stats.gov.cn/sj/zxfb/202404/t20240430_1948783.html (date of access: 19.02.2025).

DIRECTIONS FOR ENSURING FOOD SECURITY IN THE REPUBLIC OF GHANA

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Food security is a critical issue worldwide. In Ghana, food security plays a vital role in economic development, public health, and overall stability. The country's dependence on agriculture makes it essential to address food security challenges to sustain growth and ensure