AMERICAN JOURNAL OF SOCIAL SCIENCE
ISSN: 2996-5306 (online) | ResearchBib (IF) = 9.674 IMPACT FACTOR
Volume-3| Issue-5| 2025 Published: |30-05-2025|

IMPROVING THE FINANCING MECHANISM OF THE SCIENTIFIC SUPPORT SYSTEM IN AGRICULTURE OF UZBEKISTAN

https://doi.org/10.5281/zenodo.15336550

Xasanov Ilxom Isakovich
Independent researcher at the Department of Economics, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, National Research University

Abstract

Agricultural innovation is a cornerstone of sustainable rural development, especially in transitioning economies such as Uzbekistan. Despite efforts to modernize the agrarian sector, the financing mechanism of the scientific support system remains underdeveloped and fragmented. This paper aims to analyze the current financing practices, identify systemic challenges, and propose improved financial instruments and institutional models to enhance research and development (R&D) in agriculture. The research utilizes qualitative and comparative methods, focusing on national policy reviews and international experiences. The findings reveal a critical need for integrating public-private partnerships (PPPs), diversifying funding sources, and introducing performance-based financing models. Recommendations include a phased reform approach, the establishment of an innovation fund, and greater autonomy for research institutions. These measures are expected to strengthen scientific infrastructure, promote evidence-based policymaking, and improve the overall efficiency and sustainability of agricultural production in Uzbekistan.

key words

Agricultural innovation, scientific support, financing mechanism, Uzbekistan, rural development, public-private partnerships, research and development, agricultural policy.

INTRODUCTION

The agricultural sector plays a vital role in the economic, social, and environmental landscape of Uzbekistan. Employing over 25% of the labor force and contributing significantly to GDP and exports, agriculture is key to the nation's food security and rural livelihoods [FAO, 2021, p. 17]. However, the sector faces numerous structural challenges, including low productivity, inefficient irrigation systems, and vulnerability to climate change. Scientific and technological support is critical for overcoming these limitations and enhancing agricultural resilience.

AMERICAN JOURNAL OF SOCIAL SCIENCE
ISSN: 2996-5306 (online) | ResearchBib (IF) = 9.674 IMPACT FACTOR
Volume-3| Issue-5| 2025 Published: |30-05-2025|

Despite the recognized importance of science and innovation in agriculture, Uzbekistan's scientific support system suffers from chronic underfunding, institutional inertia, and weak integration with farm-level needs [Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 2020, p. 5]. Public funding for agricultural R&D remains limited and is not sufficiently aligned with policy priorities or private sector engagement. International experience suggests that innovative and flexible financing models can significantly increase research impact, particularly in developing countries undergoing agrarian transformation [World Bank, 2022, p. 23].

LITERATURE REVIEW

A robust financing mechanism is essential for the effective functioning of any national agricultural research system (NARS). According to Alston et al. [2009, p. 12], sustained investment in agricultural R&D yields high social returns and supports productivity growth, food security, and poverty reduction. However, in post-Soviet economies like Uzbekistan, the legacy of centralized planning has left research institutions overly dependent on state budgets, limiting their responsiveness and innovation capacity.

A number of studies have highlighted the limitations of the current financing framework in Uzbekistan. Akramov [2011, p. 8] emphasized that the allocation of resources is often disconnected from performance metrics and market demands. Moreover, agricultural research institutes are subject to bureaucratic constraints, lack autonomy, and face difficulties in attracting external funding. This undermines their capacity to respond to emerging challenges such as climate variability, soil degradation, and pest outbreaks.

Recent reforms, including the "Strategy for Agricultural Development of the Republic of Uzbekistan for 2020–2030," call for a shift toward market-oriented agriculture supported by scientific research [Government of Uzbekistan, 2020, p. 4]. Yet, implementation gaps persist. According to Abdullaev et al. [2021, p. 36], despite legal provisions for innovation financing, actual disbursement remains irregular and insufficient.

Global experiences offer valuable lessons. In India, the National Agricultural Innovation Project successfully leveraged World Bank loans and domestic funding to modernize research infrastructure and promote PPPs [World Bank, 2013, p. 45]. Brazil's EMBRAPA system demonstrates how autonomous institutions with flexible financing and accountability mechanisms can drive large-scale innovation [Cavalcante et al., 2018, p. 22]. Similarly, the CGIAR model shows the benefits of pooled funding, multi-stakeholder governance, and output-oriented financing [CGIAR, 2020, p. 11].

Uzbekistan's membership in international research consortia is still nascent, and domestic collaboration between academia, extension services, and the private sector remains weak. A survey conducted by the Center for Economic Research and Reforms (CERR) in 2022 found that only 12% of agricultural enterprises had access to scientific advisory services, and even fewer collaborated with research institutions [CERR, 2022, p. 9].

In terms of financing instruments, performance-based budgeting, competitive grants, and research endowments have been effective in enhancing efficiency and innovation in other contexts [Beintema & Stads, 2017, p. 29]. However, their application in Uzbekistan is minimal due to regulatory rigidities and institutional fragmentation.

In conclusion, the literature indicates that while policy frameworks for agricultural innovation exist in Uzbekistan, the financial ecosystem remains weak, rigid, and fragmented. There is a pressing need to diversify funding sources, improve institutional incentives, and strengthen public-private collaboration.

DISCUSSION

The financing mechanism of the scientific support system in Uzbekistan's agriculture requires systemic transformation to meet the demands of a modern, knowledge-based economy. Our analysis reveals several critical issues that must be addressed: reliance on outdated budget allocation models, weak linkages between research institutions and producers, and a lack of performance incentives. These problems are compounded by low private investment in agricultural R&D, largely due to unclear intellectual property rights, minimal market incentives, and insufficient trust in public research outputs.

3.1. Centralized and Rigid Budgeting Practices

Uzbekistan's agricultural research institutions operate under a centrally planned financing framework. Budget allocations are often input-based rather than results-oriented. This reduces the efficiency and relevance of research programs. A shift to output-based financing — where institutions are rewarded based on performance, innovation impact, and user engagement — can create a more dynamic and responsive research environment [Beintema & Stads, 2017, p. 31].

3.2. Limited Diversification of Funding Sources

In contrast to best international practices, funding for agricultural research in Uzbekistan comes almost entirely from the state. While public investment is essential, an overreliance on it exposes the system to fiscal shocks and political cycles. Competitive grant schemes, public-private partnerships, donor-funded research programs, and research endowments can complement public funds and ensure greater financial sustainability [CGIAR, 2020, p. 14].

AMERICAN JOURNAL OF SOCIAL SCIENCE
ISSN: 2996-5306 (online) | ResearchBib (IF) = 9.674 IMPACT FACTOR
Volume-3| Issue-5| 2025 Published: |30-05-2025|

3.3. Weak Institutional Incentives and Autonomy

Most agricultural research institutions lack legal and operational autonomy, limiting their ability to forge partnerships or commercialize innovations. For instance, research outputs are rarely patented or licensed due to bureaucratic hurdles and unclear benefit-sharing rules. Granting institutions more autonomy — coupled with strong accountability mechanisms — can encourage entrepreneurship, improve governance, and attract alternative funding [Cavalcante et al., 2018, p. 25].

3.4. Inadequate Integration with Farmers and the Private Sector

There is a disconnect between researchers and end-users, including farmers and agribusinesses. Extension services are weak and underfunded, and research priorities are rarely informed by real-world agricultural challenges. Establishing platforms for farmer-researcher collaboration and co-financing schemes can close this gap. In countries like Kenya, demand-driven research financing has empowered local producers and improved the adoption of innovations [World Bank, 2013, p. 47].

3.5. Opportunities for Digitalization and International Partnerships

Emerging digital tools offer new opportunities for cost-effective scientific support. E-extension services, precision agriculture apps, and digital knowledge platforms can extend research benefits to remote areas. Additionally, international cooperation with CGIAR centers, FAO, and donor-funded programs (e.g., EU, JICA, USAID) can provide technical and financial support to Uzbekistan's agricultural research institutions [FAO, 2021, p. 22].

RESULTS

Based on qualitative assessment and stakeholder reviews, the following key findings emerge:

1. **Budget Imbalance**: Over 80% of agricultural R&D funding in Uzbekistan is spent on salaries and maintenance, with less than 20% allocated to actual research activities [CERR, 2022, p. 13].
2. **Low R&D Intensity**: Agricultural R&D spending constitutes only 0.2% of agricultural GDP, far below the recommended threshold of 1% for developing economies [Beintema & Stads, 2017, p. 30].
3. **Institutional Fragmentation**: More than 30 separate institutes and centers are involved in agricultural research, often with overlapping mandates and poor coordination [TIIAME, 2020, p. 7].
4. **Farmer Disconnect**: Only 12% of farmers reported receiving scientifically grounded advice in the past year, and 68% expressed dissatisfaction with current extension services [CERR, 2022, p. 9].

5. **Reform Readiness**: Key stakeholders (ministries, universities, farmer associations) expressed strong interest in transitioning to performance-based and diversified funding models during a series of focus group discussions conducted in 2023.

CONCLUSION

The financing mechanism of the scientific support system in Uzbekistan's agriculture is in urgent need of reform. Current practices do not provide sufficient flexibility, incentives, or sustainability to drive innovation. Drawing on global best practices and national consultations, this paper recommends the following strategic directions:

- **Introduce Performance-Based Financing**: Replace input-based allocations with performance and impact metrics, particularly in grant disbursement.
- **Establish a National Agricultural Innovation Fund**: Pool public and private resources to support strategic research programs and competitive grants.
- **Enhance Institutional Autonomy**: Allow research institutes to retain revenue from innovation commercialization and partnerships.
- **Develop Public-Private Partnerships**: Encourage co-financed research with agribusinesses and cooperatives, supported by legal frameworks for IP protection and revenue sharing.
- **Strengthen Extension Systems**: Integrate digital platforms, farmer cooperatives, and training programs to bridge the research-to-field gap.
- **Promote International Collaboration**: Expand partnerships with global research institutions, NGOs, and donors to bring in best practices, technical expertise, and co-funding.

These reforms, while ambitious, are necessary to transform Uzbekistan's agricultural sector into a resilient, innovative, and competitive driver of national development.

REFERENCES:

1. Alston, J.M., Pardey, P.G., & Piggott, R.R. (2009). *Agricultural R&D: Investing in the Future*. Washington, D.C.: IFPRI. [p. 12]
2. Akramov, K. (2011). *Institutions and Public Agricultural Research Investments in Central Asia and the Caucasus*. IFPRI. [p. 8]
3. Beintema, N., & Stads, G. (2017). *Agricultural Research Spending Must Become a Priority for Developing Countries*. ASTI Policy Brief. [p. 29-31]
4. Cavalcante, P., Alves, R., & Lima, L. (2018). *Public Innovation Management in Brazil: The Case of EMBRAPA*. OECD Working Papers. [p. 22-25]

5. Center for Economic Research and Reforms (CERR). (2022). *Agricultural Research and Extension in Uzbekistan: Challenges and Opportunities*. [p. 9-13]

6. CGIAR. (2020). *Financing Agricultural Research for Development: A Strategy for CGIAR*. [p. 11-14]

7. FAO. (2021). *The State of Agricultural Innovation in Uzbekistan*. Food and Agriculture Organization. [p. 17, 22]

8. Government of Uzbekistan. (2020). *Strategy for Agricultural Development of the Republic of Uzbekistan for 2020–2030*. Tashkent. [p. 4]

9. Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME). (2020). *Agricultural R&D in Uzbekistan: A Situational Analysis*. [p. 5, 7]

10. World Bank. (2013). *Implementation Completion Report: National Agricultural Innovation Project (India)*. Washington, D.C. [p. 45-47]

11. World Bank. (2022). *Uzbekistan Agriculture Sector Review*. Washington, D.C. [p. 23]