

# **Research on the Mechanism for Coordinated Advancement of Education, Science and Technology and Talent in the Modernisation Process**

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## **Abstract**

**Diverse models have emerged in the practice of the mechanism for coordinated advancement of education, science and technology, and talent development, accumulating cross-domain collaboration experience. However, issues such as fragmented resources and low collaborative efficiency persist, rooted in systemic barriers and cognitive biases. It is imperative to establish and improve five comprehensive mechanisms: integrated decision-making, resource sharing, collaborative linkage, evaluation incentives, and safeguarding oversight. Implementation pathways should focus on strengthening top-level design, dismantling institutional obstacles, optimising resource allocation, and enhancing support systems to achieve in-deep integration and coordinated development among these three domains.**

## **Keywords**

**Modernisation Process; Education, Science and Technology, and Talent; Coordinated Advancement; Mechanism Research.**

## **1. Introduction**

The Decision of the Central Committee of the Communist Party of China on Further Comprehensively Deepening Reform and Advancing Chinese Modernisation, adopted at the Third Plenary Session of the 20th CPC Central Committee, states: "We must thoroughly implement the strategy of rejuvenating the nation through science and education, the strategy of strengthening the nation through talent, and the strategy of innovation-driven development. We should coordinate the integrated reform of the institutional mechanisms for education, science and technology, and talent, improve the new national system, and enhance the overall effectiveness of the national innovation system." Education, science and technology, and talent serve as foundational and strategic pillars for building a modern socialist country in an all-round way, with intrinsic consistency and mutual reinforcement. However, in practice, the work in these three domains is often managed by separate departments, resulting in policy barriers and institutional obstacles that hinder the realisation of overall effectiveness. To address this issue, the integrated reform of the institutional mechanisms for education, science and technology, and talent development has emerged.

## **2. Current Status of the Mechanism for Coordinated Advancement of Education, Science and Technology, and Talent**

### **2.1. Practical Exploration of Existing Integrated Advancement Mechanisms**

Based on local development strategies, regions have explored and developed diverse integrated models. In policy coordination, Many localities have issued integrated development plans, clarifying connection objectives and task divisions in the fields of education, science

and technology, and talent. Meanwhile, cross-departmental joint meeting systems have been established to ensure effective policy implementation[1]. In platform development, integrated complexes such as industry-academia-research integration bases and innovation parks have been established. These facilitate the alignment of university research resources with corporate needs, promoting precise matching between talent cultivation and industrial development. Regarding resource allocation, some regions have consolidated education funding, research investment, and talent subsidies through special funds, prioritising support for collaborative projects in critical sectors. These explorations have laid a practical foundation for integrated coordination and accumulated preliminary experience in cross-domain collaboration.

## **2.2. Core Issues in the Coordinated Advancement Mechanism**

The coordinated advancement mechanism suffers from systemic deficiencies and inadequate synergy, with core issues becoming increasingly apparent. Resource allocation exhibits a fragmented pattern, as resources in education, science and technology, and talent fields are managed separately. Significant barriers impede cross-domain resource flows, hindering the formation of synergistic effects. Collaborative effectiveness remains relatively low, characterised by insufficient interdepartmental information sharing and disconnects between policy formulation and implementation. Consequently, the alignment between talent cultivation, technological demands, and industrial development remains suboptimal[2]. Evaluation systems remain relatively simplistic, with existing assessments predominantly focused on isolated indicators within individual sectors. There is a notable absence of comprehensive consideration for integrated outcomes, hindering effective guidance on the direction of coordinated advancement. Regional development remains uneven: while the coordinated mechanisms in the developed eastern regions are relatively well-established, the central and western regions face significant constraints due to resource endowment limitations, resulting in substantial disparities in both the capacity and effectiveness of coordinated advancement.

## **2.3. Analysis of the Underlying Causes of the Problems**

The root causes stem from the interplay of institutional barriers and cognitive biases. At the systemic level, the traditional compartmentalised management structure has solidified the division of powers and responsibilities. Coordination across departments lacks rigid constraints and long-term safeguards, making it difficult to overcome the limitations of domain boundaries. Cognitively, some regions lack a thorough understanding of the dialectical unity among the three dimensions, exhibiting a tendency to prioritise single-sector development over coordinated integration. This results in a systemic absence of holistic thinking in integrated advancement. From the perspective of guarantee, the necessary infrastructure—such as cross-domain information-sharing platforms and specialised coordination bodies—remains underdeveloped. Furthermore, a shortage of multidisciplinary coordination and management talent constrains the effectiveness of coordination mechanisms[3]. Furthermore, disparities in regional economic development levels create imbalances in resource supply capacity, exacerbating unevenness in the coordinated advancement process.

# **3. Construction Framework of the Mechanism for Coordinated Advancement of Education, Science and echnology, and Talent**

## **3.1. Integrated Decision-Making Mechanism**

The integrated decision-making mechanism plays a central guiding role in the advancement of integration. It is essential to establish a decision-making system with clear levels and unified

authority and responsibility. A national-level integrated coordination leading group should be established to define the boundaries of responsibilities and collaborative obligations among the competent authorities for education, science and technology, and talent development. Regular interdepartmental decision-making consultations should be convened to evaluate integrated development objectives and key tasks. Decision-making research and consultation mechanisms must be refined to engage multiple stakeholders, including universities, research institutes, and industry enterprises. Expert think tanks should conduct feasibility assessments to ensure decisions align with modernisation requirements and regional realities. Refine decision-implementation feedback mechanisms by establishing dynamic monitoring indicators to track policy outcomes in real time. Adjust decisions promptly based on feedback to create a closed-loop management model: research-decision-implementation-feedback-optimisation.

### **3.2. Resource Integration and Sharing Mechanism**

Resource integration and sharing mechanisms are pivotal to overcoming resource fragmentation, facilitating efficient cross-domain and cross-regional resource flows. Regarding fund consolidation, establish an integrated development special fund to pool educational funding, research investments, talent subsidies, and other resources. Adopt centralised management with categorised allocation, prioritising critical sectors and key projects [4]. Regarding platform sharing, a unified national resource sharing platform for education, science and technology, and talent should be established to integrate resources such as university research equipment, scientific achievements, and talent information. A resource-sharing catalogue and a fee-based usage mechanism should be established to enhance resource utilisation efficiency. For factor allocation, a dynamic resource allocation mechanism responsive to market demand should be established. This would guide the concentration of high-quality educational and scientific resources towards talent-intensive areas and industrial clusters, achieving precise alignment between resource allocation and development needs.

### **3.3. Coordination and Synergy Mechanism**

The collaborative linkage mechanism is pivotal to enhancing the effectiveness of integrated advancement. It requires dismantling coordination barriers across departments, regions, and entities by establishing routine cross-departmental collaboration frameworks. This involves defining collaborative responsibilities and workflows for each department, leveraging joint offices, information sharing, and task sharing to facilitate coordinated policy formulation, project implementation, and achievement transformation. We should deepen Industry-Academia-Research Collaboration Foster, build collaborative innovation alliances between universities, research institutes, and enterprises and establish cooperative mechanisms for joint talent cultivation, collaborative research breakthroughs, and shared outcome transformation. We should promote deep integration between education chains, talent chains, industrial chains, and innovation chains, and strengthen regional coordination mechanisms by establishing counterpart assistance frameworks between eastern and central/western regions, and facilitate cross-regional dissemination of high-quality resources to narrow development disparities and achieve nationwide coordinated advancement.

### **3.4. Evaluation and Incentive Mechanism**

Evaluation and incentive mechanisms serve as critical safeguards for guiding the direction of integrated advancement. A scientific and diversified evaluation and incentive system should be established, creating a comprehensive integrated evaluation indicator system that transcends the limitations of single-domain assessments. This system should encompass collaborative effectiveness, resource utilisation efficiency, benefits from achievement

transformation, and talent cultivation quality within its evaluation scope. Employing a combination of quantitative and qualitative evaluation methods will enable a comprehensive and precise assessment of the effectiveness of integrated advancement. Refine incentive and constraint mechanisms by offering financial support and honour to regions, departments, and institutions demonstrating outstanding integration outcomes, while holding accountable those lagging in coordination through formal discussions and accountability measures. We should establish diversified incentive models balancing material and non-material rewards to encourage researchers and educators to engage in cross-domain collaboration, thereby stimulating the initiative and creativity of all stakeholders.

### **3.5. Safeguarding and Oversight Mechanism**

The safeguarding and oversight mechanism serves as the bedrock for ensuring the effective implementation of the integrated advancement mechanism, requiring support across institutional frameworks, resource allocation, and supervisory functions. Regarding institutional safeguards, relevant laws and regulations governing the integration of education, science and technology, and talent should be refined to clarify the rights and obligations of all stakeholders, thereby providing a legal foundation and institutional guidelines for integrated advancement. Regarding resource safeguards, emphasis must be placed on cultivating multi-disciplinary coordination management talent, establishing a specialised coordination team to enhance overall coordination capabilities. Concurrently, strengthening information technology support is vital, promoting the application of big data, artificial intelligence and similar technologies in resource sharing and collaborative management processes. Regarding oversight and management, a diversified supervision system should be established, integrating administrative oversight, social supervision, and media scrutiny. This system should conduct comprehensive monitoring of policy implementation, fund utilisation, and project advancement, enabling the timely detection and resolution of issues arising during the integration process. This ensures the integrated advancement mechanism operates in a standardised and orderly manner.

## **4. Implementation Paths of the Mechanism for Coordinated Advancement of Education, Science and Technology, and Talent**

### **4.1. Strengthening Top-Level Design to Define Integrated Direction**

From the perspective of the nation's overall modernisation strategy, we should formulate medium-to-long-term plans for the integrated development of education, science and technology, and talent, clearly define the coordinated objectives, key tasks, and implementation steps for each phase, establish and improve national-level coordination mechanisms to strengthen cross-departmental strategic collaboration, and encourage regions to develop differentiated implementation rules based on their resource endowments and development needs. We should increase efforts in strategic analysis and dynamic adjustments, closely tracking trends in scientific and technological revolutions and industrial transformations, and precisely align with major national strategic requirements to ensure the foresight and scientific rigour of top-level design. We should utilise unified planning to guide resource allocation, policy formulation, and project implementation, establishing a coordinated advancement framework that integrates top-down and bottom-up efforts across all domains. This will provide directional guidance and strategic support for integrated development.

## **4.2. Breaking Down Institutional Barriers and Streamlining Coordination Channels**

We should abandon traditional compartmentalised management models by reviewing departmental authority and responsibility lists, clarifying collaborative boundaries, and establishing a collaborative management system with clear delineation of powers and responsibilities. We should initiate the development of cross-departmental information-sharing platforms to eliminate data silos and achieve connectivity across educational teaching, scientific research innovation, and talent mobility. We should further deepen the integrated reform of science and technology systems, education systems, and talent development mechanisms to remove institutional barriers to cross-domain factor mobility and refine supporting policies for the conversion of scientific research achievements and the rational flow of talent. We should establish regular collaborative consultation and dispute resolution mechanisms to promptly address cross-departmental and cross-regional coordination challenges during implementation, thereby enhancing the smoothness and efficiency of collaborative advancement.

## **4.3. Optimising Resource Allocation and Enhancing Coordination Efficiency**

We should establish a diversified model for coordinated resource allocation by integrating various fiscal funds into a unified development special fund, and prioritise support for breakthroughs in key core technologies, high-level talent cultivation, and collaborative innovation projects between industry, academia, and research. We should guide social capital towards integrated education, science, and talent development, forming a resource supply pattern where the government plays a leading role and society actively participates, and optimise the spatial allocation of resources to direct high-quality educational and scientific resources towards central, western, and underdeveloped regions. We should establish mechanisms for inter-regional resource sharing and targeted assistance to narrow regional development gaps, and enhance the precision of resource allocation by optimising talent cultivation structures and scientific resource distribution based on the needs of key industries and strategic emerging sectors, achieving efficient alignment between resource allocation and development requirements.

## **4.4. Strengthening the Support System to Consolidate the Foundation for Implementation**

We should refine the legal framework governing the integration of education, science and technology and talent, detailing supporting policies to provide robust legal safeguards for integrated advancement and strengthen the development of multidisciplinary talent pools, cultivating professional coordinators proficient in educational administration, scientific innovation, and talent services to elevate the specialised standards of coordinated implementation. We should enhance the enabling role of information technology, leveraging modern tools such as big data and artificial intelligence to improve the intelligence of resource management, collaborative scheduling, and performance evaluation. Establish a diversified supervision and evaluation system, constructing a supervisory mechanism that integrates governmental oversight, societal monitoring, and third-party assessments. We should conduct comprehensive tracking evaluations of policy implementation, fund utilisation, and project advancement, and establish mechanisms for feedback and application of evaluation outcomes, linking assessment results to policy adjustments and resource allocation. This ensures the feasibility and effectiveness of all tasks within the integrated advancement framework.

## 5. Conclusion

The integrated advancement of education, science and technology, and talent is a systemic project. It necessitates addressing institutional barriers from a strategic and holistic perspective. By scientifically constructing a coordination framework, precisely implementing operational paths, and strengthening oversight mechanisms, resources can be effectively consolidated and synergistic efficiency can be enhanced. Moving forward, sustained deepening of reforms and optimisation of coordination models will fully unleash the combined effects of these three pillars, providing robust support for the nation's high-quality development.

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