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University Governance for Sustainability: Overcoming Structural Fragmentation to Enable Institutional Transformation

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Abstract

Against the global imperative to advance higher education for sustainable development and institutional transformation in support of the United Nations Sustainable Development Goals (SDGs), coherent governance architectures have been recognized as a foundational prerequisite for enabling universities to embed sustainability into values into core operations, teaching, research, and community engagement. Drawing on socio-technical systems theory and complex adaptive systems thinking, this study analyzes 167 central-level policy documents (2015–2023) related to China’s Higher Education “Delegation, Regulation, and Service” reform to examine how governance intentions are translated into organizational control mechanisms. A dual-dimensional analytical framework is developed that conceptualizes policy objectives as system goals and policy instruments as control levers, combining content analysis with fuzzy systems methodology to quantify system coupling. The findings reveal distinct emergent patterns: governance objectives exhibit structural differentiation with functional complementarity, whereas the synergy of control levers is shaped by their functional roles and organizational adaptability. More importantly, a selective pattern of structural–functional decoupling is identified. Coupling between Improving Quality and its supporting levers declines substantially over the study period, while coupling involving Stimulating Vitality exhibits marked volatility and an overall decline. By contrast, coupling associated with Breaking Down Institutional Barriers and Improving the Modern University System remains consistently high. These differentiated patterns suggest that governance misalignment is concentrated in quality- and vitality-related objectives rather than occurring uniformly across the governance system. The study provides a diagnostic framework for assessing governance coherence as a prerequisite for organizational capacity-building, contributing to both sustainability governance research and the design of more coherent institutional governance systems.

Keywords: sustainability in higher education; institutional transformation; sustainable governance; university autonomy; university governance; sustainability strategy; socio-technical systems; complex adaptive systems

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1. Introduction

Institutions of higher education (HEIs) occupy a unique and paradoxical position in the global sustainability transition [1]. Across their three foundational missions of knowledge creation, student education, and public engagement, universities are uniquely positioned to set benchmarks for sustainable institutional practice, generate evidence-based approaches that drive system-level transformation, and rigorously assess the real-world impact of sustainability-focused interventions. Yet, as large, complex, and resource-dependent institutions operating across expansive physical campuses, large employee bodies, international partnership networks, and heterogeneous stakeholder groups, universities encounter deep-seated managerial and strategic obstacles in integrating sustainability priorities across their core missions [2]. The integration of sustainability principles—including environmental responsibility, social equity, long-term institutional resilience, and multi-stakeholder governance aligned with the United Nations Sustainable Development Goals (SDGs)—into daily operations, formal governance frameworks, and long-term institutional change agendas has emerged as a core priority for university leaders, higher education policymakers, and campus administrators worldwide [3].

However, a critical prerequisite for achieving this imperative is often overlooked: the coherence of governance frameworks that shape institutional autonomy, accountability, and strategic capacity. When national governance reforms create misaligned policy goals and implementation instruments, they generate structural barriers that prevent universities from moving beyond symbolic sustainability initiatives toward deep institutional change. This study examines how a major national governance reform—China’s Higher Education “Delegation, Regulation, and Service” reform (HEDRSR)—reconfigures the socio-technical architecture of higher education institutions, focusing specifically on whether its policy design cultivates or constrains universities’ capacity for sustainable transformation.

It is important to clarify the analytical scope and conceptual framing of this study. We do not directly measure environmental sustainability outcomes, social equity indicators, or institutional-level SDG implementation rates. Rather, we examine a foundational prerequisite for such outcomes: the coherence of governance architectures that enable universities to develop autonomous and adaptive capacity. Drawing on the sustainability governance literature, we conceptualize governance coherence as an organizational enabling condition. When governance goals and control levers are structurally decoupled, universities lack the stable institutional foundations required to embed sustainability into core operations, regardless of their formal commitments to the SDGs. This analytical framing treats sustainability not as a dependent variable measured within the policy corpus, but as an emergent systemic property of coherent governance configurations. Consequently, our claims regarding the implications for sustainability are theoretically informed inferences rather than empirically demonstrated causal findings, a limitation we acknowledge throughout the analysis. From the perspective of the United Nations Sustainable Development Goals, this governance-level analysis aligns most directly with SDG 16 (Peace, Justice and Strong Institutions), which calls for effective, accountable, and transparent institutions.

Modernizing higher education governance remains a central concern in global educational reform, with a common challenge being how to balance institutional autonomy with public accountability to create the conditions for both institutional vitality and long-term sustainable development [4]. Since the late 20th century, a global trend toward decentralization and de-administration has reshaped the relationship between the state and universities. Conceptualizing higher education governance as a complex socio-technical system—comprising interconnected actors, institutional rules, and resource flows—helps

illuminate why such reforms often produce unintended organizational consequences that undermine institutional sustainability. In the United States, the tradition of institutional autonomy is counterbalanced by accreditation systems and market forces, creating a model of pluralistic governance [5]. In Europe, the Bologna Process has been a major driver, promoting institutional autonomy while simultaneously establishing the European Standards and Guidelines for quality assurance as a continent-wide framework for accountability [6]. Similarly, in Asia, Japan's National University Corporation reform in 2004 granted universities greater managerial flexibility while introducing medium-term goal-setting and evaluation by the Ministry of Education [7]. These diverse reforms converge on a common challenge: how to design governance architectures that effectively use policy instruments as organizational levers to empower universities while ensuring that they serve the public interest and support the institutional resilience required for sustainable transformation.

From a sustainability perspective, the long-term viability of higher education institutions depends not merely on discrete policy interventions, but on the systemic coherence of governance architectures—the degree to which policy objectives, control mechanisms, and implementation structures form mutually reinforcing configurations capable of enabling institutional adaptation [8]. From a systems perspective, higher education governance reform can be conceptualized as a multi-level socio-technical system in which the state [9], universities, and other stakeholders interact through a set of policy objectives (the system's functional subgoals) and policy instruments (the system's control variables). The degree to which these system elements are coupled—that is, the extent to which instruments consistently and coherently support objectives—determines the system's overall integration and its capacity to generate emergent organizational outcomes, such as improved quality, institutional vitality, and accountability—outcomes that constitute key pillars of sustainable institutional transformation. System synergy therefore refers to the alignment and mutual reinforcement among subsystems (objectives, instruments, and implementation structures) that enable the system to function more effectively than the sum of its parts.

In China, the HEDRSR serves as a major initiative for advancing the transformation of the educational governance system and represents a localized response to global shifts in higher education governance [10]. Viewed through a sustainability lens, the HEDRSR constitutes a large-scale socio-technical system reconfiguration aimed at cultivating governance architectures capable of sustaining institutional vitality within the context of the Chinese-style university system. In areas such as academic program management and research funding allocation, the government delineates responsibilities between itself and universities through a list-based delegation mechanism, while maintaining necessary macro-level regulatory measures. This demonstrates a governance approach that seeks to balance autonomy with accountability [11]. However, the systemic complexity of China's reform has become increasingly evident, raising critical questions about whether its governance design enables universities to develop the adaptive governance capacity necessary for sustainable institutional transformation.

On one hand, policy texts reveal a tension between “systemic decentralization and structural re-centralization”. The Higher Education Law grants universities autonomy in areas such as curriculum planning and research, yet subsequent administrative documents indirectly constrain this autonomy through filing and registration procedures. This decoupling between formal autonomy and operational control generates persistent institutional uncertainty, preventing universities from developing the stable governance foundations necessary for long-term sustainability. On the other hand, insufficient systemic synergy among multiple agencies leads to resource waste and implementation barriers. For instance, weak coordination between the Ministry of Education and the Ministry of

Finance on research funding policies reduces reform effectiveness. Such policy system incoherence limits universities' operational vitality and undermines the systemic integration required for sustainable governance, contrasting with the global emphasis on "systemic coherence" in higher education organizational reform.

In this context, developing a framework for analyzing policy synergy—reconceptualized here as system coupling between governance goals and organizational control mechanisms—is critical for diagnosing whether national reforms cultivate or constrain the institutional capacity for sustainable transformation. This framework addresses the paradox of government power "not being relinquished" and university power "not being accepted" in the HEDRSR, a paradox that, if unresolved, perpetuates governance configurations that prevent universities from developing autonomous, self-regulating governance structures. Grounded in socio-technical systems thinking, this study seeks to answer the following questions. First, do the existing system goals exhibit synergistic emergence, and what are the characteristics of this synergy? Second, how are the system control levers (policy instruments) distributed within the HEDRSR governance system, and are there imbalances in their types and deployment? Third, what is the level of structural–functional coupling between system goals and control levers, and to what extent do the control levers effectively correspond to the system goals? By answering these questions, we aim to diagnose governance challenges that impede the sustainable transformation of higher education institutions, thereby providing both theoretical insights and practical guidance for institutional leaders and policymakers seeking to align governance reform with the broader sustainability agenda.

The marginal contributions of this study are as follows. (1) Theoretical contribution. It extends the application of socio-technical systems theory and complex adaptive systems theory to higher education governance, reconceptualizing policy synergy analysis as a diagnostic tool for assessing structural–functional coupling in the context of sustainable institutional transformation. It identifies failures in lever coordination as a distinct governance challenge and demonstrates that decoupling is selective—concentrated on quality and vitality goals rather than occurring across the system as a whole—thereby providing a more nuanced diagnostic basis for governance reform. (2) Methodological contribution. It develops a two-dimensional analytical framework linking goals and control levers, together with a fuzzy systems-based measurement model, providing a transferable methodology for quantifying governance coherence in multi-level governance systems. This framework can be used by institutional leaders to diagnose alignment gaps in organizational sustainability strategies. (3) Practical contribution. It identifies patterns of selective structural–functional decoupling in China's higher education governance reform and interprets vertical segmentation across governance levels as a plausible contributing factor. These findings provide insights for the design of higher education decentralization reforms by showing that effective empowerment for institutional sustainability requires the systemic reconfiguration of goal–lever coupling rather than simply reducing central control or setting superficial targets.

2. Literature Review

2.1. Sustainable Governance in Higher Education: The Organizational Transformation Imperative

Recent scholarship has increasingly framed higher education governance reform as an organizational transformation process aimed at cultivating sustainable institutional structures. Kezar [3] argues that sustainable institutional transformation in higher education requires system-wide reconfiguration rather than isolated policy interventions, emphasizing the need for alignment among governance structures, strategic leadership, and

stakeholder engagement. Similarly, Leal Filho et al. [2] identify sustainability leadership as a critical yet underexplored mechanism through which governance frameworks translate policy intentions into durable organizational outcomes. In this vein, Sibbel [1] contends that HEIs occupy a paradoxical position in the sustainability landscape: they are expected to model exemplary sustainability practices while simultaneously navigating resource constraints and competing stakeholder demands that strain their capacity for genuine transformation. These studies converge on a central insight: sustainable governance in higher education depends on the systemic coherence of governance architectures—the degree to which institutional rules, resource flows, and the behavior of key actors form mutually reinforcing configurations that support organizational adaptation. However, this literature has yet to develop rigorous diagnostic approaches for measuring such systemic coherence, leaving a critical methodological gap that this study addresses.

2.2. Sustainability Research in Higher Education and Its Connection to Governance Scholarship

The sustainability literature has extensively documented the normative case for embedding environmental and social values into higher education [1,3] and has identified barriers to implementation across different institutional and national contexts [2]. However, comparative evidence suggests that these barriers are not merely institutional idiosyncrasies but are shaped by the broader governance architectures within which universities operate. A cross-continental analysis [2] identified three categories of barriers—administrative, legislative, and resource-related—with systematically different patterns across regions. South American institutions predominantly face administrative barriers, including limited support from university leadership and the absence of dedicated sustainability offices; European institutions encounter legislative barriers, such as the absence of binding sustainability guidelines; and institutions in Africa and Asia confront resource constraints, including insufficient funding.

Critically, the sustainability literature has paid relatively little systematic attention to the governance preconditions that enable or constrain the embedding of sustainability. Studies have identified multiple barriers but have rarely examined how the coherence of governance architectures shapes organizational capacity for sustainable transformation. This gap is consequential because, without understanding whether and how governance systems provide coherent goal-instrument alignment, sustainability initiatives risk remaining at the level of symbolic commitment rather than achieving systemic integration. Our study addresses this gap by shifting the analytical focus from sustainability outcomes to governance preconditions and treating goal-instrument coupling as a foundational condition for organizational capacity-building.

2.3. Policy Coherence and Policy Mixes: Diagnostic Tools from Sustainability Transitions Research

The sustainability transitions literature has developed sophisticated analytical frameworks for examining governance coherence that are transferable to higher education. Research on policy coherence for sustainable development examines the logical alignment among policy goals and instruments across different sectors and governance levels [12,13]. In higher education, policy coherence is particularly consequential because governments pursue multiple—and often conflicting-policy objectives, including equity, efficiency, quality, and innovation [14].

The policy mix literature extends this perspective by analyzing how combinations of policy instruments—rather than individual tools—interact to produce synergistic or conflicting effects [15,16]. Recent applications to higher education demonstrate that governance reforms are best understood as policy mixes in which funding mechanisms, quality assurance instruments, autonomy regulations, and accountability frameworks interact to

produce outcomes that cannot be predicted from individual instruments alone [17]. Research on policy sequencing [18] further shows that the temporal ordering of policy instruments—including which instruments are introduced first and how subsequent instruments build on earlier ones—is as important as their substantive content.

A central insight from this literature is that coherence is not merely a matter of instrument alignment but also a political process shaped by competing stakeholder interests, institutional path dependencies, and contested governance visions [19]. Applied to higher education governance, this perspective suggests that sustainability policy coherence requires an understanding of the political dynamics that enable or constrain coherent policy design.

2.4. Decentralization, University Autonomy, and Multi-Level Governance Architectures

Decentralization has been a defining feature of higher education governance reform across national systems for at least three decades. The theoretical rationale rests on the premise that devolving decision-making authority to institutional actors enhances responsiveness, efficiency, and innovation capacity. In higher education, this logic has translated into reforms that grant universities greater autonomy over financial management, academic programming, staffing, and institutional strategy [20].

However, a recurring theme in the comparative governance literature is the paradox of centralized decentralization: the phenomenon whereby the formal expansion of institutional autonomy is accompanied by the introduction of new higher-level control mechanisms that constrain the exercise of that autonomy in practice [21,22]. Mok [23] documented that while decentralization shifted operational responsibilities from the central state to local governments and institutions, the state's role as regulator and overall service coordinator was strengthened rather than weakened. This finding challenges the assumption that decentralization necessarily diminishes state capacity and introduces a governance architecture in which the formal devolution of authority coexists with strengthened regulatory oversight.

Recent scholarship [24] has further documented the emergence of what is termed the “global model with Chinese characteristics,” in which Chinese universities have been granted substantial operational autonomy while remaining subject to strong state steering through funding conditionalities, performance metrics, and leadership appointment powers. This dual movement—toward institutional autonomy on the one hand and state-anchored governance on the other—creates a structural tension that is particularly consequential for sustainability governance because sustainability requires long-term institutional commitment, cross-sectoral coordination, and adaptive management capacity.

A growing body of research focuses specifically on the characteristics and dynamics of China's HEDRSR policies. This research stream has yielded valuable insights by examining regional policy variations [25], mapping typical policy features and element distributions through quantitative text analysis [26–28], deciphering the logic underlying policy instrument use [29], and exploring the drivers of policy innovation diffusion. Nevertheless, these studies often remain confined to isolated dimensions of the policy system, whether instruments, diffusion, or attention allocation. A significant gap persists in understanding the dynamic interaction between system goals and control levers as coupled elements of a governance architecture that shapes organizational sustainability. How overarching governance intentions guide the selection of organizational control mechanisms, and how different policy instruments work together to enable universities to develop adaptive governance capacity for sustainable transformation, remain underexplored, creating a disconnect between system design and organizational outcomes.

2.5. Systems Theory and the Analytical Framework for Governance Coherence

This study integrates two complementary theoretical traditions—policy mix scholarship and socio-technical systems theory—to analyze governance coherence in higher education reform. While both traditions address policy design and implementation, they operate at different levels of analysis and offer distinct analytical resources. Making their integration explicit is essential for understanding both the theoretical novelty of our approach and the analytical scope of our findings.

Policy mix scholarship provides the operational vocabulary for analyzing policy design. Research in this tradition typically examines dimensions such as consistency (whether instruments conflict with or reinforce one another), coherence (whether goals and instruments are logically aligned), credibility (whether policy commitments are believable to target actors), and instrument interaction (how different policy tools combine in practice) [15,16]. However, policy mix research has traditionally focused on static, design-level properties and has been less attentive to how policy designs interact with the broader organizational and institutional environments in which they are implemented.

Socio-technical systems theory complements this focus by foregrounding the dynamic relationship between formal structures and organizational practices. Originating in organizational studies [30] this tradition emphasizes the joint optimization of social and technical subsystems—a principle directly applicable to the relationship between policy instruments (the “technical” subsystem of formal rules, procedures, and control mechanisms) and actor behaviors (the “social” subsystem of institutional practices, stakeholder interpretations, and organizational routines). In the context of governance reform, socio-technical systems thinking directs attention to how policy designs are mediated, interpreted, and sometimes transformed by the institutional actors who implement them—a dynamic that policy mix scholarship, with its focus on design-level properties, often leaves implicit.

Complex adaptive systems theory provides a third theoretical pillar, offering an ontological foundation for understanding governance systems as evolving, multi-agent systems in which system-level properties emerge from decentralized interactions rather than from top-down design [31]. This perspective highlights how feedback loops, emergent behavior, and path dependence shape governance outcomes over time—dynamics that are often obscured in static analyses of policy design. Meadows’ concept of “leverage points”—places within a complex system where a small shift can lead to large changes—provides a powerful heuristic for understanding policy interventions [32]. However, it is important to distinguish our use of the term “system control levers” from Meadows’ broader concept. Meadows’ leverage points refer to fundamental system properties—such as the goals of the system, its information flows, or its governing paradigm—where strategic intervention can produce transformative change. By contrast, system control levers refer to the concrete, formal policy instruments (administrative, economic, supervisory, and facilitation measures) that governance actors deploy to shape organizational behavior. Not every policy instrument necessarily constitutes a high-leverage point in the strong systems-theoretical sense. Indeed, the finding that many instruments fail to produce coherent system-level effects suggests that they often operate at relatively low levels of leverage within the governance system. We therefore use the term “lever” in a descriptive sense—to denote the specific intervention mechanisms through which policy intentions are operationalized—rather than to imply that every instrument has transformative potential.

The integration of these traditions yields the concept of policy synergy, a term central to our analytical framework that requires careful distinction from related concepts in the

policy mix literature [33]. Policy coherence typically refers to the logical consistency between policy goals and instruments at the design level, whereas policy consistency refers to the absence of contradictions among different policy instruments. By contrast, policy synergy refers to an emergent system property: the degree to which interacting goals and instruments produce mutually reinforcing effects that generate greater governance effectiveness than the sum of their individual contributions. Whereas coherence and consistency are static, design-level attributes, synergy is a dynamic, system-level property that emerges from goal–instrument interaction over time and is shaped by the implementation context. This study empirically measures structural–functional coupling—the system-level degree of mutual support between policy goals and instruments, ranging from 0 (complete decoupling) to 1 (full coupling)—as a proxy for policy synergy, while recognizing that synergy at the level of policy design does not guarantee effective implementation.

To clarify the analytical scope of our study, we identify a conceptual pathway linking governance coherence to sustainable institutional transformation: First, Coherent governance architectures—characterized by strong goal–instrument coupling—align policy goals with implementation mechanisms, reducing organizational uncertainty and enabling strategic coordination. Second, this alignment cultivates institutional capacity—including autonomy, accountability, and adaptive governance capacity—that allows universities to respond to emerging sustainability demands. Third, this organizational capacity, in turn, supports the durable integration of sustainability into teaching, research, campus operations, and community engagement. This study empirically tests only the first stage of this model, identifying patterns of coupling and fragmentation within central policy design. Inferences to later stages are grounded in established governance theory and are presented as interpretive claims rather than empirically demonstrated causal outcomes. Figure 1 illustrates this conceptual pathway.

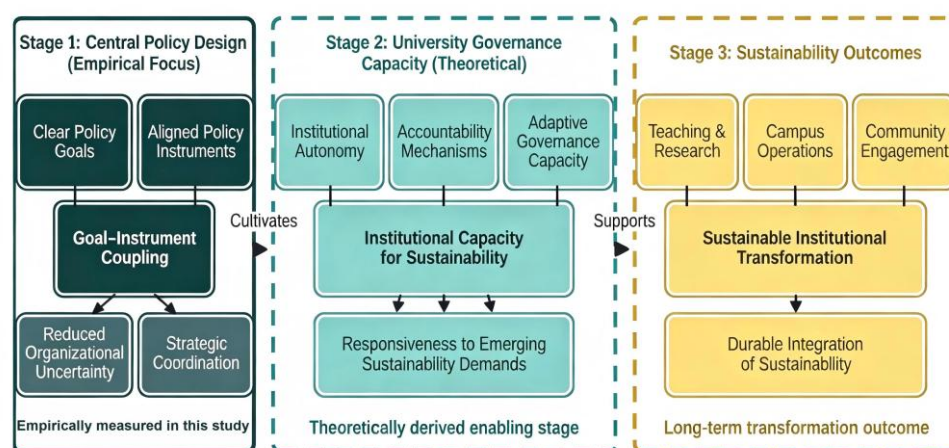


Figure 1. Conceptual Pathway from Governance Coherence to Institutional Sustainability.

This gap limits understanding of the institutional logic underlying system tensions between decentralization and recentralization, and restricts the ability to design governance architectures that can support authentic, organization-wide sustainable transformation in higher education.

3. Materials and Methods

3.1. Sample and Data

The object of analysis is the formal policy system that constitute the formal governance architecture shaping higher education organizational behavior in China. These documents represent the formal rule sets that structure the socio-technical system within which universities operate, defining actor roles, resource flows, and control mechanisms that enable or constrain institutional sustainability. This study analyzes policy design coherence at the central government level.

To ensure the transparency and reproducibility of the sample selection, a systematic search strategy was implemented. Policy documents were sourced from the official websites of the Central People's Government, the Ministry of Education, and the Ministry of Finance. The search timeframe spanned from 12 May 2015, to 31 December 2023, using the following keyword combinations: “higher education,” “delegation, regulation, and service” (fang guan fu), “streamline administration,” “delegate power,” “improve regulation,” “optimize services,” and “institutional autonomy.” Inclusion criteria: (1) the issuing body is at the central government level; (2) the policy content is directly related to HEDRSR; (3) the policy type includes opinions, plans, proposals, methods, notices, etc. [34]. Exclusion criteria: (1) policy content that is not closely related to HEDRSR; (2) policy documents that have been formally invalidated [35]. Based on these criteria, the initial search returned 225 documents; after removing duplicates ($n = 27$), excluding documents not directly related to HEDRSR ($n = 20$) and formally invalidated documents ($n = 11$), a final sample of 167 documents was included. The full policy search and screening procedure is detailed in Appendix A, and the complete list of 167 included policy documents is provided in Appendix B to ensure full reproducibility. These documents constitute the formal governance architecture of China's higher education system, defining the actor roles, resource flows, and accountability mechanisms that shape organizational behavior and policy implementation. Policy publication trends in higher education governance reform are shown in Figure 2. All retrieved policy documents were systematically screened and organized. The coding and analysis of policy texts were performed using NVivo 15 (QSR International Pty Ltd., Burlington, MA, USA) for qualitative content analysis. Descriptive statistics and data aggregation were conducted using Microsoft Excel 2021 (Microsoft Corporation, Redmond, WA, USA). No specialized equipment or additional hardware was required for this study.

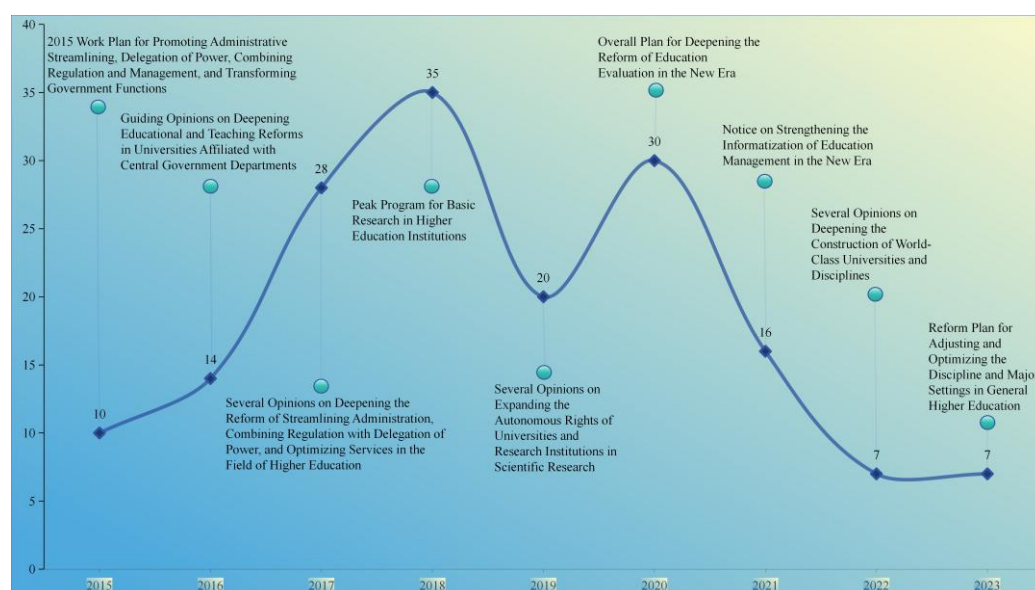


Figure 2. Policy Publication Trends in Higher Education Governance Reform (2015–2023).

Furthermore, in addition to the yearly distribution illustrated in Figure 2, Table 1 provides a systematic breakdown of the 167 policy documents by issuing body and policy type, thereby strengthening the descriptive validity of the governance architecture under investigation. The sample comprises 167 policy documents related to China’s HEDRS reform. Across the study period, the number of policy-issuing bodies increased substantially, rising from five in 2015 to 45 in 2023. The 45 participating institutions include the Central Committee of the Communist Party of China (CPC Central Committee), the State Council, the General Office of the CPC Central Committee, the General Office of the State Council, the Ministry of Education, the Ministry of Finance, the Ministry of Science and Technology, the Academic Degrees Committee of the State Council, the National Development and Reform Commission, the State Commission Office for Public Sector Reform, the Ministry of Human Resources and Social Security, the National Natural Science Foundation of China, the National Administration of Traditional Chinese Medicine, the Ministry of Industry and Information Technology, the Chinese Academy of Engineering, the National Health Commission, the Publicity Department of the CPC Central Committee, the Chinese Academy of Sciences, the Chinese Academy of Social Sciences, and the China Association for Science and Technology, among others. Policies were issued either individually or jointly by multiple agencies and were classified into five formal policy categories: guiding opinions, implementation plans, development plans, administrative measures, and official notices.

Table 1. Distribution of Issuing Bodies and Policy Types.

Issuing Mode	Issuing Body	Policy Type					Total
		Guiding Opinions	Implementation Plans	Development Plans	Administrative Measures	Notices	
Single-Agency Issuance	CPC Central Committee	2	0	0	0	0	2
	State Council	10	2	3	0	1	16
	General Office of the State Council	13	9	0	0	1	23
	Ministry of Education	21	1	3	7	4	36
	Other Single Agencies	6	1	2	6	4	20
	Subtotal	52	13	8	13	11	97
Multi-Agency Joint Issuance	2 Agencies	26	4	3	5	3	41
	3 Agencies	8	1	0	3	1	13
	4 Agencies	1	1	0	0	1	3
	5 Agencies	1	1	1	0	1	4
	6 Agencies	4	0	0	0	0	4
	7 Agencies	1	0	0	0	0	1
	8 Agencies	1	0	0	0	0	1
	9 Agencies	0	1	0	0	0	1
	10+ Agencies	0	1	1	0	0	2
	Subtotal	42	9	5	8	6	70
Total		94	22	13	21	17	167

The unit of analysis for this empirical study is the formal central government policy system for higher education governance in China during 2015–2023. All empirical analyses are based exclusively on central government policy documents. Accordingly, this study does not directly examine provincial policy implementation, universities' internal organizational practices, actor negotiation processes, or on-the-ground sustainability outcomes. References to university autonomy, institutional resilience, and adaptive governance capacity are interpreted as theoretically derived enabling conditions associated with coherent policy design, rather than as directly measured organizational outcomes.

3.2. Construction of the Socio-Technical System Analytical Framework

To operationalize the governance system for empirical analysis, we develop a dual-dimensional analytical framework that treats policy objectives as system goals (state variables) and policy instruments as system control levers (intervention mechanisms). This framework integrates policy mix theory with socio-technical systems thinking to examine how governance intentions are translated into policy interventions. The dual-dimensional framework for assessing governance goal–lever coupling in higher education is illustrated in Figure 3.

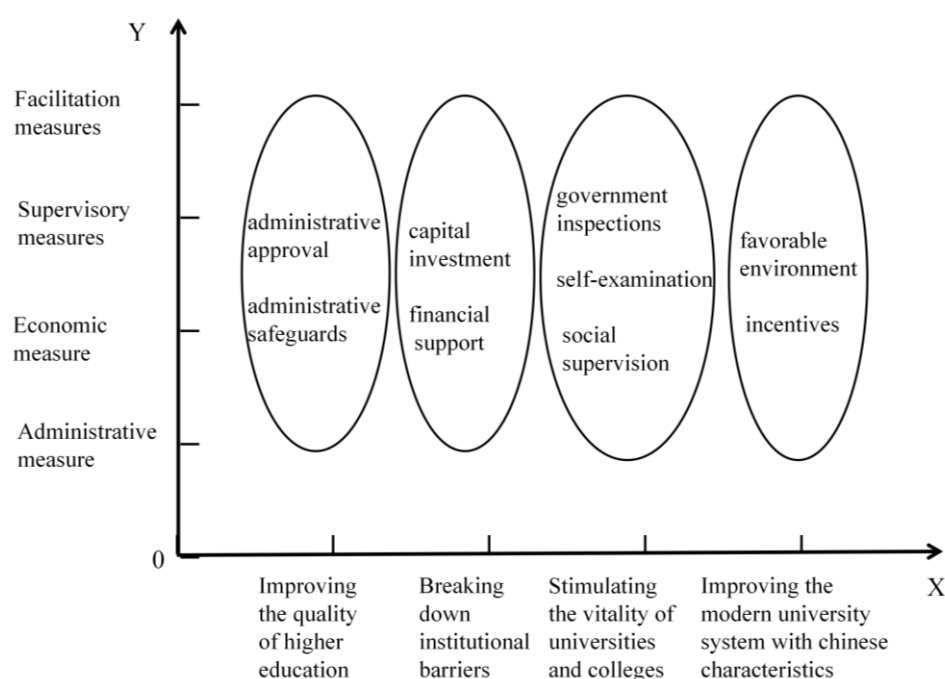


Figure 3. Dual-Dimensional Framework for Assessing Governance Goal-Lever Coupling in Higher Education.

3.2.1. X-Dimension: System Goals

System goals refer to the specific expectations and objectives that a country or government seeks to achieve through policy formulation and implementation [36]. In systems terms, these goals represent the desired state variables of the governance system. From an organizational sustainability perspective, these goals represent intended transformation outcomes that, when coherently supported by control mechanisms, enable universities to develop adaptive governance capacity.

The four system goal categories—Improving the Quality of Higher Education (IQ), Breaking Down Institutional Barriers (BD), Stimulating the Vitality of Universities and Colleges (SV), and Improving the Modern University System with Chinese Characteristics

(IM)—were derived through an integrated deductive–inductive procedure. The deductive framework drew upon the goal typology established in Li’s [27] study of China’s HEDRSR, which provided the foundational category structure. Building on this theoretical foundation, we conducted an inductive coding process using 30 randomly selected policy documents to validate and refine the categories based on the actual policy language. Candidate categories were discussed, merged, or excluded through two rounds of deliberation among the research team. The final four categories achieved saturation, with no new goal themes emerging from the remaining policy texts. A supplementary table containing representative policy clauses for each goal is provided in Table 2.

Table 2. Representative Policy Examples for System Goal Categories.

System Goal	Representative Policy Content	Policy Title
IQ	After five years of effort, develop a group of Marxist journalism education bases, build a batch of world-class journalism programs with Chinese characteristics, form an all-media compound journalism talent training system aligned with journalism communication laws and talent development rules, train a large cohort of outstanding journalism talents adapted to media integration and industry innovation, who can tell China’s stories well and spread China’s voice.	Opinions on Implementing the Excellent Journalism Talent Education and Training Plan 2.0 to Improve the Quality of Journalism Talent Training in Universities
BD	Effectively reverse the “paper-only” misorientation in current university philosophy and social science research evaluation, establish academic norms and evaluation systems for philosophy and social sciences with Chinese characteristics, fully improve academic ecology, continuously improve research quality, and promote universities to accelerate the construction of philosophy and social sciences with Chinese characteristics.	Several Opinions on Eliminating the Bad Orientation of “Paper-only” in University Philosophy and Social Science Research Evaluation
SV	Further implement university autonomy, strengthen supervision after the delegation of professional title review authority to universities, stimulate teachers’ enthusiasm and creativity in teaching and educating, and promote the emergence of outstanding talents.	Interim Measures for the Supervision and Administration of University Professional Title Review
IM	Uphold and improve the socialist education system with Chinese characteristics, promote the modernization of university governance systems and governance capacity, further strengthen the rule of law in higher education institutions, and fully advance law-based education, law-based school running, and law-based university governance.	Opinions of the Ministry of Education on Further Strengthening the Rule of Law in Higher Education Institutions

3.2.2. Y-Dimension: System Control Levers

System control levers are the means or methods used to accomplish policy objectives. These include concrete operational approaches, institutional arrangements, or resource allocation strategies [37]. Conceptualized as system control levers, they represent the intervention mechanisms through which policymakers attempt to guide the governance system toward desired states. From an organizational sustainability perspective, the coherent deployment of these levers influences whether governance reforms support universities in developing adaptive governance capacity or merely produce temporary perturbations that leave institutional foundations unchanged.

From the perspective of operational methods, HEDRSR system control levers are grouped into four categories: Administrative Measures (AM), Economic Measures (EM), Supervisory Measures (SM), and Facilitation Measures (FM). The four control lever categories were adopted from Zhang’s [38] policy instrument typology, which has been

widely applied in Chinese higher education policy analysis. Following Zhang’s framework, AM refers to direct regulatory interventions that prescribe mandatory behaviors, including approval procedures, administrative orders, and rule-setting. EM encompasses financial instruments such as funding allocations, subsidies, and performance-based incentives. SM includes monitoring, inspection, evaluation, and accountability mechanisms. FM covers information provision, capacity-building, guidance, and voluntary standards that shape behavior through normative influence rather than coercion.

While the four categories are conceptually distinct, we acknowledge that some policy provisions may exhibit functional overlap. For instance, approval processes with embedded monitoring requirements were coded as both administrative and supervisory levers; performance-based funding was coded as both economic and supervisory levers; and digital service platforms were coded as both facilitation and administrative levers. In such borderline cases, the coding protocol permitted multiple coding of the same clause across different lever categories, provided that the clause explicitly addressed distinct functions. To account for the dependence among observations arising from multiple coding, each coded reference point was treated as an independent unit of analysis for frequency and synergy calculations. Accordingly, the total number of coded reference points reflects the number of coded functions rather than the number of unique policy clauses. A table containing representative policy clauses for each lever is provided in Table 3.

Table 3. Representative Policy Examples for System Control Lever Categories.

System Control Lever	Representative Policy Content	Policy Title
AM	The Ministry of Education authorizes affiliated universities to take charge of the record-filing of scientific and technological achievements asset evaluation. Universities shall formulate their own asset evaluation record-filing systems for scientific and technological achievements in accordance with relevant regulations of the Ministry of Education and Ministry of Finance, optimize filing procedures, and effectively complete record-filing work.	Notice of the General Office of the Ministry of Education on Further Promoting the Implementation of Policies Related to the Transformation of Scientific and Technological Achievements in Universities
EM	Education administrative departments at all levels shall increase investment, set up special funds, improve the funding system, and ensure the steady growth of education and research funding within the budget. Explore the establishment of a diversified, multi-channel, multi-level investment system, and improve the competitive funding and stable funding coordination mechanism.	Opinions on Strengthening Educational Scientific Research Work in the New Era
SM	Strengthen the supervision and assessment of ideological and political work in universities, and increase accountability for dereliction of duty. Implement the system of secretaries of universities, colleges, and grassroots party organizations reporting on their performance in party building and ideological and political work, and incorporate it into party discipline supervision and inspection.	Opinions of Eight Ministries including the Ministry of Education on Accelerating the Construction of the Ideological and Political Work System in Universities
FM	Increase the weight of teachers’ teaching performance in on-campus performance distribution, professional title evaluation, and post promotion, to fully mobilize teachers’ enthusiasm for engaging in education and teaching work.	Guiding Opinions of the Ministry of Education on Deepening the Reform of Teacher Assessment and Evaluation in Universities

3.3. Measures

Each system goal was assigned a score ranging from 5 to 1 according to the level of government emphasis and the clarity of the proposed measures [39]. The scoring criteria for system goals are presented in Table 4, together with an illustrative policy example coded under the IQ category. Similarly, each system control lever was scored on a five-point scale (5–1) according to its specificity and implementation intensity [40]. The corresponding scoring criteria are presented in Table 5, together with an illustrative policy example coded under the AM category. These scores operationalize the intensity of system goal articulation and system control lever deployment. Drawing on the relevant literature and expert consultation, the measurement of system goals and system control levers was further refined by incorporating policy strength scores [41]. Policy strength evaluates the legal authority of a policy and reflects the intensity of its expected influence within the governance system hierarchy. The scoring criteria for policy strength are presented in Table 6.

Table 4. Scoring Criteria and Coding Examples for System Goal.

Indicator Scores	Scoring Criterion	Example of IQ Coding
5	Strong emphasis on goal achievement, with clear implementation requirements and detailed provisions on all aspects of the goal.	By 2025, adjust the layout of about 20% of university programs, establish a batch of new programs adapted to new technologies, new industries, new business forms, and new models, and eliminate programs not adapted to economic and social development; further increase the proportion of basic science programs, build about 10,000 national first-class programs and 300 basic science talent training bases; form a large number of distinctive program clusters, build a number of future technology colleges, modern industry colleges, high-level public health colleges, and outstanding engineer colleges, and significantly improve independent talent training capacity. By 2035, the structure of higher education programs will be more coordinated, the mechanism for adjusting programs will be more complete, a high-level independent talent training system will be formed, strongly support the construction of first-class talent teams and first-class university system, realize high-quality higher education development, and build a strong higher education system.
4	Emphasis on goal achievement, with clear strategic positioning and implementation requirements, and further explanation of the goal.	By 2027, improve the long-term mechanism conducive to the classified development and integrated training of two types of postgraduate degrees, form a pattern where academic and professional degree postgraduate education have distinct characteristics and develop in parallel, further improve the training quality of academic innovation talents and practice-oriented talents, continuously improve the governance system and governance capacity of degree and postgraduate education, and significantly enhance the ability of postgraduate education to support the construction of a powerful country in science and technology.
3	Attention to goal achievement, with a certain degree of explanation, but no mandatory implementation requirements.	Train a batch of compound talents specialized in scientific and technological achievement transfer, build a number of specialized service institutions, expand channels for scientific and technological achievement transfer and transformation, and promote the construction of industrial technology innovation alliances and scientific and technological achievement transfer platforms.
2	Mentions goal achievement, with limited explanation of the goal.	Promote “Double First-Class” universities to focus on building artificial intelligence talent training systems that catch up with world advanced

		levels, and accelerate the training of high-level talents who can pioneer in “no-man’s land” fields.
1	Only mentions relevant policy goals or related keywords, without further explanation.	Strengthen the selection and training of top-notch innovative talents.

Table 5. Scoring Criteria and Coding Examples for System Control Levers.

Indicator Scores	Scoring Criterion	Example of AM Coding
5	Implementation plan is detailed, implementation attitude is clear, responsible entities are clearly defined, with high operability and strong practical guiding significance	Deepen the reform of educational administrative approval. Establish lists of educational administrative powers and responsibilities, fully disclose the functions, legal basis, implementation entities, authority, management processes, and supervision methods of education and relevant government departments. Reduce educational administrative approval items, simplify procedures for retained approvals, strengthen information disclosure to facilitate grassroots and public services. Strengthen in-process and post-process supervision. Strictly control project reviews, education evaluations, and talent assessments for all types of schools at all levels, and strengthen service functions.
4	Implementation plan is relatively detailed, implementation attitude is proactive, with operability and practical guiding significance.	For projects invested by central universities and research institutes using their own funds without applying for government investment, central universities and research institutes shall make independent decisions and report to competent departments for record, no longer requiring administrative approval. The National Development and Reform Commission and competent departments of central universities and research institutes shall strengthen guidance, supervision and inspection of capital construction projects of central universities and research institutes.
3	Contains multiple relevant explanations, but no detailed implementation plan, with clear implementation attitude.	Allow researchers from eligible universities and research institutes, with approval from their institutions, to engage in innovation work or start enterprises while retaining their positions and basic benefits, with their research projects and achievements.
2	Indicates the use of relevant instruments, with brief relevant explanations, but no implementation plan.	Support postdoctoral researchers to initiate the establishment of academic social organizations and build academic exchange platforms.
1	Only mentions relevant clauses or keywords, without corresponding explanations.	Universities shall independently set up and adjust their programs in accordance with relevant regulations.

Table 6. Scoring Criteria for Policy Strength.

Indicator Scores	Policy Strength
5	Laws promulgated by the National People’s Congress and its Standing Committee
4	Regulations and provisions promulgated by the Central Committee of the Communist Party of China and the State Council
3	Plans, programs, opinions, and notices issued by the Central Committee of the Communist Party of China and the State Council
2	Plans, methods, programs, opinions, and notices issued by various ministries and commissions
1	Plans, programs, opinions, and notices issued by subordinate agencies of various ministries

Using the selected policy sample, NVivo 15 qualitative analysis software was employed to conduct a content analysis of 167 HEDRSR policy documents. A deductive coding approach was used to categorize each policy document according to the predefined analytical framework. Each policy clause was treated as the unit of analysis and coded according to the predefined criteria for system goals, system control levers, and policy strength. This process identified the key governance elements embedded in the policy documents. Analysis units meeting the coding criteria were coded according to the document structure using the format “policy number–chapter number–clause serial number” [42]. Table 7 presents an example of the coding process for selected policy texts.

Table 7. Example of policy synergy coding.

Policy Number	Policy Title	Policy Content	Coding
1	2015 Work Plan for Advancing Streamlining Administration, Delegating Power, and Combining Supervision with Service Reform in Government Functions	Properly implement the cancellation and decentralization of administrative approval matters in the fields of education, science, culture, health, and sports. Each item should be examined to address behaviors such as interception, disguised approval, arbitrary new additions, or unclear reductions, and necessary corrections should be made.	1-2-6
.....			
32	Opinions on Deepening the Reform of Streamlining Administration, Delegating Power, and Combining Supervision with Service Optimization in the Field of Higher Education	Further decentralize authority to local governments and universities, alleviate burdens, simplify unnecessary processes, and grant universities greater autonomy in school management. This will stimulate the enthusiasm and initiative of teaching and research staff to educate and innovate.	32-1-2
.....			

Note: The ellipsis “.....” in this table stands for unlisted intermediate policy coding entries, and this table only displays partial coding examples for illustration.

To enhance the rigor of reliability reporting, both percentage agreement and chance-corrected agreement statistics were calculated. During the preliminary scoring calibration, three doctoral students independently coded 30 randomly selected policy documents over three rounds. After each round, Cohen’s kappa was calculated for pairwise inter-coder agreement, and Fleiss’ kappa was calculated for agreement among all three coders. In the final round, Fleiss’ kappa values reached 0.82 for system goal coding, 0.79 for system control lever coding, and 0.84 for policy strength scoring, indicating substantial to almost perfect agreement. For the final independent reliability assessment, 10% of the analysis units were randomly selected and independently coded by two public policy experts with more than five years of research experience in higher education governance who had not participated in the development of the coding framework or the primary coding process. Percentage agreement was 89%, 91%, and 87% for system goals, system control levers, and policy strength, respectively. The corresponding Cohen’s kappa values were 0.84, 0.86, and 0.82, indicating almost perfect inter-rater reliability. Initial disagreements were first resolved through consensus discussion between the two coders. Any remaining discrepancies were adjudicated by a third senior public policy expert, who made the final coding decision. The reported “consistency rate” of 85% refers to exact score agreement, defined as identical coding of both category assignment and ordinal score, and calculated as the number of agreements divided by the total number of coding decisions. The three experts were associate professors and professors specializing in higher education governance and public policy analysis, with 5–15 years of research experience in Chinese higher education

reform. The three doctoral students were PhD candidates in public policy and higher education who had received prior training in qualitative content analysis.

3.4. Model Construction

3.4.1. Model

We processed the coded scores to calculate goal–lever system coupling as follows. Drawing on Zhang et al. [43] and fuzzy systems theory, which is particularly suited to analyzing governance systems characterized by ambiguity, vague boundaries, and gradual transitions, we used the 2015 IQ–AM goal–lever pair as an illustrative example, where IQ is denoted as element e and AM as element f .

First, we calculated annual weighted values for system goals and system control levers. Policies issued by higher-level authorities generally have broader jurisdictional scope and greater hierarchical authority, but often contain less detailed operational provisions; by contrast, policies issued by lower-level authorities have narrower scope and less formal authority, but typically include more specific, actionable goals and implementation instruments. Weighting raw content scores by policy strength therefore produces more valid annual estimates, as specified in Equation (1), where TG_i denotes the annual weighted value for element e or f in year i .

For illustration, the Implementation Opinions of the General Office of the State Council on Deepening Innovation and Entrepreneurship Education Reform in Higher Education Institutions, issued in 2015, received a raw content score of 8 for goal e (IQ) according to the scoring criteria in Table 4. According to the policy strength criteria presented in Table 6, this State Council document received a policy strength score of 2, yielding a weighted score of $8 \times 2 = 16$. Weighted scores were calculated for all policies referencing element e in 2015, and these values were summed to obtain an annual weighted value of $TG_i = 88$ for e in 2015. The same procedure for element f (AM) produced an annual value, $TG_i = 850$ for 2015. In Equation (1), pl_j denotes the hierarchical strength score of policy j , and pm_j denotes the raw content score for element e or f in policy j .

$$TG_i = \sum_{j=1}^N pl_j \times pm_j \quad i \in [2015, 2023] \quad (1)$$

Second, policy synergy is not a simple linear relationship, but is characterized by fuzziness and dynamism—properties that membership functions in fuzzy set theory are well suited to capture. Therefore, we used fuzzy membership functions to calculate the state coordination degree of HEDRSR policies, as specified in Equation (2), where $u(e/f)$ denotes the one-way coordination degree of element e relative to element f .

For the 2015 IQ–AM pair, the observed TG_i for goal e was 88, calculated as above. TG'_i denotes the predicted value of element e , and S^2 denotes the variance of annual TG_i values for e across the 2015–2023 study period. To calculate TG'_i , we treated lever f as the independent variable x and goal e as the dependent variable y , and fit an ordinary least squares regression $y = \alpha + \beta x$ using annual values for e and f , producing fitted coefficients $\beta = 0.042$ and $\alpha = 26.257$. Substituting the 2015 annual value of f (850) into the regression equation produces a predicted value $TG'_i = 1289.246$ for e in 2015. The variance S^2 for goal e was calculated using the sample variance formula (Excel VAR.S function) on annual values of goal e across the 2015–2023 study period, yielding a value of 1520.528. Closer alignment between the observed TG_i and predicted TG'_i indicates higher coordination between the two elements. The coordination degree of f relative to e , $u(f/e)$, is calculated using the identical procedure. For the 2015 IM–AM pair, $u(e/f) = 0.640$ and $u(f/e) = 0.634$.

$$u(e/f) = \exp \left[-\frac{(TG_i - TG'_i)^2}{S^2} \right] \quad i \in [2015, 2023] \quad (2)$$

To calculate the final structural-functional coupling degree between goal e and lever f , we combined the two directional coordination values as specified in Equation (3). In this equation, $U(e/f)$ denotes the final coupling degree between HEDRS system goal e and lever f ; closer values of $u(e/f)$ and $u(f/e)$ indicate stronger mutual coordination and higher system coupling. For the 2015 IQ–AM pair, the final coupling value $U(e/f) = 0.991$

Drawing on Zhou's (2018) [44] study of policy synergy measurement, we adopt the conventional partitioning of synergy values into three intervals: $[0, 0.4]$ for low coupling, $(0.4, 0.7]$ for moderate coupling, and $(0.7, 1]$ for high coupling. These thresholds are not arbitrary but reflect both theoretical and empirical considerations. Theoretically, a coupling degree below 0.4 indicates that the two system elements exert minimal mutual influence, suggesting functional independence or even misalignment—a condition we interpret as governance decoupling, which may constrain effective policy coordination. A coupling degree between 0.4 and 0.7 represents moderate interdependence, where system elements exhibit some coordination but lack the systemic coherence required for sustained organizational transformation. A coupling degree above 0.7 indicates strong mutual reinforcement, where goals and levers form integrated configurations capable of enabling universities to develop self-regulating governance capacity.

$$U(e/f) = \min\{u(e/f), u(f/e)\} / \max\{u(e/f), u(f/e)\} \quad i \in [2015, 2023] \quad (3)$$

3.4.2. Sensitivity Check for Coupling Thresholds

Given that several observations in our analysis were located near the category boundaries of the coupling classification (i.e., close to 0.4 or 0.7), we conducted a sensitivity analysis to examine whether the principal conclusions were robust under slightly different cut-off values. Specifically, the boundary values were systematically adjusted by ± 0.05 around the original thresholds: the lower boundary (0.4) was adjusted to 0.35 and 0.45, and the upper boundary (0.7) was adjusted to 0.65 and 0.75. This produced four alternative classification scenarios in addition to the baseline specification.

For each scenario, all goal–lever–year observations were reclassified, and we examined whether the overall diagnostic patterns—particularly the identification of declining structural–functional coupling between governance goals and system control levers, and the classification of specific goal–lever pairs as low, moderate, or high coupling—remained unchanged.

The results of the sensitivity analysis are summarized in Table 8. Across all alternative scenarios, fewer than 8% of the observations were reclassified into different coupling categories. More importantly, the principal findings were robust across all threshold specifications. Specifically, (1) the declining trend in IQ–AM and IQ–EM coupling was consistently observed; (2) the strong and stable coupling between IM and all four control levers was reproduced in every scenario; and (3) the volatile coupling patterns of SV–EM and BD–EM remained identifiable as distinctive system challenges. Classification stability was particularly high for observations located well within the moderate or high coupling ranges. Reclassification occurred only for observations with coupling values within ± 0.05 of the original thresholds, which is consistent with the inherent fuzziness of ordinal classification.

We therefore conclude that the findings are robust to reasonable variations in the selected cut-off values and that the proposed diagnostic framework provides a reliable basis for assessing policy coherence in higher education reform.

Table 8. Sensitivity Check Results for Alternative Coupling Thresholds.

Threshold Scenario	Lower Boundary	Upper Boundary	% of Observations Reclassified	Principal Conclusions Stable?
Original	0.4	0.7	—	Yes
Scenario 1	0.35	0.65	7.2%	Yes
Scenario 2	0.35	0.75	6.8%	Yes
Scenario 3	0.45	0.65	7.6%	Yes
Scenario 4	0.45	0.75	5.9%	Yes

4. Results

4.1. Single-Dimensional Analysis: Emergent Properties of System Goals and Levers

To assess the potential influence of annual variation in policy volume and coded reference points, two robustness checks were performed. First, annual goal and lever scores were normalized by the total number of coded reference points within each category for each year to avoid inflated scores in years with higher policy output. Second, all coupling values were re-estimated after excluding category–year combinations with fewer than 10 coded reference points (i.e., categories receiving limited policy attention in a given year, including the zero-observation goal categories in 2022–2023). The core temporal patterns remained robust across both model specifications. Specifically, the analysis consistently showed (1) an overall decline in structural–functional coupling over the study period; (2) pronounced variability in goal–lever pairs associated with stimulating university vitality; and (3) consistently high coupling in goal–lever pairs related to improving the modern university system with Chinese Characteristics. These results indicate that the observed patterns are unlikely to be driven by small annual sample sizes. The annual numbers of coded reference points for each goal and lever category are reported in Tables 9 and 10.

Table 9. Annual Distribution of Coded Reference Points and Adjusted Values for System Goals.

Year	IQ	BD	SV	IM
2015	8 (88)	2 (37)	3 (40)	1 (21)
2016	9 (92)	7 (45)	6 (80)	2 (22)
2017	15 (117)	4 (32)	9 (32)	6 (60)
2018	17 (140)	8 (60)	7 (31)	7 (52)
2019	7 (38)	5 (32)	6 (22)	3 (21)
2020	13 (72)	10 (63)	7 (34)	6 (36)
2021	6 (31)	5 (16)	3 (12)	3 (28)
2022	7 (32)	0 (0)	0 (0)	0 (0)
2023	7 (51)	0 (0)	0 (0)	0 (0)

Note: For entries formatted as “X (Y)” (e.g., “8 (88)” for the IQ goal category in 2015), X represents the number of coded reference points, and Y represents the weighted annual score for that goal category in the given year.

Table 10. Annual Distribution of Coded Reference Points and Adjusted Values for System Control Levers.

Year	AM	EM	SM	FM
2015	58 (850)	11 (579)	6 (447)	24 (784)
2016	84 (1016)	4 (343)	12 (874)	21 (690)
2017	147 (1646)	8 (788)	47 (1382)	14 (1132)
2018	155 (2072)	18 (730)	38 (1557)	27 (1353)
2019	86 (1174)	4 (278)	28 (962)	23 (957)

2020	128 (1910)	10 (468)	35 (1080)	30 (1078)
2021	65 (837)	10 (418)	19 (586)	15 (528)
2022	21 (281)	5 (251)	4 (122)	9 (251)
2023	36 (276)	1 (20)	2 (46)	6 (218)

Note: For entries formatted as “X (Y)” (e.g., “58 (850)” for the AM lever category in 2015), X represents the number of coded reference points, and Y represents the weighted annual score for that lever category in the given year.

Several near-zero coupling values appear across the study period, particularly for pairs involving the SV goal in 2016, and for pairs involving BD, SV, and IM in 2022–2023. These extremely low values are not attributable to computational artifacts or policy conflict; rather, they correspond to periods in which few or no centrally issued policy clauses addressed these specific goal–lever combinations. For 2016, the near-zero coupling values coincide with a limited number of coordinated policy clauses linking the SV goal with supporting policy instruments during the early stage of reform implementation, when policy documents primarily emphasized administrative decentralization associated with the BD goal. After 2017, as additional policy provisions addressing the SV goal and related policy instruments were issued, the corresponding coupling values increased. For 2022–2023, the zero coupling values coincide with the absence of newly issued central policy clauses addressing the BD, SV, and IM goals. During the same period, newly issued central policies were concentrated primarily on Improving the Quality of Higher Education (IQ), corresponding to the observed shift in coupling patterns.

4.1.1. X-Dimension: System Goal Synergy Analysis

By examining the synergy among system goals, it becomes clear that their interactions do not follow a simple linear pattern but instead exhibit emergent characteristics that reflect changes in policy priorities and the evolving configuration of the governance system. These patterns provide insight into the temporal evolution of goal interactions during the reform period. The system goal synergy results and temporal trends are presented in Figure 4.

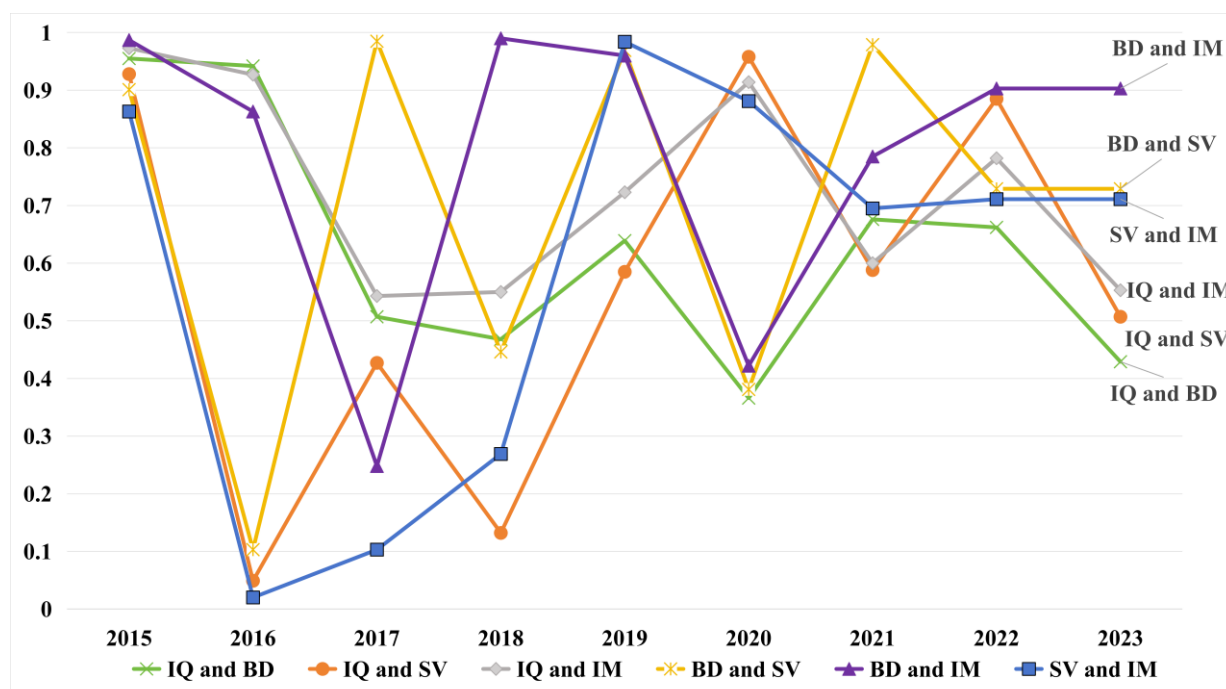


Figure 4. System Goal Synergy Trends in HEDRSR. Note: The y-axis ranges from 0 to 1, with higher values indicating stronger synergy and mutual support across policy goals. Coupling thresholds are defined as: 0–0.4 = low coupling (fragmented, conflicting goals), 0.4–0.7 = moderate coupling (partial goal alignment), 0.7–1.0 = high coupling (coherent, mutually supportive goals).

1. Divergence of Synergy Paths and Phase-Specific Shifts in System Focus

The combination of IQ and BD represents two central policy goals of higher education decentralization reform. At the launch of HEDRSR in 2015, the IQ–BD pair exhibited high synergy (0.89). However, this synergy declined steadily during the later stages of the reform, reaching 0.52 in 2023. The decline coincided with a shift in central policy emphasis after 2017. To strengthen talent cultivation and enhance the competitiveness of higher education, the central government issued a series of major policy documents, including the Guiding Opinions on Accelerating the Development of High-Level Talents in Universities Directly Affiliated with the Central Government, Several Opinions on Deepening Industry–Education Integration, and Guiding Opinions on Establishing a Linkage Mechanism among Employment, Enrollment Quotas, and Talent Cultivation in Universities. The 2018 National Education Conference further elevated talent cultivation as a central policy priority. During this period, newly issued policies focused predominantly on improving talent cultivation capacity and promoting the connotative development of higher education, whereas relatively fewer policy provisions addressed institutional and structural barriers. This change in policy emphasis corresponded to the observed decline in synergy between the IQ and BD goals.

2. Fluctuating Synergy Between Institutional Empowerment and Rule-Based Governance

The combination of SV and IM exhibited substantial fluctuations in synergy over the study period, with the lowest value (0.31) occurring in 2016–2017, when policy attention was concentrated more heavily on one goal than the other. For example, the 2016 Action Plan for Promoting the Transfer and Transformation of Higher Education Scientific and Technological Achievements and the 2017 Proposal on Deepening the Reform of the Science and Technology Award System placed strong emphasis on the SV goal, particularly on enhancing research vitality, whereas relatively fewer policy provisions addressed the IM goal, resulting in lower synergy between the two goals. In 2020, the central government issued the Opinions on Further Strengthening the Rule of Law in Higher Education Institutions. This policy emphasized both standardizing administrative authority and delegating greater operational autonomy to universities, corresponding to improved alignment between the SV and IM goals and an increase in their synergy.

4.1.2. Y-Dimension: System Control Lever Synergy Analysis

The synergy analysis of system control lever combinations reveals dynamic interaction patterns among different intervention mechanisms as the reform environment evolved. These patterns illustrate how relationships among system control levers changed over the course of higher education decentralization reform. The system control lever synergy results and temporal trends are presented in Figure 5.

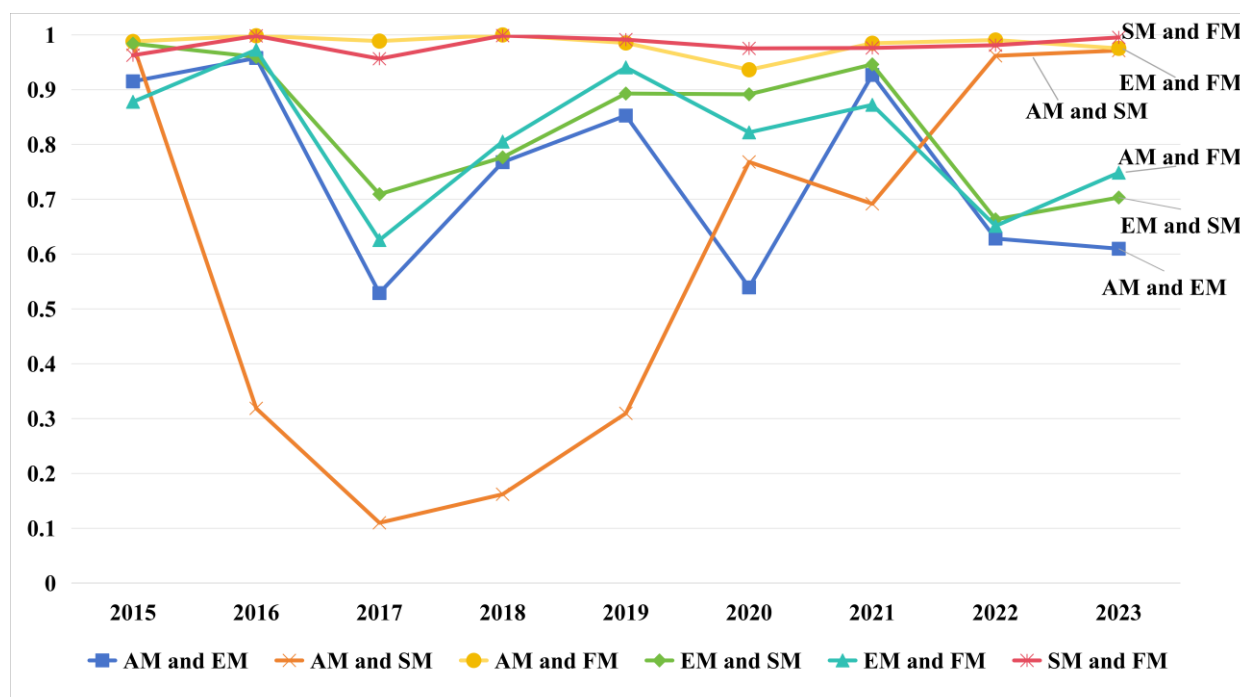


Figure 5. System Lever Synergy Trends in HEDRSR. Note: The y-axis ranges from 0 to 1, with higher values indicating stronger synergy and coordination across policy instruments. Coupling thresholds are defined as: 0–0.4 = low coupling (fragmented, conflicting instruments), 0.4–0.7 = moderate coupling (partial instrument coordination), 0.7–1.0 = high coupling (coherent, mutually reinforcing instruments).

1. Stable High Synergy of Hard-Soft Lever Pairs: AM-FM and SM-FM

The combinations of AM with FM and SM with FM exhibited consistently high synergy, remaining within the high coupling range (>0.9) throughout 2015–2023. This sustained high synergy reflects the complementary deployment of these intervention mechanisms: administrative and supervisory levers provide binding institutional requirements, whereas facilitation levers provide supportive policy guidance, resulting in consistently coordinated use across the reform period.

2. Dynamic Balance Between Administrative Delegation and Supervisory Alignment: AM-SM

Synergy between AM, particularly those related to the delegation of authority, and SM exhibited substantial variation, ranging from 0.21 in 2016 to 0.98 in 2019. Coupling values remained in the low coupling range during 2016–2019 and in the high coupling range throughout the remaining years. This period of low coupling coincided with an imbalance in the policy emphasis during the early stage of reform implementation. Although integrating delegation with appropriate regulation was identified as a core principle of the HEDRS reform, the State Council's 13th Five-Year Plan for National Education Development (2017) placed greater emphasis on expanding university autonomy, including provisions for establishing inter-agency consultation mechanisms to advance institutional autonomy. During this period, a large number of policies focused on administrative streamlining and the delegation of authority, whereas relatively fewer policy provisions addressed supervisory mechanisms, corresponding to lower coupling between the AM and SM levers. After 2017, several policies strengthening supervisory mechanisms were introduced, including the Guiding Opinions of the State Council on Strengthening and Standardizing In-Process and Ex-Post Supervision (2019) and the Opinions on Deepening the Reform of the Educational Supervision System in the New Era (2020). These policies

required education administrative departments at all levels to regularly publish reform progress and implementation updates. During this 4period, increased attention to supervisory mechanisms corresponded to the recovery of coupling between the administrative and supervisory levers.

3. Leverage Effect of EM: Volatile Coupling

Synergy between EM and the other system control levers exhibited considerable variation (coefficient of variation: 0.42). In 2015 and 2017–2018, economic investment directly supported reform objectives, resulting in high synergy with the AM and FM levers (synergy > 0.85). However, in 2022, investment in the “Double First-Class” initiative increased substantially following the release of the Opinions on Further Promoting the Construction of World-Class Universities and First-Class Disciplines and the announcement of the second-round “Double First-Class” construction list. During this period, a large proportion of new economic policy instruments was directed toward earmarked funding for “Double First-Class” universities, whereas the corresponding administrative and facilitation levers remained broadly applicable rather than specifically aligned with these initiatives. This shift in policy emphasis corresponded to lower synergy between EM and the other system control levers, with the coupling value declining to 0.44.

4.2. XY Two-Dimensional Cross Analysis: Structural–Functional Coupling

By cross-analyzing system goals and system control levers, the results illustrate the degree of structural–functional coupling between governance objectives and the policy instruments implemented in HEDRSR. Table 11 presents the annual structural–functional coupling values for all 16 goal–lever pairs, together with summary statistics, including the mean, standard deviation, coefficient of variation, and change scores (2015–2023), to highlight temporal patterns.

Table 11. Annual Structural–Functional Coupling Between System Goals and System Control Levers in HEDRSR.

Goal-Lever Pair	2015	2016	2017	2018	2019	2020	2021	2022	2023	SD	CV	Change
IQ–AM	0.991	0.898	0.736	0.670	0.670	0.466	0.609	0.768	0.509	0.158	0.229	−0.482
IQ–EM	0.910	0.963	0.691	0.571	0.839	0.991	0.619	0.790	0.362	0.201	0.277	−0.548
IQ–SM	0.882	0.911	0.982	0.700	0.720	0.862	0.615	0.810	0.466	0.154	0.203	−0.416
IQ–FM	0.939	0.923	0.822	0.705	0.750	0.767	0.697	0.741	0.462	0.137	0.181	−0.447
BD–AM	0.956	0.967	0.918	0.885	0.998	0.946	0.934	0.949	0.953	0.033	0.035	−0.003
BD–EM	0.827	0.809	0.277	0.990	0.787	0.337	0.753	0.442	0.560	0.252	0.388	−0.267
BD–SM	0.891	0.890	0.618	0.801	0.955	0.571	0.899	0.898	0.975	0.145	0.175	+0.084
BD–FM	0.989	0.938	0.828	0.859	0.954	0.740	0.984	0.974	0.971	0.087	0.095	−0.018
SV–AM	0.919	0.021	0.588	0.165	0.97	0.303	0.833	0.744	0.732	0.335	0.570	−0.187
SV–EM	0.894	0.022	0.158	0.274	0.748	0.968	0.692	0.517	0.262	0.332	0.659	−0.632
SV–SM	0.876	0.030	0.377	0.192	0.962	0.821	0.800	0.808	0.599	0.323	0.549	−0.277
SV–FM	0.813	0.025	0.527	0.177	0.877	0.655	0.985	0.677	0.562	0.307	0.532	−0.251
IM–AM	0.982	0.995	0.660	0.882	0.99	0.766	0.967	0.991	0.995	0.116	0.127	+0.013
IM–EM	0.941	0.986	0.911	0.996	0.945	0.965	0.999	0.813	0.811	0.070	0.075	−0.130
IM–SM	0.954	0.996	0.824	0.915	0.995	0.985	0.980	0.983	0.963	0.055	0.058	+0.009
IM–FM	0.987	1	0.668	0.877	0.964	0.920	0.923	0.982	0.935	0.110	0.120	−0.052

1. IQ and System Control Lever Combinations

IQ exhibited consistently strong synergy with the SM and FM levers. However, the overall synergy between the IQ goal and the system control levers declined over the study period.

2. BD and System Control Lever Combinations

BD with AM and FM shows consistently strong synergy. In contrast, synergy between BD and EM or SM is more volatile.

3. SV and System Control Lever Combinations

Synergy between SV and system levers shows instability. At different stages, lever design deviates from the requirement of expanding university autonomy.

4. IM and System Control Lever Combinations

Synergy between IM and system levers is the strongest, with AM, EM, SM, and FM working together in a stable manner.

To facilitate comparison of temporal patterns across all goal-lever pairs, Figure 6 presents a heatmap of annual coupling values, where darker colors indicate higher coupling and lighter colors indicate lower coupling. IQ-related pairs (especially IQ-EM, IQ-FM, and IQ-AM) show a clear temporal trend, with coupling values declining over time. SV-related pairs exhibit substantial variability, particularly SV-EM, which declined from 0.89 in 2015 to 0.26 in 2023. By contrast, BD-related pairs (BD-AM, BD-FM, and BD-SM) remained consistently within the high-coupling range, and all IM-related pairs maintained high coupling throughout the study period. Overall, the heatmap highlights that changes in structural-functional coupling differed across goal-lever pairs rather than occurring uniformly over time.

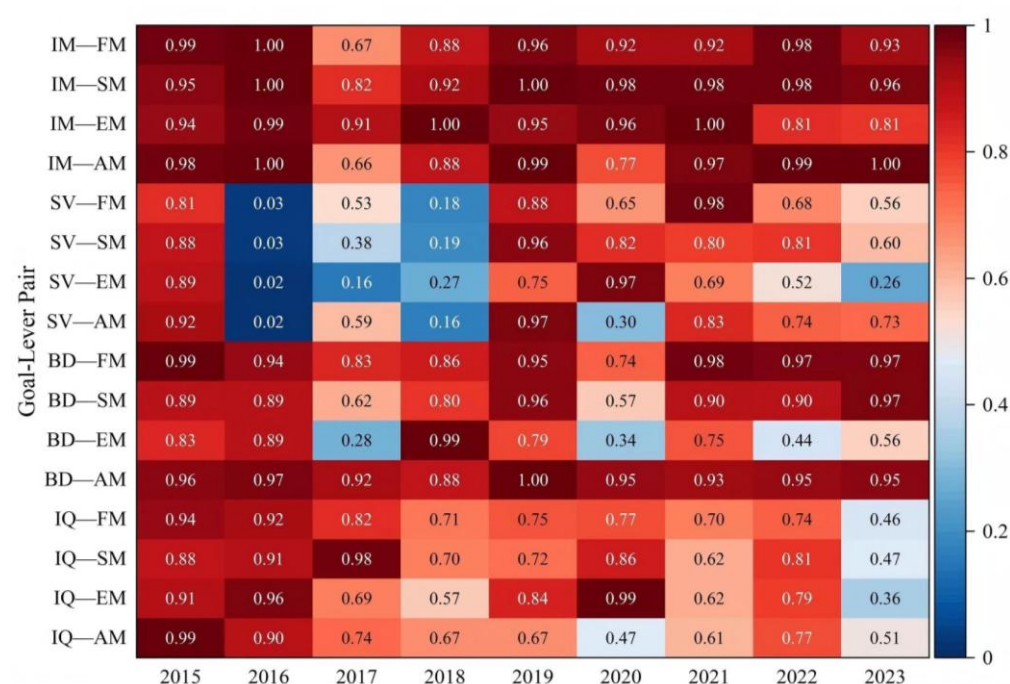


Figure 6. Heatmap of annual coupling values for goal-lever pairs.

5. Discussion

Before discussing the specific findings, we first clarify the inferential scope of this analysis. All patterns identified in this study were observed at the level of central government policy documents and reflect characteristics of formal policy design rather than directly measured implementation outcomes, university organizational behavior, or institutional sustainability outcomes.

The results reveal distinct patterns of system structural-functional coupling and decoupling within China's HEDRSR governance system. These findings suggest that differences in the alignment between system goals and system control levers may influence the

coherence of policy design across reform priorities. This section interprets the findings through the lens of systems theory, relates them to the existing literature, and discusses their implications for governance design and higher education sustainability.

5.1. Interpreting System Goal Synergy: Structural Differentiation with Functional Complementarity and Organizational Sustainability

The results suggest that system goals may exhibit a pattern of structural differentiation with functional complementarity, an emergent property of complex governance systems. While IQ and BD initially exhibited strong synergy, their alignment weakened over time as policy priorities shifted and coordination between the two goals diminished. This pattern suggests that sustainable institutional transformation depends not only on differentiated policy goals but also on maintaining coordination among them throughout the reform process.

Conversely, the fluctuating synergy between SV and IM may reflect the enduring tension between subsystem autonomy and meta-system regulation—a classic dynamic in complex adaptive systems [45]. The findings suggest that stronger alignment between these goals is associated with policy designs that balance institutional autonomy and accountability. Throughout the study period, IM consistently functioned as an integrative policy objective linking other reform goals. This finding is consistent with the view that higher-order coordinating goals contribute to maintaining coherence across multiple policy objectives in complex governance systems.

5.2. Interpreting System Lever Synergy: Functional Complementarity, Systemic Adaptability, and Sustainable Control

The stable, high synergy among AM, SM, and FM (mean >0.9) is consistent with the co-existence of coercive and normative control mechanisms in China's governance architecture. This "hard constraints + soft incentives" pattern suggests the deep coupling between authoritative and normative system levers, which may reflect the underlying logic where "systemic coercive power" and "value consensus" coexist. From an organizational sustainability perspective, this complementarity may provide a stable control foundation for institutional transformation, as it could help ensure that behavioral regulation is reinforced by normative alignment, potentially reducing the implementation slippage that may undermine organizational durability and could enable universities to internalize governance expectations within their own operational cultures.

Fluctuations in AM–SM synergy may mirror the core tension between "delegating power" and "ensuring oversight." The recovery of synergy after 2020 through strengthened feedback and accountability mechanisms is suggestive of the governance system's evolving capacity to maintain homeostasis through adaptive control—a key characteristic of self-regulating socio-technical systems [46]. This adaptive capacity may be important for sustainable institutional transformation: governance systems may benefit from possessing feedback mechanisms that detect and correct goal-lever misalignment before systemic drift becomes entrenched, which could help preserve the organizational resilience necessary for long-term institutional sustainability.

The volatility of EM synergy (coefficient of variation: 0.42) may indicate that economic measures act as a conditional "system lever", highly dependent on alignment with system goals and complementary control mechanisms. The 2022 mismatch—where concentrated "Double First Class" investment appears not to have synchronized with FM and AM adjustments—is consistent with lever coordination failure: isolated resource inputs without corresponding institutional or value guidance may produce systemic misalignment rather than targeted transformation. This pattern may be interpreted as a challenge that could potentially undermine sustainable transformation: when resource-intensive

levers operate without synchronization with institutional and normative levers, the system may produce unintended consequences—concentrated investment without targeted organizational capacity-building, which could waste scarce resources and risk eroding stakeholder confidence in the reform’s capacity to deliver durable institutional change.

5.3. Structural–Functional Decoupling: A Systemic Design Flaw Threatening Organizational Sustainability

Notably, the decoupling observed in our analysis is selective rather than uniform across all governance objectives. As shown in Table 11, the weakening alignment is concentrated on IQ and SV, while BD and IM maintain consistently strong coupling throughout the study period. The newly added statistics—standard deviation (SD), coefficient of variation (CV), and change (Δ)—reveal a three-tier pattern: IM and most BD pairs exhibit low volatility and stable high coupling ($SD < 0.15$, $CV < 0.18$); IQ pairs show moderate but persistent decline ($\Delta = -0.42$ to -0.55 , $SD = 0.14$ – 0.20); and SV pairs display the highest volatility and most dramatic deterioration ($SD = 0.31$ – 0.34 , $CV = 0.53$ – 0.66 , SV – $EM \Delta = -0.632$). This selective decoupling—concentrated precisely on the quality and vitality goals—suggests that governance misalignment reflects differentiated patterns of goal-lever (mis)alignment shaped by the specific reform priorities and instrument configurations of different policy domains, rather than a systemic failure affecting all objectives equally.

The weakening alignment between IQ and its supporting levers suggests a potential structural design flaw: although IQ remains a national priority, the control variables do not consistently target its core elements (innovation capacity, talent cultivation). This “local high adaptation—overall weak coupling” pattern may indicate path dependence in instrument selection [47], where short-term administrative directives may crowd out long-term capacity-building. This pattern suggests that sustained emphasis on short-term administrative responses may weaken long-term institutional capacity for policy implementation.

A particularly striking feature of the SV-related pairs warrants explicit attention: in 2016, all four SV-lever pairs collapsed to approximately 0.02—SV–AM at 0.021, SV–EM at 0.022, SV–FM at 0.025, and SV–SM at 0.030—representing the lowest coupling values recorded across the entire dataset. This dramatic collapse reflects a specific policy context. In 2016, the central government issued a series of policies heavily oriented toward stimulating research vitality and incentivizing technology transfer—including the Action Plan for Promoting the Transfer and Transformation of Higher Education Scientific and Technological Achievements and the Opinions on Implementing a Distribution Policy Oriented Toward Increasing Knowledge Value—which strongly emphasized SV goals but deployed policy instruments almost exclusively in the form of Economic and Facilitation Measures. These instruments were not well-coordinated with the Administrative and Supervisory Measures needed to support the broader dimensions of institutional vitality—particularly the delegation of authority and reduction of administrative burdens. By 2017, the issuance of the Several Opinions on Deepening the Reform of Streamlining Administration, Delegating Power, and Combining Supervision with Service Optimization in the Field of Higher Education began to rebalance the instrument mix. The instability of SV-lever coupling is consistent with inconsistent system design for autonomy enhancement. The repeated swings between incentive-driven and empowerment-driven approaches may reflect an unresolved systemic ambiguity about the internal logic of vitality stimulation. This pattern is consistent with the dynamics of complex adaptive systems, in which persistent ambiguity may contribute to oscillatory system behavior.

In contrast, as shown in Figure 6, the strong and stable coupling between IM and all four levers is consistent with the view that multi-lever integration is achievable when system design explicitly targets governance modernization. The closed-loop synergy of “framework construction–process constraints–resource guarantee–environment optimization” may represent a configuration that appears close to a benchmark of policy coherence—a possible benchmark for sustainable institutional transformation.

This optimal coupling suggests that sustainable organizational governance may be an achievable configuration when system design prioritizes coherent goal-lever alignment, which could enable universities to develop the integrated, adaptive capacity necessary for long-term institutional resilience. The contrast between the selective decoupling observed for IQ and SV and the stable coupling observed for BD and IM further suggests that governance coherence is not an all-or-nothing property but rather a domain-specific achievement: some policy objectives can maintain strong goal-lever alignment even while others experience significant decoupling. This differentiated pattern offers a more nuanced foundation for diagnosis than a blanket claim of system-wide decoupling.

5.4. Theoretical Implications: Contributing to Sustainable Higher Education Governance and Organizational Theory

This study offers three potential contributions to socio-technical systems theory and governance system design:

First, we suggest that policy synergy analysis may serve as a diagnostic tool for sustainable governance in complex adaptive systems. The fuzzy systems methodology employed here offers a potentially valuable quantitative approach to measuring systemic coherence that complements traditional qualitative systems analysis, which could provide a rigorous empirical foundation for assessing whether governance architectures enable or constrain long-term institutional development.

Second, the “structural differentiation with functional complementarity” pattern observed in system goals, and the hard/soft lever complementarity in control mechanisms, may offer generalizable insights for multi-level governance systems navigating the tension between central control and local autonomy in pursuit of sustainable institutional transformation. For system designers and institutional leaders, our findings suggest that effective decentralization may point to the importance of not only reducing central control, but the systemic reconfiguration of goal-lever coupling to ensure that subsystem empowerment is matched by meta-system coordination—a principle that maintains coordination between system goals and system control levers.

Third, we interpret lever coordination failure as a potential system challenge: when resource-intensive levers (EM) operate without synchronization with institutional (AM) and normative (FM) levers, the system may produce unintended consequences of concentrated investment without corresponding institutional change. This pattern is consistent with challenges observed in higher education sustainability initiatives globally, where large financial investments in campus sustainability projects or ESD programs often may not produce sustained outcomes to deliver long-term change due to potential misalignment with regulatory frameworks, accountability systems, and institutional value commitments.

5.5. Global Implications: A Tentative Framework for Comparative Governance Analysis

Before discussing potential implications beyond the Chinese context, we wish to clarify the scope and limitations of our claims regarding international transferability. The framework developed in this study—particularly the four goal categories (IQ, BD, SV, IM) and four lever categories (AM, EM, SM, FM)—is grounded in the structure, terminology, and reform priorities of China’s HEDRSR policy system. While we believe the analytical

logic of goal–lever coupling may be adaptable to other national contexts, such adaptation would require careful re-contextualization to align with local governance structures, policy traditions, and institutional arrangements. The brief comparisons that follow are intended to illustrate potential parallels and to generate hypotheses for future comparative research, rather than to establish that the framework is directly applicable across all systems without modification.

While this study focuses on China, the structural-functional decoupling identified here is consistent with governance tensions observed in other transitional and emerging economies. Brazil's university autonomy reforms (2007–2017) similarly exhibit a pattern of formal decentralization coupled with persistent meta-level control through budgetary conditionalities and ministerial oversight [48], which may generate comparable organizational sustainability challenges: universities may struggle to develop adaptive governance capacity when formal autonomy is undermined by operational control mechanisms. South Africa's post-apartheid higher education restructuring exhibits comparable oscillations between institutional empowerment and systemic re-regulation [48]. The socio-technical system framework advanced in this paper thus may offer a transferable diagnostic for analyzing such governance challenges that may affect sustainable institutional transformation beyond the Chinese context, which could enable institutional leaders and policymakers to assess whether governance configurations cultivate or constrain organizational resilience. However, these comparisons remain illustrative and do not constitute validation of the framework's transferability; systematic cross-national research would be needed to establish its applicability across diverse governance systems.

The two-dimensional goal-lever coupling framework and fuzzy system measurement model developed here are designed to be context-agnostic and could be applied to assess policy coherence in other multi-level governance systems, such as: The European Union's higher education governance, where the Bologna Process may create tension between supranational coordination and national autonomy [50]. Federal systems such as India and Germany, where central-state/provincial relations shape university autonomy [51]. In each of these contexts, the framework could assist institutional leaders and policymakers in diagnosing whether governance architectures enable or constrain sustainable institutional transformation, potentially offering a common analytical language for comparative organizational sustainability research.

As higher education organizations worldwide face pressure to balance institutional autonomy with public accountability and deliver on SDG commitments for higher education sustainability—from the OECD's governance reviews to the UNESCO Global Education Monitoring Report—China's experience suggests a potential lesson: decentralization without systemic lever reconfiguration may risk producing governance systems that are formally coherent but functionally fragmented, which could prevent universities from developing the autonomous, adaptive capacity necessary for sustainable institutional transformation. Without coherent instrument support, sustainability strategies may remain difficult to implement effectively.

To clarify the scope of our framework's potential transferability, we distinguish between its generalizable components and its context-dependent elements. The following components are analytically generalizable and may be adapted to other governance systems: (1) The logic of treating policy objectives as system goals and policy instruments as control levers, and assessing their coherence through coupling analysis; (2) The method of weighting policy content by hierarchical strength to reflect differential legal authority; (3) The longitudinal comparison of coupling trends to identify patterns of alignment and misalignment over time. By contrast, the following components are context-dependent and would require re-specification when applied to other national systems: (1) The specific four goal categories (IQ, BD, SV, IM), which reflect China's HEDRSR reform priorities

and may not map directly onto other countries' higher education policy objectives; (2) The four lever categories (AM, EM, SM, FM), which are based on China's policy instrument typology; in systems where authority is distributed across states, accreditation bodies, professional associations, markets, or university boards, instruments may need to be re-classified or new categories added; (3) The interpretation of specific coupling patterns as indicating certain governance challenges, which may vary across political and institutional contexts.

We therefore frame the model as analytically transferable after contextual adaptation, rather than universally applicable in its current form. Future comparative research—including application of the framework to other national settings and subsequent refinement of categories and interpretations—would be necessary to validate and extend its utility for cross-national analysis of higher education governance and sustainability.

5.6. Practical Implications: Toward Coherent Socio-Technical Governance for Sustainable Institutional Transformation

For policymakers and institutional leaders designing higher education sustainability strategies, this analysis highlights the potential need for integrated socio-technical system redesign. Rather than treating policy objectives and instruments as separate design tasks, reform architects may benefit from adopting a systems engineering perspective to ensure that sustainability goals are supported by coherent, mutually reinforcing sets of administrative, economic, supervisory, and normative instruments, rather than relying solely on high-level target-setting or isolated project funding:

Three practical considerations emerge from the findings: (1) Map emergent properties: Assess how goal interactions (e.g., SV–IM tension) may evolve under different reform scenarios, while maintaining an appropriate balance between empowerment and accountability. (2) Configure lever clusters: Coordinate hard, soft, and resource-based levers so that they reinforce one another, ensuring that resource inputs are synchronized with institutional and normative adjustments. (3) Install feedback loops: Develop monitoring mechanisms to identify and address goal–lever misalignment before it becomes persistent, thereby supporting continuous policy adjustment.

Together, these measures may contribute to more coherent policy implementation by strengthening coordination between system goals and system control levers in higher education reform.

5.7. Connecting to the Sustainability Agenda: Governance Coherence as a Prerequisite for Sustainable Institutional Transformation

The findings of this study may carry implications for the sustainability of higher education systems, particularly in transitional and emerging economies. The analysis suggests a decline in goal–lever coupling within the policy corpus, which appears to contribute to vertical segmentation within the governance system. Such decoupling may weaken the institutional conditions for sustainable transformation by increasing fragmentation and reducing policy coordination within the governance environment.

Institutional transformation for sustainability may be understood as more than establishing sustainability offices, green campus initiatives, or sustainability curricula. Rather, it may require consistent coordination between policy goals and implementation mechanisms over time. Without such coordination, sustainability initiatives may remain vulnerable to policy reversal, resource reallocation, and symbolic compliance.

This study may contribute to the emerging literature on sustainability governance in higher education by offering a diagnostic methodology for assessing governance coherence. The two-dimensional goal–lever framework developed here may assist institutional leaders, policymakers, and researchers in identifying governance challenges that could

impede sustainability initiatives. For higher education institutions pursuing sustainability certifications (e.g., STARS and UI Green Metric) or aligning their strategies with the SDGs, the framework may provide a practical approach to evaluating whether governance arrangements support sustained implementation.

Moreover, the study suggests a critical insight for sustainability governance: the most resource-intensive control lever (EM) appears to be the most volatile in its coupling with system goals. This finding is consistent with the view that financial investments in sustainability—however substantial—cannot substitute for coherent institutional and normative mechanisms that align resource allocation with strategic priorities. It also aligns with broader sustainability literature emphasizing policy coherence and the risks of fragmented approaches to sustainable development.

For transitional economies like China, where higher education expansion may have outpaced governance capacity building, the findings highlight the potential need for system-level governance adjustment rather than isolated policy interventions. We interpret the observed goal-lever decoupling through the lens of vertical segmentation across governance levels and functional domains. This structural feature may represent a potential barrier to sustainable institutional transformation. Addressing such segmentation may require not only technical policy adjustments but also greater inter-agency coordination, long-term strategic planning, and accountability for system-level outcomes rather than individual policy outputs.

Throughout this study, the term “vertical segmentation” has been used to describe fragmentation within China’s multi-level governance system that may contribute to goal-lever decoupling. However, this concept encompasses three analytically distinct dimensions. First, horizontal fragmentation among central ministries and agencies may occur when different state actors, such as the Ministry of Education, the Ministry of Finance, and the National Development and Reform Commission, pursue partially overlapping objectives through separate control instruments, generating policy incoherence at the same governance level. Second, vertical disjunction between central and provincial governance may emerge when centrally formulated policies are adapted or reinterpreted during implementation, resulting in variation in policy intensity and instrument alignment across regions. Third, the tension between state authority and university autonomy reflects the agency of universities as semi-autonomous actors within the governance system. When policy signals are perceived as overly prescriptive or poorly aligned with institutional priorities, universities may respond through symbolic rather than substantive compliance.

The empirical analysis in this study directly measures patterns of alignment and misalignment within central-level policy texts. Therefore, interpreting these patterns as manifestations of vertical segmentation represents an inference based on observed goal-lever decoupling rather than a direct empirical demonstration of causal mechanisms. Although this interpretation is consistent with broader research on Chinese governance, further studies—including inter-ministerial process tracing, provincial implementation analysis, and university-level case studies—are needed to identify which forms of segmentation are most consequential for sustainable institutional transformation.

6. Conclusions

This study examines the systemic coherence of China’s HEDRSR policies using the “system goals—system control levers” framework, with a focus on how governance coherence influences sustainable institutional transformation in higher education.

The findings suggest a selective pattern of structural-functional decoupling: the weakening alignment is concentrated on IQ and SV, while BD and IM maintain consistently strong coupling throughout the study period. The newly added statistics—standard

deviation (SD), coefficient of variation (CV), and change (Δ)—reveal a three-tier pattern: IM and most BD pairs exhibit low volatility and stable high coupling ($SD < 0.15$, $CV < 0.18$); IQ pairs show moderate but persistent decline ($\Delta = -0.42$ to -0.55 , $SD = 0.14$ – 0.20); and SV pairs display the highest volatility and most dramatic deterioration ($SD = 0.31$ – 0.34 , $CV = 0.52$ – 0.66 , SV – $EM \Delta = -0.632$). This selective decoupling—concentrated on quality and vitality goals—suggests that governance misalignment is not uniform across all objectives but rather reflects differentiated patterns of goal–lever (mis)alignment. The selective decoupling observed for IQ and SV may undermine reform effectiveness in those domains and potentially create structural barriers that may constrain universities from developing the autonomous, adaptive governance capacity that may be necessary for embedding sustainability across core functions. However, the consistently strong coupling observed for BD and IM indicates that coherent goal–lever alignment is achievable in other policy domains, offering a more optimistic and nuanced diagnostic foundation than a blanket claim of system-wide decoupling. Across analyses, vertical segmentation in China’s multi-level bureaucratic system emerges as a plausible explanatory factor for observed system incoherence: fragmented, siloed policy design may, in theory, create structural constraints on the enabling conditions universities require to advance institutional sustainability mandates. These findings highlight the importance of maintaining coherence between system goals and system control levers in higher education reform.

The study offers a potential contribution to sustainable higher education governance theory by illustrating the applicability of fuzzy system methods to governance analysis and identifying lever coordination failure as a potential system challenge, with specific relevance to governance research. Globally, the framework may offer a transferable tool for diagnosing decentralization challenges and sustainability strategy alignment gaps across diverse higher education systems, although its transferability to other national contexts would require careful contextual adaptation and further empirical validation. The analytical logic of goal–lever coupling, policy strength weighting, and longitudinal comparison is generalizable, but the specific goal and lever categories—grounded in China’s HEDRSR policy system—would need to be re-specified for other governance systems with different institutional arrangements, policy traditions, and stakeholder configurations.

This study has three main limitations. First, it focuses on central-level policies (macro-system rules), with limited examination of provincial adaptation and local implementation challenges (meso- and micro-system behaviors). Second, while quantifying synergy patterns, it does not fully uncover the underlying system dynamics—such as inter-departmental bargaining or university-level agency—that drive these dynamics. Third, while robustness checks confirm that core coupling trends are not driven by annual variation in sample size, coupling estimates for years with fewer policy documents (particularly 2022 and 2023) have wider uncertainty.

Future research should therefore: (1) Expand multi-level system analysis by integrating local policy texts and fieldwork to examine how central policy designs are adapted, resisted, or reinterpreted at the provincial and institutional levels, and how goal–lever (de)coupling influences the implementation of sustainability-related initiatives, including education for sustainable development and social equity programs. (2) Adopt mixed methods by combining quantitative system coupling analysis with interviews and case studies to examine the political, cognitive, and organizational factors shaping system coherence in practice, including the roles of strategic leadership and multi-stakeholder engagement. (3) Apply system dynamics or agent-based modeling to simulate the long-term behavior of goal–lever coupling under different decentralization and sustainability transition scenarios, thereby enhancing the predictive capacity of socio-technical governance analysis for long-term policy development.

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Abbreviations

The following abbreviations are used in this manuscript:

HEDRSR	Higher Education “Delegation, Regulation, and Service” reform
SDGs	Sustainable Development Goals
HEIs	Institutions of higher education
IQ	Improving the Quality of Higher Education
BD	Breaking Down Institutional Barriers
SV	Stimulating the Vitality of Universities and Colleges
IM	Improving the Modern University System with Chinese Characteristics
AM	Administrative Measure
EM	Economic Measure
SM	Supervisory Measures
FM	Facilitation Measures
CPC	Communist Party of China

Appendix A. Flow Diagram of China's HEDRSR Policy Search and Screening Procedure, 2015–2023

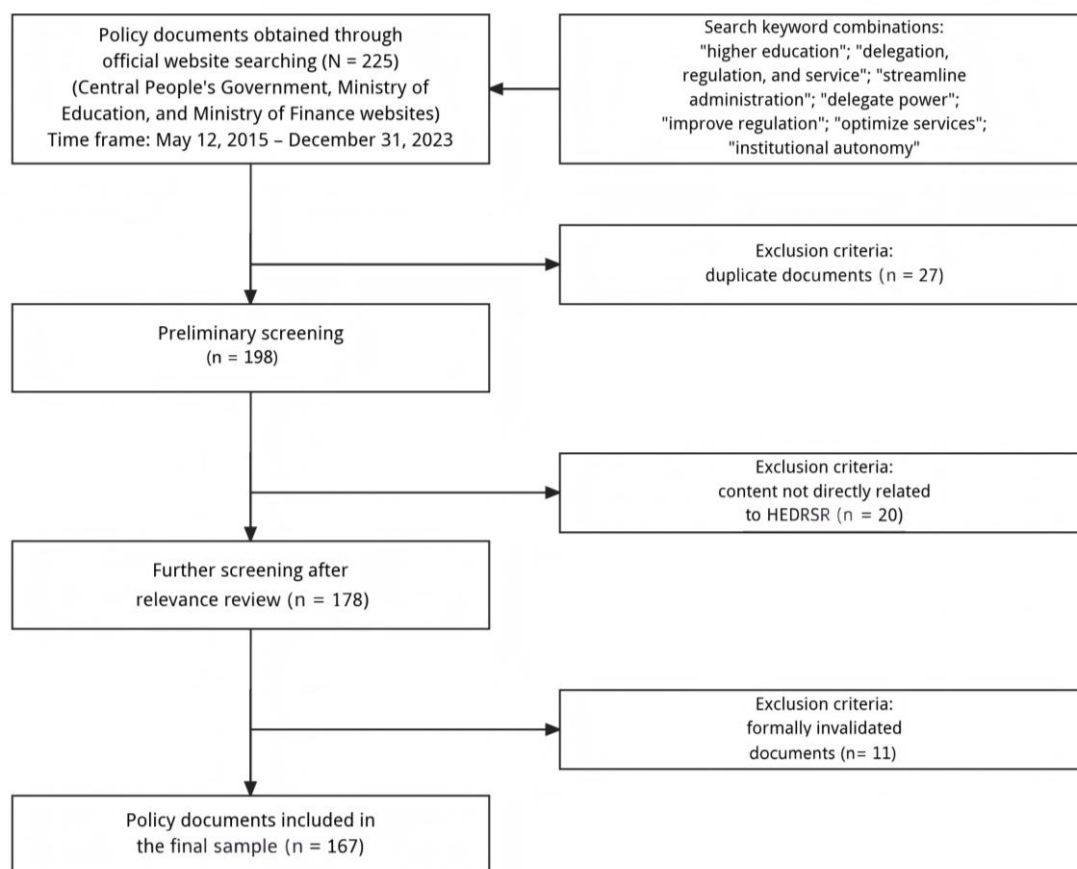


Figure A1. Flow Diagram of China's HEDRSR Policy Search and Screening Procedure.

Appendix B. Full List of 167 China's HEDRSR Policy Documents Included in the Analysis, 2015–2023

Table A1. Full List of 167 China's HEDRSR Policy Documents.

No.	Policy Title	Issuing Body	Issue Date
1	Work Plan for Promoting Streamlining Administration, Combining Delegation with Regulation, and Transforming Government Functions in 2015	State Council	12 May 2015
2	Implementation Opinions of the General Office of the State Council on Deepening Innovation and Entrepreneurship Education Reform in Higher Education Institutions	General Office of the State Council	13 May 2015
3	Guiding Opinions of the State Council on Actively Promoting the 'Internet+' Action	State Council	1 July 2015
4	Guiding Opinions of the State Council on Accelerating the Construction of Support Platforms for Mass Entrepreneurship and Innovation	State Council	23 September 2015
5	Implementation Plan for Deepening the Reform of the Science and Technology System	General Office of the CPC Central Committee, General Office of the State Council	24 September 2015

6	Several Opinions of the State Council on Accelerating the Building of an Intellectual Property Power under the New Situation	State Council	18 October 2015
7	Overall Plan for Coordinated Promotion of World-Class Universities and First-Class Disciplines Construction	State Council	24 October 2015
8	Administrative Measures for Program Setting in Higher Vocational Education of Regular Higher Education Institutions	Ministry of Education	26 October 2015
9	Notice of the Ministry of Finance and Ministry of Education on Reforming and Improving the Budget Appropriation System for Central Universities	Ministry of Finance, Ministry of Education	17 November 2015
10	Opinions of the General Office of the State Council on Reforming and Improving the Postdoctoral System	General Office of the State Council	30 November 2015
11	Opinions on Deepening the Reform of Talent Development Systems and Mechanisms	CPC Central Committee	21 March 2016
12	Implementation Plan for Pilot Programs of Promoting 'Internet+ Government Services' to Deliver Information-Based Benefits to the Public	General Office of the State Council	14 April 2016
13	Action Plan for Promoting the Transfer and Transformation of Scientific and Technological Achievements	General Office of the State Council	21 April 2016
14	Outline of the National Innovation-Driven Development Strategy	CPC Central Committee, State Council	19 May 2016
15	Key Work Priorities for Promoting Streamlining Administration, Combining Delegation with Regulation, and Optimizing Services Reform in 2016	State Council	23 May 2016
16	Opinions of the State Council on Several Policies and Measures for Vigorously Promoting Mass Entrepreneurship and Innovation	State Council	11 June 2016
17	Guiding Opinions of the Ministry of Education on Deepening Education and Teaching Reform in Universities Directly under Central Departments	Ministry of Education	13 June 2016
18	Several Opinions on Further Improving Policies Related to Central Fiscal Research Project Fund Management	General Office of the CPC Central Committee, General Office of the State Council	31 July 2016
19	Several Opinions of the Ministry of Education and Ministry of Science and Technology on Strengthening the Transfer and Transformation of Scientific and Technological Achievements in Higher Education Institutions	Ministry of Education, Ministry of Science and Technology	3 August 2016
20	Guiding Opinions of the Ministry of Education on Deepening the Reform of Teacher Assessment and Evaluation Systems in Higher Education Institutions	Ministry of Education	25 August 2016
21	Guiding Opinions of the State Council on Accelerating the Promotion of 'Internet+ Government Services'	State Council	25 September 2016
22	Action Plan for Promoting the Transfer and Transformation of Scientific and Technological Achievements in Higher Education Institutions	General Office of the Ministry of Education	13 October 2016
23	Several Opinions on Implementing Distribution Policies Oriented toward Increasing the Value of Knowledge	General Office of the CPC Central Committee, General Office of the State Council	7 November 2016
24	13th Five-Year Plan for Science and Technology Development in Higher Education Institutions	Ministry of Education	18 November 2016

25	13th Five-Year Plan for National Education Development	State Council	10 January 2017
26	13th Five-Year Plan for Academic Degree and Postgraduate Education Development	Ministry of Education, Academic Degrees Committee of the State Council	17 January 2017
27	Opinions on Deepening the Reform of the Professional Title System	General Office of the CPC Central Committee, General Office of the State Council	18 January 2017
28	Implementation Measures for Coordinated Promotion of World-Class Universities and First-Class Disciplines Construction	Ministry of Education, Ministry of Finance, National Development and Reform Commission	24 January 2017
29	Opinions of the Ministry of Education on the Establishment of Higher Education Institutions during the 13th Five-Year Plan Period	Ministry of Education	25 January 2017
30	Opinions on Strengthening and Improving Ideological and Political Work in Higher Education Institutions under the New Situation	CPC Central Committee, State Council	27 February 2017
31	Administrative Measures for the Review of Doctoral and Master's Degree Authorization	Academic Degrees Committee of the State Council	13 March 2017
32	Several Opinions of Five Ministries including the Ministry of Education on Deepening the Reform of Streamlining Administration, Combining Delegation with Regulation, and Optimizing Services in Higher Education	Ministry of Education, State Commission Office for Public Sector Reform, National Development and Reform Commission, Ministry of Finance, Ministry of Human Resources and Social Security	31 March 2017
33	Opinions of the Ministry of Education on Comprehensively Promoting Informatization of Teacher Management	Ministry of Education	31 March 2017
34	Administrative Measures for Capital Construction in Universities Directly under the Ministry of Education	Ministry of Education	11 April 2017
35	Opinions on Accelerating the Construction of Philosophy and Social Sciences with Chinese Characteristics	CPC Central Committee	16 May 2017
36	Plan for Deepening the Reform of the Science and Technology Award System	General Office of the State Council	31 May 2017
37	Division Plan for Key Tasks of the National Video and Telephone Conference on Deepening Streamlining Administration, Combining Delegation with Regulation, Optimizing Services Reform	General Office of the State Council	22 June 2017
38	Opinions of the General Office of the State Council on Deepening the Coordination of Medical Education and Further Promoting Medical Education Reform and Development	General Office of the State Council	3 July 2017
39	Guiding Opinions of the Ministry of Education and National Administration of Traditional Chinese Medicine on Deepening Traditional Chinese Medicine Education Reform and Development through Medical-Education Coordination	Ministry of Education, National Administration of Traditional Chinese Medicine	13 July 2017
40	Opinions of the State Council on Strengthening the Implementation of Innovation-Driven Development Strategy to Further Promote Mass Entrepreneurship and Innovation	State Council	21 July 2017
41	Guiding Opinions of the Party Leadership Group of the Ministry of Education on Accelerating the Development of High-Level Talents in Directly Affiliated Universities	Party Leadership Group of the Ministry of Education	25 July 2017

42	Opinions of the Party Leadership Group of the Ministry of Education on Strengthening the Construction of Teacher Party Branches in Higher Education Institutions under the New Situation	Party Leadership Group of the Ministry of Education	1 August 2017
43	Opinions on Deepening the Reform of Education Systems and Mechanisms	General Office of the CPC Central Committee, General Office of the State Council	24 September 2017
44	Interim Measures for the Supervision of Professional Title Review for University Teachers	Ministry of Education, Ministry of Human Resources and Social Security	20 October 2017
45	Supplementary Notice of the Ministry of Finance on the 'Administrative Measures for the Record-Filing of State-Owned Asset Appraisal Projects'	Ministry of Finance	8 November 2017
46	Supplementary Provisions on the Disposal of State-Owned Assets in Universities Directly under Central Departments	Ministry of Finance	9 November 2017
47	Implementation Outline for the Quality Improvement Project of Ideological and Political Work in Higher Education Institutions	Party Leadership Group of the Ministry of Education	4 December 2017
48	Several Opinions of the General Office of the State Council on Deepening the Integration of Industry and Education	General Office of the State Council	5 December 2017
49	Several Opinions of the Ministry of Education on Regulating and Strengthening the Management of State-Owned Assets in Directly Affiliated Universities	Ministry of Education	15 December 2017
50	Guiding Opinions of the Ministry of Education on the Construction and Application of Digital Education Resource Public Service System	Ministry of Education	21 December 2017
51	Notice of the General Office of the Ministry of Education on Further Promoting the Implementation of Scientific and Technological Achievement Transformation Policies in Universities	General Office of the Ministry of Education	26 December 2017
52	Guiding Opinions of the Ministry of Education on Promoting the Linkage Mechanism between Employment, Enrollment Plans and Talent Cultivation in Universities	Ministry of Education	29 December 2017
53	Opinions of the Ministry of Education on Fully Implementing the Responsibilities of Postgraduate Supervisors for Fostering Virtue through Education	Ministry of Education	17 January 2018
54	Several Opinions of the State Council on Comprehensively Strengthening Basic Scientific Research	State Council	19 January 2018
55	Opinions of the CPC Central Committee and State Council on Comprehensively Deepening the Reform of Teacher Ranks in the New Era	CPC Central Committee, State Council	20 January 2018
56	Guiding Opinions on Promoting the Reform of Talent Evaluation Mechanisms by Category	General Office of the CPC Central Committee, General Office of the State Council	26 February 2018
57	Notice of the National Natural Science Foundation of China and Ministry of Finance on Further Improving the Management of Science Fund Projects and Funds	National Natural Science Foundation of China, Ministry of Finance	28 March 2018
58	Action Plan for Teacher Education Revitalization	Ministry of Education, National Development and Reform Commission, Ministry of Finance, Ministry	28 March 2018

		of Human Resources and Social Security, State Commission Office for Public Sector Reform	
59	Opinions of the Ministry of Education on Further Strengthening Treasury Management in Directly Affiliated Universities and Institutions	Ministry of Education	28 March 2018
60	Opinions of the Academic Degrees Committee of the State Council on Carrying Out Independent Review of Degree Authorization in Higher Education Institutions	Academic Degrees Committee of the State Council	19 April 2018
61	Interim Measures for the Identification of Bases for Scientific and Technological Achievement Transformation and Technology Transfer in Higher Education Institutions	Ministry of Education	18 May 2018
62	Implementation Opinions of the Party Leadership Group of the Ministry of Education on the 'Benchmarking and Striving for Excellence' Construction Plan for University Party Organizations	Party Leadership Group of the Ministry of Education	22 May 2018
63	Implementation Opinions of the Party Leadership Group of the Ministry of Education on the 'Double Leaders' Cultivation Project for Secretaries of University Teacher Party Branches	Party Leadership Group of the Ministry of Education	22 May 2018
64	Several Opinions on Further Strengthening Research Integrity	General Office of the CPC Central Committee, General Office of the State Council	30 May 2018
65	Implementation Plan for Further Deepening 'Internet+ Government Services' and Promoting the 'One Network, One Window, One Visit' Government Service Reform	General Office of the State Council	10 June 2018
66	Opinions on Deepening the Reform of Project Review, Talent Evaluation, and Institutional Assessment	General Office of the CPC Central Committee, General Office of the State Council	3 July 2018
67	Notice of the State Council on Several Measures for Optimizing Scientific Research Management and Improving Research Performance	State Council	18 July 2018
68	Everest Plan for Basic Research in Higher Education Institutions	Ministry of Education	18 July 2018
69	Division Plan for Key Tasks of the National Video and Telephone Conference on Deepening 'Delegation, Regulation, Service' Reform and Transforming Government Functions	General Office of the State Council	5 August 2018
70	Guiding Opinions on Accelerating the Construction of 'Double First-Class' Universities	Ministry of Education, Ministry of Finance, National Development and Reform Commission	8 August 2018
71	Opinions of the General Office of the State Council on Further Adjusting and Optimizing the Structure to Improve the Efficiency of Education Fund Use	General Office of the State Council	17 August 2018
72	Opinions of the CPC Central Committee and State Council on Comprehensively Implementing Budget Performance Management	CPC Central Committee, State Council	1 September 2018
73	Opinions of the Ministry of Education on Implementing the Excellent Teacher Training Program 2.0	Ministry of Education	17 September 2018
74	Opinions of the Ministry of Education, Ministry of Industry and Information Technology, and Chinese Academy of Engineering	Ministry of Education, Ministry of Industry and Information Technology, Chinese Academy of Engineering	17 September 2018

	gineering on Accelerating the Construction of New Engineering and Implementing the Excellent Engineer Education and Training Program 2.0		
75	Opinions of the Ministry of Education, Ministry of Agriculture and Rural Affairs, and National Forestry and Grassland Administration on Strengthening the Integration of Agriculture, Science and Education to Implement the Excellent Agriculture and Forestry Talent Education and Training Program 2.0	Ministry of Education, Ministry of Agriculture and Rural Affairs, National Forestry and Grassland Administration	17 September 2018
76	Opinions of the Ministry of Education, National Health Commission, and National Administration of Traditional Chinese Medicine on Strengthening Medical-Education Coordination to Implement the Excellent Doctor Education and Training Program 2.0	Ministry of Education, National Health Commission, National Administration of Traditional Chinese Medicine	17 September 2018
77	Opinions of the Ministry of Education and Central Political and Legal Affairs Commission on Adhering to the Integrated Development of Law and Virtue to Implement the Excellent Legal Talent Education and Training Program 2.0	Ministry of Education, Central Political and Legal Affairs Commission of the CPC Central Committee	17 September 2018
78	Opinions of the Ministry of Education and Publicity Department of the CPC Central Committee on Improving the Training Capacity of Journalism and Communication Talents in Universities to Implement the Excellent Journalism and Communication Talent Education and Training Program 2.0	Ministry of Education, Publicity Department of the CPC Central Committee	17 September 2018
79	Opinions of Six Ministries including the Ministry of Education on Implementing the Top-Notch Student Training Program in Basic Disciplines 2.0	Ministry of Education, Ministry of Science and Technology, Ministry of Finance, Chinese Academy of Sciences, Chinese Academy of Social Sciences, China Association for Science and Technology	17 September 2018
80	Opinions of the Ministry of Education on Accelerating the Construction of High-Level Undergraduate Education and Comprehensively Improving Talent Training Capacity	Ministry of Education	17 September 2018
81	Opinions of the State Council on Promoting High-Quality Development of Innovation and Entrepreneurship to Build an Upgraded Version of ‘Mass Entrepreneurship and Innovation’	State Council	18 September 2018
82	Notice on Launching a Special Campaign to Clean Up the ‘Paper-only, Title-only, Education-only, Award-only’ Practices	Ministry of Science and Technology, Ministry of Education, Ministry of Human Resources and Social Security, Chinese Academy of Sciences, Chinese Academy of Engineering	15 October 2018
83	Guiding Opinions of the Ministry of Education on Handling Teacher Ethics Violations by University Teachers	Ministry of Education	8 November 2018
84	Notice of the Ministry of Education on Issuing the ‘Ten Professional Norms for University Teachers in the New Era’	Ministry of Education	8 November 2018
85	Special Action Plan for Reducing the Burden on Researchers to Implement the Spirit of General Secretary Xi Jinping’s Important Speech at the Academicians Conference of the Two Academies	Ministry of Science and Technology, Ministry of Finance, Ministry of Education, Chinese Academy of Sciences	12 December 2018

86	Notice of the General Office of the State Council on Implementing Documents Granting Greater Autonomy to Scientific Research Institutions and Personnel	General Office of the State Council	26 December 2018
87	Science and Technology Innovation Action Plan for Rural Revitalization in Higher Education Institutions	Ministry of Education	29 December 2018
88	Notice of the Ministry of Science and Technology and Ministry of Finance on Further Optimizing the Management of National Key R&D Program Projects and Funds	Ministry of Science and Technology, Ministry of Finance	22 January 2019
89	Notice on Implementing Documents Granting Greater Autonomy to Scientific Research Institutions and Personnel	General Office of the Ministry of Finance	22 February 2019
90	Implementation Plan for Accelerating the Modernization of Education	General Office of the CPC Central Committee, General Office of the State Council	23 February 2019
91	Notice of the Party Leadership Group of the Ministry of Education on Implementing Documents Granting Greater Autonomy in Scientific Research Management	Party Leadership Group of the Ministry of Education	4 April 2019
92	Guiding Opinions of the Ministry of Human Resources and Social Security and Ministry of Science and Technology on Deepening the Reform of the Professional Title System for Natural Science Researchers	Ministry of Human Resources and Social Security, Ministry of Science and Technology	23 April 2019
93	Opinions on Further Promoting the Spirit of Scientists and Strengthening Work Style and Study Style Construction	General Office of the CPC Central Committee, General Office of the State Council	11 June 2019
94	Administrative Measures for the Authorization and Awarding of Bachelor's Degrees	Academic Degrees Committee of the State Council	9 July 2019
95	Several Opinions on Expanding Research-Related Autonomy of Universities and Research Institutes	Ministry of Science and Technology, Ministry of Education, National Development and Reform Commission, Ministry of Finance, Ministry of Human Resources and Social Security, Chinese Academy of Sciences	30 July 2019
96	Division Plan for Key Tasks of the National Video and Telephone Conference on Deepening 'Delegation, Regulation, Service' Reform and Optimizing the Business Environment	General Office of the State Council	1 August 2019
97	Several Opinions on Deepening the Reform and Innovation of Ideological and Political Theory Courses in Schools in the New Era	General Office of the CPC Central Committee, General Office of the State Council	14 August 2019
98	Work Plan for the 'Excellence Initiative for Ideological and Political Theory Courses in Universities in the New Era'	Party Leadership Group of the Ministry of Education	2 September 2019
99	Guiding Opinions of the State Council on Strengthening and Standardizing In-Process and Ex-Post Supervision	State Council	6 September 2019
100	Notice on Further Increasing Delegation to Promote the Transfer and Transformation of Scientific and Technological Achievements	Ministry of Finance	23 September 2019
101	Opinions of the Ministry of Education on Deepening Undergraduate Education and Teaching Reform to Comprehensively Improve Talent Training Quality	Ministry of Education	29 September 2019
102	Guiding Opinions of the Ministry of Human Resources and Social Security and Chinese Academy of Social Sciences on Deepening the Reform of the Professional Title System for Philosophy and Social Science Researchers	Ministry of Human Resources and Social Security, Chinese Academy of Social Sciences	11 October 2019

103	Opinions of the Ministry of Education on Strengthening Educational Scientific Research Work in the New Era	Ministry of Education	24 October 2019
104	Administrative Measures for the Outstanding Scientific Research Achievement Award in Higher Education Institutions	Ministry of Education	7 November 2019
105	Opinions on Strengthening and Improving the Construction of Teacher Ethics in the New Era	Ministry of Education, Organization Department of the CPC Central Committee, Publicity Department of the CPC Central Committee, National Development and Reform Commission, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Culture and Tourism	15 November 2019
106	Guiding Opinions of the Ministry of Human Resources and Social Security on Further Supporting and Encouraging Researchers in Public Institutions to Innovate and Start Businesses	Ministry of Human Resources and Social Security	27 December 2019
107	Guiding Opinions of the General Office of the State Council on Supporting National New Areas to Deepen Reform and Innovation and Accelerate High-Quality Development	General Office of the State Council	31 December 2019
108	Opinions of the Ministry of Education on Launching Pilot Reforms of Basic Discipline Enrollment in Some Universities	Ministry of Education	13 January 2020
109	Regulations on the Construction of Ideological and Political Theory Course Teachers in Higher Education Institutions in the New Era	Ministry of Education	16 January 2020
110	Several Opinions on Promoting Discipline Integration in 'Double First-Class' Universities to Accelerate Postgraduate Training in Artificial Intelligence	Ministry of Education, National Development and Reform Commission, Ministry of Finance	21 January 2020
111	Several Opinions of the Ministry of Education, National Intellectual Property Administration, and Ministry of Science and Technology on Improving Patent Quality in Higher Education Institutions to Promote Transformation and Application	Ministry of Education, National Intellectual Property Administration, Ministry of Science and Technology	3 February 2020
112	Several Opinions on Regulating the Use of SCI Paper-Related Indicators in Higher Education Institutions to Establish Correct Evaluation Orientation	Ministry of Education, Ministry of Science and Technology	18 February 2020
113	Opinions on Deepening the Reform of the Educational Supervision System in the New Era	General Office of the CPC Central Committee, General Office of the State Council	19 February 2020
114	Opinions of Eight Ministries including the Ministry of Education on Accelerating the Construction of Ideological and Political Work Systems in Higher Education Institutions	Ministry of Education, Organization Department of the CPC Central Committee, Publicity Department of the CPC Central Committee, Commission for Political and Legal Affairs of the CPC Central Committee, Office of the Central Cyberspace Affairs Commission, Ministry of Finance, Ministry of Human Re-	22 April 2020

		sources and Social Security, Communist Youth League of China Central Committee	
115	Implementation Plan for Pilot Programs Granting Researchers Ownership or Long-Term Use Rights of On-Duty Scientific and Technological Achievements	Ministry of Science and Technology, National Development and Reform Commission, Ministry of Education, Ministry of Industry and Information Technology, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Commerce, National Intellectual Property Administration, Chinese Academy of Sciences	9 May 2020
116	Performance Evaluation Specifications for Central Fiscal Science and Technology Plans	Ministry of Science and Technology, Ministry of Finance, National Development and Reform Commission	19 June 2020
117	Opinions of the Ministry of Education on Further Strengthening the Rule of Law in Higher Education Institutions	Ministry of Education	15 July 2020
118	Implementation Opinions of the General Office of the State Council on Enhancing the Leading Role of Mass Entrepreneurship and Innovation Demonstration Bases to Further Promote Reform, Stabilize Employment and Strengthen Momentum	General Office of the State Council	23 July 2020
119	Opinions of the Ministry of Education, National Development and Reform Commission, and Ministry of Finance on Accelerating the Reform and Development of Postgraduate Education in the New Era	Ministry of Education, National Development and Reform Commission, Ministry of Finance	4 September 2020
120	Guiding Opinions of the General Office of the State Council on Accelerating the Innovative Development of Medical Education	General Office of the State Council	17 September 2020
121	Guiding Opinions of the General Office of the State Council on Accelerating the Cross-Provincial Handling of Government Services	General Office of the State Council	24 September 2020
122	Several Opinions of the Ministry of Education on Strengthening the Post Management of Doctoral Supervisors	Ministry of Education	24 September 2020
123	Development Plan for Professional Degree Postgraduate Education	Academic Degrees Committee of the State Council, Ministry of Education	25 September 2020
124	Several Opinions of the Academic Degrees Committee of the State Council and Ministry of Education on Further Strictly Regulating Quality Management in Degree and Postgraduate Education	Academic Degrees Committee of the State Council, Ministry of Education	25 September 2020
125	Overall Plan for Deepening Education Evaluation Reform in the New Era	CPC Central Committee, State Council	13 October 2020
126	Opinions on Comprehensively Strengthening and Improving Aesthetic Education in Schools in the New Era	General Office of the CPC Central Committee, General Office of the State Council	15 October 2020
127	Opinions on Comprehensively Strengthening and Improving Physical Education in Schools in the New Era	General Office of the CPC Central Committee, General Office of the State Council	15 October 2020

128	Notice of the Ministry of Science and Technology, Ministry of Finance, Ministry of Education, and Chinese Academy of Sciences on Continuing the Special Campaign to Reduce Burdens on Researchers and Stimulate Innovation Vitality	Ministry of Science and Technology, Ministry of Finance, Ministry of Education, Chinese Academy of Sciences	22 October 2020
129	Notice of the Ministry of Education on Issuing the 'Code of Conduct for Postgraduate Supervisors'	Ministry of Education	30 October 2020
130	Division Plan for Key Tasks of the National Video and Telephone Conference on Deepening 'Delegation, Regulation, Service' Reform and Optimizing the Business Environment	General Office of the State Council	1 November 2020
131	Measures for the Qualification Assessment of Degree Authorization Points	Academic Degrees Committee of the State Council, Ministry of Education	11 November 2020
132	Several Opinions on Correctly Understanding and Standardizing the Use of Talent Titles in Higher Education Institutions	Ministry of Education	30 November 2020
133	Dynamic Adjustment Measures for Doctoral and Master's Degree Authorization Disciplines and Professional Degree Authorization Categories	Academic Degrees Committee of the State Council	1 December 2020
134	Several Opinions on Eliminating the Bad Orientation of 'Paper-only' in Philosophy and Social Science Research Evaluation in Higher Education Institutions	Ministry of Education	7 December 2020
135	Measures for Evaluating the Effectiveness of 'Double First-Class' Construction	Ministry of Education, Ministry of Finance, National Development and Reform Commission	15 December 2020
136	Guiding Opinions of Six Ministries including the Ministry of Education on Strengthening the Reform of University Teacher Ranks in the New Era	Ministry of Education, Organization Department of the CPC Central Committee, Publicity Department of the CPC Central Committee, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Housing and Urban-Rural Development	24 December 2020
137	Guiding Opinions of the Ministry of Human Resources and Social Security and Ministry of Education on Deepening the Reform of the Professional Title System for Higher Education Teachers	Ministry of Human Resources and Social Security, Ministry of Education	31 December 2020
138	Notice on Issues Concerning the Inclusion of Cash Rewards for the Transformation of On-Duty Scientific and Technological Achievements by Public Institution Researchers into Performance Salary Management	Ministry of Human Resources and Social Security, Ministry of Finance, Ministry of Science and Technology	8 February 2021
139	Opinions of the State Council on Further Deepening the Reform of the Budget Management System	State Council	7 March 2021
140	Notice of the Ministry of Education on Strengthening Education Management Informatization in the New Era	Ministry of Education	10 March 2021
141	Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and Long-Range Objectives for 2035	State Council	12 March 2021
142	Opinions of the General Office of the State Council on Serving the 'Six Stabilities' and 'Six Guarantees' to Further Advance 'Delegation, Regulation, Service' Reform	General Office of the State Council	7 April 2021
143	Implementation Plan for the Education Power Promotion Project during the 14th Five-Year Plan Period	National Development and Reform Commission, Ministry of Education,	10 May 2021

		Ministry of Human Resources and Social Security	
144	Guiding Opinions of Six Ministries including the Ministry of Education on Promoting the Construction of New Educational Infrastructure to Build a High-Quality Education Support System	Ministry of Education, Office of the Central Cyberspace Affairs Commission, National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Finance, People's Bank of China	1 July 2021
145	Division Plan for Key Tasks of the National Video and Telephone Conference on Deepening 'Delegation, Regulation, Service' Reform to Cultivate and Stimulate Market Entity Vitality	General Office of the State Council	11 July 2021
146	Guiding Opinions of the General Office of the State Council on Improving the Evaluation Mechanism for Scientific and Technological Achievements	General Office of the State Council	16 July 2021
147	Several Opinions of the General Office of the State Council on Reforming and Improving the Management of Central Fiscal Research Funds	General Office of the State Council	5 August 2021
148	Guiding Opinions of the Ministry of Human Resources and Social Security and Ministry of Education on Deepening the Reform of the Professional Title System for Experimental Technical Talents	Ministry of Human Resources and Social Security, Ministry of Education	9 August 2021
149	Guiding Opinions of the General Office of the State Council on Further Supporting College Student Innovation and Entrepreneurship	General Office of the State Council	22 September 2021
150	Administrative Measures for the Disposal of State-Owned Assets of Central Administrative Institutions	Ministry of Finance	28 September 2021
151	Administrative Measures for the Establishment and Management of Interdisciplinary Disciplines	Academic Degrees Committee of the State Council	17 November 2021
152	Administrative Measures for Basic Scientific Research Operating Expenses of Central Universities	Ministry of Finance, Ministry of Education	30 November 2021
153	Administrative Measures for Funds Supporting Reform and Development of Local Universities	Ministry of Finance, Ministry of Education	31 December 2021
154	Several Opinions on Further Promoting the Construction of World-Class Universities and First-Class Disciplines	Ministry of Education, Ministry of Finance, National Development and Reform Commission	26 January 2022
155	Work Plan for Strengthening the Construction of Higher Education Talent Training System for Carbon Peak and Carbon Neutrality	Ministry of Education	19 April 2022
156	Action Plan for High-Quality Development of Philosophy and Social Sciences in Universities toward 2035	Publicity Department of the CPC Central Committee, Ministry of Education	27 May 2022
157	Implementation Opinions of the Ministry of Education on Promoting the Reform of Academic Continuing Education in Regular Higher Education Institutions in the New Era	Ministry of Education	23 July 2022
158	Work Plan for Comprehensively Promoting the Construction of 'Big Ideological and Political Courses'	Ministry of Education, Publicity Department of the CPC Central Committee, Office of the Central Cyberspace Affairs Commission, Ministry of Science and Technology, Ministry	25 July 2022

		of Industry and Information Technology, Ministry of Ecology and Environment, National Health Commission, National Cultural Heritage Administration, National Rural Revitalization Administration, China Care for the Next Generation Committee	
159	Administrative Measures for the Catalog of Disciplines and Specialties for Postgraduate Education	Academic Degrees Committee of the State Council, Ministry of Education	13 September 2022
160	Opinions of Four General Offices including the General Office of the Ministry of Education on Accelerating the Construction of New Agricultural Science and Promoting the Innovative Development of Higher Agricultural and Forestry Education	General Office of the Ministry of Education, General Office of the Ministry of Agriculture and Rural Affairs, General Office of the National Forestry and Grassland Administration, General Department of the National Rural Revitalization Administration	23 November 2022
161	Reform Plan for Adjustment and Optimization of Program Settings in Regular Higher Education Institutions	Ministry of Education, National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Finance, Ministry of Human Resources and Social Security	11 February 2023
162	Guiding Opinions of the Ministry of Human Resources and Social Security on Reforming and Improving the Salary Distribution System for University Teachers	General Office of the CPC Central Committee, General Office of the State Council	26 February 2023
163	Notice of the General Office of the Ministry of Education on Regulating the Use of ‘Double First-Class’ Construction Titles	Ministry of Education, Supreme People’s Procuratorate, Publicity Department of the CPC Central Committee, Office of the Central Cyberspace Affairs Commission, Ministry of Science and Technology, Ministry of Public Security, Ministry of Civil Affairs, Ministry of Finance, National Health Commission, National Radio and Television Administration, General Administration of Sport of China, Chinese Academy of Sciences, Office of the National Working Committee on Women and Children under the State Council, Central Committee of the Communist Youth League of China, All-China Women’s Federation, China Working Committee for the Care of the Next Generation, China Association for Science and Technology	20 April 2023
164	Guiding Opinions of the Ministry of Education on Promoting the High-Quality Development of Affiliated Hospitals of Higher Education Institutions	Ministry of Education	24 November 2023

165	Opinions of the Ministry of Education on Deepening the Reform of the Academic Degree Authorization and Review System	Ministry of Education	1 December 2023
166	Guiding Opinions on Further Strengthening the Construction of Young Scientist Teams	Ministry of Education	28 December 2023
167	Several Opinions of the Ministry of Education on Deepening the Reform of Teacher Evaluation in the New Era	Ministry of Education	28 December 2023

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