

EMERGING BIOSECURITY LANDSCAPE IN CHINA

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Table of Contents

1. Executive Summary	3
2. Introduction	3
3. Methodology and Positionality	4
4. Conceptualizing Biosecurity in China	4
4.1 Early Emphasis on Public Health and Agricultural Safety.....	4
4.2 SARS as a Turning Point.....	5
4.3 Integration into the Holistic Approach to National Security.....	5
4.4 The Biosecurity Law (2020) as a Conceptual Anchor.....	6
5. Regulatory Frameworks and Key Institutions	7
5.1 Core Legislation and Policy Instruments.....	8
5.2 Crisis Activation and Legal Synergy.....	9
5.3 Institutional Landscape.....	10
5.4 Dual-Use Research Governance.....	11
5.5 Toward a More Integrated Governance Model.....	11
6. Biosecurity Risk Perceptions in China	11
6.1 Emerging and Re-emerging Infectious Diseases (EIDs/REIDs).....	12
6.2 Laboratory Biosafety and Research Safety Culture.....	12
6.3 Dual-Use Research of Concern (DURC).....	13
6.4 Deliberate Misuse and Low-Probability, High-Impact Risks.....	13
6.5 Environmental and Agricultural Biosecurity.....	13
6.6 Misinformation and Risk Communication.....	14
6.7 Variations in Risk Perceptions Across Communities.....	14
7. Regulation vs Threats: Challenges and Gaps	14
7.1 Coordinating Multiple Actors and Regulatory Domains.....	14
7.2 Managing Rapid Laboratory Expansion and Long-term Operations.....	15
7.3 Governance of Emerging Biotechnologies and Dual-Use Research.....	15
7.4 Data Governance, Cyberbiosecurity, and Information Management.....	16
7.5 Public Communication and Risk Awareness.....	16
7.6 Regional and Cross-Border Coordination.....	17
8. Recommendations for Strengthening China’s Biosecurity Governance and Regional Role	18
8.1 Deepen Integrated Governance Across Sectors.....	18
8.2 Strengthen Sustainable Management of Laboratory and Research Systems.....	18
8.3 Advance Responsible Governance of Emerging Biotechnologies.....	18
8.4 Expand Regional Cooperation in Early Warning and Joint Response.....	19
8.5 Promote Biosecurity Education and Public Engagement.....	19
8.6 Enhance International Engagement and Norm-Shaping.....	20
9. Conclusion	20
10. Acknowledgements	21
11. About the Author	21
12. About the Asia Centre for Health Security (ACHS)	21

1. Executive Summary

China's biosecurity system has expanded rapidly as scientific innovation accelerates and the biological risk environment becomes increasingly complex. Significant progress has been made in legislation, laboratory capacity, surveillance systems, and participation in regional and global cooperation platforms. These advances have strengthened national readiness and created new opportunities for constructive engagement with ASEAN, the BWC, and other international partners. At the same time, the breadth and speed of scientific development—particularly in synthetic biology, genomics, digital biology, and high-containment laboratory work—have introduced governance challenges that require more integrated, adaptive, and transparent approaches.

Gaps persist where regulatory domains intersect, where operational capacity has not yet fully aligned with policy ambitions, and where scientific and technological developments outpace existing oversight mechanisms. Ensuring coherence across ministries, sustaining long-term laboratory operations, safeguarding biological data, supporting ethical and responsible research, and strengthening public communication remain central areas for continued refinement. Regionally, China's growing partnerships with ASEAN and ASEAN+3 offer practical opportunities to enhance early-warning systems, harmonize surveillance standards, and deepen joint training and laboratory collaboration. Strengthening these cooperative mechanisms will be critical to fostering shared preparedness and reducing systemic vulnerabilities.

2. Introduction

China's biosecurity landscape has evolved rapidly in recent years as scientific innovation accelerates and the global environment for managing biological risks becomes more complex. Advances in biotechnology, including synthetic biology, gene editing, high-throughput sequencing, and AI-assisted life sciences, have expanded opportunities for scientific and industrial development. At the same time, the recurrence of emerging and re-emerging infectious diseases—illustrated by SARS, H1N1, COVID-19, avian influenza, and mpox—has demonstrated how quickly biological risks can escalate and disrupt public health, supply chains, and socioeconomic stability.

These developments have underscored the importance of establishing biosecurity systems that are not only capable of responding to acute threats but also able to support long-term preparedness and resilience. As one of the world's leading biotechnology powers, China plays an increasingly significant role in shaping regional and global biosecurity governance. The country has strengthened legislation, expanded laboratory infrastructure, modernized disease surveillance networks, and intensified participation in multilateral initiatives such as the Biological Weapons Convention (BWC), ASEAN+3 cooperation platforms, and the Belt and Road Initiative's Health Silk Road.

At the same time, the rapid pace of biotechnological development presents governance challenges. These include managing dual-use research of concern (DURC), ensuring consistent

implementation of biosafety standards across a large and diverse laboratory system, safeguarding digital biological information, and maintaining effective communication during public health emergencies. These challenges are not unique to China; they reflect broader global issues that all countries face as biological sciences evolve.

This report examines China's biosecurity governance from multiple angles. It begins by analyzing how biosecurity is conceptualized within Chinese policy discourse, then maps the regulatory and institutional architecture that underpins national oversight. It proceeds to assess how key actors perceive biosecurity risks, followed by an exploration of the challenges and gaps that emerge when regulatory frameworks meet operational realities. The report then discusses China's role in regional and international cooperation, with a particular focus on ASEAN and the BWC. Finally, it offers recommendations aimed at strengthening governance coherence, supporting responsible scientific development, and enhancing China's constructive role in global biosecurity cooperation.

Together, these sections present a balanced and evidence-informed assessment of China's evolving biosecurity landscape. The report does not evaluate political decision-making; instead, it focuses on policy frameworks, technical issues, and institutional developments relevant to public health, biosafety, and responsible innovation.

3. Methodology and Positionality

This report is based on a comprehensive literature review of Chinese legislation, ministerial regulations, academic publications, regional cooperation documents, and international governance frameworks. The analysis also draws upon previous policy reports and publicly available guidelines. The author writes from the standpoint of an Asia Center for Health Security (ACHS) Fellow based in China, recognizing both the analytical advantages and limitations that come with being situated within the region's institutional and geopolitical context.

4. Conceptualizing Biosecurity in China

China's conceptualization of biosecurity has changed significantly over the past two decades, moving from a sector-specific understanding to a comprehensive, multi-dimensional framework¹. This evolution reflects policy learning from past outbreaks, growing technological capabilities, and the integration of biosecurity into broader national development strategies.

4.1 Early Emphasis on Public Health and Agricultural Safety

Before the early 2000s, biosecurity policy in China largely centered on infectious disease control, quarantine measures, and protection of agricultural resources². These areas were shaped by historical experiences with zoonotic diseases, plant pathogens, and risks to food security.

¹ Cao, C. (2021). China's evolving biosafety/biosecurity legislations. *Journal of Law and the Biosciences*, 8(1), Isab020. <https://doi.org/10.1093/jlb/Isab020>

² Zhu, K. (2020). Review of biosecurity strategy research in China in the 21st century [in Chinese]. *Frontiers*. <https://doi.org/10.16619/j.cnki.rmltxsqy.2020.20.006>

Biosafety discussions were primarily technical, often confined to laboratory management, veterinary science, and agriculture.

4.2 SARS as a Turning Point

The SARS outbreak in 2003 marked a major shift. It highlighted weaknesses in disease surveillance, laboratory procedures, and emergency response coordination³. The lessons from SARS contributed to the strengthening of public health capacities, expansion of the China CDC system, and modernization of national disease reporting mechanisms.

SARS also marked the beginning of China's broader conceptualization of biosecurity, expanding it from a public health issue to a governance domain that intersects with science, technology, and national resilience⁴.

4.3 Integration into the Holistic Approach to National Security

A major conceptual shift in China's biosecurity thinking occurred in 2014, when policymakers recognized that national security threats were becoming increasingly complex, interconnected, and technology-driven—rendering traditional security frameworks insufficient⁵. Several factors drove this transition. Governance lessons from SARS demonstrated how biological risks could rapidly escalate into national-level challenges, while the rapid expansion of China's biotechnology sector introduced both new opportunities and heightened risks that demanded coordinated oversight across the health, science, agriculture, and security domains. At the same time, globalization and cross-border pressures—including infectious diseases, ecological degradation, and vulnerabilities in global supply chains—highlighted the need for a systemic, whole-of-government approach to security.

Against this backdrop, the Holistic View to National Security (总体国家安全观) formally incorporated biosecurity as a core component of national security⁶. Under this framework, biosecurity expanded beyond its earlier public health focus to encompass a much broader scope, including biotechnology development, laboratory biosafety, management of pathogenic microorganisms, protection of genetic and biological resources, prevention of invasive species, and environmental and ecological safety⁷. This expanded framing positions biosecurity not only as a matter of risk prevention but also as a foundation for sustainable scientific progress and

³ Shen, Y., Liu, Y., Krafft, T., & Wang, Q. (2025). Progress and challenges in infectious disease surveillance and early warning. *Medicine Plus*, 2(1), 100071. <https://doi.org/10.1016/j.medp.2025.100071>

⁴ Li, Z., Li, D., Dong, J., Zhu, Q., Zuo, Y., Pu, J., Wang, L., Lei, W., Cai, J., Cheng, Q., Li, Y., Yang, J., Ju, Y., & Wu, Z. (2025). Integrated health surveillance and early warning systems in China under the One Health perspective: Progress and challenges. *Science in One Health*. <https://doi.org/10.1016/j.soh.2025.100132>

⁵ Vuori, J. A. (2023). *Chinese macrosecuritization: China's alignment in global security discourses* (Routledge New Security Studies). Routledge. <https://doi.org/10.4324/9781003309413>

⁶ Xi, J. (2014). A holistic view of national security: Main points of the speech at the first meeting of the National Security Commission on April 15, 2014. In *The governance of China*. Beijing: Foreign Languages Press

⁷ Feng, W. (2022). *The theoretical foundation of the Global Security Initiative: The holistic view of national security* [全球安全倡议的理论基础 – 总体国家安全观视角]. Interpret: China.

national resilience⁸. It reflects an understanding that biological risks are inherently interconnected and that safeguarding biosecurity requires cross-sector collaboration and an integrated governance system.

4.4 The Biosecurity Law (2020) as a Conceptual Anchor

The enactment of the Biosecurity Law represents the institutional consolidation of the understanding of the Holistic View to National Security. The law defines biosecurity as the ability to prevent and manage biological risks while maintaining social and ecological stability and supporting scientific and technological development⁹.

The definition emphasizes several themes:

1. Risk prevention and control across infectious diseases, laboratory safety, and biotechnology.
2. Coordination across sectors, including health, agriculture, science, and security agencies.
3. Innovation and development, linking biosecurity to China's long-term scientific strategies.
4. Integration with national resilience, highlighting the role of biosecurity in safeguarding stability.

This formulation differs from narrower functional definitions used by organizations such as WHO¹⁰, FAO^{11, 12}, or OECD¹³. While those frameworks prioritize biosafety practices, laboratory containment, and prevention of deliberate misuse, China's Biosecurity Law integrates these elements into a broader strategic vision that links biological risk management to national development and governance modernization¹⁴.

⁸ Xinhua. (2014). 习近平：坚持总体国家安全观走中国特色国家安全道路-高层动态-新华网 [Xi Jinping: Adhere to the overall national security concept and follow the path of national security with Chinese characteristics]. Xinhua Net. http://www.xinhuanet.com/politics/2014-04/15/c_1110253910.htm

⁹ Liang, H., Huang C., Zhu X., Yuan Z. (2021). Significance of and outlook for the Biosecurity Law of the People's Republic of China. *Journal of Biosafety and Biosecurity*, 3(1), 46–50. <https://doi.org/10.1016/j.jobbb.2021.06.004>

¹⁰ World Health Organization. (2004). Laboratory biosecurity guidance. <https://iris.who.int/server/api/core/bitstreams/9e97e6c8-0955-46a9-b638-b4d0c9acbcd7/content>

¹¹ Food and Agriculture Organization of the United Nations. (n.d.). Biosecurity. In *One Health – FAO*. <https://www.fao.org/one-health/areas-of-work/biosecurity/en>

¹² Food and Agriculture Organization of the United Nations. (2008). *Biosecurity for highly pathogenic avian influenza: Issues and options* (FAO Animal Production and Health Paper No. 165). Rome: FAO.

¹³ Organisation for Economic Co-operation and Development. (2007). *OECD best practice guidelines for biological resource centres*. OECD Publishing. <https://doi.org/10.1787/9789264128767-en>

¹⁴ Food and Agriculture Organization of the United Nations. (2021). *Biosecurity Law of the People's Republic of China*. FAOLEX. <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC198696/>

Table 1. Comparisons of Biosecurity Definitions

Organization	Definition
WHO	Biosecurity concepts – the protection of microbiological assets from theft, loss or diversion, which could lead to the inappropriate use of these agents to cause public health harm. Laboratory biosecurity refers to institutional and personal security measures designed to prevent the loss, theft, misuse, diversion or intentional release of pathogens and toxins.
FAO	<p>Biosecurity is a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) that analyze and manage risks in the sectors of food safety, animal life and health, and plant life and health, including associated environmental risk. Biosecurity covers the introduction of plant pests, animal pests and diseases, and zoonoses, the introduction and release of genetically modified organisms (GMOs) and their products, and the introduction and management of invasive alien species and genotypes. Biosecurity is a holistic concept of direct relevance to the sustainability of agriculture, food safety, and the protection of the environment, including biodiversity.</p> <p>OR</p> <p>Biosecurity refers to the “implementation of practices that create barriers in order to reduce the risk of the introduction and spread of disease agents.</p>
OECD	Institutional and personal security measures and procedures designed to prevent the loss, theft, misuse, diversion or intentional release of pathogens, or parts of them, and toxin producing organisms, as well as such toxins that are held, transferred and/or supplied by Biological Resource Centers.
Biosecurity Law of the People’s Republic of China	Biosecurity refers to a state in which a country can effectively prevent and respond to threats posed by hazardous biotic or related factors, undergo stable and healthy development in biotechnology, the people’s lives and health as well as ecosystem are relatively not in danger or free from threats, and the biological field has the capability to safeguard national security and sustainable development.

5. Regulatory Frameworks and Key Institutions

China’s biosecurity governance system has developed into a comprehensive and multi-layered regulatory framework designed to support public health protection, ensure laboratory biosafety, guide the responsible development of biotechnology, and enhance national preparedness for biological risks¹⁵. Over the past decade, this system has broadened from sector-based

¹⁵ Min, K., Zhang, Y., Liu, J., Yang, J., Cao, F., Peng, Z., & Liu, D. (2025). China’s biosafety/biosecurity governance: Evolution, challenges, and architecture design. *Frontiers in Medicine*, 19(5), 871–878. <https://doi.org/10.1007/s11684-025-1158-y>

regulations into a more integrated governance structure, with the Biosecurity Law (2020) serving as its central legal foundation¹⁶.

Table 2. Summary of China’s Key Biosecurity Laws & Institutions

Category	Key Elements
Core Laws	Biosecurity Law; Infectious Diseases Law; GMO Regulations
Lead Institutions	NHC; China CDC; MOST; MARA; MPS; MSS; NMPA
Strategic Bodies	National Security Commission
Focus Areas	Surveillance, Labs, DURC, Emergency Response, Data Governances

5.1 Core Legislation and Policy Instruments

The Biosecurity Law (2020) represents the central legal foundation of China’s contemporary biosecurity governance system. Enacted to unify a previously fragmented regulatory landscape spanning public health, biotechnology, genetic resource management, and laboratory biosafety, the law responds to long-standing governance lessons from SARS, H1N1, and avian influenza, which revealed the need for integrated risk prevention, coordinated oversight, and robust early-warning systems¹⁷. Although drafted before the COVID-19 pandemic, the crisis accelerated its adoption and underscored its urgency—highlighting the importance of modernizing surveillance, strengthening the China CDC’s institutional capacity, clarifying responsibilities across ministries during emergencies, and elevating biosafety standards in high-containment laboratories¹⁸. The law establishes a comprehensive framework governing infectious disease control, biotechnology research, laboratory operations, counter-bioterrorism readiness, and invasive species management. It also formalizes risk assessment requirements and sets procedures for national monitoring, early warning, information reporting, and emergency response, thereby anchoring China’s shift toward a more coherent and strategically coordinated biosecurity system¹⁹.

Complementing this law are several long-standing and newly updated regulations:

1. Law on the Prevention and Control of Infectious Diseases²⁰

This law outlines reporting responsibilities, classification of infectious diseases, and requirements for prevention and control. It supports the national surveillance system and

¹⁶ China Institutes of Contemporary International Relations. (2023). China’s biosafety/biosecurity concept and governance system. CICIR. <http://www.cicir.ac.cn/UpFiles/file/20230630/6382374889951538716352930.pdf>

¹⁷ Wang, L., Wang, F., & Zhang, W. (2021). Bioethics in China’s Biosecurity Law: Forms, effects, and unsettled issues. *Journal of Law and the Biosciences*, 8(1), Isab019. <https://doi.org/10.1093/jlb/Isab019>

¹⁸ Qiu, S., & Hu, M. (2021). Legislative moves on biosecurity in China. *Biotechnology Law Report*, 40(1), 27–34. <https://doi.org/10.1089/blr.2020.29217.mh>

¹⁹ Wang, K., Chen, Z., & Yao, X. (2021). The legal system of national biosafety with Chinese characteristics: The status quo and trends. In *Proceedings of the 2021 4th International Workshop on Advances in Social Sciences (IWASS 2021)*. Francis Academic Press. <https://doi.org/10.25236/iwass.2021.026>

²⁰ National People’s Congress. (2007, December 12). Law of the People’s Republic of China on Prevention and Control of Infectious Diseases. http://www.npc.gov.cn/zgrdw/englishnpc/Law/2007-12/12/content_1383919.htm

provides the legal basis for measures such as quarantine and outbreak investigation.

2. Regulations on the Safety Management of Biotechnology R&D²¹

These regulations guide risk classification and management of genetically modified organisms, laboratory containment, and monitoring of synthetic biology research and related applications.

3. High-Level Biosafety Laboratory System Construction Plan (2016–2025)²²

This plan outlines the development of BSL-3 and BSL-4 laboratories, training requirements, personnel certification, and long-term facility management.

4. 14th Five-Year Plan (2021–2025)²³

The plan includes the establishment of a National Biosecurity Risk Monitoring and Early Warning System, aimed at integrating epidemiological, genomic, environmental, and digital surveillance data into a unified platform.

Together, these laws and policies provide the structural backbone for biosecurity governance. Their design reflects an intent to balance scientific advancement with safety and risk prevention.

5.2 Crisis Activation and Legal Synergy

One notable feature of China's regulatory architecture is that different laws can be activated simultaneously during a biological event^{2,24}. For example:

- An infectious disease outbreak triggers provisions in the Biosecurity Law, Infectious Diseases Law, and the Emergency Response Law.
- A laboratory incident activates laboratory biosafety regulations, institutional biosafety committee protocols, and local emergency reporting requirements.
- A suspected deliberate biological threat involves the Ministry of Public Security (MPS), Ministry of State Security (MSS), and counter-bioterrorism provisions under the Biosecurity Law.

This layered structure allows for flexible and coordinated use of legal tools, ensuring that no single instrument must address all facets of a complex event. It also reinforces the importance of inter-agency coordination mechanisms²⁵.

²¹ Ministry of Science and Technology of the People's Republic of China. (2019, March 11). 关于《生物技术研究开发安全管理条例（征求意见稿）》公开征求意见的公告 [Public notice on soliciting opinions on the draft regulations on the safety management of biotechnology research and development]. http://www.most.gov.cn/tztg/201903/t20190311_145548.html

²² Gao, W., Wu, Z., Zuo, K., Xiang, Q., Zhang, L., Chen, X., Tan, F., & Liu, H. (2025). Global safety and health: The history of high-level biosafety laboratories toward large scientific facilities. *Laboratories*, 2(1), 3. <https://doi.org/10.3390/laboratories2010003>

²³ Asian Development Bank. (2021). The 14th Five Year Plan of the People's Republic of China (2021–2025): Fostering high quality development. Mandaluyong City: ADB. <http://dx.doi.org/10.22617/BRF210192-2>

²⁴ National People's Congress of the P.R.C. (2021). Articles 20, 21, and 39 [in Chinese].

²⁵ Wang, S. (2022). Convergence and divergence of biosecurity and biodiversity in China. *China International Strategy Review*, 4(1), 144–155.

5.3 Institutional Landscape

China's biosecurity governance involves collaboration among a wide range of ministries and specialized agencies, each with defined areas of responsibility.

The Biosecurity Law empowers the National Security Commission (NSC) to provide high-level strategic direction, make national-level decisions, and coordinate major biosecurity events and activities²⁶. Headed by the president and supported by the Standing Committee of the Central Political Bureau of the Communist Party of China, as well as key government bodies—including the Ministry of Foreign Affairs, Ministry of Public Security, Ministry of State Security, General Staff Department, and Ministry of Commerce—the NSC oversees biosecurity at the national level. To facilitate implementation, inter-ministerial coordination mechanisms under the law promote cooperation among agencies such as the National Health Commission (NHC), China CDC, Ministry of Science and Technology (MOST), Ministry of Agriculture and Rural Affairs (MARA), and National Medical Products Administration (NMPA), while local administrative divisions and ministries carry out operational biosecurity work.

- **National Health Commission (NHC)**
The NHC is central to public health preparedness, disease surveillance, and laboratory biosafety. It issues standards, coordinates outbreak response, and works closely with local health authorities and the China CDC²⁷.
- **China CDC**
The China CDC functions as the operational and scientific hub for epidemiological surveillance, risk assessment, lab management, training, and technical support. Its modernization has been a major national priority since the COVID-19 pandemic²⁸.
- **Ministry of Science and Technology (MOST)**
MOST oversees national biotechnology strategies, research funding, and scientific ethics. It is also responsible for guidelines on biotechnology development, research integrity, and dual-use governance²⁹.
- **Ministry of Agriculture and Rural Affairs (MARA)**
MARA manages agro-biosecurity, including animal and plant disease surveillance, zoonosis prevention, quarantine systems, and GM crop oversight³⁰.

²⁶ National People's Congress of the P.R.C. (2021). Article 10 [in Chinese].

²⁷ National Health Commission of the People's Republic of China. (2018, September 22). What we do. http://en.nhc.gov.cn/2018-09/22/c_74499.htm

²⁸ Zeng, Z., Chen, H., Chen, Q., Wang, Y., Huang, L., Lai, C., Liu, K., Pan, H., & Cui, Y. (2024). Advancing China's disease control and prevention system: A strategic roadmap for high-quality development. *China CDC Weekly*, 6(38), 975–978. <https://doi.org/10.46234/ccdcw2024.202>

²⁹ Hennig, W. (2006). Bioethics in China: Although national guidelines are in place, their implementation remains difficult. *EMBO Reports*, 7(9), 850–854. <https://doi.org/10.1038/sj.embor.7400794>

³⁰ Wei, X., Lin, W., & Hennessy, D. A. (2013). Biosecurity and disease management in China's animal agriculture sector (Working Paper 13 WP 542). Center for Agricultural and Rural Development. <https://www.card.iastate.edu/products/publications/pdf/13wp542.pdf>

- **National Medical Products Administration (NMPA)**
NMPA regulates vaccines, biologics, gene therapies, and diagnostics, ensuring the safety and quality of biotechnology-derived products³¹.

5.4 Dual-Use Research Governance

Dual-use research of concern (DURC) has become increasingly important as synthetic biology and genome engineering advance³². While China's Biosecurity Law and export-control mechanisms set overarching principles, operational guidance also draws from earlier foundational regulations^{14,33}.

For example:

- The Management Regulations on LB of Pathogenic Microorganisms classify microorganisms into four groups, with Group 1 as the highest risk³⁴.
- The 2006 List of Human-Transmitted Pathogenic Microorganisms specifies biosafety levels required when handling each pathogen³⁵.

These regulatory tools help standardize laboratory procedures, although continuous updates are necessary to keep pace with scientific developments.

5.5 Toward a More Integrated Governance Model

Taken together, China's regulatory frameworks and institutional arrangements reflect significant progress in building a comprehensive biosecurity system. The emphasis on coordination, early warning, scientific integrity, and emergency readiness aligns with global trends in improving biological risk governance. At the same time, ongoing refinement is expected as biotechnology evolves and as China deepens its cooperation with international partners.

6. Biosecurity Risk Perceptions in China

Biosecurity risk perception in China is shaped by lessons from past outbreaks, technological progress, and broader national development priorities. Across government agencies, scientific communities, and academic experts, several categories of biological risks consistently receive attention.

³¹ Tan, R., Hua, H., Zhou, S., et al. (2025). Current landscape of innovative drug development and regulatory support in China. *Signal Transduction and Targeted Therapy*, 10, 220. <https://doi.org/10.1038/s41392-025-02267-y>

³² Swiss Medical Weekly. (2018, December 2). Dual use in the 21st century: Emerging risks and global governance. *Swiss Medical Weekly*, 148(4748), w14688. <https://smw.ch/index.php/smw/article/view/2545>

³³ Regulations of the People's Republic of China on export control of nuclear dual-use items and related technologies (2007). <https://www.caea.gov.cn/english/n6759372/c6793480/content.html>

³⁴ Wu, G. (2019). Laboratory biosafety in China: Past, present, and future. *Biosafety and Health*, 1(2), 56–58. <https://doi.org/10.1016/j.bsheat.2019.10.003>

³⁵ Wang, L., Wang, Y., Jin, S., Wu, Z., Chin, D. P., Koplan, J. P., & Wilson, M. E. (2008). Emergence and control of infectious diseases in China. *The Lancet*, 372(9649), 1598–1605. [https://doi.org/10.1016/S0140-6736\(08\)61365-3](https://doi.org/10.1016/S0140-6736(08)61365-3)

Table 3. China’s Biosecurity Risk Perceptions

Risk Category	Risk Perception	Key Evidence & Indicators
EIDs/REIDs	High	Post-COVID reforms; 14th Five-Year Plan; China CDC modernization
Laboratory Accidents	Moderate to High	Biosecurity Law; BSL-4 lab strategy; strengthened lab oversight
Biotech/DURC	Moderate	Draft regulations from MOST and NHC; ethical reviews in scientific journals
Deliberate Misuse/Bioterrorism	Low to Moderate	Limited institutional response; low emphasis in national strategy
Misinformation	High	Biosecurity Law Chapters II–III; public health communication research
Environmental & Agricultural Biosafety	Moderate to High	MARA approvals for GE products; GMO regulations

6.1 Emerging and Re-emerging Infectious Diseases (EIDs/REIDs)

Emerging infectious diseases are widely viewed as the most frequent and disruptive category of biological risks^{36,37}. Experiences with SARS, H1N1 influenza, avian influenza, COVID-19, and mpox have underscored the importance of rapid pathogen detection, transparent and timely reporting, effective genomic surveillance, strong cross-sector coordination, and sustained public communication. These lessons have reinforced the need for a more agile and interconnected public health system capable of identifying and responding to outbreaks at their earliest stages. Reflecting this priority, the 14th Five-Year Plan places strong emphasis on strengthening early-warning capacities, modernizing public health information systems, and improving the China CDC’s technical capabilities³⁸. These efforts collectively aim to build a more responsive, data-driven, and resilient health security architecture equipped to manage both known and emerging infectious disease threats.

6.2 Laboratory Biosafety and Research Safety Culture

As China expands its laboratory infrastructure, including high-level biosafety facilities, increasing attention has been placed on maintaining high standards for operational safety, staff training, and equipment maintenance. Chinese scientists and policymakers frequently emphasize the need for

³⁶ Qiang, N., Li, T., Jia, L., Zhu, Z., Feng, X., Ran, J., Zhang, X., & Han, L. (2025). Risk assessment of emerging infectious diseases in China under the One Health framework. *Science in One Health*, 4, 100104. <https://doi.org/10.1016/j.soh.2025.100104>

³⁷ Wang, S., Li, W., Wang, Z., et al. (2024). Emerging and reemerging infectious diseases: Global trends and new strategies for their prevention and control. *Signal Transduction and Targeted Therapy*, 9, 223. <https://doi.org/10.1038/s41392-024-01917-x>

³⁸ Ji, J. S., Xia, Y., Liu, L., Zhou, W., Chen, R., Dong, G., Hu, Q., Jiang, J., Kan, H., Li, T., Li, Y., Liu, Q., Liu, Y., Long, Y., Lv, Y., Ma, J., Ma, Y., Pelin, K., Shi, X., Tong, S., Xie, Y., Xu, L., Yuan, C., Zeng, H., Zhao, B., Zheng, G., Liang, W., Chan, M., & Huang, C. (2023). China’s public health initiatives for climate change adaptation. *The Lancet Regional Health – Western Pacific*, 40, 100965. <https://doi.org/10.1016/j.lanwpc.2023.100965>

comprehensive biosafety management systems, continuous professional development for laboratory personnel, standardized accreditation processes for facilities, and clear incident-reporting mechanisms that ensure accountability and transparency. Together, these priorities aim to strengthen safe laboratory operations and sustain public confidence in high-containment research.

Laboratory biosafety is viewed as critical not only for preventing accidents but also for supporting international confidence and scientific credibility^{39,40}.

6.3 Dual-Use Research of Concern (DURC)

Rapid developments in synthetic biology, gene editing, and automated high-throughput experimentation have raised important discussions about research that holds both scientific and security relevance. Chinese scholars commonly highlight the importance of rigorous ethical review, the establishment of standardized risk assessment frameworks, strong information governance practices for sensitive biological data, and the need to balance scientific progress with responsible oversight. These considerations reflect a growing recognition of the dual-use nature of cutting-edge biotechnology and the importance of ensuring its safe and beneficial development.

The view that DURC requires both technical and ethical Governance is increasingly mainstream within Chinese academic discussions⁴¹.

6.4 Deliberate Misuse and Low-Probability, High-Impact Risks

Deliberate biological threats are generally perceived as low-probability relative to natural outbreaks but are recognized as scenarios that could have significant consequences. Relevant agencies such monitor risks related to illicit access to biological materials, unauthorized laboratory activities, and potential cross-border biological threats. While not the dominant focus of national discourse, these issues are integrated into China's broader security planning⁴².

6.5 Environmental and Agricultural Biosecurity

China places strong emphasis on agricultural biosecurity, recognizing its critical role in safeguarding food security, preventing zoonotic spillover, managing plant and animal pathogens, and controlling invasive species. The Ministry of Agriculture and Rural Affairs (MARA) is responsible for overseeing surveillance systems, conducting risk assessments, and coordinating preventive measures across livestock, crop, and aquaculture sectors. In addition to monitoring

³⁹ Tang, Q., Yan, F., Yuan, L., Tang, Y., Chen, H., Sun, Y., Yang, M., & Song, G. (2024). Enhancing laboratory biosafety management: A comprehensive strategy from theory to practice. *Frontiers in Public Health*, 12, 1439051. <https://doi.org/10.3389/fpubh.2024.1439051>

⁴⁰ Gao, W., Wu, Z., Zuo, K., Xiang, Q., Zhang, L., Chen, X., Tan, F., & Liu, H. (2024). From biosafety to national security: The evolution and challenges of biosafety laboratories. *Laboratories*, 1(3), 158–173. <https://doi.org/10.3390/laboratories1030013>

⁴¹ Wang, X., & Zhai, X. (2025). Dual-use research assessment in emerging medical biotechnology: An ethical perspective from China. *Developing World Bioethics*, 25(3), 245–252. <https://doi.org/10.1111/dewb.12472>

⁴² Lou, Y., Tang, X., Liao, L., Deng, Z., & Gao, J. (2024). Biosafety and biosecurity: Treading China's synbio tightrope. *Trends in Biotechnology*, 42(4), 389–392. <https://doi.org/10.1016/j.tibtech.2023.10.014>

domestic threats, MARA engages in early-warning activities for transboundary risks, implements biosecurity standards for production and trade, and collaborates with research institutions to develop resilient agricultural practices⁴³.

6.6 Misinformation and Risk Communication

The COVID-19 pandemic clearly illustrated the importance of accurate and timely public communication, and Chinese public health experts increasingly emphasize the role of health literacy, effective communication strategies, transparent information dissemination, and proactive efforts to combat misinformation. Strengthening these areas is viewed as essential not only for improving emergency response but also for building sustained public trust, supporting compliance with health guidance, and enhancing long-term societal resilience to future biological threats.

These issues are addressed in the Biosecurity Law through provisions on public awareness and science communication¹⁴.

6.7 Variations in Risk Perceptions Across Communities

While risk categories are broadly shared across the biosecurity landscape, different stakeholder groups tend to emphasize distinct priorities. Government agencies often focus on systemic preparedness, continuity of operations, and the strengthening of institutional capacity⁴⁴. Researchers place greater emphasis on laboratory safety, technological ethics, and alignment with global scientific standards⁴⁵. Public health academics, in turn, highlight the need for cross-sector collaboration and broader structural reforms within health systems⁴⁶. These differing perspectives contribute to a more comprehensive understanding of biosecurity risks, but they also underscore the importance of coordination and dialogue among stakeholders to ensure coherent, effective, and mutually reinforcing approaches to national and regional resilience.

7. Regulation vs Threats: Challenges and Gaps

China's biosecurity governance system has expanded substantially over the past two decades, evolving from sector-specific regulations into a comprehensive framework that integrates public health, scientific research, agriculture, emergency management, and national security. This progress has significantly strengthened national preparedness and technical capacity. However, the rapid evolution of biological threats—including emerging pathogens, advanced biotechnologies, and increasingly digital laboratories—means that regulatory mechanisms must

⁴³ Liang, J., Yang, X., Jiao, Y., et al. (2022). The evolution of China's regulation of agricultural biotechnology. *aBIOTECH*, 3, 237–249. <https://doi.org/10.1007/s42994-022-00086-1>

⁴⁴ National Health Commission of the People's Republic of China. (2020, October 19). Governments to cooperate to reduce biosecurity risks. *China Daily Global*. https://en.nhc.gov.cn/2020-10/19/c_81907.htm

⁴⁵ Wang, X. (2020). Enhancing the national biosecurity system in China amidst COVID-19 epidemic. *Journal of Biosafety and Biosecurity*, 2(1), 3–4. <https://doi.org/10.1016/j.jobb.2020.03.002>

⁴⁶ Gao, Y., Li, C., Zhou, Q., & Hao, M. (2025). The application of One Health concept in China and its practice and innovation in cross-sector cooperation. *Public Health in Practice*, 9, 100574. <https://doi.org/10.1016/j.puhip.2024.100574>

continually adapt⁴⁷. The following challenges do not indicate shortcomings in China's system; rather, they reflect natural areas for ongoing refinement as the scope and complexity of biosecurity continue to grow.

7.1 Coordinating Multiple Actors and Regulatory Domains

China's biosecurity governance spans a broad array of ministries, research institutions, and provincial authorities. This multi-actor landscape is common among countries with large and rapidly advancing biotechnology sectors, but it creates inherent coordination challenges. The Biosecurity Law has established important structures for cross-agency collaboration, yet practical alignment across institutions remains an evolving effort.

During routine operations, agencies such as NHC, MOST, and MARA regulate different aspects of biosecurity according to their mandates. During emergencies, these systems integrate, but smooth joint decision-making requires standardized communication channels, harmonized protocols, and interoperable data-sharing systems. As scientific and technological boundaries blur—for example, in dual-use oversight, invasive species management, or cross-border risk monitoring—responsibilities can overlap⁴⁸. Continued development of joint working groups, unified technical standards, and shared early-warning and information platforms can help further streamline governance. These adjustments reflect normal institutional maturation within a system expanding in scale and sophistication.

7.2 Managing Rapid Laboratory Expansion and Long-term Operations

China's rapid expansion of BSL-3 and BSL-4 laboratories has significantly enhanced national abilities in high-level pathogen research, diagnostics, and emergency response, while enabling deeper collaboration with global scientific networks⁴⁹. With this expanded infrastructure comes the ongoing need to ensure safe, sustainable, and high-quality operations across a growing number of facilities⁵⁰.

Emerging challenges relate to maintaining consistent accreditation aligned with international biosafety standards, ensuring regular staff training and professional certification, securing stable long-term funding for equipment maintenance and upgrades, and developing uniform lifecycle management systems. These needs are not unique to China; they are shared worldwide as countries expand high-containment capacity. Strengthening standardized training, systematic audits, digital equipment-tracking systems, and workforce development will support operational

⁴⁷ Fan, L., Han, Y., & Xue, Y. (2024). A sustainable balance between innovation and risk: How the "right to science" affects China's medical biotechnology regulatory policy. *Computational and Structural Biotechnology Journal*, 24, 306–313. <https://doi.org/10.1016/j.csbj.2024.04.027>

⁴⁸ Flores-Coronado, J. A., Alanis-Valdez, A. Y., Herrera-Saldivar, M. F., Flores-Flores, A. S., Vazquez-Guillen, J. M., Tamez-Guerra, R. S., & Rodriguez-Padilla, C. (2025). Awareness of the dual-use dilemma in scientific research: Reflections and challenges to Latin America. *Frontiers in Bioengineering and Biotechnology*, 13, 1649781. <https://doi.org/10.3389/fbioe.2025.1649781>

⁴⁹ Gao, W., Wu, Z., Zuo, K., Xiang, Q., Zhang, L., Chen, X., Tan, F., & Liu, H. (2025). Global safety and health: The history of high-level biosafety laboratories toward large scientific facilities. *Laboratories*, 2(1), 3. <https://doi.org/10.3390/laboratories2010003>

⁵⁰ Niu, P., Sun, Z., Zhang, R., Zhao, Y., Tian, F., Cheng, P., Zheng, H., Guo, J., Zhang, M., Ma, X., & Wang, J. (2024). The state of biosafety across China's CDC microbiology laboratories: Insights from a nationwide survey (2021–2023). *Frontiers in Public Health*, 12, 1436503. <https://doi.org/10.3389/fpubh.2024.1436503>

excellence. These efforts also carry regional significance: harmonized laboratory standards and skilled personnel underpin China–ASEAN cooperation on surveillance, diagnostics, and emergency response⁵¹.

7.3 Governance of Emerging Biotechnologies and Dual-Use Research

China has made notable progress in establishing regulations, ethics oversight, and technical standards for biotechnology. As frontier technologies such as synthetic biology, AI-driven lab automation, genome editing, and gene synthesis advance rapidly, governance frameworks must evolve to address new dual-use concerns and the blurring boundaries between physical and digital biology⁵².

Key governance challenges include updating risk classification systems to reflect technological developments, strengthening ethical review mechanisms across academic, government, and private laboratories, enhancing cybersecurity for sensitive biological data and automated workflows, and fostering responsible research norms consistent with global best practices. These issues are global in nature and central to ongoing discussions under the BWC, WHO, and other scientific cooperation platforms.

China's active engagement in the BWC—through CBM submissions, participation in working groups, and support for verification and global capacity building—complements domestic governance efforts⁵³. Continued participation helps align national approaches with emerging global norms for responsible innovation, transparency, and dual-use oversight.

7.4 Data Governance, Cyberbiosecurity, and Information Management

The increasing digitalization of biological research introduces both opportunities and new governance responsibilities. Advances in genomic sequencing, digital laboratory systems, and cloud-based data platforms allow faster detection and analysis of outbreaks, yet they also raise concerns regarding data security, standardization, and quality.

China's evolving data governance landscape highlights several ongoing priorities: strengthening secure data storage and controlled-access systems, improving interoperability across institutions and provinces, ensuring compatibility with regional and international surveillance platforms, and expanding training in cyberbiosecurity for laboratory and IT personnel. These areas are already receiving attention across Chinese health and research institutions, but continued investment in

⁵¹ Qiao, J., Zhan, S., Ren, M., et al. (2025). A new phase of China–ASEAN health cooperation: The China–ASEAN Beijing Declaration on Cooperation in Innovation of Health Products and Technologies. *Global Health Research and Policy*, 10, 3. <https://doi.org/10.1186/s41256-024-00401-x>

⁵² Qin, Y., Hu, J., & Su, K. (2026). Functions and optimization of soft law in the international governance of synthetic biology: The predicament of hard law vs. the rise of soft law. *Synthetic and Systems Biotechnology*, 12, 134–151. <https://doi.org/10.1016/j.synbio.2025.11.005>

⁵³ China. (2011). China's views on strengthening the effectiveness of the BWC (BWC/CONF.VII/WP.24). United Nations Digital Library. <https://digitallibrary.un.org/record/719419>

digital infrastructure and governance mechanisms will be essential to ensure that biological data can be used both safely and effectively for national and regional preparedness.

7.5 Public Communication and Risk Awareness

The COVID-19 pandemic underscored the importance of public communication in shaping risk perception, influencing community behavior, and building trust in emergency response systems⁵⁴. China's Biosecurity Law identifies public awareness, science communication, and accessible risk information as essential components of a resilient national biosecurity culture.

Current challenges relate to strengthening risk communication strategies, expanding public engagement channels, and ensuring community-level outreach tailored to diverse populations⁵⁵. Sustained efforts can enhance scientific literacy, public understanding of biotechnology and laboratory safety, and community preparedness for emergencies. Building strong, two-way communication between authorities, experts, and the public also supports long-term institutional trust and reinforces the effectiveness of health and biosecurity systems⁵⁶.

7.6 Regional and Cross-Border Coordination

China has intensified cooperation with ASEAN and ASEAN+3 on public health, laboratory systems, and surveillance capacity⁵⁷. However, regional biosecurity systems are developing at different speeds, and cross-border threats demand increasingly harmonized approaches. The diversity of national systems creates natural gaps in reporting standards, diagnostic practices, emergency communication channels, and data-sharing protocols.

Recent initiatives—including the ASEAN–China Health Ministers Meeting⁵⁸, the ASEAN Senior Officials Meeting for Health Development (SOMHD)⁵⁹, and the Forum on China-ASEAN Cooperation in Public Health⁶⁰, have helped build a foundation for shared capacity. Moving forward, opportunities include establishing interoperable early-warning systems, improving cross-border outbreak notification mechanisms, expanding joint simulation exercises, and aligning risk

⁵⁴ Vandrevala, T., Morrow, E., Coates, T., Boulton, R., Crawshaw, A. F., O'Dwyer, E., & Heitmeyer, C. (2024). Strengthening the relationship between community resilience and health emergency communication: A systematic review. *BMC Global and Public Health*, 2(1), 79. <https://doi.org/10.1186/s44263-024-00112-y>

⁵⁵ Frost, M., Li, R., Moolenaar, R., Mao, Q., & Xie, R. (2019). Progress in public health risk communication in China: Lessons learned from SARS to H7N9. *BMC Public Health*, 19(Suppl 3), 475. <https://doi.org/10.1186/s12889-019-6778-1>

⁵⁶ Lee, Y., & Li, J. Q. (2021). The role of communication transparency and organizational trust in publics' perceptions, attitudes and social distancing behaviour: A case study of the COVID-19 outbreak. *Journal of Contingencies and Crisis Management*, 29(4), 368–384. <https://doi.org/10.1111/1468-5973.12354>

⁵⁷ Yang, Y., & Li, F. (2020). ASEAN–China cooperation in the COVID-19 outbreak (EAI Background Brief No. 1542). East Asian Institute, National University of Singapore. <https://research.nus.edu.sg/eai/wp-content/uploads/2020/07/EAI-BB-No.-1542-COVID-19-and-ASEAN-China-cooperation-2.pdf>

⁵⁸ Association of Southeast Asian Nations & Government of the People's Republic of China. (2024, August 9). Adopted joint statement of the ninth ASEAN–China Health Ministers Meeting (9th AC HMM). <https://asean.org/wp-content/uploads/2024/08/Adopted-Joint-Statement-9th-ASEAN-China-HMM.pdf>

⁵⁹ Association of Southeast Asian Nations. (2020, March 13). ASEAN senior health officials enhance regional collective actions against COVID-19 pandemic. ASEAN Secretariat. <https://asean.org/asean-senior-health-officials-enhance-regional-collective-actions-against-covid-19-pandemic/>

⁶⁰ Peking University Health Science Center; China ASEAN Science and Technology Cooperation Center for Public Health. (2024, August 22). The 2nd forum on China–ASEAN cooperation in public health & annual assembly of China–ASEAN University Consortium on Medicine and Health held. <https://cascp.bjmu.edu.cn/English/NEWS/93e4bf18d3824cceb25840f4bbd69d24.htm>

communication strategies across different national systems⁶¹. These steps would strengthen regional resilience and enhance China's ability to contribute to collective preparedness for emerging biological threats.

8. Recommendations for Strengthening China's Biosecurity Governance and Regional Role

Building on its existing progress, China has multiple opportunities to further enhance its biosecurity governance and contribute more effectively to regional and global health security. As biotechnology accelerates and regional cooperation deepens, strengthening institutional coordination, research oversight, and international partnerships will be increasingly essential. The recommendations below outline pathways for supporting long-term capacity building and enabling China to play a more constructive role within global governance systems.

8.1 Deepen Integrated Governance Across Sectors

China's whole-of-government approach already provides a strong basis for coordinated biosecurity management, and further refinement will help improve alignment across the public health, agricultural, scientific, environmental, and security sectors. Strengthening cross-agency working mechanisms established under the Biosecurity Law would support more unified decision-making and ensure that ministries share information, technical expertise, and risk assessments in a timely manner. Expanding joint training programs and inter-ministerial exercises would help build shared understanding of roles and responsibilities, while integrated digital platforms could improve the accuracy and comparability of surveillance and laboratory reporting. Harmonizing technical standards—particularly those related to biosafety, sample management, and laboratory operations—would reduce inconsistencies across provinces and institutions. Together, these steps would enhance inter-institutional coherence and improve the effectiveness of both day-to-day management and emergency response.

8.2 Strengthen Sustainable Management of Laboratory and Research Systems

China's advanced laboratory infrastructure is a major national asset, and sustaining its quality over the long term requires continued investment in management systems, professional training, and operational resources. Expanding national training centers dedicated to biosafety, laboratory management, and risk assessment would help cultivate a skilled workforce capable of supporting high-quality research and safe operations. Creating clearer career development pathways for biosafety officers, laboratory technicians, and facility managers would help professionalize these roles and strengthen accountability. Developing standardized systems for lifecycle maintenance, internal auditing, and incident reporting would further ensure consistent quality across institutions. In addition, expanding cooperation with international partners on issues such as high-containment laboratory operations, pathogen handling, and quality management would help China

⁶¹ Wilton Park. (2025, January). Strengthening biosecurity and health security collaboration in the ASEAN region (Report WP3484). <https://www.wiltonpark.org.uk/reports/strengthening-biosecurity-and-health-security-collaboration-in-the-asean-region/>

continuously update its practices in line with evolving global standards. These sustained efforts would strengthen both laboratory safety and scientific capability.

8.3 Advance Responsible Governance of Emerging Biotechnologies

China is well positioned to contribute to global discussions on synthetic biology, gene editing, and governance of dual-use research, and continued refinement of its regulatory framework can support responsible scientific development. Enhancing risk assessment tools tailored to rapidly evolving technologies would help research institutions evaluate potential safety and security implications from early stages of project design. Strengthening the role and expertise of ethics committees and technical advisory groups would support more consistent oversight across diverse research environments. Improving cybersecurity measures for digital biological information, automated research platforms, and cloud-based laboratory systems would help safeguard data integrity and reduce emerging cyber-bio risks. Promoting responsible research practices through academic curricula, professional training, and institutional guidelines would further ensure that scientific advancement proceeds in a manner that aligns with international expectations and strengthens global trust in China's biotechnology governance.

8.4 Expand Regional Cooperation in Early Warning and Joint Response

China's partnerships with ASEAN and ASEAN+3 countries remain central to improving collective preparedness for transboundary biological risks. Building on existing platforms, China can help advance the development of a regional early-warning mechanism that integrates surveillance data, laboratory results, and outbreak notifications. Expanding joint training in epidemiology, laboratory diagnostics, and emergency response would create shared technical competencies and strengthen coordinated action during outbreaks. Closer collaboration on sample-sharing mechanisms, diagnostic standardization, and reference laboratory networks would enable faster identification of pathogens and more consistent response strategies. Regular cross-border simulation exercises would also help countries test operational readiness and refine coordination protocols. By deepening these partnerships, China can contribute to a more harmonized and resilient regional health security architecture.

8.5 Promote Biosecurity Education and Public Engagement

Long-term biosecurity resilience depends not only on legislation and institutional arrangements but also on broader societal awareness of biosafety, public health, and emerging biotechnologies. Enhancing biosecurity and biosafety education in universities would help ensure that future researchers receive systematic training in ethics, risk management, and responsible innovation. Expanding training programs for healthcare workers, laboratory staff, and biotechnology professionals would support safer daily practices and strengthen institutional capacity during emergencies. Improving public communication strategies—particularly those designed to address misinformation, explain technological developments, and support community participation—would build trust and contribute to more effective public health responses. Supporting science

outreach initiatives would further promote public understanding of emerging life sciences and help cultivate a more informed, engaged, and resilient society.

8.6 Enhance International Engagement and Norm-Shaping

China is already an active participant in the BWC, WHO platforms, and various regional cooperation mechanisms, and there remains substantial potential for China to play an even more influential role in shaping global biosecurity norms. Sharing best practices on biosafety, emergency response, and laboratory management would support capacity building in other countries and strengthen global preparedness. Contributing to international standard-setting efforts—particularly in areas such as dual-use research oversight, high-containment laboratory operations, and biotechnology ethics—would help harmonize global governance frameworks and reinforce China’s commitment to responsible science. Supporting capacity development in low- and middle-income countries through training, technology partnerships, and institutional exchanges would also enhance global health equity and strengthen China’s international partnerships. Expanding scientific collaborations in surveillance, genomics, and early-warning systems would further demonstrate China’s commitment to global health resilience and responsible biotechnology leadership.

9. Conclusion

China’s biosecurity landscape has undergone a profound transformation, evolving into a comprehensive governance system that integrates public health protection, scientific advancement, laboratory biosafety, and international cooperation. Anchored by the Biosecurity Law and reinforced through an extensive network of sectoral regulations, technical standards, and institutional mechanisms, this framework now supports both routine operations and rapid emergency response, providing a foundation for national and regional resilience.

As with all rapidly evolving fields, biosecurity governance requires continual adaptation. Advances in synthetic biology, genomics, and digital technologies, combined with the growing complexity of transboundary disease threats, demand forward-looking, adaptive approaches. China has already made significant strides in strengthening surveillance networks, modernizing laboratory infrastructure, and deepening regional and international engagement. Moving forward, there are clear opportunities to further enhance cross-sector coordination, ensure the sustainable management of high-containment laboratories, expand interoperable early-warning systems, and promote responsible governance of emerging biotechnologies.

By sustaining investments in scientific capacity, public health infrastructure, and international collaboration, China can consolidate its position as a constructive leader in regional and global biosecurity. Through rigorous attention to research integrity, biosafety, and transparent cooperation, its biosecurity system will not only safeguard public health but also support responsible innovation, foster trust, and advance collective preparedness against biological threats. With these efforts, China is well-positioned to contribute meaningfully to a safer, more resilient, and interconnected global health ecosystem.

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11. About the Author

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12. About the Asia Centre for Health Security (ACHS)

The Asia Centre for Health Security (ACHS) is a philanthropy-supported think tank dedicated to keeping Asia safe from future pandemics and other catastrophic biological threats that cost lives and disrupt societies. Our work focuses on strengthening the region's preparedness and resilience through research, knowledge-sharing, training, and strategic partnerships. ACHS collaborates with organisations across multiple sectors, including academia, government, and non-government agencies, to contribute to policymaking and biosecurity practices in Asia. ACHS is based at the Saw Swee Hock School of Public Health, National University of Singapore, and works closely with the S. Rajaratnam School of International Studies at Nanyang Technological University.