

RESEARCH ARTICLE

Central–Local Relations in China: A Case Study of Heilongjiang’s GMO Ban

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Abstract

This study contributes to the research on central–local relations in China by examining local dynamics and defiance. Drawing on the case of a provincial government’s defiance against a central policy – Heilongjiang province’s 2016 ban on genetically modified organisms (GMOs) – this study shows that despite the unprecedented recentralization push in recent years, local defiance still exists and persists. In addition, this study finds that the Heilongjiang provincial government managed to reduce potential political backlash by feeding the public distrust of GMOs, exploiting the internal divide and central ambiguity over GMOs and, more importantly, skilfully framing its GMO ban as part of its efforts to implement Xi Jinping’s Green Development Concept.

摘要

本文通过研究中国地方政治生态和地方抵制中央政策对中央与地方关系的研究做出了贡献。本文以 2016 年黑龙江省的转基因禁令为例，说明在中央集权不断加强的大背景下，地方政府的政策自主性和地方抵制中央政府仍然存在。此外，本研究发现黑龙江省政府主要通过三个途径减少了违令的潜在政治风险：一是加深公众对转基因食物的不信任；二是利用内部分歧和中央政府对转基因生物的政策模糊性；三是巧妙地将转基因生物禁令宣传为实施习近平绿色发展理念的一个重要举措。

Keywords: central–local relations; local defiance; decentralization; genetically modified organisms (GMOs); biotechnology; China

关键词: 中央与地方关系; 地方抗争; 分权; 转基因; 生物技术; 中国

Central–local relations have long been a critical issue in China. A careful balance between the central and local governments is paramount to the country’s continued development and stability.¹ As China goes global, research on its central and local relations is of growing importance to the international policy community.²

Over the past decades, central–local relations have generated voluminous studies and intense debates among China watchers. In general, there are three schools of thought.³ The first school of researchers contends that although it formally remains a unitary government, buttressed by top-down political control,⁴ China has become one of the most decentralized states in the world due to

1 Wong, Christine P. W. 1991.

2 He 2019; Mierzejewski 2021; Yang and Wu 2015.

3 Donaldson and Yang 2022.

4 Gong and Wu 2012; Wu, Ye and Li 2019.

decades of reform in the post-Mao era. This group of researchers stresses the importance of local autonomy, particularly over economic affairs, as high autonomy is considered to prompt local officials to pursue economic growth and take the initiative on institutional reform.⁵ The aforementioned decentralized view is disputed by the second school of scholars who claim that decentralization in China only occurred when the centre wanted it to. From their perspective, local governments, provincial governments in particular, as agents of the central government, do not enjoy territorial autonomy but have only operational autonomy.⁶ Nevertheless, the third school of scholars considers central–local relations as a tug of war, stressing that local governments consistently push the boundaries of legitimate local action.⁷

As the theoretical debates continue, tremendous changes have been observed in the reconfiguration of central–local relations since 2012. Under Xi Jinping 习近平, the power balance between central and local governments has been tipped decisively in the centre's favour, and there has been a definite shift towards a more top-down (top-level) design (*dingceng sheji* 顶层设计).⁸ Against the backdrop of shrinking local policy autonomy, Heilongjiang province's controversial genetically modified organism (GMO) ban in 2016 thus represents a puzzling case. With very limited arable land and water resources to feed its 1.4 billion population, applying yield-augmenting technologies, such as GM technology, has long been considered vital by top Chinese leaders, such as former premier Wen Jiabao 温家宝 and current president Xi Jinping, to safeguard the country's food security. Therefore, developing GM technology is a strategic decision made by the Central Committee of the Chinese Communist Party (CCP) and the State Council,⁹ and the central government has been determined to steadily achieve the commercialization of GMOs with Chinese seeds. However, surprisingly, in December 2016, Heilongjiang, the country's most important grain producer, introduced a provincial GMO ban.¹⁰

This paper contributes to the debate on central–local relations through an in-depth case study of Heilongjiang's GMO ban by addressing two key questions. First, why did the Heilongjiang provincial government introduce the provincial GMO ban despite the central government's strong support of GMOs? Second, how has the Heilongjiang provincial government reduced its political risk? The remainder of this article proceeds as follows. Section two introduces the research method and data. Following that, section three presents a brief review of GMO development in China and discusses the nature of Heilongjiang's GMO ban, and section four discusses the contributing factors behind the ban. Section five then sheds light on how the Heilongjiang provincial government managed to reduce the political risk prompted by its defiance of the central GMO policy. A short conclusion is provided in section six.

Method and Data

This research adopted the case study method, and it analyses coverages of GMO issues by prominent party mouthpieces, central and local policy documents, and the statements of Chinese central and local officials. In addition, academic literature and industry reports from both Chinese and English sources have been collected as supplementary data. The primary data set was compiled by accessing China National Knowledge Infrastructure (CNKI). Apart from CNKI, relevant central and local governments' laws and regulations were extracted from the PKULaw database and government websites.

5 Lieberthal and Lampton 1992.

6 Cai and Treisman 2006; Heilmann 2008; Rithmire 2014.

7 Chung, 2017; Huang, Yasheng 1999.

8 Yu and Huang 2019; Shirk 2018; Kostka and Nahm 2017; Wong and Karplus 2017; Schubert and Alpermann 2019; Shirk 2018.

9 MARA 2016.

10 Department of Justice of Heilongjiang Province 2016.

Central GMO Policy and Heilongjiang's GMO Ban

Chinese leaders have long considered GM technology an essential solution to the country's food security challenges. China is not only the first country that commercialized GMOs back in 1992 but also at the forefront of global GMO research and development.¹¹ For decades, top Chinese leaders and various central policy documents have shown strong support for GMOs (see Appendix A in supplementary material). For instance, in 2007, at the annual gathering of the Chinese Academy of Sciences and the Chinese Academy of Engineering, the then premier Wen Jiabao said, "To solve the food problem, we have to rely on big science and technology measures, rely on biotechnology, rely on GM technology."¹² In February 2008, China's No. 1 Document (*yihao wenjian* 一号文件) initiated a major special scientific and technological project for breeding new GMO varieties. Later that year, in July, the State Council approved a US\$3.5 billion investment in GMO development.¹³ Following this, the importance of developing GMOs was further stressed during the Third Plenary Session of the 17th Central Committee and in the country's first ever Medium- and Long-Term Food Security Plan (2008–2020) in late 2008.¹⁴ Then, in 2010, the State Council announced its plans to develop seven strategic emerging industries (SEIs). Biotechnology, including GM technology, was one of the seven SEIs.¹⁵

However, with the outbreak of several major food safety scandals, and more importantly, the Golden Rice Scandal in 2012,¹⁶ the concern among Chinese consumers about GMOs has dovetailed with broader worries about food safety.¹⁷ Furthermore, reports of the widespread illegal plantation of GM crops, particularly the GM varieties developed by foreign companies such as Monsanto, have also led to worry about foreign control of China's GMO market. Amid mounting public resistance and growing fear of foreign control over GM technology, in a speech at the Central Rural Work Conference in December 2013, Chinese president Xi Jinping stated that China must "boldly research and innovate, [and] dominate the high points of GMO technology" while exercising appropriate caution.¹⁸ Following this, in March 2014, Han Changfu 韩长赋, the then minister of agriculture and rural affairs, while responding to media questions regarding GMOs, stated:

To ensure food security and the effective supply of important agricultural products, the way out is that we must take the road of scientific and technological innovation. This also includes that we must occupy a place in GM technology and have our own independent intellectual property rights. GM technology cannot be monopolized by others, and the GMO market cannot be occupied by foreign countries.¹⁹

In December 2014, the chief economist and press secretary of the Ministry of Agriculture and Rural Affairs (MARA) outlined the roadmap for GMO commercialization in China.²⁰ To revert the public opinion of GMOs, China has not only launched a media campaign to combat misinformation and build support for GM foods²¹ but also mobilized Chinese scientists, most notably the father of hybrid rice, Yuan Longping 袁隆平, to endorse GMOs publicly.²²

11 Andersen 2020.

12 Stone 2008.

13 USDA Foreign Agricultural Service 2008.

14 State Council 2008.

15 State Council 2010.

16 Hvistendahl and Enserink 2012.

17 Cao 2018; Jiang and Fang 2019.

18 "China to Catch Up with GM Technology." *China Daily*, 3 February 2015, www.chinadaily.com.cn/china/2015-02/03/content_19478193.htm. Accessed 22 March 2022.

19 State Council 2014a.

20 State Council 2014b.

21 Patton 2014.

22 Zhang 2018.

In addition, the importance of GM technology has been stressed by the No. 1 Documents – the central government’s prime directive – for many years (see Appendix A in supplementary material). Shortly after Xi’s statements, the 2014 No. 1 Document was published, in which it called for strengthening biotechnology research and development. Then in 2015, for the first time, the country’s No. 1 Document prioritized the scientific popularization of agricultural GM biotechnology. The 2016 No. 1 Document added to this by calling for reinforcing agricultural GM technology development and oversight and cautiously promoting the commercialization of GMOs. Also, in many No. 1 Documents (such as those of 2010, 2019, 2021 and 2022), though GM technology was not explicitly mentioned, the term “biological breeding” (*shengyu yuzhong* 生物育种) has been used. Biological breeding is the collective name for modern agricultural biotech breeding, which includes the use of transgenic gene editing, whole genome selection, synthetic biology and other technologies. Nevertheless, GM technology is widely regarded as the core of biological breeding, and in the Chinese context, biological breeding and GM breeding (*zhuangjiyin yuzhong* 转基因育种) are often used interchangeably²³ or bundled together in the form of “GM biological breeding” (*zhuanjiiyin shengwu yuzhong* 转基因生物育种).²⁴ Moreover, in April 2016, MARA held a press conference on GMO development in China in which it was announced that during the 13th Five-Year Period (2016–2020), the country would carry out the following: (1) step up research on GM cotton and corn varieties; (2) accelerate the commercialization of new GM cotton and GM corn; and (3) take the lead in GM rice research and development.²⁵ In July 2016, the State Council released the 13th Five-Year Plan for Science and Technology Innovation (2016–2020). According to the plan, China aimed to push forward the commercialization of GM corn and GM soybeans by 2020.²⁶ Thus, notwithstanding setbacks in GMO commercialization and calls for exercising caution, developing GMOs has always been a strategic decision made by the Central Committee and the State Council, and the country is determined to steadily achieve the commercialization of GMOs with Chinese seeds.²⁷

Despite the strong and consistent central support for GMO development, in December 2016, Heilongjiang province, which grows more than 10 per cent of China’s grain, introduced a provincial ban on GM crops, which forbids not only the cultivation of GM crops but also the production, processing and trading of GM foods and products that contain GM ingredients.²⁸ Legally speaking, local regulations that the People’s Congresses issue at the provincial level cannot be in conflict with the constitution or the national government’s laws. China’s National Food Safety Law only states that GM food (processed GM products rather than GM crops) needs to be labelled accordingly. In other words, Heilongjiang’s 2016 provincial GMO ban, as an amendment to its food safety regulation, does not align with the National Food Safety Law. Also, at the national level, the plantation of GM crops is governed by the National Seed Law and the Regulation on Administration of Safety of Agricultural Genetically Modified Organisms, which only prohibits illegal plantation of GM crops. Heilongjiang’s amendment to its food safety regulation was, however, intended as a complete ban on GM crop plantations.²⁹ More importantly, Heilongjiang’s GMO ban also covers the processing, trading and import of GM foods or products containing GM ingredients, which are allowed at the national level.

23 Huang, Dafang 2013; Li, Liyin 2022; see Appendix B in supplementary material for details.

24 MOST 2016; State Council 2021.

25 MARA 2016.

26 State Council 2016a.

27 MARA 2016. Since 2020, MARA has begun organized planting pilots for corn and soybeans that already had biosafety licences, and the pilot zone has been gradually expanded, with full commercialization soon to follow.

28 Department of Justice of Heilongjiang Province 2016.

29 “Zhongguo nongye dasheng Heilongjiang mingnian yue quanmianjinzhi zhuanjiiyin zuowu” (China’s agricultural province of Heilongjiang will completely ban genetically modified crops in May next year). *Chinanews*, 16 December 2016, <https://www.chinanews.com.cn/m/sh/2016/12-16/8096125.shtml>. Accessed 22 June 2022.

As expected, Heilongjiang's GMO ban added fuel to the already heated debate over GMOs in China. In particular, Heilongjiang's GMO ban attracted rare public criticisms from several state media outlets. China's *Science and Technology Daily* (S&TD) (*Keji ribao* 科技日报), the party mouthpiece under the Ministry of Science and Technology (MOST), published an article on 22 December 2016 cautioning that misguided public opinion should not sway scientific decisions.³⁰ The *Guangming Daily* (*Guangming ribao* 光明日报), a major mouthpiece of the Central Committee, also published an editorial criticizing Heilongjiang for conflicting with the State Council's authority over GMOs.³¹ Similar criticism was also expressed in an article published by the *Beijing Times* (*Jinhua shibao* 京华时报), which is part of the *People's Daily* (PD) (*Renmin ribao* 人民日报) Group, the top mouthpiece of the Central Committee. In particular, the *Beijing Times* pointed out that Heilongjiang's ban goes against the central government's pledge to pursue the commercialization of GM corn and soybean by 2020.³² Furthermore, *The Paper* (*Pengpai* 澎湃), which the CCP Shanghai Committee oversees, also published an article questioning the legitimacy of Heilongjiang's GMO ban.³³

While PD did not get directly involved in this open clash, its online platform (*People.cn*) reposted the S&TD article on Heilongjiang's GMO ban.³⁴ Similarly, although the *Farmer's Daily* (FD) (*Nongmin ribao* 农民日报) under MARA did not respond directly to Heilongjiang's GMO ban, at the press conference of the annual "Two Sessions" (*lianghui* 两会) in March 2017, Zhang Taolin 张桃林, the vice minister of MARA, while responding to questions related to GMOs, stressed two points. First, GM technology is the frontier technology of modern biotechnology, which has great potential in reducing costs and increasing efficiency, reducing the application of pesticides and promoting green development in agriculture (a rebuttal of the Heilongjiang officials' claim that the GMO ban is about achieving green development in agriculture). He also stressed that GMOs are safe (a rebuttal of the Heilongjiang officials' claim that GMOs are not safe). Second, on the development of GMOs in China, Zhang reaffirmed the central government's steadfast support and reintroduced the country's GMO commercialization roadmap (from cash crops to feed crops and to staple crops).³⁵ Therefore, through the lens of central–local relations, Heilongjiang's GMO ban can be considered a case of local defiance against central policy. As discussed previously, the central government has made a strategic decision to develop GMOs and has been determined to steadily achieve their commercialization. In particular, in its 13th Five-Year Plan, China aimed to advance the commercialization of GM soybeans and corn by 2020. Given that Heilongjiang is the largest soybean producer and a major corn producer, its GMO ban severely undermines the central government's GMO commercialization plan and the country's long-term objective of occupying the commanding heights of GM technology.³⁶ Moreover, one of the key reasons for the delayed process in the commercialization of GM crops in China is widespread public resistance towards GMOs due to safety concerns. That is the reason why right after Xi Jinping's GMO statements, efforts were made by the central government to crack down on misinformation and improve public GMO education. For instance, according to a circular issued on 12 January 2015, MARA asked local governments to crack down on advertisements that hint that non-GM food is safer than GMOs.³⁷ In this context, Heilongjiang's high-profile GMO ban as an amendment to its food safety regulation and

30 Ma, Aiping 2016.

31 Zhu 2016.

32 Hong 2016.

33 Wang, Can 2016.

34 "You chao qilai le: 'Heilongjiang jin zhong zhuanjiyin' zaiqi bolan" (Another fight: "Heilongjiang ban on planting genetically modified' ripples again). *Keji ribao*, 24 January 2017, <http://scitech.people.com.cn/n1/2017/0124/c1007-29045075.html>. Accessed 12 July 2022.

35 MARA 2017a.

36 *China Daily*, 3 February 2015.

37 Chen 2015.

local officials' claims that GMOs are unsafe has greatly undermined the central government's efforts to improve public confidence in the safety of GMOs.

Local Protectionism behind Heilongjiang's GM Crop Ban

Heilongjiang's controversial 2016 GMO ban can be considered the climax of its decades-long anti-GMO movement. Protecting local soybean sectors has been the key reason behind Heilongjiang's apparent deviation, or arguably defiance, of the central GMO policy. Heilongjiang is the country's largest producer of non-GM soybeans, with numerous crushing plants that process non-GM soybeans.³⁸ However, after China began importing soybeans in 1995, the country quickly emerged as the world's largest soybean importer. The immense inflow of GM soybeans has resulted in a large-scale closedown of soybean-crushing factories in Heilongjiang.³⁹ As pointed out by Chung, when provincial governments have high stakes in a particular policy and their interests significantly differ from those of the centre, it is more likely that the provincial government will actively defy central policy.⁴⁰

Heilongjiang started its battle against GMOs when it began to provide subsidies for non-GMO production in the early 2000s. In 2005, at a provincial People's Congress meeting, ten deputies proposed to protect Heilongjiang's non-GM soybean industry through legal measures. Two years later, in 2007, to counter pressure from the influx of GM soybeans, Heilongjiang not only established its own soybean association but also founded the China Soybean Association. Since then, the Heilongjiang Soybean Association and various provincial departments have sought to protect the local soybean industry by designating Heilongjiang as a non-GM soybean protection area (Table 1).

While the initial motivation of Heilongjiang's anti-GMO efforts is undoubtedly to protect its local soybean sector, the Heilongjiang provincial government has also gradually aimed to gain leverage in the market to charge a premium for its non-GM soybean products. Heilongjiang has used food safety concerns to advance local interests by portraying GM soybeans as unsafe. Since the 2008 tainted-milk scandal and a litany of other food scandals, Chinese consumers have become wary of national regulation around food and agriculture; this extends to resistance towards national GMO policy. The low public acceptance of GMOs has created an opportunity for non-GM soybeans. In 2017, China's domestic soybean crushing plants were prepared to pay over 1,000 yuan (about US\$150) more per tonne for Heilongjiang's non-GM soybeans, compared with imported GM soybeans, as consumers increasingly prefer non-GM soybean oil.⁴¹

Apart from soybean products, a growing middle-class is willing to pay a premium for a wide range of safer and high-quality food products, which in the Chinese context usually refers to "green food" (*lüse shípíng* 绿色食品). Green food, a Chinese eco-certification scheme for food, is defined as agricultural products cultivated with controlled and reduced pesticide use and has a testing regime for pesticide residues. China's green food industry has undergone rapid expansion over the past decade.⁴² Regarding the regional distribution of China's green food industry, Heilongjiang is second to none. As seen in Table 2, Heilongjiang's green food industry comprises nearly 40 per cent of the national total in terms of plantation area and nearly 30 per cent of output. As demand for quality food products soars, Heilongjiang's agricultural and food sectors have benefited enormously, and the food sector has become the second largest industry in the province after oil and natural gas.⁴³ Therefore, faced with sluggish petroleum and coal industries, the Heilongjiang provincial government has naturally turned its attention to the growing green food industry as the

38 Li, Wenxue 2013.

39 Yan, Chen and Bun 2016.

40 Chung 2016.

41 Ma, Yunxiao 2017.

42 Bekele et al. 2017.

43 Yang 2014.

Table 1. Heilongjiang's Attempts to Protect Its Soybean Sector

2008	Led by the Heilongjiang Soybean Association, an agreement is reached among the local crushing plants on no imports and no processing of GM soybeans, a de facto GMO ban.
2010	Heilongjiang province first implements the non-GM products labelling act, ensuring a premium for its non-GM products, particularly soybean products.
2011	Heilongjiang province establishes the China non-GM soybean core protection area in its Jiusan state-farm area.
2012–2015	The Heilongjiang provincial government submits several proposals to the central government for establishing a non-GM soybeans protection area in Heilongjiang but is rejected.
March 2016	During China's annual two-session meeting, national legislators from Heilongjiang call for a national law to set up a special zone where the planting and processing of GM plants are prohibited.
December 2016	Heilongjiang provincial people's congress passes a ban on GM crops, hoping to use the new rules to protect local crop producers from competition posed by GM importers.

Source: Compiled by the authors based on search results from PKUlaw, CNKI and other sources.

new driver for its economic growth.⁴⁴ In 2010, the Heilongjiang provincial government listed green food as the first in the top ten priority sectors for provincial economic growth. Heilongjiang's push for green food development has accelerated under Lu Hao 陆昊, who became the governor of Heilongjiang in March 2013. In June 2013, Lu Hao held a provincial food sector development conference. At the conference, Lu urged governments at all levels and relevant departments to take the responsibility and obligation to support, maintain and protect the overall image of green, organic and pollution-free food from Heilongjiang, to implement the province's Green Excellence Strategy and to develop the green food industry. Two months later, in August 2013, the Heilongjiang provincial government decided to hold the first Heilongjiang Green Food Industry Expo in Harbin and formulated the Heilongjiang Green Food Industry Development Guidelines, which listed non-GM soy oil as one of the priority areas. In January 2014, in his first provincial government work report, Lu called provincial officials to build Heilongjiang into a national green food base. Further to these remarks, Lu noted at the annual Two Sessions in 2015 and 2016 that a green food branding and marketing strategy was needed.

Nevertheless, Heilongjiang's push to transform the province into a green food powerhouse has not been without difficulties. First, before the ban on GM crops, Heilongjiang maintained a de facto ban on processing GM soybeans in its province. As a result, it has become widely known in China that non-GM soybeans come from Heilongjiang. However, due to the lack of a formal certification system and lax law enforcement on the mislabelling of food products, many GM soybean products are intentionally labelled as non-GMOs, thereby damaging the interests of Heilongjiang's non-GM soybean farmers and processors. Second, between 2015 and 2016, several reports found that many Heilongjiang farmers illegally planted GM soybean seeds. This revelation posed a major threat to Heilongjiang's green food industry. In this context, in the eyes of the Heilongjiang officials, a complete GMO ban sends a strong and clear message to wealthy Chinese consumers and to neighbouring countries that the province produces non-GM green food.⁴⁵ This also explains why the Heilongjiang provincial government was not afraid of public backlash against its provincial bans and why the *Heilongjiang Daily* (HD) (*Heilongjiang ribao* 黑龙江日报), the mouthpiece of the Heilongjiang provincial CCP committee, has engaged in a rare open clash with central mouthpieces over GMOs. Essentially, Heilongjiang's 2016 GMO ban was intended as a high-profile branding campaign for the province's green food industry. In fact, several articles published in HD openly

44 See Appendix C in supplementary material for the list of Heilongjiang provincial policy documents and official statements related to green food.

45 Zhang 2018.

Table 2. China's Green Food Production by Province 2018

	Plantation area (million ha)		Production (million tonnes)	
Heilongjiang	4.3	38.9%	29.9	28.1%
Jiangsu	1.2	10.9%	12.3	11.5%
Inner Mongolia	1.1	10.2%	10.8	10.1%
Sichuan	0.6	5.5%	8.7	8.1%
Anhui	0.6	5.1%	3.9	3.7%
Jiangxi	0.6	5.1%	5.4	5.1%
Xinjiang	0.5	5.0%	8.4	7.9%
Hunan	0.4	3.6%	5.5	5.2%
Rest of China	1.7	15.7%	21.6	20.2%
Total	10.9	100.0%	106.5	100.0%

Source: China Green Food Development Center 2019.

described the province's anti-GMO efforts as part of Heilongjiang's branding campaigns to promote itself as China and North-East Asia's "green food base."⁴⁶ For instance, on 12 January 2017, HD published a GMO article entitled "Heilongjiang Plays the GM Crop Ban Card [to promote the Green Food industry]."⁴⁷ More importantly, as Lu Hao, the then governor of Heilongjiang province, stated in December 2016, Heilongjiang province *should not be afraid of controversy and that by issuing the ban, more people will notice what efforts the province has gone to in order to develop non-GM food and protect food safety.*⁴⁸

Feeding Public Distrust, Exploiting Central Ambiguity and Skilful Issue Framing

Open resistance against or even deviation from the central policy carries high political risks for the local leaders. Hence, how did the Heilongjiang provincial government manage the political risks of its high-profile GMO ban? In general, Heilongjiang has taken three main approaches, namely: (1) feeding public distrust of GMOs; (2) exploiting the internal divide and central ambiguity over GMOs; and (3) skilful framing of its GMO ban.

First, while the GMO debate initially centred on its social-economic impacts, frequent food safety scares have increased food safety scepticism in China and expressed attitudes towards GM foods. As a result, safety has emerged as the dominant theme in GMO debates. Given the gravity of food safety concerns in China, the central government has become sensitive to negative public views of GMOs. Conversely, Heilongjiang not only sees great opportunity for its non-GM soybean industry but also actively feeds the public's growing distrust of GMOs. A key approach in Heilongjiang's plan to revive its soybean sector is to emphasize the safety advantages of non-GMOs.⁴⁹ Heilongjiang officials, scholars and industrial actors claim that Heilongjiang's non-GM soybeans are healthier and more natural than GM products. More importantly, Heilongjiang officials and affiliated actors have contributed to the public's distrust of GMOs. For example, in June 2013, the Heilongjiang Soybean Association published a report that linked the high rates of cancer and other serious health issues across China with the consumption of GM soybean oil owing to Roundup – the most widely

46 Yan, Ziqian 2017; State Council 2017.

47 Yan, Ziqian 2017.

48 Tian and Chen 2017.

49 "Soybeans to go non-GM." *Global Times*, 5 August 2010, www.china.org.cn/business/2010-08/05/content_20645024.htm. Accessed 23 April 2022.

used herbicide for GM soybeans.⁵⁰ The central authorities, such as MARA, and major state media outlets, such as PD and Xinhuanet, quickly published articles rejecting these claims while expressing support for GMOs.⁵¹

However, the message that “GMOs cause cancer” quickly became deeply ingrained in the minds of consumers.⁵² HD further fed public concern about the safety of GMOs by publishing several articles implying that GMOs are unsafe. For instance, in 2014, Jin Guojun 靳国君, an adviser and retired senior official in the Heilongjiang provincial government, published an article in HD, stating “There are indeed risks associated with GMOs, not all GM food products are safe ... thus towards GM food, assessment can never be too strict.”⁵³ Also, in 2018, HD published another article stating, “China’s top scientific, medical and military medical research institutions have reached the conclusion that genetically modified soybeans are unsafe.”⁵⁴ S&TD later rebuked HD’s articles for containing “seriously misleading” information and crossing the “moral and legal red line.”⁵⁵

Apart from publishing articles in local media, Heilongjiang senior officials have also directly inflated public distrust of GMOs. In December 2016, Heilongjiang’s provincial government held a press conference to explain its GM crop ban. At the press conference, Yao Dawei 姚大为, director of the provincial legislature, said, “while the province supports the research and development of GM technology, the techniques must be applied cautiously as there is uncertainty regarding the safety of GMOs.”⁵⁶ Furthermore, as previously mentioned, Lu Hao, Heilongjiang’s then governor, claimed that the purpose of the GMO ban is to demonstrate to the public the effort that the province has undertaken to develop non-GM food and protect food safety.⁵⁷ Also, the fact that Heilongjiang’s GMO ban was introduced through an amendment to the provincial food safety regulation⁵⁸ further adds to the general public’s concerns about the safety of GMOs.

In turn, growing public distrust of GMOs has become a key source of legitimacy for Heilongjiang province’s GMO ban. Indeed, the Heilongjiang provincial government has stated that 91.5 per cent of the province’s residents object to GMOs as the legal basis for its amendment to the provincial food safety regulation.⁵⁹ As concern for the safety of GMOs grows, the public’s support for GMOs in China has reduced significantly over the years, dropping from 40–50 per cent in the early 2000s to around 10 per cent in 2016.⁶⁰ A 2018 study further suggests that the Chinese general public GMO support rate ranged from 7 to 16 per cent across various demographic subgroups.⁶¹ Therefore, widespread consumer scepticism of GMOs means that Heilongjiang’s GMO ban enjoys public support while also supporting GMO distrust.

Second, the Heilongjiang provincial government has sought to exploit “ambiguity” in central policy to reduce the potential political backlash of its GMO ban. The Chinese polity is often considered a model of fragmented authoritarianism whereby power and responsibility are divided horizontally between state ministries with different and overlapping functional responsibilities that are delegated vertically to provincial and local levels of government.⁶² Due to disjointed and

50 David and Niu 2013.

51 State Council 2013; “‘Zhuanjiyin dadou zhiai’ yishuo quefa kexue yiji” (The claim that “genetically modified soybeans cause cancer” lacks scientific basis). *People’s Daily Online*, 21 June 2013, <http://opinion.people.com.cn/n/2013/0621/c1036-21930994.html>. Accessed 12 July 2022.

52 Jiang and Fang 2019; Li, Wenxue 2013.

53 Jin 2014.

54 Teng 2018.

55 Ibid.

56 State Council 2016b.

57 Tian and Chen 2017.

58 Department of Justice of Heilongjiang Province 2016.

59 Deng 2016.

60 Lü and Chen 2016.

61 Cui and Shoemaker 2018.

62 Brødsgaard 2016; Lema and Ruby 2007; Mertha 2009.

overlapping power and responsibilities between central ministries and departments,⁶³ opportunities exist for other policy actors, such as subnational governments, “to ally with sympathetic agencies in the process of policy entrepreneurship,” as well as to continue to push boundaries.⁶⁴ Within the Chinese government, while MARA is the central government department responsible for nationwide supervision and administration of agricultural GMOs, there are other central ministries and departments with a varied extent of involvement in GMO governance. Over the years, as the GMO debate in China has moved beyond scientific discussion into social, environmental, moral, legal, political and strategic domains, there appears to be internal resistance towards GMOs. Notably, China’s military establishment and People’s Liberation Army (PLA) strategists have voiced strong concerns about GMO safety and the potential national security risks associated with GMOs. Not only did a few vocal military leaders echo the Heilongjiang Soybean Association’s claim that GMOs could cause cancer and infertility, but in 2014, it was reported that Hubei and Guangzhou military officials requested a ban on GMO food for their troops on the ground of safety concerns.⁶⁵ Moreover, several PLA strategists, such as Senior Colonel Dai Xu 戴旭, Major General Peng Guangqian 彭光谦 and Rear Admiral Luo Yuan 罗援, argue that GMOs should be viewed as a grand Western scheme – bioweapons launched by the United States against China.⁶⁶ In 2013, an educational movie jointly produced by the National Defence University, two departments under the Ministry of National Defence, and the Chinese Academy of Agricultural Sciences (CAAS), claimed that the United States is using GMOs to destroy China.⁶⁷ In December of the same year, at the 12th National Security Forum in Beijing, a few Chinese generals, including the retired Lieutenant General Mi Zhengyu 糜振玉, a top PLA strategist, criticized GMOs for threatening China’s national security and called for the establishment of a biosecurity defence system. In addition, the Ministry of Ecology and Environment (formerly the Ministry of Environmental Protection) has long adopted a rather conservative approach towards GMOs, and notably, it has collaborated with Greenpeace on studying and disseminating mainly the negative environmental impacts of GMOs.⁶⁸ Conversely, MARA, MOST and other important central actors adopt a pro-GMO stance. For instance, the Ministry of Commerce and China’s largest state-owned agribusiness – China Oil and Foodstuffs Corporation (COFCO) – strongly opposed the establishment of the China Soybean Association due to its anti-GMO stance.⁶⁹ The internal divide over GMOs creates a window of opportunity for Heilongjiang in two ways: strengthening ties with like-minded central ministries and forming alliances with other actors.

Equally, the internal divide and fragmentation make the GMO policymaking process increasingly subject to the influence of non-state actors, such as non-governmental organizations (NGOs) and enterprises and provided fertile ground for the rapid development of the anti-GMO movement in China.⁷⁰ For instance, Greenpeace, an international NGO, has played a prominent role “in fighting against the introduction of GM crops, especially GM rice, in China.”⁷¹ The rising anti-GMO movement, in turn, has in part forced the central government to slow down the commercialization of GM crops in the country. Furthermore, facing mounting domestic resistance

63 Mertha 2005; Mertha 2008.

64 Mertha 2008.

65 Minter 2016; Peng 2013; Mi 2014; “GM grain banned for city soldiers,” *China News Service*, 16 May 2014, www.ecns.cn/2014/05-16/114269.shtml. Accessed 22 June 2022.

66 Peng 2013; Yap 2014; Dai 2014; “Food Fight,” *The Economist*, 14 December 2013, www.economist.com/china/2013/12/14/food-fight. Accessed 12 June 2022.

67 “Fanmei shipin ‘Jiaoliang wusheng’ zai Zhongguo bei pingbi” (Anti-US movie, “Silent Contest”, silenced in China), *BBC News*, 1 November 2013, www.bbc.com/zhongwen/simp/china_watch/2013/11/131101_silent_contest_video_row. Accessed 18 March 2022.

68 Cao 2018.

69 Fares 2022.

70 Hornby 2017.

71 Cao 2018.

and out of fear of foreign control over China's GMO market, the central government has adopted an incremental approach towards GMOs. This incremental approach can be summarized as follows: fast-forwarding GMO research and public education while cautiously promoting GMO commercialization in three phases, starting with cash crops "not for food use" (cotton), followed by crops used as input for feed and industrial use (such as soybean and corn) and finally by staple crops (such as rice and wheat). However, the incremental approach can appear ambiguous as it sends mixed and sometimes confusing messages to the public. For instance, to prevent foreign control of the Chinese GM seeds market and establish a better intellectual property right regime to foster faster development of China's own GM seed companies, China has launched several high-profile crackdowns on the illegal plantation of GM crops in the country.⁷² The news reports that GMO research institutes are punished, distributors and farmers are locked up and the images of burning fields of GMO crops have certainly undermined the government's message that GMOs are safe.

It is precisely due to this huge public resistance, internal divide and the seemingly confusing messages delivered by the central government's incremental approach towards GMOs that have created opportunities for Heilongjiang to frame its provincial GMO ban. Unsurprisingly, the Heilongjiang provincial government has positioned its provincial GMO ban as a direct response to the central government's call for caution towards GMOs while also expressing its support for further GMO research. As Yao Dawei put it, "We support the research and development of transgenic technology, but we should be cautious in applying the techniques in crop production" – almost the exact phrases used by Xi on GMOs.⁷³

Finally, the Heilongjiang provincial government skilfully and successfully frames its provincial GMO ban as the province's resolve to implement Xi Jinping's Green Development Concept (*lǜsè fāzhǎnguān* 绿色发展观). In China, the central government imposes numerous tasks on the local governments, and these policy tasks are hierarchically ranked against each other.⁷⁴ Among these tasks, a few are priority tasks with veto effect; failing to achieve them could cancel out all other work performances or lead to termination of political careers or even imprisonment in extreme cases. As far as Heilongjiang's attempt to frame its GMO ban is concerned, apart from the central GMO policy, the other closely related central task is to promote the Green Development Concept championed by Xi Jinping (see [Figure 1](#)). As compared to the central GMO policy, which not only is a sectoral policy with comparatively lower priority for the local governments but also faces huge public and internal resistance, the Green Development Concept championed by Xi is a higher priority central task that is both well-articulated and widely supported. Since taking office in 2012, Xi has begun to promote the "Two Mountain Theory" (*liangshan lun* 两山论), calling clear waters and green mountains invaluable assets comparable to the gold and silver of legend, which later evolved into the Green Development Concept.⁷⁵ In addition, the Green Development Concept became an integral part of Xi Jinping Thought on Ecological Civilization (*Xi Jinping shengtaiwenming sixiang* 习近平生态文明思想), which was later enshrined in both the CCP constitution in 2017 and China's national constitution in 2018. With such emphasis placed on green development by Xi, it is unequivocal that the central government is determined to develop green initiatives. Meanwhile, local governments, which have long embraced a traditional model of development that emphasizes economic growth at the expense of the environment, have since advocated for environmentally sustainable development as a means to a better quality of life.⁷⁶

72 MARA 2017b.

73 Deng 2016.

74 Edin 2003.

75 Ran 2017.

76 Sheng 2019.

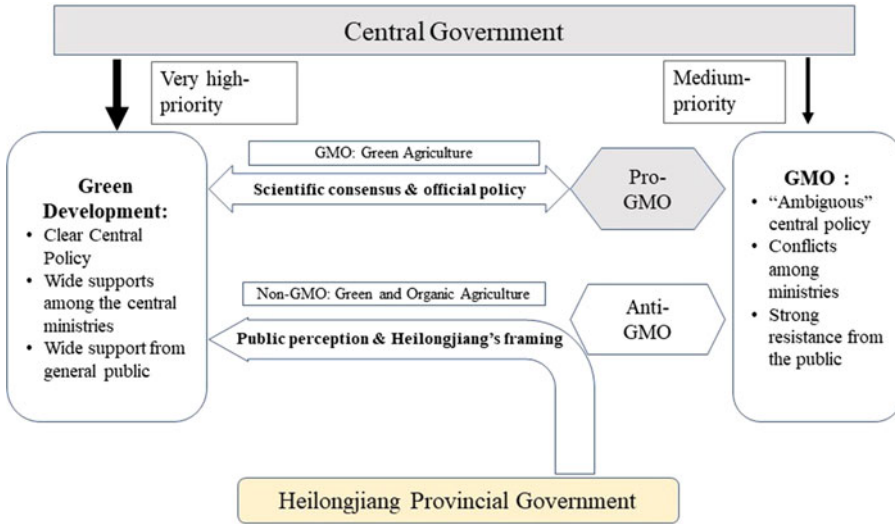


Figure 1. Heilongjiang’s Framing of Its GM Crop Ban
 Source: Prepared by the authors.

A key industry targeted in Xi Jinping’s green development push is agriculture. On many occasions, Xi Jinping has called for implementing the Green Development Concept and accelerating the development of energy-saving and environmentally friendly agriculture. As one of the most important agricultural regions, Xi has personally called on Heilongjiang’s leaders to follow the Green Development Concept and focus on green agriculture. For instance, during the 2016 Two Sessions, Xi spoke to the Heilongjiang delegation, calling for additional wetland protection and strengthening both the “Ecological Civilization” (*shengtaiwenming* 生态文明) and Green Development Concept in the province. Two months later, Xi further urged local governments to maintain the principle of green agriculture development during an inspection tour in Heilongjiang. In September 2018, during Xi’s second inspection visit to Heilongjiang, he stated to a local government official that “it is necessary to speed up the development of green agriculture and work to avoid the loss and degradation of black soil.”⁷⁷

Regarding central policies, there is no conflict between Xi’s Green Development Concept (including green agriculture (*lüse nongye* 绿色农业) and green food) and the central GMO policy. Instead, GM technology is considered critical to achieving green agriculture. In 2017, China released guidelines on green development in agriculture, setting zero-growth targets for the use of chemical fertilisers and pesticides and stipulating controlled exploitation of groundwater. In China, green food, which presents a middle way between chemical and organic farming, is mainly concerned with reducing pesticide use.⁷⁸ Indeed, one of the most prominent threats to the sustainability of China’s agriculture is its over-reliance on chemical fertilisers and pesticides.⁷⁹ In this regard, GM technology has proven advantages in reducing the need for toxic fertiliser, pesticides and irrigation.⁸⁰ Hence, from the central government’s perspective, GM technology is vital for China to achieve green agricultural development. In July 2018, MARA published the “Guide for Green Development Technology for Agriculture, 2018–2030,” stipulating that GM technology is the top priority for strengthening the development of green agricultural technology.⁸¹

77 Li, Xiaoyang 2018.

78 Paull 2008.

79 Huang, Jikun et al. 2017.

80 Huang, Jikun et al. 2003; Shrawat et al. 2008.

81 MARA 2018.

However, to anti-GMO groups and the general public, green food (and green agriculture) and GMOs are at opposite ends of the same spectrum. The Heilongjiang provincial government, like other anti-GMO groups, plays up the environmental risks of GMOs by framing the province's ban as part of the provincial government's efforts to develop the local green food industry. As Li Qixiang 李启祥, a senior official with the Legislative Affairs Commission of Heilongjiang, explained, the province's GMO ban is necessitated by the development of the green food industry.⁸² On the other hand, Heilongjiang has tactically associated green food with organic food. For instance, the provincial government organizes an annual event called the Heilongjiang International Green Organic Food Industry Expo. As it is widely accepted that organic food must be GMO-free,⁸³ it is therefore assumed that to develop Heilongjiang into a green food centre of the country and region, it must also become GMO-free. This sentiment is clearly reflected in a statement by Wang Jinhui 王金会, director of the agricultural and rural affairs department of Heilongjiang province:

Sticking to the concept of green development, strengthening environmental protection and utilization of resources, turning clear water and green mountains into golden mountains and silver mountains, and transforming resources and ecological advantages into economic advantages and development advantages are the ardent expectations and wishes of General Secretary Xi Jinping to Heilongjiang. In this regard, the provincial party committee and the provincial government have clearly proposed to **play the cards** of our black soil, **non-GMO and green-organic** as specific and prioritized measures to turn Heilongjiang into a strong agricultural province.⁸⁴

Many other Heilongjiang officials and departments have expressed similar statements. For instance, in December 2020, the Heilongjiang provincial development and reform commission published an article stating that Heilongjiang will continue to rely on green-organic and non-GMO brands to develop its agriculture.⁸⁵

Conclusion

Through a comprehensive content analysis of GMO articles published by party mouthpieces, official policy documents, industry reports and academic papers, this study finds that Heilongjiang's province-wide GMO ban in 2016 was a high-profile branding campaign. The overarching goal of this campaign was to protect its non-GM soybean sector and promote the province's fast-growing green food industry. This study contributes to the research on central–local relations in China. While subnational governments in general have considerable “room to manoeuvre,”⁸⁶ the extent of autonomy or manoeuvrability space enjoyed by subnational governments is issue specific. In some issue areas, fragmentation may be more severe and central government policies may be particularly unclear, inconsistent or lacking public support. Consequently, not only are subnational governments generally confronted with substantial confusion and uncertainty,⁸⁷ opportunities are created for subnational governments to challenge the central policies. As the GMO case presented in this paper shows, when the issue is highly controversial and there is a large internal divide, subnational governments enjoy greater policy space in which to advance their local interests. This can be done through various means, such as exploiting central policy ambiguities, rallying public support and skilful issue framing.

82 Yan, Ziqian 2017.

83 Ministry of Commerce 2022.

84 Wang, Jinhui 2019.

85 Heilongjiang Development and Reform Commission 2020.

86 Kostka and Nahm 2017.

87 Breznitz and Murphree 2011; Rithmire 2014.

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References

- Andersen, Veslemøy.** 2020. *Genetically Modified and Irradiated Food: Controversial Issues: Facts versus Perceptions*. Amsterdam: Elsevier.
- Bekele, Gebisa Etea, Deyi Zhou, Assefa Abebe Kidane and Atinkut Bazezew Haimanot.** 2017. "Analysis of organic and green food production and consumption trends in China." *American Journal of Theoretical and Applied Business* 3 (4), 64–70.
- Breznitz, Dan, and Michael Murphree.** 2011. *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China*. New Haven, CT: Yale University Press.
- Brodsgaard, Kjeld Erik.** 2016. *Chinese Politics as Fragmented Authoritarianism: Earthquakes, Energy and Environment*. London: Routledge.
- Cai, Hongbin, and Daniel Treisman.** 2006. "Did government decentralization cause China's economic miracle?" *World Politics* 58 (4), 505–535.
- Cao, Cong.** 2018. *GMO China: How Global Debates Transformed China's Agricultural Biotechnology Policies*. New York: Columbia University Press.
- Chen, Heying.** 2015. "China to seek boost in GMO popularity." *People's Daily*, 4 February, <http://en.people.cn/n/2015/0204/c202936-8845611.html>. Accessed 20 March 2022.
- China Daily.** 2015. "China to catch up with GM technology." *China Daily*, 3 February, www.chinadaily.com.cn/china/2015-02/03/content_19478193.htm. Accessed 22 March 2022.
- China Green Food Development Center.** 2019. "China green food development annual report 2018." www.greenfood.agri.cn/ztlz/tjnb/lssp/. Accessed 18 March 2022.
- Chung, Jae Ho.** 2016. *Centrifugal Empire: Central–Local Relations in China*. New York: Columbia University Press.
- Chung, Jae Ho.** 2017. "Changing norms, issue-variance, and unending tugs of war." In John Donaldson (ed.), *Assessing the Balance of Power in Central-Local Relations in China*. London: Routledge, 138–161.
- Cui, Kai, and Sharon P. Shoemaker.** 2018. "Public perception of genetically-modified (GM) food: a nationwide Chinese consumer study." *NPJ Science of Food* 2 (1), 10.
- Dai Xu.** 2014. "Dai Xu: tupo jiyinjishu tuiguang ziji dei liang zhong" (Dai Xu: breakthrough in genetic technology to promote our own food seeds). *Huanqiu shibao*, 9 January, www.huanqiu.com/article/9CaKrnrnDSbx. Accessed 22 June 2022.
- David, Stanway, and Shuping Niu.** 2013. "Chinese state media kick into high gear to ease GMO food fears." *Reuters*, 13 November, Business News section, www.reuters.com/article/cbusiness-us-china-gmo-idCABRE9AC16720131113. Accessed 12 July 2022.
- Deng, Xiaoci.** 2016. "Heilongjiang passes regulation to ban GM crops." *Global Times*, 21 December, www.globaltimes.cn/content/1024839.shtml. Accessed 12 July 2022.
- Department of Justice of Heilongjiang Province.** 2016. "Heilongjiangsheng shipinanquan tiaoli" (Heilongjiang province food safety regulation).
- Donaldson, John A., and Xiaotao Yang.** 2022. "Shifting strategies: the politics of radical change in provincial development policy in China." *The China Quarterly* 249, 139–159.
- Edin, Maria.** 2003. "State capacity and local agent control in China: CCP cadre management from a township perspective." *The China Quarterly* 173, 35–52.
- Fares, Tomaz Mefano.** 2022. "Food security and power struggle in the Chinese 'battle of the beans'." *Journal of Peasant Studies*, 1–26.
- Gong, Ting, and Alfred M. Wu.** 2012. "Central mandates in flux: local noncompliance in China." *Publius: The Journal of Federalism* 42 (2), 313–333.
- He, Baogang.** 2019. "The domestic politics of the Belt and Road Initiative and its implications." *Journal of Contemporary China* 28 (116), 180–195.
- Heilmann, Sebastian.** 2008. "From local experiments to national policy: the origins of China's distinctive policy process." *The China Journal* 59, 1–30.
- Heilongjiang Development and Reform Commission.** 2020. "Heilongjiang: tongchou fazhan he anquan genghao fuwu guojia zhanlue daju" (Heilongjiang: Integrated development and security to better serve the overall situation of the national strategy). 30 December, www.ndrc.gov.cn/fzggw/jgsj/zys/sjdt/202012/t20201230_1260943.html?code=&state=123. Accessed 12 June 2022.

- Hong, Guangyu.** 2016. "Mingwen jin zhong zhuanjiyin zuowu youxie wudao gongzhong?" (Is an explicit ban on genetically modified crops somewhat misleading to the public?). *Jinghua shibao*, 21 December.
- Hornby, Lucy.** 2017. "China dashes hopes of GM boost after Syngenta deal." *Financial Times*, 18 October, www.ft.com/content/96fad274-b466-11e7-a398-73d59db9e399. Accessed 12 July 2022.
- Huang, Dafang.** 2013. "Huang Dafang: woguo nongzuowu shengwu yuzhongfazhan zhanlue sikao" (Huang Dafang: strategic thinking on the development of crop biological breeding in China). *Chinese Academy of Agricultural Sciences*, 6 May, www.caas.cn/xwzx/zjgd/73318.html. Accessed 12 July 2022.
- Huang, Jikun, Ruifa Hu, Carl Pray, Fangbin Qiao and Scott Rozelle.** 2003. "Biotechnology as an alternative to chemical pesticides: a case study of Bt cotton in China." *Agricultural Economics* 29 (1), 55–67.
- Huang, Jikun, Wei Wei, Qi Cui and Wei Xie.** 2017. "The prospects for China's food security and imports: will China starve the world via imports?" *Journal of Integrative Agriculture* 16 (12), 2933–44.
- Huang, Yasheng.** 1999. *Inflation and Investment Controls in China: The Political Economy of Central-Local Relations during the Reform Era*. Cambridge: Cambridge University Press.
- Hvistendahl, Mara, and Martin Enserink.** 2012. "Chinese researchers punished for role in GM rice study." *Science*, 12 December, <https://doi.org/10.1126/article.26635>.
- Jiang, Sujia, and Wei Fang.** 2019. "Misinformation and disinformation in science: examining the social diffusion of rumours about GMOs." *Cultures of Science* 2 (4), 327–340.
- Jin, Guojun.** 2014. "Ying zhongshi gongzhong dui zhuanjiyin dami de zhiyi" (Public scepticism about genetically modified rice should be taken seriously). *Heilongjiang ribao*, 30 July.
- Kostka, Genia, and Jonas Nahm.** 2017. "Central-local relations: recentralization and environmental governance in China." *The China Quarterly* 231, 567–582.
- Lema, Adrian, and Kristian Ruby.** 2007. "Between fragmented authoritarianism and policy coordination: creating a Chinese market for wind energy." *Energy Policy* 35 (7), 3879–90.
- Li, Liyin.** 2022. "Dishi jie quanguo meiti zhuanjiyin baodao yan xiu ban juxing" (The tenth national workshop on media coverage of genetic modification has been held). *Nongmin ribao*, 11 November, https://szb.farmer.com.cn/2022/20220111/20220111_007/20220111_007_6.htm. Accessed 12 December 2022.
- Li, Wenxue.** 2013. "'Dadou baowei zhan': zhuanjiyin dadouyou zhiai?" ("Soybean war": Does GMO soybean oil cause cancer?). CNTV, 20 June, <http://news.cntv.cn/2013/06/20/ARTI1371724020196563.shtml>. Accessed 12 July 2022.
- Li, Xiaoyang.** 2018. "Xi stresses revitalization of Northeast China." *Beijing Review*, 28 September, www.bjreview.com/Nation/201809/t20180929_800142834.html. Accessed 25 July 2022.
- Lieberthal, Kenneth G., and David M. Lampton,** eds. 1992. *Bureaucracy, Politics, and Decision Making in Post-Mao China*. Berkeley: University of California Press.
- Lü, Lan, and Haidan Chen.** 2016. "Chinese public's risk perceptions of genetically modified food: from the 1990s to 2015." *Science, Technology and Society* 21 (1), 110–128.
- Ma, Aiping.** 2016. "Heilongjiang lifa jinzhong zhuanjiyin zuowu yin zhengyi: zhuanjia cheng bie rang beiwudao de minyi zuoyou kexue juece" (Controversy over Heilongjiang legislation banning GM crops: experts say don't let misguided public opinion sway scientific decisions). *Keji ribao*, 22 December.
- Ma, Yunxiao.** 2017. "Heilongjiang rang ren kandao shipinanquan dei xiwang" (Heilongjiang gives hope for food safety). *State Council of the PRC*, 4 January, www.gov.cn/xinwen/2017-01/04/content_5156290.htm. Accessed 12 July 2022.
- MARA (Ministry of Agriculture and Rural Affairs of the PRC).** 2016. "Nongyebu juxing xinwenfabuhui jiu nongye zhuanjiyin youguan qingkuang da jizhe wen" (The Ministry of Agriculture held a press conference on "the situation of agricultural genetic modification" to answer reporters' questions). 13 April, www.moa.gov.cn/xw/zwdt/201604/t20160413_5093642.htm. Accessed 12 July 2022.
- MARA.** 2017a. "Buzhang jizhehui" (Ministerial press conference). 3 July, www.moa.gov.cn/hdllm/zbf/bzjzh/wzq/. Accessed 12 June 2022.
- MARA.** 2017b. "Nongyebu bangongting guanyu zuo hao zhongzi shichang jianguan he/huo/hu pinzhong baohu gongzuo de tongzhi" (The general office of the Ministry of Agriculture on the supervision of the seed market and variety protection work notice). Beijing: MARA.
- MARA.** 2018. "Nongye Nongcunbu guanyu yinfa nongye luse fazhan jishu dao ze nian de tongzhi" (Ministry of Agriculture and Rural Affairs on the issuance of the technical guidelines for green development in agriculture (2018–2030)). Beijing: MARA.
- Mertha, Andrew.** 2005. *The Politics of Piracy: Intellectual Property in Contemporary China*. Ithaca, NY: Cornell University Press.
- Mertha, Andrew.** 2008. *China's Water Warriors: Citizen Action and Policy Change*. New York: Cornell University Press.
- Mertha, Andrew.** 2009. "Fragmented authoritarianism 2.0: political pluralization in the Chinese policy process." *The China Quarterly* 200, 995–1012.
- Mi, Zhenyu.** 2014. "Zhenshi jinkou zhuanjiyin dadou dui shisanyi Zhongguoren jiankanganquan de yinxiang" (We must face the harm caused by imported GM soybeans to 1.3 billion Chinese people). *Keji wenzhaibao*, 25 April.
- Mierzejewski, Dominik.** 2021. *China's Provinces and the Belt and Road Initiative*. London: Routledge.

- Ministry of Commerce, PRC.** 2022. “Nongchanpin zhiliang anquan xuanchuan xiao zhishi” (Agricultural product quality and safety publicity tips). 16 February, <https://zycpzs.mofcom.gov.cn/html/zhishiwenda/2022/2/1644991366327.html>. Accessed 12 August 2022.
- Minter, Adam.** 2016. “China wants GMOs. The Chinese people don’t.” *Bloomberg News*, 28 September, www.bloomberg.com/view/articles/2016-09-28/china-wants-gmos-the-chinese-people-don-t. Accessed 26 July 2022.
- MOST (Ministry of Science and Technology of the PRC).** 2016. “Zhuanjiyin shengwu xin pinzhong peiyu keji zhongda zhuanxiang jiaoliu cailiao” (Communication materials for the major special project on breeding new varieties of genetically modified organisms). 11 January, www.most.gov.cn/ztzl/qgkjgzhy/2016/2016jldc/2016jldzx/201601/t20160111_123546.html. Accessed 12 July 2022.
- Patton, Dominique.** 2014. “China launches media campaign to back genetically modified crops.” *Reuters*, 30 September, Chemicals – Agricultural section, www.reuters.com/article/china-gmo-idUSL3N0RU1PD20140930. Accessed 12 July 2022.
- Paul, John.** 2008. “Green food in China.” *Elementals: Journal of Bio-Dynamics Tasmania* 91, 49–53.
- Peng Guangqian.** 2013. “Peng Guangqian: ba wen zhu liang zhuanjiyin hua” (Peng Guangqian: eight questions on GM crops). *Huanqiu shibao*, 21 August, www.huanqiu.com/article/9CaKrnJBTV. Accessed 12 May 2022.
- Ran, Ran.** 2017. “Understanding blame politics in China’s decentralized system of environmental governance: actors, strategies and context.” *The China Quarterly* 231, 634–661.
- Rithmire, Meg E.** 2014. “China’s ‘new regionalism’: subnational analysis in Chinese political economy.” *World Politics* 66 (1), 165–194.
- Schubert, Gunter, and Björn Alpermann.** 2019. “Studying the Chinese policy process in the era of ‘top-level design’: the contribution of ‘political steering’ theory.” *Journal of Chinese Political Science* 24 (2), 199–224.
- Sheng, Chunhong.** 2019. *Guanxi and Local Green Development in China: The Role of Entrepreneurs and Local Leaders*. London: Routledge.
- Shirk, Susan L.** 2018. “China in Xi’s ‘new era’: the return to personalistic rule.” *Journal of Democracy* 29 (2), 22–36.
- Shrawat, Ashok K., Rebecca T. Carroll, Mary DePauw, Gregory J. Taylor and Allen G. Good.** 2008. “Genetic engineering of improved nitrogen use efficiency in rice by the tissue-specific expression of alanine aminotransferase.” *Plant Biotechnology Journal* 6 (7), 722–732.
- State Council of the PRC.** 2008. “Guojia liangshi anquan zhongchangqi guihua gangyao (2008–2020)” (National medium- to long-term grain security plan (2008–2020)). Beijing: State Council of the PRC.
- State Council of the PRC.** 2010. “Guowuyuan guanyu jiakuai peiyu he fazhan zhanlue xing xinxingchanye de jueding” (The State Council on accelerating the cultivation and development of strategic emerging industries). 18 October, www.gov.cn/zw/gk/2010-10/18/content_1724848.htm. Accessed 12 July 2022.
- State Council of the PRC.** 2013. “Kexue shenghuo: zhuanjiyin shipin daodi anquan haishi bu anquan” (Scientific life: is genetically modified food safe or unsafe?). 10 July, www.gov.cn/govweb/fwxx/kp/2013-07/10/content_2443767.htm. Accessed 12 July 2022.
- State Council of the PRC.** 2014a. “Han Changfu zhengmian huiying zhuanjiyin zhiyi” (Han Changfu responds to GMO questions). 6 March, www.gov.cn/wenzheng/2014-03/06/content_2631217.htm. Accessed 12 July 2022.
- State Council of the PRC.** 2014b. “Nongye bu dui zhuanjiyin wenti dei taidu shi dadan chuangxin quebaoanquan” (The Ministry of Agriculture’s approach to the issue of genetic modification is bold innovation while ensuring safety). 5 December, www.scio.gov.cn/xwfbh/xwfbh/wqfbh/2014/20141205/zy32173/Document/1387984/1387984.htm. Accessed 2 July 2022.
- State Council of the PRC.** 2016a. “Guowuyuan guanyu yinfa ‘shisan wu’ guojia keji chuangxin guihua de tongzhi” (The State Council on the issuance of the “thirteenth five-year” national science and technology innovation plan notice). 28 July, www.gov.cn/zhengce/content/2016-08/08/content_5098072.htm. Accessed 1 July 2022.
- State Council of the PRC.** 2016b. “Heilongjiang mingnian jiang yifa jinzhi zhongzhi zhuanjiyin liangshizhouwu” (Heilongjiang will ban the planting of genetically modified food crops next year by law). 16 December, www.gov.cn/xinwen/2016-12/16/content_5149085.htm. Accessed 11 July 2022.
- State Council of the PRC.** 2017. “Heilongjiang juxing diwu jie lüshipin chanye bolanhui he shijie nongye bolanhui fabuhui” (Heilongjiang held the fifth green food industry expo and world agricultural expo launch). 31 August, www.scio.gov.cn/xwfbh/gsxwfbh/xwfbh/heilongjiang/Document/1563794/1563794.htm. Accessed 19 July 2022.
- State Council of the PRC.** 2021. “Guo xin ban juxing quanmian tuijin xiangcun zhenxing jiakuai nongye nongcun xiandaihua fabu hui tu wen shilu” (The State Council Information Office held a conference on accelerating the modernization of agriculture and rural areas by comprehensively promoting rural revitalization). 22 February, www.scio.gov.cn/xwfbh/xwfbh/wqfbh/44687/44916/wz44918/Document/1698904/1698904.htm. Accessed 12 June 2022.
- Stone, Richard.** 2008. “China plans \$3.5 billion GM crops initiative.” *Science* 321 (5894), 1279.
- Teng, Jingxuan.** 2018. “Chinese state newspapers argue over genetically modified soybeans.” *Caixin Global*, 19 October, www.caixinglobal.com/2018-10-19/chinese-state-newspapers-argue-over-genetically-modified-soybeans-101337070.html. Accessed 12 June 2022.
- Tian, Xuefei, and Mengwei Chen.** 2017. “Heilongjiang sticks to ban on gm crops.” *China Daily*, 9 February, www.chinadaily.com.cn/china/2017-02/09/content_28144777.htm. Accessed 12 June 2022.

- USDA (United States Department of Agriculture) Foreign Agricultural Service. 2008. "China, People's Republic of Biotechnology Annual 2008." GAIN Report. Washington, DC: USDA Foreign Agricultural Service.
- Wang, Can. 2016. "Heilongjiang chu difang tiaoli jin zhong zhuanjiyin zuowu bei zhi weifa guanyuan biaooshu bei zhi huangtang" (Heilongjiang's local regulations to ban the planting of genetically modified crops are allegedly illegal, and official statements are said to be absurd). *Pengpai*, 20 December, www.thepaper.cn/newsDetail_forward_1583608. Accessed 12 June 2022.
- Wang, Jinhui. 2019. "Tuidong wo sheng chengwei luse liangcang luse caiyuan luse chufang" (Promote our province to become a green granary, green vegetable garden, green kitchen). *Heilongjiang ribao*, 4 June, sec. 6, 2.
- Wong, Christine, and Valerie J. Karplus. 2017. "China's war on air pollution: can existing governance structures support new ambitions?" *The China Quarterly* 231, 662–684.
- Wong, Christine P. W. 1991. "Central–local relations in an era of fiscal decline: the paradox of fiscal decentralization in post-Mao China." *The China Quarterly* 128, 691–715.
- Wu, Alfred M., Lin Ye and Hui Li. 2019. "The impact of fiscal decentralization on urban agglomeration: evidence from China." *Journal of Urban Affairs* 41 (2), 170–188.
- Yan, Hairong, Yiyuan Chen and Ku Hok Bun. 2016. "China's soybean crisis: the logic of modernization and its discontents." *Journal of Peasant Studies* 43 (2), 373–395.
- Yan, Ziqian. 2017. "Heilongjiang jiu da 'jin zhong zhuanjiyin' zhe zhang pai" (Heilongjiang played the "ban on genetically modified" card). *Heilongjiang ribao*, 12 January, 3.
- Yang, Feiyue. 2014. "Heilongjiang's farms turn to 'green'." *China Daily*, 16 September, www.chinadaily.com.cn/bizchina/2014-09/16/content_18605715.htm. Accessed 12 June 2022.
- Yang, Zhenjie, and Alfred M. Wu. 2015. "The dynamics of the city-managing-county model in China: implications for rural–urban interaction." *Environment and Urbanization* 27 (1), 327–342.
- Yap, Chuin-Wei. 2014. "Claims that US soybeans cause infertility stoke China's GMO battle." *Wall Street Journal*, 14 May, <https://blogs.wsj.com/chinarealtime/2014/05/14/claims-that-u-s-soybeans-cause-infertility-stoke-chinas-gmo-battle/>. Accessed 12 June 2022.
- Yu, Jianxing, and Biao Huang. 2019. "Mapping the progress of local government innovation in contemporary China." In Jianxing Yu and Sujian Guo, eds. *The Palgrave Handbook of Local Governance in Contemporary China*. Singapore: Springer.
- Zhang, Hongzhou. 2018. *Securing the "Rice Bowl": China and Global Food Security*. Singapore: Palgrave Macmillan.
- Zhu, Changjun. 2016. "Shipin anquan lifa buneng bei difang liyi bangjia" (Food safety legislation cannot be kidnapped by local interests). *Guangminnet*, 21 December. https://guancha.gmw.cn/2016-12/21/content_23309788.htm. Accessed 12 June 2022.

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