



A TEACHING CASE ON CHINESE LOCAL ENVIRONMENTAL GOVERNANCE

Case Synopsis

The local primary goals for top leaders in Luowen County have transitioned from economic growth to environmental protection to poverty alleviation since 2005. As the head of county environmental protection bureau, what could Yang Deqiang do when he got into the dilemma when performing his duty in environmental protection discordant with following his superior for achieving other policy goals out of his hands? Are there any solutions from a bigger picture?

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Yang's Dilemma: Economic Growth vs. Environmental Protection

It was a rainy September afternoon in 2017. Yang Deqiang, the head of Luowen county Environmental Protection Bureau (EPB), looked down staring at his working notes with a long face during the Luowen County mobilization meeting on Poverty Alleviation and Development. The strong sense of déjà vu brought him an ominous presentiment.

Just ten years ago, it was at a similar internal meeting on “Rectifying Random Acts and Relieving Burdens for Enterprises” that then County Party Secretary, Gao Qisheng, announced a command to leaders of all county law-enforcing departments. The order prohibited any fee-charging or fine-imposing behaviors towards the key county enterprises, nominally in response to the order from the State Council.¹ The order struck a mighty blow at Yang — first, he and his bureau would lose a major source of extra income²; second, it would be almost impossible to regulate pollution enterprises without any substantial penalty power, though the EPB still seemingly reserved its power of inspection. Gloom covered Yang's mind. Strike after strike, Yang felt a person in his position is merely a man of straw. Just yesterday, Secretary Gao secretly called him to the Party Secretary's Office and urged him to open a back door for the newly introduced investment-promotion project Siyuan Poultry Enterprise. Caught in a dilemma between performing his duty in environmental protection and being obedient to his superior for achieving other policy goals out of his hands,³ Yang drove back to his bureau while pondering what he should do.

¹ The "Notice about Rectifying the Practice of Randomly Charging Fees from, Randomly Imposing Fine on and Randomly Apportioning Quotas to Non-Publicly-Owned Enterprises Including Individually-Owned and Privately-Owned Businesses" was issued by the Burdens-relieving Office under the State Council (OFRBEST [2005] No.2).

² According to Article 66 of *Measures for Environmental Administrative Punishment (2010 Revision)*, “all fines and confiscated money and proceeds from the disposal of confiscated articles must be turned over to the state treasury, and no entity or individual shall intercept, secretly divide them or do so in any disguised form.” By rights all of the personnel funds, public funds, supervision and law enforcement funds, equipment purchase funds and infrastructure funds of the county EPB should be provided by the local finance. In fact, however, the county financial department only covered the expenses for permanent staff (在编人员 zaibianrenyuan). The rest approximately 80% EPB staff who were not on the regular payroll (自收自支人员 zishouzizhirenyuan) relied on the extra-budgetary funds that belonged to non-tax income to be dealt with of their own accord. These funds primarily came from the “pollutant charge” (排污费 paiwufei). Though procedurally this money was turned over to the treasury as stipulated, the local budget plan would later return it to the local EPB for the non-permanent personnel outlays. Therefore, pollution companies strangely became a source of EPB income.

³ This dilemma was primarily stemmed from the widely criticized departmental-regional fragmented (条块分离 tiaokuaifenli) governance. The regional dimension extended from central government to jurisdictional-based local governments. The departmental dimension, for environmental protection, included the Ministry of Ecology and Environment (MEE), and local environmental protection bureaus (EPB). Chief leaders of the Party Committee and the Government, e.g. at county level, the county party secretary and the county magistrate, were the ones who took charge of public affairs within their administrative jurisdiction. They also managed the allocation of personnel and money among different bureaus in the local government. As they were largely promotion driven, their limited attention and the tradeoffs in resource allocation were naturally influenced by the incentives given by

A Contour of Luowen County

Luowen is a typical mountainous agricultural county located in Central China. The estimated population of 50,000 people are distributed over a land area of about 2,300 square kilometers, with 80% of the population living in rural parts (2016 data). The county was listed as a “State-Level Poverty-Stricken County”⁴ in 1984 due to its adverse geography and dry climate. Luowen consists of 20 townships and 400 administrative villages. The number of “Key Villages for Poverty Alleviation and development” amounts to 90, accounting for 25.3% of the total number of administrative villages, with 10,000 households and 38,000 individuals in poverty in Luowen.⁵ The poverty incidence⁶ of Luowen amounts to 9%.

Though the second and third industry production has kept increasing since 2008, the first industry output still makes up 20% of total county GDP. The main agricultural industries of Luowen include apple, pear and tobacco planting, and poultry, cattle, and hog raising. Husbandry requires fewer natural conditions compared to planting industry and therefore is developed as a county pillar industry.

The Introduction of Siyuan Poultry Enterprise

In 2005, Wu Fei, an investor from Beijing, and six other co-partners established Siyuan Poultry Co., Ltd. (hereinafter referred to as Siyuan Poultry Enterprise or Siyuan) in Luowen County. During his MBA study in Beijing, Wu got acquainted with

the promotion mechanism. Contrastingly, the superior authorities in the departmental dimension could only enforce supervision and instruction on their subordinate departments, and therefore had little substantial power on the EPB at lower level. See Exhibit 2. For detailed background, please refer to Jin, Yana, et al. “Air Pollution Control Policies in China: A Retrospective and Prospects.” *International Journal of Environmental Research and Public Health*, vol. 13, no. 12, 2016, p. 1219., doi:10.3390/ijerph13121219.

⁴ The Key Counties of National Poverty Alleviation and Development Work in the New Era, commonly known as the State-Level Poverty-Stricken Counties (SLPSC), are the specific titles of county-level administrative districts that implement economic support in China. The qualifications must be approved by the Office of the Leading Group for Poverty Alleviation and Development of the State Council. The examination and approval work has been carried out four times in 1986, 1994, 2001 and 2012. Autonomous areas for ethnic minorities have different evaluation criteria and are called Key Poverty-Stricken Counties in Autonomous Areas (KPSCAA). According to the 2012 Summary of China's Rural Poverty Alleviation and Development issued by the State Council, 592 county-level administrative districts meet the standards of SLPSC (annual income per capita less than 2300 RMB in 2012), and 341 meet the standards of KPSCAA (the demarcation is lower than 2300 RMB). According to the plan of Chinese government, all poverty-stricken counties will be lifted out of poverty and the system of poor counties will be abolished by 2020. See http://www.cpad.gov.cn/art/2012/3/19/art_343_42.html. Also See Exhibit 3 and Exhibit 4.

⁵ China's administrative system is divided into five levels: the central government, the provincial (province, autonomous region, municipality, and special administrative region), prefecture, county, and township. Some also recognize the village as a de facto lowest administrative level, but officially is defined as autonomous social organization rather than state power by Chinese constitution. As of 2017, China administers 34 provincial-level regions, 334 prefecture-level divisions, 2,862 county-level divisions, 41,034 township-level administrations, and 704,382 basic level autonomies. See <http://xzqh.mca.gov.cn/map>. For more information about Chinese political system, please refer to <https://www.everycrsreport.com/reports/R41007.html>.

⁶ Poverty incidence = the number of people whose annual income is below 2300 RMB (in 2011 inflation-adjusted RMB) / the number of all people counted * 100%

Secretary Gao's son, Gao Wenming and used his connections to help Wenming successfully obtain Beijing Hukou⁷. To acknowledge Wu's favor, Secretary Gao invited Wu to invest in "his" county and promised that Wu would be granted 30 million RMB loans by local banks with government endorsement. It was a double-win deal for both Wu Fei and Gao Qisheng. At the time, local governments and their branches were facing enormous pressure from superiors to complete the investment promotion tasks.⁸ An official's promotion or demotion was primarily decided by how they performed in promoting investments due to the Chinese central government's firm emphasis on economic growth.⁹ In such context, the introduction of Siyuan Poultry Enterprise would add a bright spot on Secretary Gao's political record; and for Wu, he earned such a rare opportunity to make profits with considerable leverage fund and government support.

For whatever reasons of task completion or private interest exchange, the county government, at last, made an oral promise to Wu that for those investing in the construction of animal product processing enterprises in Luowen, the government

⁷ The hukou system is a governmental household registration system. In China, the hukou system is used to actively limit where a person is allowed to live, especially if one is born into a rural hukou – attempting to change to a more attractive residence or to an urban hukou can be extremely difficult, if not impossible. In this way the hukou system institutionalizes inequality and consolidates the government's administrative control over China's population. The hukou registration also determines access to housing, education, and medical treatment, among other social and welfare provisions. Each city in China administers its own hukou application process to control its resident population. This is why the hukou is very important for residents in China, and highly-valued in first-tier cities like Beijing, Shanghai, and Guangzhou. For more information, please see <https://www.china-briefing.com/news/china-hukou-system-shanghai-benefits-eligibility-application-process/> and <https://thediplomat.com/2017/07/chinas-hukou-system/>.

⁸ From 2000 to 2007, investment invitation had continuously been selected as the most important indicator in county-township-level cadre performance assessment by the interviewed Chinese officials. This emphasis on the investment invitation corresponded to the emphasis in provincial-level performance assessment on GDP growth. See Liu, Mingxing. "An empirical study on the Cadre Responsibility System of Local Government in China." *World Economic Papers*, no. 1, 2013, pp. 71-85. For the English digital version, please refer to <http://www.chinaeconomist.com/index.php/2016/07/21/an-empirical-study-on-the-cadre-responsibility-system-of-local-government-in-china/>.

⁹ The Chinese cadre responsibility system is a complicated topic. As guidance targets have replaced mandatory targets of the old Chinese planning system in the reform era after 1980s, local cadres are given more autonomy choosing the means used to achieve the targets given them by higher levels, and economic incentives are provided to improve efficiency. However, the Communist Party of China (CPC) spells out its priority policies, and the implementation of these policies weighs much more heavily than other policies in the evaluation of local leaders. Non-leading and leading cadres are assigned performance targets (考核指标 kaohezhibiao) which are internally ranked in importance: there are soft targets (一般指标 yibanzhibiao), hard targets (硬指标 yingzhibiao) and priority targets with veto power (一票否决 yipiaofojue). While non-leading cadres are usually held responsible for fulfilling the soft targets, leading cadres are ultimately held accountable to higher-level authorities for achieving the hard and priority targets with veto power. Performance targets are not static, but part of a very flexible governance institution that can quickly adjust to changing circumstances. If higher-level authorities wish to shift priority policy, they can upgrade or downgrade the status of a target. For more detailed information about Chinese cadre responsibility system, please refer to Edin, Maria. "Remaking the Communist Party-State: The Cadre Responsibility System at the Local Level in China." *China: An International Journal*, NUS Press Pte Ltd, 29 Aug. 2005, muse.jhu.edu/article/186590/pdf.

would 1) take responsibility for the demonstration, approval and environmental impact assessment (EIA) of the processing project; 2) provide enterprise construction land for the most favorable price, and handle the land use approval; and 3) dispatch special political and legal service officers to Siyuan's headquarters to help handle the approval processes and prevent regulations from county law-enforcing agencies.

Siyuan's Contribution to Economic Growth and Poverty Alleviation

Siyuan Poultry Enterprise was built at the industrial cluster area of Luowen County, covering an area of 78 acres with a registered capital of 11.4 million RMB. In 2014, the company had more than 300 employees. Its main business included meat duck breeding, slaughtering, processing, and sales. Since its establishment in July 2005, Siyuan had completed an investment of 50 million RMB, owning a breeding duck farm that annually produced 5 million eggs, a hatchery that daily produces 16,000 poults, a feed mill that annually produced 120,000 tons of feed, an automatic production line that daily slaughtered 50,000 meat ducks, a freezer that could store 3,000 tons of products, and 33 breeding communities.

Siyuan's contribution to the local economy also reflected on its farmer-benefit programs, of which participants were mainly low-income villagers. The most pro-poor project was the breeding community, which transferred dispersed farmers into industrial workers. Siyuan executed centralized planning and construction of breeding communities and signed lease contracts with duck farmers. The company provided duck sheds, all equipment, poults, and drugs needed in duck breeding; in return, duck farmers were supposed to maintain the equipment in good condition and to sell back the ducks to the company periodically. The efficient scale management pattern drove farmers' income increase by more than 10 million RMB.

As Luowen was a county characterized by scarce land resource per capita, relying on grain production could only make farmers meet the basic living standards. To earn a better life, many young labors had chosen to seek job opportunities in neighbor cities or provinces. Therefore, most of the remaining population were middle-aged and older adults aged from 45 to 70. This sandwich generation usually lacked skills and funds to start their own businesses. They could neither go out to work nor find suitable jobs locally yet craved for earning money to support the kids and the old in their families. Building the breeding community in each village, Siyuan made it possible for farmers to acquire wealth near their own homes and effectively mitigate many of the challenges faced in these types of communities in China with an outbound work migration flow.

In 2014, more than 80% of the townships in Luowen had been incorporated into Siyuan's meat duck breeding project. The breeding communities were distributed in 20 villages with more than 200 standardized duck sheds in use. After a few years of duck raising, most of the farmers had expanded their business from the original one shed producing 2,000 ducks every month to three sheds with nearly 10,000 products. The average annual income could reach 30,000 to 40,000 RMB. Compared

to the annual income of less than 5000 RMB before Siyuan's operation, the stable income had much improved the lives of farmers.

The contribution of Siyuan Plant Enterprise to local poverty alleviation was recognized by top provincial leaders. In August 2010, the company was awarded the "Key Poverty Alleviation Enterprise" in the province. In 2012 and 2013, the two provincial party secretaries successively visited Siyuan's breeding communities and praised the company's innovation of engaging farmers into an integrated industrial chain as a practical approach to poverty alleviation.

Siyuan's Environmental Impacts

Although Siyuan had a positive economic impact to the county development, it did cause severe environmental problems to the rural population.

Episode 1: Water Pollution from Duck Manure

Back to the year of 2010, only six households contracted to raise ducks in Dongbei Village (a village of Luowen, see Exhibit 5) with each shed producing 4,000 ducks on average, totaling 30,000 ducks at most per batch.¹⁰ As the profits were satisfactory, neighboring villagers began to join in the contract with the enterprise. The farming scale rapidly expanded to 30 sheds with about 100,000 products per batch, which brought a surge of manure pollution. Lacking proper animal waste management strategies for intensive livestock farming, the duck farmers hosed the duck sheds and directly washed out the duck feces downward along the hillside to the Wulong stream, a branch of Yellow River that wound around and provided water to the village (see Exhibit 6). Although the village stunk from the duck urine and feces and was disturbed by a cloud of flies, community residents simply complained in private rather than reporting to the local authorities because the manure was carried away by the current once it entered to the stream, and therefore didn't cause critical health hazards.

However, Dongbei Village suffered a drought at the beginning of 2015. The drought dried up the Wulong Stream, with the result that manure piled up on the stream bed and infiltrated the ground. Because the public water system had long been neglected and in disrepair, dwellers highly relied on private well water (see Exhibit 7). Since the drought, the well water became turbid and stinky, and many of them had a rash after drinking the water although it had already been boiled. In 2015, dwellers from Dongbei Village tipped off to the local EPB that Siyuan's duck farming in the breeding community severely polluted the stream. The operation of breeding communities was then forced to suspend and didn't have a chance to improve the manure system due to the bankruptcy immediately afterwards.

Episode 2: EIA Punishment

On April 14, 2015 during an on-site inspection, the environmental inspection

¹⁰ It took 28 days to raise a batch of ducks.

dispatch of Fushan Municipal EPB¹¹ discovered that Siyuan's production line of meat duck slaughter had not passed an environmental impact assessment (EIA) and had started construction and production without authorization since its original establishment. The law enforcer ordered the enterprise to immediately stop production and complete the EIA formalities, in accordance with Article 9 Paragraph 1 of the Provincial Regulations on the Environmental Protection of Construction Projects. They also imposed a fine of 100,000 yuan, according to Article 27 Paragraph 2 of the same regulation.

Siyuan defended itself by submitting written materials and requested reducing the fine, stating that 1) the company was the county government's 2005 attracting investments project, and had obtained promise from the county government about the EIA procedure yet the latter didn't realize its promise for unstated reasons; 2) the company had contracts with the duck farmers, therefore the shutdown would affect the farmers' interests and lead to social instability; 3) the company faced difficulties in its business operation due to the market fluctuations, and the production plant had been suspended on April 4; and 4) once the new plant completed its construction soon, the old one would be abandoned.

The municipal EPB negated Siyuan's justifications and insisted on the original punishments.

Episode 3: Landfill of Rotten Duck

In September 2015, Siyuan Enterprise was shut down due to a cash crunch. The company was well-managed at the beginning and made profits for both farmers and the company itself until 2014. However, Wu hastily invested a large sum of money to the then-popular micro-credit and another sum of money to expanding industry chain to merchandising business in 2015. The premature advancement along with the unfortunate wave of micro-credit failure rapidly hollowed the company. Siyuan fell into heavy debts and could hardly pay the duck farmers, who had to leave away from home to find work outside the village, and also the electricity company. The latter, therefore, cut off the plant's electricity several times urging the company to pay off the past owing fees. As a result of the power outage, duck meat stored in freezer on site started to defreeze and, left untreated, started to rot. On April 20, 2016, the company hired a villager to dump three tons of rotten ducks into a 7-meter-high pit at the north-western corner to the plant without permission. The putrid stench from the landfill seriously influenced the normal life of residents nearby the plant. The next day, the county EPB received reports of the dumping misconduct and ordered Siyuan to handle the mess quickly. The person in charge of the company dug out the rotten duck meat and transported it to the designated landfill site for innocuous treatment under supervision of county EPB and county Animal Health Supervision Institute. The rest of stored meat was also carried to the landfill site on April 22. Meanwhile, the health and epidemic prevention personnel

¹¹ Fusan Municipal EPB is the superior competent department of Luowen County EPB.

disinfected the rotted duck meat pits, cold storage, and transportation tools, and purified the air in the plant. However, underground water had been polluted severely, affecting nearby residents. These residents accused the company of its long-existing dumping behaviors which forced them to buy water filters that cost thousands of RMB.

On April 26, the county government¹² adopted three countermeasures: 1) ordering Siyuan to conduct immediate self-inspection and to improve the management system¹³; 2) requiring Siyuan to negotiate with the residents and solve the problem of drinking water safety by paying the residents who had no access to tap water; 3) enjoining the county Animal Husbandry Bureau to reflect upon its negligence, and the EPB to follow up on supervision of plant's surrounding environment and sanitation.

Yang's New Dilemma: Environmental Protection vs. Poverty Alleviation

Though the environmental issues had long been existing, it wasn't until the President Xi Jinping came into power in 2013 did all Siyuan's three environmental events float to the water surface. Since Xi took his office, the priority of the government has been shifted from economic development towards environment protection and ecological remediation. The leadership showed unprecedented political will against pollution and ecological damage. Environmental protection was enshrined as the official ideology, along which targets and cadre performance assessment indicators were changed with a great emphasis on green development.¹⁴ The life of Yang Deqiang¹⁵ became much busier thereafter, but he did enjoy the sense of fulfillment, and more importantly, regaining power. His bureau was favorable in all aspects. The county government gave the EPB more fiscal support to equip with air quality monitoring devices, develop system platforms and establish water quality testing stations. As for

¹² The media report of Siyuan's duck landfill pollution aroused strong repercussions and caused a baleful social impact. As environmental problems became unprecedentedly sensitive for local leadership at the time, the county party committee and government placed great emphasis on the event and formed a special task force to investigate the incident and respond to the public rather than simply leaving the case to the county EPB. Another reason that EPB didn't take in charge of the case was that the county Bureau of Animal Husbandry which was held accountable to pollution was at the same administrative level with the county EPB; therefore, the EPB could hardly exert its power over the subject of liability.

¹³ The company has terminated the labor contract with the directly responsible person Mr. Yu, the deputy general manager of the company, when the order was issued.

¹⁴ For more background information about the China's environmental enforcing shift, please refer to Corne, Peter, and Johnny Browaeys. "China Cleans up Its Act on Environmental Enforcement." *The Diplomat*, The Diplomat, 9 Dec. 2017, thediplomat.com/2017/12/china-cleans-up-its-act-on-environmental-enforcement. *Environmental Protection is Enshrined as Official Ideology in China Amid Major Reforms*. www.lw.com/thoughtLeadership/environmental-protection-official-ideology-china-major-reforms. "Tightening the Grip: Environmental Governance under Xi Jinping." Taylor & Francis, www.tandfonline.com/doi/full/10.1080/09644016.2018.1491116.

¹⁵ Incumbent Chinese local officials verified that, in fact, it is normal for a section-level officials (科级干部 keji ganbu) in China to stay in the same position in the case that there is no promotion or rotation, which requires guanxi in the bureaucratic system

personnel deployment, both police office and transportation bureau were required to cooperate with EPB in environmental inspection and regulation.

However, since 2015 when the central committee of the Communist Party of China (CPC) first declared the war against poverty, the salience of poverty alleviation fast exceeded environmental protection and became the top priority of Chinese government. Leaders of twenty-two mid-western provinces were asked to sign letters of responsibility to guarantee the completion of poverty alleviation tasks.¹⁶ The battle against poverty was highly political because CPC had promised to complete the building of a moderately prosperous society in all respects by the year 2020 when all people are expected to be lifted out of poverty.¹⁷

As the due date approached, poverty alleviation became increasingly urgent for government officials at all levels. This was particularly true for Luowen in the year 2018. The 2020 goal was advanced to 2018 when the target arrived at the county level. Poverty alleviation replaced Yang and his subordinates' original primary work of environmental protection. Eighty of EPB staffs were dispatched to live in villages filling poverty alleviation forms for and distributing life materials to the poor villagers for the whole day even without noon break. Only after 6:00 p.m. could these staffs squeeze out time for their actual work. Many EPB employees were anticipating that this warlike campaign would be over within a relatively short time like one or two years. They privately whined about the excessive workload, but publicly still showed understanding and support to the top leader's order.

As poverty alleviation took over the county Secretary's political agenda, Yang's interest segregated from his superior's core interest again. The top county leaders, i.e., the new county party secretary Fu Heng and the county magistrate Zheng Wei, had signed the pledge of poverty alleviation responsibility with the municipal leading group of poverty alleviation. The political future of the two executive officers highly hinged on whether they could achieve the goals committed to their superiors, and for this time being, primarily achieve the goal of poverty alleviation. Out of the political incentives of promotion and partially the requirements from higher authorities, the county government leaders brought forth new approaches to alleviate poverty other than traditional government relief. One of the most popular new trends was to invite anti-poverty enterprises like Siyuan and to offer them both financial and policy supports. These enterprises, in return, either gave job priority to

¹⁶ Please refer to Note 9.

¹⁷ The Communist Party of China (CPC) came into being in 1921, and in 1949 the People's Republic of China was established. To mark the 100th anniversaries of these two important dates, the CPC set goals that are to be met by 2021 and 2049. By 2021, to celebrate the CPC's centenary, the goal is to "build a moderately prosperous society in all respects". This essentially means making sure that China's development improves the lives of all its people, particularly those who are below or near the country's poverty line. The incumbent Chinese leadership put unprecedented emphasis on poverty alleviation as whether the CPC would meet its promise has a significant impact on its political legitimacy. See CPC Q&A: What are China's two centennial goals and why do they matter? (n.d.). Retrieved from http://www.xinhuanet.com/english/2017-10/17/c_136686770.htm.

the impoverished population or directly involved the poor into the profit-sharing as the government loaned money to them for buying shares of the anti-poverty enterprises. However, the government hadn't included the projects of the newly invited anti-alleviation enterprises into the planned construction area, which means the EIA of these enterprises could not be approved within a short time. To accelerate the enterprise initiation for the impending task of poverty alleviation, Secretary Zhang had a private discussion with Yang, just as the Gao's conversation once upon a time, asking him to turn a blind eye for the EIA absence of these anti-poverty enterprise constructions. Yang fell into a dilemma one more time. Is there any way to get him out of the predicament?

Exhibit 1. Case Timeline

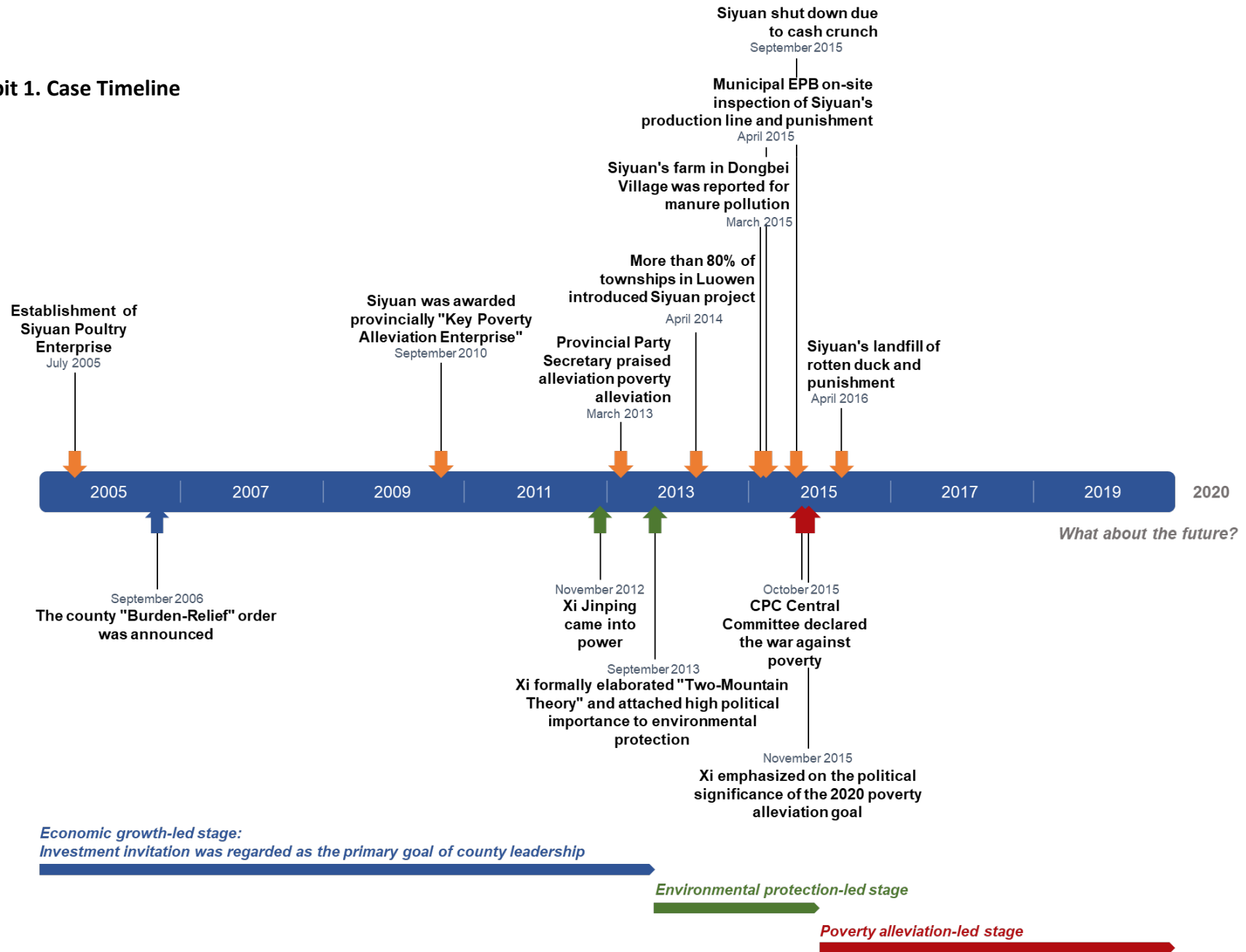
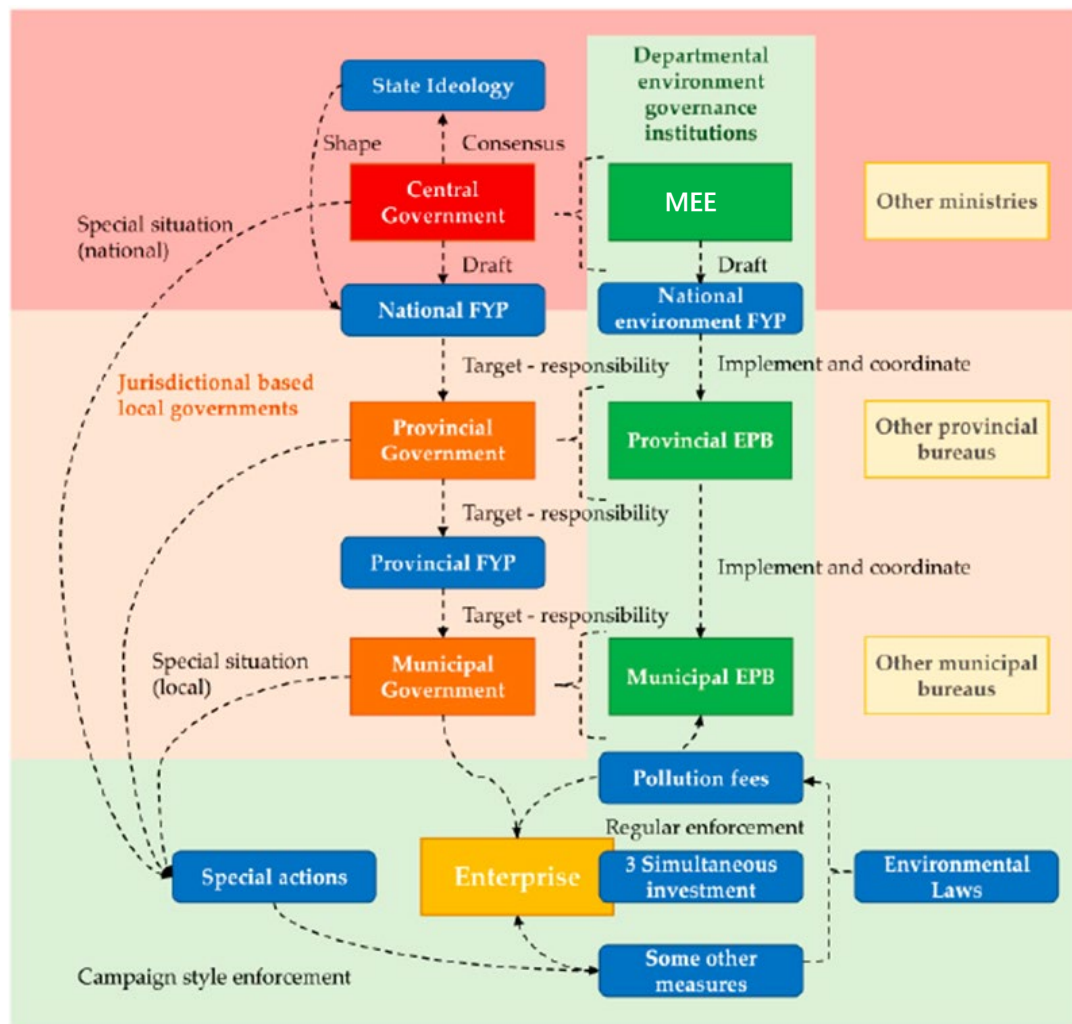


Exhibit 2. Chinese Dual-Command Environmental Governance Structure

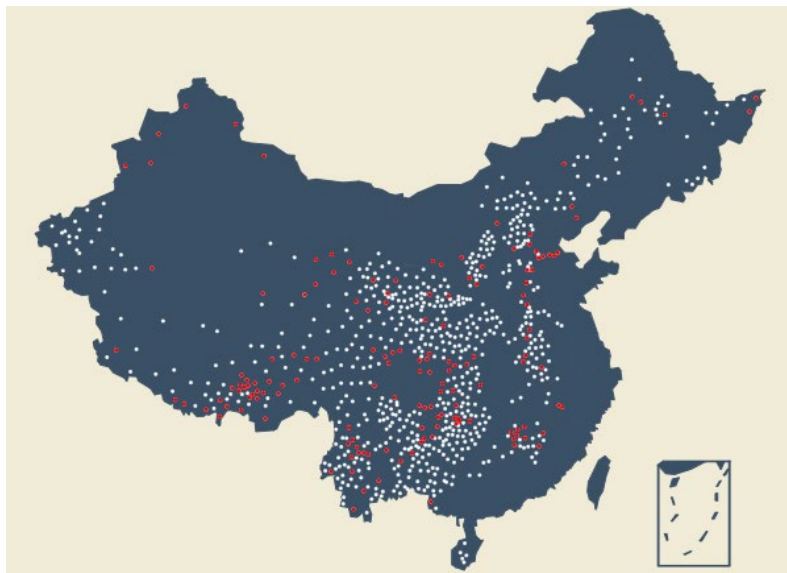


Source: Jin, Yana, et al. "Air Pollution Control Policies in China: A Retrospective and Prospects." *International Journal of Environmental Research and Public Health*, vol. 13, no. 12, 2016, p. 1219., doi:10.3390/ijerph13121219.

Exhibit 3. The twenty-two mid-western provinces where leaders committed to the completion of poverty alleviation by 2020



Exhibit 4. The Key Counties of National Poverty Alleviation and Development Work



Source: China's Poverty Alleviation Database <http://www.jianpincn.com/>.

Note: The red dots are counties that have gotten out of poverty by October 2019; the white dots are counties that are still in poverty.

Exhibit 5. The Layout of Dongbei Village

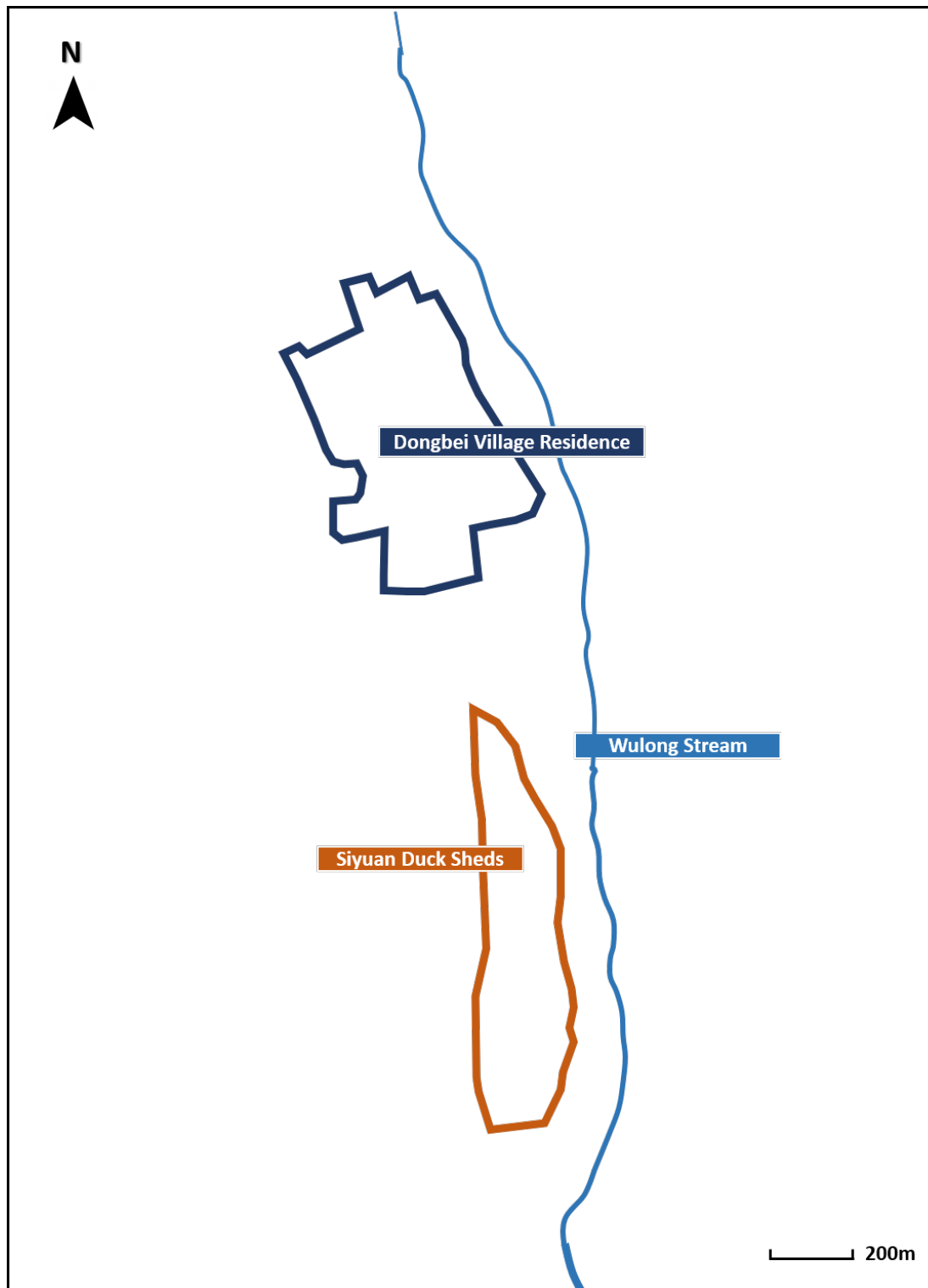


Exhibit 6. The Duck sheds and manure accumulation



Exhibit 7. The well in villager's home that was polluted by duck manure



Exhibit 8. The legal framework on farm-pollution

Laws (Issuing authority for all laws below: Standing Committee of the National People's Congress)

Names	Effective Date Earliest Version	Effective Date Current Version	Key Points Related to Animal Husbandry Pollution Prevention and Control
<p><i>Animal Husbandry Law of the People's Republic of China</i> 《畜牧法》</p>	<p>July 1, 2006</p>	<p>April 24, 2105</p>	<p>Article 46 A livestock or poultry farm or raising community shall ensure the normal running of the comprehensive utilization or other innocuous disposal facilities of the livestock or poultry dung, waste water, and other solid wastes so as to make the dumped pollutants reach the relevant standards and prevent them from polluting the environment.</p>
<p><i>Environmental Protection Law of the People's Republic of China</i> 《环境保护法》</p>	<p>December 26, 1989</p>	<p>January 1, 2015</p>	<p>Article 49 The site selection, construction, and management of farms, breeding areas, and designated slaughter enterprises of livestock and poultry shall comply with the provisions of relevant laws and regulations. Entities and individuals engaging in livestock and poultry breeding or slaughter shall take measures to dispose of livestock and poultry manure and corpses, sewage, and other wastes in a scientific manner to prevent environmental pollution.</p>
<p><i>Water Pollution Prevention and Control Law of the People's Republic of China</i> 《水污染防治法》</p>	<p>May 11, 1984</p>	<p>June 1, 2008</p>	<p>Article 56 The state supports livestock and poultry breeding plants or communities to construct facilities for the comprehensive utilization or harmless treatment of livestock and poultry stool and waste water. These plants or communities shall guarantee the normal operation of such facilities and make sure that the discharge of sewage reaches corresponding standards so as to prevent water environment from being polluted.</p>

<p><i>Law of the People's Republic of China on the Prevention and Control of Environment Pollution Caused by Solid Wastes</i> 《固体废物污染环境防治法》</p>	<p>April 1, 1996</p>	<p>November 7, 2016</p>	<p>Article 20 The engagement in the scale breeding of livestock and birds shall, according to relevant rules of the State, collect, store, utilize and dispose dung of livestock and birds produced in the breeding so as to prevent environmental pollution.</p> <p>Article 71 Any entity that engages in the scale breeding of livestock and birds fails to collect, store or dispose dung of livestock and birds and thus causes environmental pollution, it shall be ordered to correct within the time limit by the environmental protection administrative department of the local people's government at or above the county level and be imposed with a fine of less than 50,000.</p>
<p><i>Cleaner Production Promotion Law of the People's Republic of China</i> 《清洁生产促进法》</p>	<p>January 1, 2003</p>	<p>July 1, 2012</p>	<p>Article 22 Agricultural producers shall scientifically use chemical fertilizers, pesticides, agricultural films, and feed additives and improve planting and breeding technologies to ensure quality and harmless agricultural products, realize utilization of agricultural production waste as resources, and prevent agricultural environmental pollution</p>
<p><i>Circular Economy Promotion Law of the People's Republic of China</i> 《循环经济促进法》</p>	<p>January 1, 2009</p>	<p>October 26, 2018</p>	<p>Article 34 The state encourages agricultural producers and the relevant enterprises to take advantage of advanced or applicable technologies to make comprehensive utilization of crop straws, livestock and poultry excrements, byproducts of the agro-product processing industry and waste agricultural films and develop and use biogas and other biomass energies.</p>

<p><i>Animal Epidemic Prevention Law of the People's Republic of China</i> 《动物防疫法》</p>	<p>January 1, 1998</p>	<p>April 24, 2015</p>	<p>Article 21 Epidemic-infected animals and their excrement, products of epidemic-infected animals, carcass of animals that died of illness or of uncertain causes and the excrements, cushion materials, packing and containers in the means of delivery must be handled according to the relevant regulations of the veterinary administrative department under the State Council, and may not be disposed of at will.</p> <p>Article 75 Where any entity or individual violates this Law and fails to dispose of infectious animals and their excrements, infectious animal products, corpses of animals which died of illness or unknown causes, and animal excrements, cushion materials, packing, containers and other pollutants in its/his means of delivery, as well as other animals and animal products failing to pass quarantine inspections, the animal health supervision institution shall order it/him to give harmless treatment to them and pay the necessary expenses, and may impose a fine of not more than 3,000 yuan upon it/him.</p>
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Regulations and Rules

Names	Issuing Authority	Effective Date	Key Points
<p><i>Measures for Prevention and Control of Pollution in Animal Husbandry</i> 《畜禽养殖污染防治管理办法》 (国家环保总局令第9号)</p>	<p>State Environmental Protection Administration</p>	<p>May 8, 2001</p>	<p>To build, rebuild and expand livestock and poultry farms, it is necessary to carry out environmental impact assessment and handle relevant approval procedure. Delineate forbidden areas for livestock and poultry breeding. The livestock and poultry farm pollution control facilities must be simultaneously constructed and used with the main project. Livestock and poultry farms should adopt comprehensive methods such as returning waste to the field, producing biogas, manufacturing organic fertilizer, and manufacturing recycled feed.</p>
<p><i>Technical Specifications for Prevention and Control of Pollution in Animal Husbandry</i> 《畜禽养殖业污染防治技术规范》 (HJ/T81-2001)</p>		<p>April 1, 2002</p>	<p>It stipulates the site selection requirements for livestock and poultry farms, the layout of the farm and the process of removing manure, the storage of livestock and poultry manure, the treatment of sewage, the treatment and utilization of solid manure, the management of feed and feeding, the treatment of sick and dead poultry, and the basic technical requirements for pollutant monitoring. It specially stipulates that determining the scale of new livestock and poultry farms based on land capacity.</p>

<p><i>Standards for Pollutant Discharge from Livestock and Poultry Industry</i> 《畜禽养殖业污染物排放标准》 (GB18596-2001)</p>	<p>State Environmental Protection Administration; State Administration for Quality Supervision and Inspection and Quarantine</p>	<p>January 1, 2003</p>	<p>It for the first time clearly stipulates the pollutant discharge standards for livestock and poultry farming and that livestock and poultry breeding industry should actively return the waste water and manure to the field or used other measures to comprehensively utilize the pollutants discharged to realize the recycling of pollutants.</p>
<p><i>Standards for Environmental Quality and Sanitation Control of Livestock and Poultry Farms</i> 《畜禽场环境质量及卫生控制规范》 (NY/T 1167-2006)</p>	<p>Ministry of Agriculture</p>	<p>October 1, 2006</p>	<p>It specifies the ecological quality and health indicators, air quality and health indicators, soil quality and health indicators, drinking water quality and health indicators, and the sanitary control measures of livestock and poultry farms.</p>
<p><i>Technical Specifications for Innocuous Treatment of Livestock and Poultry Manure</i> 《畜禽粪便无害化处理技术规范》 (NY/T 1168-2006)</p>		<p>October 1, 2006</p>	<p>It specifies the technical requirements for site selection, site layout, treatment technology, hygiene control indicators, the technical requirements for pollutant monitoring and pollution prevention of livestock and poultry manure innocuous treatment facilities.</p>
<p><i>Technical Specifications for Pollution Control Engineering of Livestock and Poultry Breeding</i> 《畜禽养殖业污染治理工程技术规范》 (HJ497-2009)</p>	<p>Ministry of Environmental Protection</p>	<p>December 1, 2009</p>	<p>It stipulates technical requirements for design, construction, acceptance, operation and maintenance of pollution control engineering for livestock and poultry breeding.</p>

<p><i>Technical Policies on Pollution Prevention and Control in Livestock and Poultry Breeding</i> 《畜禽养殖业污染防治技术政策》 (环发【2010】151号)</p>		<p>December 30, 2010</p>	<p>It encourages the professionalization of livestock and poultry pollution prevention from the aspect of technical policy. It also encourages the prevention and control of livestock and poultry pollution according to local conditions and giving priority to the comprehensive utilization of livestock and poultry manure.</p>
<p><i>Guidelines for Environmental Supervision of Livestock and Poultry farms (Breeding Communities) (Trial)</i> 《畜禽养殖场（小区）环境监察工作指南》 (试行) (环办【2010】84号)</p>		<p>June 3, 2010</p>	<p>It includes the basis for the environmental inspection of livestock and poultry farms (breeding communities), monitoring procedures, and monitoring content. It applies to the on-site supervision, inspection and punishment over livestock and poultry farms (breeding communities) for the environmental protection administrative departments at each level.</p>
<p><i>The Best Feasible Technical Guidelines for Pollution Prevention and Control in Large-Scale Livestock and Poultry Farming (Trial)</i> 《规模畜禽养殖污染防治最佳可行技术指南》 (试行) (HJ-BAT-10)</p>		<p>July 17, 2013</p>	<p>It systematically analyzes and evaluates the farm manure treatment technologies in different regions, different breeding types and different breeding scales. Combining with international development trends and requirements, it proposes the best feasible technology and the best environmental management requirements.</p>

<p><i>Regulation on the Prevention and Control of Pollution from Large-scale Breeding of Livestock and Poultry</i> 《畜禽规模养殖污染防治条例》 (国务院令 第 643 号)</p>	<p>State Council</p>	<p>January 1, 2014</p>	<p>It comprehensively stipulates the large-scale livestock and poultry farm pollution from prevention, comprehensive utilization and treatment, incentive measures, and legal liabilities.</p>
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