

Article

China's Wildlife Management Policy Framework: Preferences, Coordination and Optimization

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Abstract: The coronavirus disease 2019 pandemic led to global concerns about the delicate relationship between humans and wildlife. However, quantitative research on the elements of a wildlife management policy framework in a certain country is lacking. In this study, we try to close this research gap by analyzing the formulation preferences of key elements in the wildlife management policy framework, as well as the coordination between them, in China, which is generally regarded as a main wildlife consumption country. Based on the content analysis of China's wildlife management policy documents, with a three-dimensional analytical framework, we find that: China's wildlife management policy framework prefers the use of compulsory tools, while voluntary and mixed tools are not fully used; adequate attention is paid to the biodiversity conservation objectives and attention is paid to the objectives of public health protection and wildlife welfare, while the utilization objective is restricted to some extent; government sectors, industry, citizens, and non-governmental organizations are involved in wildlife management policies and the degrees of participation of citizens and non-governmental organizations are relatively low. In conclusion, we draw wider implications for China's wildlife management policy formulation, arguing for a more coordinated and participatory policy framework.

Keywords: wildlife protection; biodiversity conservation; policy framework; policy formulation; China



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1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic has severely disrupted the global society and economy. As COVID-19 is a zoonotic disease and the earlier cases were found in Huanan Seafood Wholesale Market in Wuhan, the wildlife consumption in China led to global concerns about the relationship between wildlife and humans. Actually, issues of wildlife protection in China have drawn long-time attention by the international society, since China has some of the world's richest biodiversity which, at the same time, is highly threatened [1]. For instance, wildlife in the Himalayan region, which accounts for 70% of total area of natural reserves in China, is suffering from illegal hunting and trade [2]. According to the data by TRAFFIC, the wildlife trade monitoring network, a total of 1 million pangolins were captured in the period from 2000 to 2013, and China is one of the largest markets of trafficked pangolins [3]. As analysts, policymakers, and scholars have recognized, given that China has some of the richest biodiversity, and a large amount of wildlife consumption, in the world, any strategy to address wildlife conservation and human health risk should take account of the situation in China.

The problems of wildlife protection, especially overconsumption of wildlife in China, are mainly due to, as pointed out by many scholars [4–7], the lack of a suitable regulatory framework, administrative interference, local protectionism, and issues of public acceptance related to wildlife protection. The above-mentioned problems are closely related to the defects of wildlife-related legislation and policy design [5]. In response to the risk of zoonotic diseases such as COVID-19, China has adopted a legally binding decision to ban

consumption of terrestrial wildlife on 24 February 2020. However, scholars believed that this ban is not strong enough in the long run [6,7].

A review of existing wildlife-protection-related studies shows a large number of literature in this area, but the challenges related to wildlife management policies are still under investigated. The limited studies on China's wildlife management policies are mainly divided into three kinds: (1) normative studies of the challenges and measures of the Wildlife Protection Law of China and the recent wildlife consumption ban at a macro level [5,6,8,9], (2) empirical studies of the effects of specific wildlife management policies in China at the micro level [10–12], and (3) comparative studies of discussing wildlife management policies in China and other countries, as well as the political and institutional contexts that influence policymaking [13–15]. However, no scholars have studied the elements of a wildlife management policy framework in a certain country using quantitative methods, resulting in a vague understanding of the key elements of a wildlife management policy framework, such as policy tools, policy objectives, and policy subjects, and a lack of analysis of the relationship between these key policy elements. In this study, we try to close this research gap by analyzing the formulation preferences of the key elements in the wildlife management policy framework, as well as the coordination between them in China, which is generally regarded as a significant actor in worldwide wildlife conservation. Based on the content analysis of China's wildlife policy documents with a three-dimensional analytical framework, we have some new findings about the formulation preferences and coordination of China's wildlife management policy framework, which can provide the academia with enlightening information from China. Besides, our research results provide insights into the optimization of China's wildlife management policy formulation.

To clarify how the formulation preferences of policy tools, objectives, and subjects as key policy elements impacts the coordination of China's wildlife management policy framework, this paper is organized as follows. After the introduction, Section 2 sets up a three-dimensional framework to analyze the key elements of China's wildlife management policy framework. In Section 3, the texts of wildlife management policy documents are encoded and quantitatively analyzed based on the three-dimensional framework. Section 4 discusses the preferences of China's wildlife management policy formulation in terms of policy tools, policy objectives, and policy subjects and the coordination between them. Section 5 draws wider implications, arguing for a more coordinated and participatory wildlife management policy framework.

2. Research Method, Materials and Analytical Framework

2.1. Research Method and Materials

The content analysis method is based on grounded theory and conducts systematic analysis of text content by combining qualitative and quantitative analyses [16], which can be better implemented when there is limited discussion on a phenomenon in existing research literature [17]. The literature review above shows that studies on China's wildlife management policies are relatively limited. Therefore, it is appropriate to adopt the content analysis method, which can, to a certain extent, overcome the subjectivity, uncertainty and ambiguity in the existing qualitative studies on wildlife management policies [18]. This paper follows the usual carry-out steps of the content analysis method, including determination of the research question, selection of research samples, establishment of analytical dimensions, encoding of text units, and quantitative processing and analysis [19].

The analysis materials in this paper are the texts of China's wildlife management policy documents. The policy documents were mainly selected from the "China Law Retrieval System" (that is, "vip.chinalawinfo.com"), which is the most mature and professional retrieval system of laws and regulations in China. Based on the characteristics of wildlife management policy expressions, "wildlife", "terrestrial wildlife", "aquatic", "wildlife protection", "natural reserves", and "habitat" were used as key words individually and in pairs, and full-text retrieval was carried out within the system through a fuzzy search, with the period from 1949 to 2021. Based on the above retrieval conditions, 219 policy documents

were finally selected and a text table was made in accordance with the chronological order of policy promulgation for the next-step analysis (Table 1 and Appendix A). These 219 policy documents are all currently valid. If a certain policy has been revised, the text of the policy used for content analysis is the latest revised version, and the latest revision time is shown in Appendix A (Table A1).

Table 1. China’s Wildlife Management Policies (Excerpts).

No.	Name of Policy Document	Year of Promulgation
1	Instruction on the Active Protection and Reasonable Utilization of Wildlife Resources	1962
2	Notice on Approving the Report on the Development of Hunting Production	1971
3	Notice on Strengthening Bird Protection and Implementing the China-Japan Migratory Bird Protection Agreement	1981
...	...	...
217	Opinions on Strictly Punishing Illegal Activities during the Prevention and Control of COVID-19 Epidemic in Accordance with the Law	2020
218	Opinions on Punishing Illegal Fishing and Other Crimes in the Yangtze River Basin in Accordance with the Law	2020
219	Norms of Fishery Administrative Enforcement	2021

In terms of the selection of policy documents, the following issues need to be explained. Firstly, the term “policy” is used in a broad sense in this paper, including laws, plans, and policies in a narrow sense [20]. Although China has joined some international wildlife-protection-related conventions, such as the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (1975) and its Annexes I and II, the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat* (1975), and the *Convention on Biological Diversity* (1993), these international conventions need to be translated and applied through domestic legislation before they can actually be binding on China; therefore, they are not analyzed in this paper. Secondly, in terms of the political system, China is a country featuring a centralized leadership system, so central policies are thus generally applied throughout the country. So far, local governments at different levels of China have issued fewer policies on wildlife protection, and most of them are duplicates of central policies, so the selected documents do not include local policies. Thirdly, policies are selected based on whether they are pertinent to the rights and obligations of wildlife protection stakeholders, regardless of the name of the policy document, such as laws, actions, plans, catalogues, and notices.

2.2. Analytical Framework

In order to study the preferences of China’s wildlife management policy formulation, the key elements of policy framework, namely policy tools, policy subjects, and policy objectives, are first identified, and a three-dimensional framework composed of the three elements is constructed to analyze China’s wildlife management policies.

2.2.1. Dimension X: Policy Tools

The policy tool is the management behavior of a policy subject to achieve a policy objective, and a governance choice for the government’s available resources. In view of their complexity, scholars have divided policy tools in many ways according to various standards [21–23]. By observing the application of different policy tools, we can analyze the degree of government intervention in wildlife management and the degree of regulation of actors, to judge the government’s preferences in the selection of policy tools. Therefore, in this paper, in terms of the dimension of wildlife management policy tools, Howlett’s classification method is adopted and policy tools are divided into compulsory, voluntary, and mixed tools according to the degree of state power intervention in social affairs [24]. Compulsory policy tools mean that the government requires, or prohibits, certain acts of the actor on the basis of its own authority, and forces the actor to comply

with regulations, such as the compulsory supervision on public health risks caused by the wildlife industry, and the legal liability for violation of wildlife management regulations. Voluntary policy tools refer to soft and indirect policy means that guide actors to engage in wildlife-management-related activities, including market access, publicity and education, public opinion guidance, information tools, and international exchanges. Mixed policy tools refer to policy means that indirectly encourage and support actors to carry out wildlife management activities through external conditions, including financial subsidies, tax reduction, and science-based species protection standards.

2.2.2. Dimension Y: Policy Objectives

The policy objective is the purpose and effect of policy tools. The same policy tool can be used for different policy objectives; it is not comprehensive enough to use policy tools alone to conduct policy analysis. Therefore, a second dimension, the policy objectives, is usually involved in policy analysis. Based on the existing literature and official reports [15,25,26], and after several rounds of discussions with scholars in wildlife protection and officials of wildlife-management-related government sectors, wildlife management policy objectives are divided into four categories in this paper: biodiversity conservation, public health protection, utilization, and wildlife welfare. Scholars generally believe that the primary goal of wildlife management policies is to strengthen and improve biodiversity and habitat conservation to maintain the integrity of ecosystems [6,25,26]. Thus, in this paper, biodiversity conservation is identified as the primary objective of China's wildlife management policies. The COVID-19 pandemic created a strong incentive for the Chinese government to prevent the future outbreak of zoonotic disease through policy tools, public health protection is also included in wildlife management policy objectives. Wildlife is considered as a natural resource in the existing Chinese wildlife legislation. However, as societal awareness of wildlife protection is rising, wildlife welfare and animal right issues have attracted public attention and the Chinese government has provided guidance on health and welfare standards for wildlife farming [13,15]. Utilization and wildlife welfare are thus also indispensable to wildlife management policy objectives.

2.2.3. Dimension Z: Policy Subjects

The distinction among policy subjects should be fully considered in the realization process "from policy tools to policy objectives". Therefore, a third dimension is introduced, namely, policy subjects. In addition to be a policymaker, the government sector is also the main implementer of wildlife management policies. The wildlife breeding industry has grown to provide significant economic and social value to China [27,28]. Although the wildlife farming and trading industry does not directly participate in policy formulation, it affects the formulation and implementation of wildlife management policies and is an important policy subject. Non-governmental organizations (NGOs), facilitates communications among governmental sectors, industry, and citizens with their neutrality and professionalism. NGOs in this paper are used in a broad sense, that is, research institutions where scientists or researchers work are included. In addition, citizens' participation also plays an important role in the policymaking and implementation of wildlife management policies in China and other countries [29–31]. Thus, citizens should be analyzed as a separate policy subject. As for landowners, they are included in industry if they engage in activities related to wildlife utilization activities; they are classified as citizens if they are just landowners. Accordingly, in this paper, the policy subjects are divided into four categories: the government sectors, industry, NGOs, and citizens.

By combining policy subjects with policy tools and objectives, a three-dimensional analytical framework for China's wildlife management policy documents is finally formed (Figure 1).

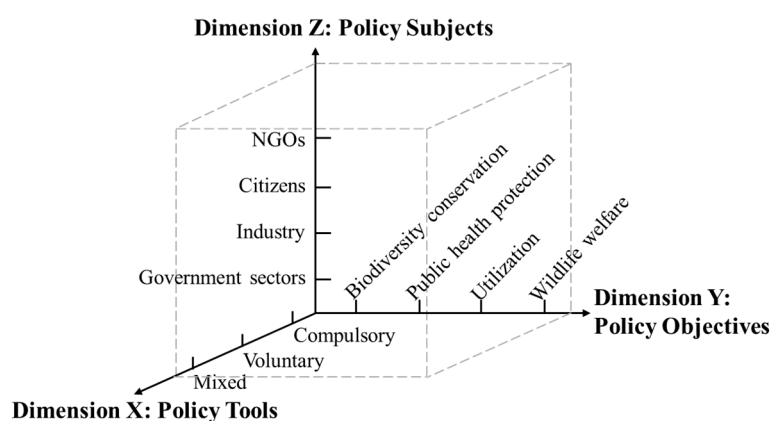


Figure 1. Three-dimensional Analytical Framework of China's Wildlife Management Policy Documents.

3. Content Analysis of China's Wildlife Management Policy Framework

3.1. Text Encoding and Reliability Test

In this paper, the text encoding of China's wildlife management policies was specifically conducted as follows. Firstly, the full text of the 219 policy documents was carefully read through to determine the content analysis unit, which was encoded and classified according to the format of "policy text number-item number". The computer-aided qualitative analysis software NVivo12.0 was used to automate document labeling and coding [32]. Then, the specific content of all the 2652 analysis units that were formed and numbered was classified according to the three-dimensional analytical framework. As for the determination of the analysis unit, chapter, paragraph, subsection, and even sentence can be identified as the appropriate analysis unit [33]. Because the objects of content analysis in this paper are standardized policy texts, policy clause is identified as the content analysis unit. Finally, based on the frequency statistics, the content of all analysis units was further classified into 11 second-level categories under 3 first-level categories, with a total of 4115 reference points (Table 2).

Table 2. Encoding of Content Analysis Units of Wildlife Management Policy Documents.

First-Level Category	Second-Level Category	Encoded Fragment (Excerpts)
Policy tools	Compulsory	In violation of the provisions of these regulations, if the construction unit causes damage to surrounding scenery, water bodies, forests and vegetation, wildlife resources, and topography during the construction process, the scenic area management agency shall order it to stop the illegal act, restore the original state within a time limit, or take other remedies measures and impose a fine from RMB 20,000 to RMB 100,000; if the original status is not restored or effective measures are not taken within the time limit, the scenic area management agency shall order the construction to stop. (81-1)
	Voluntary	The zoo management agency shall formulate a plan for popularizing wild animal science education and set up a dedicated person to be responsible for the popularization of science and use various methods to publicize and educate the public, especially the youth. (40-1)
	Mixed	During the "Ninth Five-Year Plan" period, it is necessary to further improve the national standards for laboratory animals, implement a unified laboratory animal quality certification and notification system throughout the country, and select qualified units as the nationally recognized laboratory animal quality inspection agency to undertake the task of laboratory animal quality inspection. (48-4)

Table 2. Cont.

First-Level Category	Second-Level Category	Encoded Fragment (Excerpts)
Policy objectives	Biodiversity conservation	The state encourages zoos to actively carry out scientific research and ex-situ protection of rare and endangered wildlife. (40-2)
	Public health protection	The zoo management agency shall have facilities for sanitation and epidemic prevention, medical rescue, and anesthesia, and shall conduct epidemic prevention and disinfection at regular intervals. Qualified zoos must have animal disease quarantine stations. (40-4)
	Utilization	The governments at all levels shall incorporate fishery production into their national economic development plans and take measures to strengthen the unified planning and comprehensive utilization of waters. (12-2)
	Wildlife welfare	Artificial breeding of wildlife under national key protection shall be conducive to species protection and scientific research and shall not damage wild population resources. According to the habits of wild animals, it should ensure that they have the necessary space for activities, survival and reproduction, sanitation and health conditions, and have the use, type, development site, facilities and technology that are compatible with the scale of wildlife. It should comply with relevant technical standards and epidemic prevention requirements. Do not abuse wildlife. (17-25)
Policy subjects	Government sectors	The National Endpoint Management Office can focus on the on-site supervision and inspection of the import and export activities of bulk trade species and sensitive species, as well as the import and export activities of endangered wildlife. (135-4)
	Industry	In order to guide the healthy development of the domestication and breeding of musk deer and bear, the local area should study and establish an incentive mechanism of “who invests, who owns, and who benefits” according to local situation, and guide and encourage the relevant Chinese medicine enterprises that use the above-mentioned raw materials to actively participate in the artificial breeding of musk deer and improve the technical conditions of bear bile farming. (68-2)
	Citizens	Residents and tourists in the scenic area shall protect the scenery, water bodies, forest and grass vegetation, wildlife and various facilities in the scenic area. (81-1)
	NGOs	Any organization or individual who finds that wild animals need to be sheltered and rescued due to injuries, traps, etc., shall promptly report to the local forestry authority and its wildlife shelter and rescue agency. (164-3)

It is necessary to verify the accuracy of the encoding and avoid subjectivity after all wildlife management policy texts are encoded. Formula (1) is used to calculate the level of agreement between two coders, and Formula (2) is used to calculate the reliability of all codes.

$$A = \frac{2 \times M}{N_1 + N_2} \quad (1)$$

$$R = n \times \frac{A}{1 + [(n - 1) \times A]} \quad (2)$$

where, M is the number of items on which both coders agree completely; N_1 is the number of items agreed on by the first coder; N_2 is the number of items agreed on by the second coder; n is the number of coders; A is the level of agreement that both coders agree on, that is, the same level of agreement; R is the code reliability. In this research, another coder (that is, the second coder) was invited to use the “text search” function in the software NVivo12.0 to perform a second round of recoding of the 219 wildlife management policy documents according to the node system established by the first coder. The results showed that the two coders totally agreed on 2900 items, the first coder agreed on 4115 items, and the second coder agreed on 3900 items. The reliability (R) obtained according to the formula was 0.84.

Generally, if the calculation result is greater than 0.8, the reliability test criterion is met [34]. Thus, the reliability of codes in this research conforms to the established criterion.

3.2. One-Dimensional Analysis on the Preferences of China's Wildlife Management Policy Formulation

As shown in Table 3, China's wildlife management policy formulation takes into account compulsory, voluntary, and mixed policy tools, covers the objectives of biodiversity conservation, public health protection, utilization, and wildlife welfare, and involves the subjects of government sectors, industry, citizens, and NGOs, which provides an institutional and regulatory framework for wildlife protection in China. In this part, the formulation preferences of policy tools, objectives, and subjects will be analyzed according to the distribution of 4115 reference points.

Table 3. Node Distribution of China's Wildlife Management Policy Framework among Different Policy Tools, Objectives, and Subjects.

First-Level Category	Second-Level Category	Number of Ref. Points	Total Ref. Points	Proportion
Policy tools	Compulsory	853	1432	59.57%
	Voluntary	266		18.58%
	Mixed	313		21.86%
Policy objectives	Biodiversity conservation	743	1350	55.04%
	Public health protection	292		21.63%
	Utilization	190		14.07%
	Wildlife welfare	125		9.26%
Policy subjects	Government sectors	744	1333	55.82%
	Industry	226		16.95%
	Citizens	225		16.88%
	NGOs	138		10.35%

From the distribution of the three policy tools, compulsory policy tools account for 59.57%, followed by mixed policy tools (21.86%) and voluntary policy tools (18.58%). Traditionally China was a totalitarian state [35]. Thereby compulsory policy tools were most frequently used, and so were the wildlife management policy tools. However, greater compulsion does not mean higher possibility of achieving the expected policy objectives. Specifically, to a large extent, successful wildlife protection requires cooperation rather than compulsion [7,36]. Since the reform and opening up, China has been shifted from the totalitarian era to the "post-totalitarian era", with the characteristics changing from authoritarianism to bureaucratism [37]. The state has changed its governance strategy and relied on technical governance to a certain extent. Accordingly, the preference of wildlife management policy tools has also changed, as reflected by the proportion of voluntary and mixed policy tools (40.43%).

From the distribution of the four policy objectives, biodiversity conservation is the most frequently referred objective of China's wildlife management policies, accounting for 55.04%, followed by public health protection (21.63%), utilization (14.07%) and wildlife welfare (9.26%). The proportion of each objective of wildlife management policies is relatively reasonable. For a long time, scholars have fiercely criticized that China's wildlife management policies adopted a utilization approach through legalizing and regulating wildlife farming and trading [4,7,27,38]. Nevertheless, according to the statistical results in Table 3, among the policy objectives, the objective of biodiversity conservation accounts for a high proportion while the objective of utilization accounts for a relatively small proportion. In addition, scholars generally hold that the objective of China's wildlife management policies ignores reducing the risk of zoonotic diseases, while the coded data in Table 3 shows that the policy design has paid attention to public health protection to some extent. Furthermore, the welfare of wild animals is also a concern of China's wildlife management policies.

From the distribution of the four policy subjects, China's wildlife management policies mainly involve government sectors, accounting for 55.82%, followed by industry (16.95%), citizens (16.88%), and NGOs (10.35%) China's wildlife management policy framework prefers a government-centric and top-down path, thereby government sectors play a guiding role in wildlife management activities. However, public policy is shaped by various actors, including industry and civil society, who influence policymaking through bottom-up pressure. Public attitude, especially, plays a very important role in the formulation and implementation of wildlife management policies [39]. The statistical results in Table 3 show that, in the framework of China's wildlife management policy, attention to citizens and NGOs is apparently weaker than that to government sectors.

3.3. Two-Dimensional Analysis on the Preferences of China's Wildlife Management Policy Formulation

With the help of the three-dimensional analytical framework of wildlife management policy documents in Figure 1, policy tools, policy objectives, and policy subjects are paired for two-dimensional matrix encoding, so as to analyze the coordination between the policy tools, objectives, and subjects of China's wildlife management policy framework in a more intuitive and comprehensive way.

3.3.1. Two-Dimensional Analysis of Policy Subjects and Policy Objectives

According to the results of the matrix coding of policy subjects and policy objectives (Table 4), in terms of biodiversity conservation and public health protection, government sectors bear much higher responsibilities than the other three subjects, accounting for 71.02% and 86.03%, respectively; government sectors and industry are mainly responsible for the realization of utilization, accounting for 67.92% and 18.87%, respectively; in terms of wildlife welfare, government sectors and non-governmental actors (including industry, citizens and NGOs) bear almost equal responsibilities, accounting for 49.06% and 50.94%, respectively. According to the results of the matrix coding of policy subjects and policy objectives (Table 4), in terms of biodiversity conservation and public health protection, government sectors bear much higher responsibilities than the other three subjects, accounting for 71.02% and 86.03%, respectively; government sectors and industry are mainly responsible for the realization of utilization, accounting for 67.92% and 18.87%, respectively; in terms of wildlife welfare, government sectors and non-governmental actors (including industry, citizens, and NGOs) bear almost equal responsibilities, accounting for 49.06% and 50.94%, respectively.

Table 4. Matrix Coding of Policy Subjects and Policy Objectives.

	Biodiversity Conservation	Public Health Protection	Utilization	Wildlife Welfare	Total Ref. Points	Proportion
Government sectors	326	117	36	26	505	72.04%
Industry	47	2	10	11	70	9.99%
Citizens	56	13	5	9	83	11.84%
NGOs	30	4	2	7	43	6.13%
Total ref. points	459	136	53	53	701	100.00%
Proportion	65.48%	19.40%	7.56%	7.56%	100.00%	-

It can be seen that, first of all, government sectors play a vital role in the realization of all policy objects. This is consistent with the conclusion drawn from the aforementioned one-dimensional analysis, that is, government sectors are the main subjects of China's wildlife management policies. On the one hand, biodiversity conservation and public health protection are the policy objectives that are most closely coupled with government sectors, which indicates a lot of government-led supervision of the delicate relationship between humans and wildlife in policy formulation. On the other hand, in the relatively new field of wildlife welfare, policy formulation has considered the joint efforts of the

government and civil society. Secondly, all policy objectives have a low degree of coupling with citizens and NGOs, which is consistent with the conclusion in the aforementioned one-dimensional analysis that China's wildlife management policies have not paid enough attention to citizens and NGOs. Thirdly, further statistics show that the coupling degree between biodiversity conservation and industry (67.14%) is even much higher than that between utilization and industry (14.28%). Regarding the wildlife breeding and trading industry, policy formulation should focus on regulating its utilization, rather than imposing excessive protection requirements.

3.3.2. Two-Dimensional Analysis of Policy Objectives and Policy Tools

According to the matrix coding of policy objectives and policy tools (Table 5), compulsory tools are primarily provided to achieve the objective of biodiversity conservation (54.61%), followed by the objectives of utilization (20.65%) and public health protection (17.92%). Voluntary tools are mainly used for the objective of biodiversity conservation (61.04%). For mixed tools, biodiversity conservation is also the main objective, accounting for 67.04%.

Table 5. Matrix Coding of Policy Objectives and Policy Tools.

	Compulsory	Voluntary	Mixed	Total Ref. Points	Proportion
Biodiversity conservation	320	141	181	642	59.06%
Public health protection	105	49	52	206	18.95%
Utilization	121	22	12	155	14.26%
Wildlife welfare	40	19	25	84	7.73%
Total ref. points	586	231	270	1087	100.00%
Proportion	53.91%	21.25%	24.84%	100.00%	-

On the positive side, the design of China's wildlife policy tools gives targeted response to the realization of different policy objectives. In most cases, the objectives of biodiversity conservation, public health protection, and wildlife welfare are achieved through a combination of relatively equivalent compulsory and non-compulsory tools, namely voluntary tools and mixed tools. However, just as it was found by the aforementioned one-dimensional analysis that more compulsory tools are used in China's wildlife management policies, the two-dimensional analysis further shows that, on the one hand, the objective of biodiversity conservation is mainly achieved through compulsory tools, which does not meet the practical needs of wildlife protection [7,36]; on the other hand, the objective of utilization is also mainly achieved through compulsory tools, with the coding coupling degree of 78.06%, which is much higher than that between the utilization objective and non-compulsory tools (21.94%). This reflects that China's wildlife policy tools have not yet created enough social space to guide other policy subjects to participate in wildlife utilization activities in accordance with their own mechanisms and relationships.

3.3.3. Two-Dimensional Analysis of Policy Tools and Policy Subjects

According to the matrix coding of the policy tools and policy subjects (Table 6), most of the policy tools allocated to government sectors are compulsory, accounting for 58.83%, followed by mixed tools (25.11%); the policy tools allocated to industry, citizens and NGOs are also mostly compulsory tools, accounting for 59.15%, 59.69%, and 54.26%, respectively.

Table 6. Matrix Coding of Policy Tools and Policy Subjects.

	Government Sectors	Industry	Citizens	NGOs	Total Ref. Points	Proportion
Compulsory	663	168	154	102	1087	58.54%
Voluntary	181	85	87	73	426	22.94%
Mixed	283	31	17	13	344	18.52%
Total ref. points	1127	284	258	188	1857	100.0%
Proportion	60.69%	15.29%	13.89%	10.12%	100.00%	-

From the above data, it can be seen that China's wildlife management policy subjects and policy tools are relatively matched. Wildlife protection is an area that requires strict government supervision. Therefore, government sectors use more compulsory tools than mixed and voluntary tools. However, just as found by the aforementioned one-dimensional analysis that voluntary tools are least used among China's wildlife management policy tools, the two-dimensional matrix coding further shows that among the policy tools allocated to citizens, voluntary tools account for only 33.73%, which is much lower than compulsory tools (59.59%). For citizens, it is advisable to raise their awareness of wildlife protection through voluntary means such as publicity, education, and public opinion guidance. In addition, among the policy tools allocated to industry, mixed tools account for the smallest proportion (10.92%), which is lower than both compulsory tools (59.15%) and voluntary tools (29.93%). Over-deployment of compulsory tools may hinder industry from playing a self-regulatory role in wildlife breeding and trading activities. At the same time, completely voluntary tools may not be able to effectively control its profit-seeking tendency. Therefore, mixed tools, such as financial subsidies, tax reduction, and industry standards, are more suitable for the industry.

4. Discussion

Based on the one-dimensional and two-dimensional analyses of China's wildlife management policy formulation, we can find the design preferences in terms of policy tools, policy objectives and policy subjects, as well as the coordination between them, and then explore some defects in policy formulation.

Firstly, in terms of policy tools, preferences are given to compulsory tools with the intervention of state power, while voluntary and mixed tools are limitedly used. This is consistent with other scholars' research results [7,36]; the content analysis further indicates that government sectors rely excessively on compulsory tools to achieve all policy objectives, especially biodiversity conservation. As a traditional totalitarian state, China preferred to use compulsory tools to implement policies through a top-down approach, which was regarded as an effective form of command-and-control regulation [40]. Although some changes have taken place with reform and opening up, as well as the introduction of market economy, preferences are still given to compulsory policy tools since the system of administrative appointments and political accountability remains centralized [41]. However, one of the most prominent problems in the implementation of China's wildlife management policies is that the implementation responsibility is distributed across different government sectors, including the forestry department, agriculture department, and market supervision department. These departments are responsible for overseeing wildlife conservation, public health, food safety, and animal health. In the process of policy implementation, insufficient cross-sector collaboration has weakened market supervision, judicial evidence collection, and law enforcement [7]; overlapping management has led to inefficiency and waste of administrative resources [36]. Correspondingly, excessive use of compulsory tools by government sectors will not help resolve the problems of separated or overlapping management but may increase the obstacles to effective wildlife protection in practice given the inflexibility of compulsory tools.

Secondly, in terms of policy objectives, the allocation of four policy objectives are generally reasonable, reflecting that policymakers are fully concerned about biodiversity conservation and public health protection, restricting utilization, and are beginning to pay attention to wildlife welfare. Many scholars have pointed out that China's wildlife management policy texts have ignored biodiversity conservation and paid more attention to utilization through qualitative research [4,7,27,38], but the results of content analysis show that this is not the case. However, there are still some shortcomings in the coordination of policy elements based on the aforementioned content analysis: the excessive protection obligations imposed on the wildlife breeding and trading industry and excessive compulsory tools for achieving the utilization objective have probably increased the operating cost of the industry. Scholars found that, if the cost of illegal wildlife farming and trade is lower

than that of legal ones, breeders and traders may circumvent the mandatory provisions of policies, such as circumventing license management, and laundering illegally sourced animals into legally bred ones; on the contrary, if there is no economic advantage to illegal utilization, they may decrease the illegal acts [42–44]. It is indicated that the vast majority of wild animals in the Chinese market are locally poached and internationally smuggled wild animals [15,45]. This status quo can be attributed not only to weak law enforcement, but also to the inherent logical contradiction in policy design, that is, the wildlife farming and trading industry, who seeks profit, has been imposed with excessive obligations of wildlife protection and allocated more compulsory tools.

Finally, in terms of policy subjects, government sectors, industry, citizens, and NGOs participate in China's wildlife management policies as multiple subjects. Among them, government sectors play a vital role, while citizens and NGOs play a smaller role. Although researchers have pointed out that there is a lack of sufficient public participation in environmental protection, including wildlife protection, in China [6,46], the reflection of this lack of public participation in wildlife management policy framework is still vague. Wildlife farming was expected to help achieve the goal of poverty alleviation [47]. However, studies showed that few wet markets provide low-income citizens with an important source of protein, and wildlife consumers have turned to young, highly-educated, and white-collar citizens; wildlife consumption is seen as a delicacy that demonstrates status and hospitality [11,48]. The shift of wildlife consumers from the poor to the upper-middle class is a serious problem, which indicates the urgency and importance of improving citizens' awareness of public health and biodiversity protection by minimizing the consumption of wildlife. The aforementioned content analysis shows that the neglect of guidance and regulation on citizens' acts, pertinent to wildlife protection in China's wildlife management policy framework, cannot effectively respond to this serious concern. In addition, many people have difficulty in obtaining detailed information on environmental issues and often rely on social media, which can be biased and lead to public misunderstanding [49,50]. NGOs, as a crucial part of civil society, are a bridge for creating an interactive relationship among other policy subjects. Accordingly, the neglect of NGOs in China's wildlife management policy framework may hinder NGOs from playing their due roles of communication and education.

5. Conclusions

In the context of the global COVID-19 pandemic, it is the right and critical time to review the delicate relationship between humans and nature. As far as China's wildlife management policy framework is concerned, it should be formulated in a more reasonable and optimized way among various policy tools, policy objectives, and policy subjects. For this reason, some optimization suggestions are proposed to improve the policy integration towards a more coordinated and participatory wildlife management policy framework.

Firstly, more voluntary and mixed policy tools rather than compulsory ones should be used to achieve the policy objectives of biodiversity conservation and utilization. During the past two decades, the form of governance has undergone great changes, from top-down into a more diversified and participatory process [51,52]. From management to governance, the construction of a service-oriented government has triggered a challenge of the relationship between government, market, and society. As China's population continues to grow, the pressure on the society and economy cannot be avoided. When other job options are exhausted, rural and indigenous communities are more likely to turn to natural resource extraction and wildlife-related shadow economy [53,54]. Accordingly, it is not advisable to excessively adopt compulsory tools for wildlife protection and utilization. More consideration should be given to mixed and voluntary policy tools; for instance, redesigning wet market access mechanisms, guiding wildlife farmers to quit from wildlife industry with the incentive of financial subsidies or taxes, and formulating science-based standards on which species can be utilized.

Secondly, in terms of policy objectives, in addition to further restricting the objective of utilization, the protection obligations for industry should also be reduced in policy design to resolve the aforementioned logical contradiction. Unfortunately, absolute protection currently dominates public opinion and sympathy, with scientific discussion and rational thinking often discounted [55]. Absolute protection includes the random release of animals, which has led to the invasion of alien species weakening and hindering the process of wildlife conservation itself [56]. Similarly, it is not rational to require the wildlife farming and trading industry to bear many responsibilities of wildlife conservation and animal welfare. A more feasible way is not only to ban farming, trading, and consumption of all terrestrial wildlife for food consumption, which was stipulated in the legally binding decision by Chinese legislative body in February 2020, but also to ban various non-food use of wildlife products, gradually changing from commercial utilization to the utilization for public welfare.

Thirdly, the public participation in China's wildlife management policy framework should be strengthened. There is general agreement that public participation in policy formulation has many benefits, including enhancing democratic capacity, increasing justice, empowering citizens, harnessing local information and knowledge, and lessening potential conflicts [57–59]. The contemporary good governance also emphasizes the participation and collaboration of multiple actors in governance. Accordingly, in the field of wildlife management in China, more emphasis should be put on public participation, particularly the participation of citizens and NGOs. A promising example is that, compared with other cities in China, residents of Beijing and Shanghai have significantly increased their support for wildlife protection. This was related to continuous public awareness education campaigns led by various government sectors and NGOs [11]. Recently, some NGOs have brought litigation to court to stop development projects that convert wildlife habitats in China [60]. Therefore, the next policy formulation should enhance continuous science-based popularization and education campaigns of biodiversity conservation, mainly led by NGOs, to ensure long-term behavioral change.

This paper is focused on the discussion of the design and coupling of key elements such as policy tools, objectives, and subjects through the quantitative research of China's wildlife management policy documents. Because China's wildlife management policy framework is broad, with more than 200 policy documents, existing studies' focus on the Wildlife Protection Law of China—although it is the most representative policy—and ignorance of the analysis of most other policies may lead to vague or inaccurate conclusions. In future studies of this field, policy texts and practice should be further effectively connected, and the international cooperation and exchange of policymaking, as well as the effect of policy implementation, should be deeply explored through an effective combination of qualitative research (such as theoretical discussion, case study, and interviews) and quantitative research.

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Appendix A

Table A1. China's Wildlife Management Policies.

No.	Name of Policy Document	Year of Promulgation
1	Instruction on the Active Protection and Reasonable Utilization of Wildlife Resources	1962
2	Notice on Approving the Report on the Development of Hunting Production	1971
3	Notice on Strengthening Bird Protection and Implementing the China-Japan Migratory Bird Protection Agreement	1981
4	Marine Environment Protection Law of the People's Republic of China (2017 Amendment)	1983
5	Interim Regulations on the Management of Laboratory Animals in the Health System	1983
6	Rules for the Implementation of the Regulations of the People's Republic of China on Import and Export Animal and Plant Quarantine	1983
7	Circular on Strictly Protecting Precious and Rare Wildlife	1983
8	Notice on Strengthening the Management and Scientific Research of Macaque Resources	1983
9	Grassland Law of the People's Republic of China (2013 Amendment)	1985
10	Forest Law of the People's Republic of China (2019 Amendment)	1985
11	Measures for the Administration of Forest and Wildlife Nature Reserves	1985
12	Fishery Law of the People's Republic of China (2013 Amendment)	1986
13	Urgent Notice on Resolutely Preventing Arbitrary Hunting, Reselling, and Smuggling of Rare Wildlife	1987
14	Regulation on the Administration of Laboratory Animals (2017 Amendment)	1988
15	Notice on Issuing the Interim Management Measures for "Draining Bear Gallbladder"	1988
16	Environmental Protection Law of the People's Republic of China (2014 Amendment)	1989
17	Wildlife Conservation Law of the People's Republic of China (2018 Amendment)	1989
18	Law of the People's Republic of China on the Prevention and Treatment of Infectious Diseases (2013 Amendment)	1989
19	Notice on Strengthening the Administration of the Entry and Exit of Antelope Horns	1990
20	Circular of the General Office of the State Council on the Current Situation of Illegal Hunting, Killing, Purchase and Resale of Rare Wildlife	1990
21	Notice on Strengthening the Administration of Snake Exports	1990
22	Notice on Severely Cracking Down on Illegal Hunting, Purchasing, Reselling, and Smuggling of Wildlife	1990
23	Measures for the Administration of the Domestication and Breeding Licenses of Wildlife under Special State Protection (2015 Amendment)	1991
24	Notice of the National Tourism Administration on the Implementation of the "Emergency Notice of the State Council on Strengthening the Protection of Wildlife and Severely Cracking down on Illegal and Criminal Activities"	1991
25	Notice on Strengthening the Work Report of Wildlife Protection and Management	1991
26	Urgent Notice on Strengthening the Protection of Wildlife and Severely Cracking down on Illegal and Criminal Activities	1991
27	Reply on Clarifying the Attributes of Endangered and Precious Animal Skins, Feathers, Metacarpal Bones and Organs	1991
28	Notice on Strengthening the Protection and Management of Marine Aquatic Wildlife	1991
29	Measures for the Implementation of the Law of the People's Republic of China on the Prevention and Control of Infectious Diseases	1991
30	Regulation of the People's Republic of China on the Protection of Terrestrial Wildlife (2016 Amendment)	1992
31	Notice on the Current Situation of Deforestation, Indiscriminate Hunting, and Comprehensive Control Measures	1992
32	Regulations of the People's Republic of China on the Protection of Aquatic Wildlife (2013 Amendment)	1993
33	Notice on Issuing the "Measures for Charges for the Protection and Management of Terrestrial Wildlife Resources"	1993
34	Notice on Strengthening Enforcement of Environmental and Resource Protection Law Enforcement	1993
35	Notice on Strengthening Environmental Protection Law Enforcement Inspection and Severely Cracking Down on Illegal Activities	1993
36	Notice on Strengthening the Protection of Wildlife in Zoos	1993
37	Notice on Vigorously Strengthening the Protection of Wildlife and Propaganda for Prohibiting the Trade of Endangered Species and Their Products According to Law	1993
38	Agriculture Law of the People's Republic of China (2012 Amendment)	1993
39	Regulations of the People's Republic of China on Nature Reserves (2017 Amendment)	1994
40	Provisions for Administration of City Zoo (2004 Amendment)	1994
41	Notice on Strengthening the Protection and Management of Forest Resources	1994
42	Letter on Issues Concerning the Execution of the Power of Punishment by the Administrative Department of Terrestrial Wildlife	1994
43	Yangtze River Fishery Resources Management Regulations (2004 Amendment)	1995
44	Notice on Strengthening Environmental Protection Work in Tourist Areas	1995
45	Notice on Strengthening the Administration of the Import and Export of Live Wildlife and Plants	1996
46	Criminal Law of the People's Republic of China (2020 Amendment)	1997
47	Notice on Issuing the "Outline of China's Nature Reserve Development Plan (1996–2010)"	1997
48	Several Opinions on the Development of Laboratory Animals during the "Ninth Five-Year Plan" Period	1997
49	Animal Epidemic Prevention Law of the People's Republic of China (2015 Amendment)	1998
50	Fishery Administrative Penalty Provisions	1998

Table A1. Cont.

No.	Name of Policy Document	Year of Promulgation
51	Notice on Several Issues Concerning Doing a Good Job in Agriculture and Rural Work in the Autumn and Winter of 1998	1998
52	Notice on launching a Special Struggle against Illegal and Criminal Activities That Destroy Forest Resources	1998
53	Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wildlife (Revised in 2019)	1999
54	Notice on the Implementation of the Simultaneous Monitoring Activities of the Baiji, Finless Porpoise and the Yangtze River Environment	1999
55	Interpretation on Several Issues Concerning the Specific Application of Law in the Trial of Criminal Cases of Destroying Wildlife Resources	2000
56	Notice on Severely Cracking Down on Illegal and Criminal Activities That Destroy Wildlife Resources	2000
57	Urgent Notice on Strengthening the Management of Crocodile	2001
58	Announcement on the No Longer Approving Health Foods Produced from Bear Bile Powder and Creatine	2001
59	Notice on Restricting the Production of Health Food from Wildlife, Plants and Their Products	2001
60	Notice on Prohibiting the Selling of Rare Wildlife and Rare Plants and Their Products in Stores in Isolated Areas at Ports	2002
61	Regulations on the Management of Ocean Fisheries (2020)	2003
62	Notice on Establishing the National Environmental Protection Center for the Protection of Key Aquatic Wildlife of the Yangtze River	2003
63	Notice on the implementation of the "Notice on the Prohibition of Illegal Hunting and Management of Terrestrial Wildlife in Adapting to the Needs of the Situation"	2003
64	Urgent Notice on Cracking Down on Illegal Capture, Management and Utilization of Aquatic Wildlife	2003
65	Urgent Notice on the Prevention and Control of Atypical Pneumonia in Public Places and Food Production and Business Units	2003
66	Notice on Strengthening Food Safety and Market Supervision and Administration during the New Year's Day and Spring Festival	2004
67	Opinions on implementing the "Notice on Strengthening the Protection and Management of Biological Species Resources" of the General Office of the State Council	2004
68	Notice on Further Strengthening the Protection of Musk Deer and Bear Resources and the Management of Their Products as Medicines	2004
69	Notice on Issuing the "Guiding Opinions on Promoting the Sustainable Development of Wildlife and Plants"	2004
70	Notice on Strengthening the Protection and Management of Biological Species Resources	2004
71	Urgent Notice on Strictly Preventing the Spread of Highly Pathogenic Avian Influenza Caused By the Migration of Migratory Birds	2004
72	Notice on Issuing the Work Plan for the Prevention and Control of Infectious SARS and Influenza in the Winter and Spring of 2004-2005	2004
73	Regulation on Handling Major Animal Epidemics Emergencies (2017 Amendment)	2005
74	Measures for the Administration of Examination and Approval of the Species and Quantity of Introduced Terrestrial Wildlife and Alien Species (2016 Amendment)	2005
75	Urgent Notice on Strengthening New Year's Day and Spring Festival Market Supervision to Ensure Consumer Safety	2005
76	Opinions on Continuing to Implement the "Decision of the Central Committee of the Communist Party of China and the State Council on Accelerating Forestry Development"	2005
77	Several Opinions on Accelerating the Construction of the Project of Fast-growing and High-yielding Timber Forest Base	2005
78	Opinions on Strengthening the Construction and Management of Nature Reserves	2005
79	Notice on Issuing the Main Points of Work in 2005	2005
80	Urgent Notice on Strengthening the Research and Management of Highly Pathogenic Microorganisms	2005
81	Regulations on Scenic and Historic Areas (2016 Amendment)	2006
82	Regulations of the People's Republic of China on the Administration of Import and Export of Endangered Wildlife and Plants (2019 Amendment)	2006
83	Regulations on the Prevention and Control of Schistosomiasis (2019 Amendment)	2006
84	Notice on 16 Practical Events for Promoting the Construction of a New Socialist Countryside in 2006	2006
85	Opinions on the Implementation of the "Several Opinions of the Central Committee of the Communist Party of China and the State Council on Promoting the Construction of a New Socialist Countryside"	2006
86	Notice on Further Strengthening the Management of Natural Resources in Nature Reserves	2006
87	Notice on Printing and Distributing the "Main Points of Work of the State Forestry Administration in 2006"	2006
88	Opinions on the implementation of the "Outline of Action for the Conservation of Aquatic Biological Resources in China" to do a good job in the current key fishery work	2006
89	Notice on Issuing the "Eleventh Five-Year Plan for National Fishery Development (2006-2010)"	2006
90	Notice on Implementing Label Management on Tiger Skins, Leopard Skins and Their Products and Further Regulating Their Business and Utilization Activities	2007
91	Urgent Notice on Strengthening the Prevention and Control of Petit Ruminants	2007
92	Notice on Issuing the "Strategy for Prevention and Control of Sudden Acute Infectious Diseases"	2007
93	Notice on Issuing the Guiding Opinions on Promoting the Recovery of Wildlife and Plant Resources and Ecosystems in Nature Reserves after Disasters	2008
94	Urgent Notice on Doing a Good Job in the Prevention and Mitigation of Heavy Rainfalls	2008
95	Administrative Measures for Practicing Veterinarians (2013 Amendment)	2009

Table A1. Cont.

No.	Name of Policy Document	Year of Promulgation
96	Notice to Jointly Launch a Special Rectification Action Plan for the Live and Live Bird Market	2009
97	Notice on Printing and Distributing the “Key Points of the State Forestry Administration’s 2009 Forestry Publicity and Ideological and Cultural Work”	2009
98	Notice on Printing and Distributing the “Main Points of Work of the State Forestry Administration in 2009”	2009
99	Regulations on Propagation and Release of Aquatic Organisms	2009
100	Notice on Strengthening the Surveillance and Control of Wild Animal Epidemic Diseases This Winter and Next Spring	2010
101	Notice on Issuing the “China Biodiversity Conservation Strategy and Action Plan” (2011–2030)	2010
102	Notice on Strengthening the Management of Crocodile	2010
103	Notice on Strengthening the Management of Aquatic Wildlife Domestication Exhibition Activities in Aquariums and Aquariums	2010
104	Opinions on Further Strengthening Zoo Management	2010
105	Measures for the Administration of National Forest Parks	2011
106	Notice on Printing and Distributing the Action Points for Forestry’s Response to Climate Change in the Twelfth Five-Year Plan	2011
107	Notice on Printing and Distributing the “Main Points of Work of the State Forestry Administration in 2011”	2011
108	Notice on Issuing the “Measures for the Management of State-owned Forest Farms”	2011
109	Notice on Strengthening the Work Safety of Oceanic Fisheries	2011
110	Notice on Issuing the Twelfth Five-Year Plan for the Development of National Fisheries	2011
111	Urgent Notice on Effectively Strengthening Law Enforcement of Wildlife Protection	2012
112	Urgent notice on Strictly Preventing Illegal Hunting of Migratory Birds and Other Wildlife	2012
113	Notice on Issuing the National Medium and Long-term Animal Disease Prevention and Control Plan (2012–2020)	2012
114	Notice on the Special Law Enforcement Inspection of Illegal Development and Construction Projects in Aquatic Biological Nature Reserves Above the Provincial Level	2012
115	Administrative Measures for Monitoring and Control of Epidemics and Epidemic Sources for Terrestrial Wildlife	2013
116	Management Regulations on Wetland Protection (2017 Amendment)	2013
117	Notice on Effectively Doing a Good Job in Monitoring and Controlling Wild Animal Epidemic Diseases in Spring	2013
118	Notice on Printing and Distributing the “Main Points of National Forestry Propaganda and Ideological and Cultural Work in 2013”	2013
119	Opinions on the Implementation of the “Agricultural Technology Extension Law of the People’s Republic of China”	2013
120	Notice on Printing and Distributing the “Main Points of Work of the State Forestry Administration in 2013”	2013
121	Notice on Further Strengthening the Management of Chinese Medicinal Materials	2013
122	Notice on Issuing the Tasks of the Fishery Resources Protection Project in 2013	2013
123	Notice on Doing a Good Job in the 2013 Yangtze River Basin Fishery Law Enforcement and Fishery Protection Action	2013
124	Notice on Doing a Good Job in the 2013 Pearl River Basin Fishery Administration, Law Enforcement and Fishery Protection Action	2013
125	Notice on Issuing the National Zoo Development Outline	2013
126	Urgent Notice on Actively Responding to Human Infection with H7N9 Avian Influenza	2014
127	Emergency Notice on Effectively Strengthening the Protection of Migratory Birds in Autumn and Winter and the Monitoring and Control of Epidemic Diseases	2014
128	Notice on Issuing the Tasks of the Fishery Resources Protection Project in 2014	2014
129	Notice on Doing a Good Job in the 2014 Yangtze River and Pearl River Basin Fishery Administration, Law Enforcement and Fishery Protection Operations	2014
130	Notice on further strengthening the protection and management of the Yangtze finless porpoise	2014
131	Notice on Further Strengthening the Protection of Marine Wildlife	2015
132	Notice on Doing a Good Job in the Law Enforcement of Fishery Administration in Related Waters in 2015	2015
133	Notice on Strengthening the Protection and Standardization of Operation and Utilization Management of Giant Salamander Resources	2015
134	Provisions on Several Issues Regarding the Trial of Related Cases Occurring in my country’s Waters Under jurisdiction (1)	2016
135	Announcement No. 1, 2016 of the Office of Import and Export Administration of Endangered Species-Measures for the Supervision and Inspection of Licensees for the Administrative License of Import and Export Certificates of the National Office of Endangered Species Measures for the Supervision and Inspection of Licensees (2016 Amendment)	2016
136	Guiding Opinions on the use of government and social capital cooperation models to promote forestry construction	2016
137	Notice on Effectively Doing a Good Job in the Protection and Publicity Activities of Spring Migratory Birds and Other Wildlife	2016
138	Notice on Doing a Good Job in Rehabilitation and Reconstruction of Forestry after Flood Disaster	2016
139	Notice on Printing and Distributing China’s National Plan for Implementing the 2030 Agenda for Sustainable Development-Forestry Action Plan	2016
140	Notice on Doing a Good Job in the Law Enforcement of the Protection of Migratory Birds and Other Wildlife in Autumn and the Monitoring and Control of Epidemic Diseases	2016

Table A1. Cont.

No.	Name of Policy Document	Year of Promulgation
141	Announcement on the Results of the National Special Action against Reclamation and Occupation of Lakes and Wetlands	2016
142	Guiding Opinions on Promoting the Development of China's Forestry Internet of Things	2016
143	Notice on Printing and Distributing the "Main Points of Work of the State Forestry Administration in 2016"	2016
144	Notice on Issuing the National Comprehensive Disaster Prevention and Mitigation Plan (2016–2020)	2016
145	Notice on Issuing the Wetland Protection and Restoration System Plan	2016
146	Notice on Increasing Fishery Poverty Alleviation and Winning the Battle of Poor Fishermen in Poverty Alleviation	2016
147	Notice on Doing a Good Job in the Management of Related Waters and Fisheries in 2016	2016
148	Guiding Opinions on Accelerating the Promotion of Fishery Conversion Mode and Structure Adjustment	2016
149	Notice on Issuing the National Veterinary Health Service Development Plan (2016–2020)	2016
150	Notice on Issuing the "Thirteenth Five-Year Plan for the Development of National Fisheries"	2016
151	Standards for Quality Management of Non-clinical Drug Research (2017)	2017
152	Notice on the Implementation of the "Wild Animal Protection Law"	2017
153	Emergency Notice on Further Strengthening the Law Enforcement of the Protection of Migratory Birds and Other Wildlife in Autumn and Winter and the Monitoring and Control of Epidemic Diseases	2017
154	Notice on Doing a Good Job in the Protection of Rare and Endangered Wildlife and Forest Resources such as Siberian Tigers, Giant Pandas, Snow Leopards	2017
155	Notice on Issuing the 13th Five-Year Plan for the Construction of the National Emergency Response System	2017
156	Notice on Jointly Launching Special Law Enforcement Actions to Combat the Violation of Sea Turtle Resources	2017
157	Notice on Printing and Distributing the Key Points of Fishery and Fishery Administration in 2017	2017
158	Notice on Doing a Good Job in the Management of Related Waters and Fishery Administration in 2017	2017
159	Notice on implementing the "Wildlife Protection Law" and strengthening the management of aquatic wildlife protection	2017
160	Notice on Further Strengthening the Management and Control of Domestic Fishing Vessels and Implementing the Total Management of Marine Fishery Resources	2017
161	Notice on the Investigation and Research on the Reform of the Collection and Use System of Fishery Resources Proliferation Protection Fees	2017
162	Notice on organizing the national "fish release day" on June 6th to promote and release activities simultaneously	2017
163	Overall Plan for Establishing a National Park System	2017
164	Measures for the Sheltering and Rescue of Wildlife	2018
165	Key Points of Fishery and Fishery Administration in 2018	2018
166	Notice on Issuing the Measures for the Administration of National Wetland Parks (2017 Amendment)	2018
167	Notice on Issuing the "Technical Specifications for Black Bear Breeding and Utilization" and other standards	2018
168	Opinions on Strengthening the Protection of the Yangtze River's Aquatic Organisms	2018
169	Notice on Strictly Controlling the Operation and Utilization of Rhino and Tiger and Their Products	2018
170	Measures for the Supervision and Administration of the Inspection and Quarantine of Imported and Exported Meat Products(2018 Amendment)	2018
171	Key Points of Fishery and Fishery Administration in 2018	2018
172	Notice on Issuing the Action Plan for the Protection of Sea Turtles (2019–2033)	2018
173	Aquatic Biodiversity Conservation Plan in Key River Basins	2018
174	Notice of the General Office of the CPC Central Committee and the General Office of the State Council on Issuing the Provisions on the Functions, Structure and Staffing of the State Forestry and Grassland Administration	2018
175	Implementation of the "Guiding Opinions of the State Forestry and Grassland Administration on Promoting the High-quality Development of the Forest and Grass Industry" Task Division Plan	2019
176	Guiding Opinions on Promoting the High-quality Development of Forest and Grass Industry	2019
177	Urgent Notice on Strengthening the Protection and Management of Wildlife and Combating the Illegal Hunting, Killing, Operation and Utilization of Wildlife	2019
178	Notice on Effectively Strengthening the Protection of Migratory Birds in Autumn and Winter	2019
179	Main Points of Work of the State Forestry and Grassland Administration in 2019	2019
180	Key Points of Fishery and Fishery Administration in 2019	2019
181	"China Fishery Policy Action 2019" Series of Special Law Enforcement Action Plans	2019
182	Notice on Jointly Carrying out Special Rectification Actions for Wildlife Protection	2019
183	Notice on the issuance of the 2019 network market supervision special action (Internet Sword Action) plan	2019
184	National Ecological Civilization Pilot Zone (Hainan) Implementation Plan	2019
185	Decision of the Standing Committee of the National People's Congress to Comprehensively Prohibit the Illegal Trade of Wildlife, Break the Bad Habit of Excessive Consumption of Wildlife, and Effectively Secure the Life and Health of the People	2020
186	Notice of Issuing the Opinions on Punishing Criminal and Illegal Activities that Hinder the Prevention and Control of Novel Coronavirus Pneumonia	2020
187	Proposal to Mobilize the Masses to Actively Participate in the Patriotic Health Campaign	2020
188	Notice on Doing a Good Job in Monitoring and Controlling Wild Animal Epidemic Diseases	2020

Table A1. Cont.

No.	Name of Policy Document	Year of Promulgation
189	Notice on the implementation of the “Decision of the Standing Committee of the National People’s Congress on the Comprehensive Banning of Illegal Wild Animal Trade, Eliminating the Bad Habits of Wildlife, and Effectively Protecting the People’s Life, Health and Safety”	2020
190	Notice on Regulating the Scope of Classified Management of Fasting Wildlife	2020
191	Notice on Effectively Strengthening the Protection of Birds	2020
192	Notice on Effectively Strengthening the Protection of Birds and Other Wildlife in Autumn and Winter	2020
193	Notice on the follow-up work of fasting Wildlife	2020
194	Letter on Organizing and Implementing the “Technical Guidelines for Properly Handling Wildlife in Raising”	2020
195	Notice on Effectively Doing a Good Job in Relevant Work of Ban on Arrest in the Yangtze River	2020
196	Opinions on Implementing the Division of Labor of Key Work Departments of the “Government Work Report” (2020)	2020
197	Notice on Further Strengthening the Administration of Wildlife Transportation in Accordance with the Law	2020
198	Notice on Further Regulating the Protection and Management of Frogs	2020
199	Opinions on Further Strengthening the Management of Fishing in the Yangtze River Basin	2020
200	Key Points for the Green Development of Agriculture and Rural Areas in 2020	2020
201	Key Points of Fishery and Fishery Administration in 2020	2020
202	Notice on organizing the national “fish release day” in 2020 to synchronize reproduction and release	2020
203	Notice on the implementation of the “Decision of the Standing Committee of the National People’s Congress on the Comprehensive Banning of Illegal Wildlife Trade, Eliminating the Bad Habits of Wildlife, and Effectively Protecting the People’s Life, Health and Safety” to further strengthen the protection and management of aquatic wildlife	2020
204	Notice on Further Strengthening Animal Quarantine Work	2020
205	Special Law Enforcement Action Plan of “China Fishery Policy Liangjian 2020” Series	2020
206	Key Points of Work of the Yangtze River Basin Fishery Administration Office of the Ministry of Agriculture and Rural Affairs in 2020	2020
207	Guiding Opinions on the Normalization of the Prevention and Control of the New Crown Pneumonia Epidemic in Catering Services	2020
208	Notice on Issuing the Guidelines for the Prevention and Control of Operation and Service of Retail and Catering Enterprises During the New Coronavirus Epidemic	2020
209	Emergency Notice on Strengthening the Supervision of the Wildlife Market and Actively Doing a Good Job in Epidemic Prevention and Control	2020
210	Announcement on the Prohibition of Wildlife Trading	2020
211	Notice on the Issuance of the 2020 Online Market Supervision Special Action (Internet Sword Action) Plan	2020
212	Notice on the Joint Implementation of Special Law Enforcement Actions against Illegal Wildlife Trade	2020
213	Notice on Further Strengthening Food Safety Supervision during the Period of Epidemic Prevention and Control	2020
214	Action Plan for Improving Food and Beverage Quality and Safety	2020
215	Announcement on Launching the Special Action of “The Yangtze River Banning Catching, Cracking Down on Non-chain Breaking”	2020
216	Notice on Doing a Good Job during the Spring Festival and New Year’s Day in 2021	2020
217	Opinions on Strictly Punishing Illegal Activities during the Prevention and Control of COVID-19 Epidemic in Accordance with the Law	2020
218	Opinions on Punishing Illegal Fishing and Other Crimes in the Yangtze River Basin	2020
219	Norms of Fishery Administrative Enforcement	2021

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