


## Article

# Decision-Maker-Oriented VS. Collaboration: China's Public Participation in Environmental Decision-Making

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Received: 31 October 2019; Accepted: 16 January 2020; Published: 12 February 2020



**Abstract:** Public participation in environmental decision-making (EDM) has been broadly discussed. However, few recent studies in English have focused on the participation subject, scope, ways, and procedure in the EDM of developing countries such as China in the worldwide governance transformation. This study aims to provide an overview of public participation in EDM in China, thus elucidating both the legislation and practice of public participation in EDM in China to a broader audience, as such an overview has not yet been provided. At the beginning of this article, we clarify the key definitions of EDM, public participation and the public, and establish an analytical framework for analyzing public participation in EDM in China. We analyze the scope of the public, the participation scope, ways of participating, and participation procedure in EDM in legislation and practice, through document analysis and empirical survey. We then comment on challenges for public participation in EDM in China—including low public participation in EDM, narrow scope of participation, unbalanced ways of participation, and unreasonable participation procedure. In conclusion, we draw wider implications for public participation in EDM in China, arguing for a transformation from a decision-maker-oriented mode to a collaboration mode.

**Keywords:** environmental decision-making; public participation; decision-maker-oriented; collaboration; governance

## 1. Introduction

Public participation has been broadly discussed by scholars and policy makers [1–4]. Public participation in the specific field of environmental decision-making (EDM) has also drawn wide attention, emerging from the social activism of the 1960s [5–9]. There is general agreement that public participation in EDM has a lot of benefits, including enhancing democratic capacity, increasing justice, empowering citizens, harnessing local information and knowledge, and lessening potential conflicts [10–13]. Particularly, public participation is considered as a beneficial way to obtain good governance and sustainable development. In the last two decades, the governance forms have undergone a change in terms of decision-making, shifting from top-down to more participatory processes involving diversified actors [14,15]. The worldwide governance transformation creates a governance framework of complex dynamics [16], challenging both researchers and practitioners to look for better institutional arrangements and foster an interdisciplinary dialogue to identify better practices [17].

In this context, China is an interesting case to study public participation in EDM for multiple reasons. First, public participation has been institutionalized in the process of EDM in China. However, the legislation text and the practice could deviate according to our analysis. Second, there is a societal and political trend in Chinese society towards a “Co-construction, Co-governance and Sharing Governance Pattern” [18]. In the report of the 19th National Congress of the Communist Party of China, Chinese president Xi Jinping reiterated the need to improve the social governance system featuring leadership of the party committee, government responsibility, social collaboration, public participation and the rule of law [19]. Meanwhile, the democratic transformation of authoritarianism in China is a widely discussed issue [20–22]. China is shifting from high despotic power to high infrastructural power [23], with the characteristics changing from totalitarianism to bureaucratism [24]. Finally, China has been exposed to a high level of environmental risk [25–27].

However, less is known about public participation in EDM of developing countries such as China during the worldwide governance transformation. To address the knowledge gap, this article aims to provide an overview of public participation in EDM in China and, thus, make both the legislation and practice of public participation in EDM in China understood by a broader audience, as such an overview has not yet been provided. The article is developed as follows: Section 2 reviews the existing literature on public participation in EDM. Section 3 introduces the key concepts, methods, and analytical framework. Section 4 outlines the current Chinese legislation on public participation in EDM. Section 5 illustrates the practice of public participation in EDM in China mainly based on the primary data. Section 6 analyzes the challenges for public participation in EDM in China. Section 7 puts forward suggestions for solving the defects of public participation in EDM in China.

## 2. Literature Review

The English-language literature on public participation in EDM is abundant, mainly in the fields of environmental management, political science and law, and with diversified research perspectives. These studies can be broadly summarized as follows. The first category is the studies on the theoretical basis of public participation in EDM. Democratic theory [10], communication theory [28], the theory of sustainable development [29], risk theory [30] were believed as the theoretical bases of why the public should participate in EDM. The relationship between public participation and environmental justice from the perspective of distributive justice and procedural justice was also discussed [31].

The second category is the studies on the participants, ways, and procedure of public participation in EDM. It is found that the youth have limited opportunities to participate in the international forest-related decision-making [32]. Laurian found through a case study that the public are more inclined to participate in EDM in ways other than formal consultation [33]. Although innovative ways of participation—such as citizen jury, round-table dialogue and collaborative management—cannot completely replace the established public participation mechanism, they can promote public participation in EDM to some extent [34]. Webler and Tuler studied the “appropriate” public participation process and made it clear that the “appropriate” process should include science-oriented stakeholder consultation, equal deliberation, effective cooperation and informed collaboration [35]. Jankowski put forward that the geographic information system, an information technology, can be used to help the public participate in the EDM process in a meaningful way that affects their communities [36]. Uittenbroek et al. pointed out from a case study in the Netherlands that the objectives and the design of public participation should be communicated explicitly and discussed by participants rather than determined by local governments [37].

The third category is the studies on the effects and influencing factors of public participation in an EDM. On the one hand, the public participation in the decision-making process of resource development and utilization has been studied. Public participation in water resource management and the formulation of fishing policies has often been discussed [38–41]. The method of analytic hierarchy process used to incorporate stakeholders’ preferences in the decision-making of regional forest planning in Australia could considerably enhance the transparency of the participatory process

and public acceptance of policy decisions [42]. Ayanaa et al. discussed how and to what extent the strategies of environmental non-governmental organizations (NGOs) have influenced the formulation of forest policies in semi-authoritarian countries, for example, Ethiopia [43]. On the other hand, public participation in specific construction projects has been studied. For instance, with respect to public participation in hazardous waste treatment projects [44], the levels of liberal citizenry, manufacturing, and urban areas are the determinants to formalize the participation provisions [45]. Besides, agenda setting, conflicts of interest, and politicized institutions were indicated as key variables of impacting public participation in a case study of the issuance of a power-plant air permit [46]. The Brownfield redevelopment projects in the United States were also researched to assess the public's views and acceptability, and influencing factors including citizen's empowerment, the participation process, and participants' roles [47,48]. De Santo found from the process of site selection of the Marine Conservation Zone in Britain that participants file lawsuits to defend their rights when the government's commitment to public participation is inconsistent with the final decision [49].

Less studies have been conducted on public participation in EDM in developing countries, including China. Besides, research on the public participation in EDM in China has the following shortcomings. First, there are few English-language papers on the topic, and most of them focus on a specific decision-making area, such as public participation in NIMBYism projects [50], strategic environmental impact assessment (EIA) [51], sustainable urbanization policy making [52], urban water tariff setting [53], and environmental lawmaking [27]. The overall public participation in EDM in China in recent years has been even less studied. Second, the Chinese-language papers on this topic mainly focus on normative research and empirical research results are lacking [54–56]. Third, while existing studies have focused on understanding the participants, ways, procedure and effects of public participation, less is known about different representatives of “the public” in participation in EDM. Based on the illustration of legislation and practice of public participation in EDM, this study aims to provide an overview of public participation in EDM in China, to be understood by a broader audience, based on primary and secondary data, with a focus on different representatives of the public in participation in EDM.

### 3. Key Concepts, Methods, and Analytical Framework

#### 3.1. Key Concepts

In this study, EDM is defined as a process in which the departments of ecology and environment (hereinafter referred to as environmental departments) as the decision-maker assess construction projects, formulate environmental plans, schemes and policies, formulate environmental laws and regulations and other proposed actions that may have a significant impact on the environment, and make final decisions after analysis and evaluation. Public participation in EDM refers to ordinary people, experts and scholars, and staff of relevant government departments that are not the decision-maker participate in the formulation, review, supervision, etc. of EDM in various ways.

In this paper, the “public” refers to the other party that is opposite to the decision-maker in EDM, including ordinary people—the broadest group of the public, experts and scholars, and staff of relevant government departments in a broad sense. It should be noted that the implementation of environmental decisions will affect relevant government departments (such as the department of housing and urban-rural development and the department of natural resources). At least, the relevant government departments are required to cooperate in EDM. Therefore, these relevant government departments are also stakeholders in the decision-making process and should be given the right to participate in EDM [57].

#### 3.2. Methods

This study firstly uses document analysis. A variety of pieces of Chinese legislation, including the laws and departmental rules, are presented given their direct and close relation to public participation

in EDM, to understand the legislation status of public participation in EDM in China. In this study, the EDM that the public participate in refers to the EDM at local level, i.e., provinces, autonomous regions, municipalities and below. Then the key factors of public participation in EDM, such as the scope of the public, scope of participation, ways of participation, and participation procedure, are identified. These results guide the design and analysis of the empirical survey.

To understand the practice of public participation in EDM in China, empirical methods including questionnaire and interview were adopted. The questionnaire survey was conducted online between March and May 2018. Specific to the subject of this study, namely, public participation in EDM in China, random sampling is not feasible due to the inability to determine the sampling frame. Instead, only non-probability sampling can be taken [58]. The following design has been made to reduce the bias of non-probability sampling.

On the one hand, according to our definition of the public, the target respondents of the questionnaire were divided into three groups, viz. ordinary people, experts and scholars, and staff of relevant government departments, with three sets of questionnaires (see Appendix A). The specific recovery of these questionnaires is shown in Table 1. Due to the similar knowledge and professional background of experts and scholars and the same status of civil servants of staff of relevant government departments, the internal differences of public participation in EDM within either of these two groups are not obvious. Therefore, for either of these two groups, the questionnaires obtained by voluntary sampling can be regarded as representative, although the sample size is relatively small [59].

**Table 1.** Recovery of three sets of questionnaires.

Groups	Responses Received	Invalid Responses	Valid Responses	Effective Responses
Ordinary people	575	14	561	97.57%
Experts and scholars	103	3	100	97.09%
Staff of relevant government departments	103	0	103	100%

Note: Effective response rate (%) = Number of valid responses/Number of received responses \* 100%.

As far as the ordinary people are concerned, their participation in EDM is affected by factors such as gender, age, income, and education background in a way which is indeed much stronger than the other two groups. Nevertheless, considering the unwillingness of ordinary people to answer questions about the sensitive subject in current China, as shown in a pre-questionnaire, and the constraints of research funding and time, our interpersonal relationship and social networks had to be used to issue questionnaires, and only received 575 responses. It is acknowledged that the online questionnaire survey for the group of ordinary people has some limitations, particularly, the representativeness of participants.

On the other hand, interviews were also conducted based on the questionnaire survey and secondary data were collected from research papers, to verify the reliability of questionnaire results.

Then, semi-structured interviews were carried out with some respondents based on the questionnaire as well as the decision-maker. The interviewees specifically included: three interviewees of the group of experts and scholars located in the cities of Beijing, Chengdu (Sichuan province), and Nanjing (Jiangsu province); two interviewees of the group of relevant government departments' staff—the staff of the district department of housing and urban–rural development located in Yibin city (Sichuan province); Six interviewees of the group of ordinary people located in Chengdu city (Sichuan province), Chongqing city, and Guangzhou city (Guangdong province). As for the decision-maker, two persons who work in the environmental department of Linshui county, Guangan city (Sichuan province) and the environmental department of Chengdu city (Sichuan province) were interviewed. The purposes of the interview are to better understand detailed procedure of public participation in EDM, and to verify questionnaire data to ensure the reliability of the survey.

In addition to the primary data, secondary data on typical cases and survey results in specific regions of China pertinent to public participation in EDM reported by research papers and media were also gathered and analyzed.

### 3.3. Analytical Framework

Based on the governance theory, public participation in EDM in China was divided into the decision-maker-oriented mode and the collaboration mode, which serves as the analytical framework. The classification is based on the following considerations: on the one hand, this classification coincides with the transformation of governance models worldwide; on the other hand, it is also consistent with the social and political trend of co-governance in Chinese society. The decision-maker-oriented mode and the collaboration mode were applied to analyze the key issues of public participation in EDM, which could reflect the respective roles of the decision-maker and the public in EDM and the delicate coordination between the two.

Decision-maker-oriented public participation mode refers to the mode in which environmental departments, as the decision-maker, promote public participation in EDM with the exercise of state's power. The decision-maker-oriented public participation mode is the embodiment of traditional command-and-control regulation [60]. In this mode, even though the public can participate in the EDM process, the process does not get rid of its inherent and top-down command-and-control characteristics.

Lobel pointed out that the organizing principles of the new governance model consist of the increased participation of non-state actors, public/private collaboration, diversity and competition, decentralization and subsidiarity, integration of policy domains, flexibility and non-coerciveness (soft law), adaptability and learning, and legal orchestration [61]. The collaboration public participation mode is exactly such a kind of governance. In this mode, the role of the decision-maker is not highlighted; the public can actively participate in the decision-making process through diversified ways of participation [62]. How the decision-maker and the public cooperate with each other in EDM has been paid more attention.

## 4. Chinese Legislation for Public Participation in EDM

In this section a variety of pieces of Chinese legislation pertinent to public participation in EDM are outlined. Table 2 lists the name, type, effective and revised dates, and issuing agency of legislation for public participation in EDM. Then the provisions on the scope of the public, scope, ways, and procedure of participation from the perspective of legislation-text are summarized.

**Table 2.** Legislation framework for public participation in EDM in China.

Name	Type	Effective	Revised	Issuing Agency
Environmental Protection Law	National Law	13-09-1979	26-12-1989 24-04-2014	Standing Committee of National People's Congress
Environmental Impact Assessment Law	National Law	01-09-2003	02-07-2016 29-12-2018	Standing Committee of National People's Congress
Measures for Public Participation in Environmental Protection	Departmental rules	01-09-2015	-	Ministry of Ecology and Environment
Measures for Public Participation in Environmental Impact Assessment	Departmental rules	01-01-2019	-	Ministry of Ecology and Environment

### 4.1. Scope of the Public in EDM

The public who have the right to participate in EDM include citizens, legal persons and other organizations according to Article 53 of Environmental Protection Law; while according to Article 5 of Environmental Impact Assessment Law, it includes relevant units, experts, and the public.



Measures for Public Participation in Environmental Protection and Measures for Public Participation in Environmental Impact Assessment provide the same scope of the public with Environmental Protection Law, that is, citizens, legal persons, and other organizations.

#### 4.2. *Scope of Participation in EDM*

According to Articles 11 and 21 of Environmental Impact Assessment Law, the scope of participation in EDM includes the plan that might cause an adverse environmental impact and is directly relates to public environmental interests, and the construction project that might cause a significant impact on the environment and needs to submit environmental impact report, which is basically consistent with Article 2 of Measures for Public Participation in Environmental Impact Assessment. Besides, Article 2 of Measures for Public Participation in Environmental Protection provides that the public can participate in the formulation of policies and regulations.

#### 4.3. *Ways of Participation*

Through summarizing the relevant provisions of participation ways in Environmental Impact Assessment Law, Measures for Public Participation in Environmental Protection, and Measures for Public Participation in Environmental Impact Assessment, the ways of public participation in EDM stipulated in Chinese legislation include the submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium, and consulting expert opinions.

#### 4.4. *Participation Procedure*

The regulations of participation procedure include three parts. First, the procedure of information disclosure before participation. Article 53 of Environmental Protection Law requires environmental departments to disclose environmental information for the convenience of the public to participate. Article 2 of Measures for Public Participation in Environmental Impact Assessment provides the disclosure ways and period in more detail. The disclosure ways include the use of online platforms, newspapers, posting a notice/notices, radio, television, WeChat, Weibo, and other new media. The disclosure period shall not be less than ten working days.

Second, the procedure of public participation in EDM. Only Article 2 of Measures for Public Participation in Environmental Impact Assessment stipulates that the hearing shall be implemented in accordance with the relevant provisions of administrative permission hearing related to environmental protection.

Third, the procedure of feedback after public participation. Article 9 of Measures for Public Participation in Environmental Protection requires giving feedback by appropriate ways. Article 19 of Measures for Public Participation in Environmental Impact Assessment requires explaining the reasons for the unaccepted opinions to the public who put forward.

### 5. Chinese Practice of Public Participation in EDM Based on an Empirical Survey

Based on an empirical survey, this section describes the practice of public participation in EDM in China, including whether the public participated in EDM, the scope of participation, ways of participation, and participation procedure.

#### 5.1. *Whether the Public Participated in EDM*

As shown in Table 3, among the respondents, 89.48% of ordinary people, 49.51% of staff of relevant government departments and 20% of experts and scholars have not participated in EDM, that is, more than half of the respondents have not participated in EDM. In interviews with ordinary people and experts and scholars who participated in EDM, it was learned that only a small number of people participated in EDM activities with them. As shown in Table 4, it should be noted that a considerable proportion of ordinary people hold the attitude of “Participate in if required”.

**Table 3.** Whether the public have participated in EDM.

	Ordinary People	Staff of Relevant Government Departments	Experts and Scholars
Have not participated in yet	89.48%	49.51%	20%
Have participated in	10.52%	50.49%	80%

**Table 4.** Attitude of ordinary people towards participation in EDM.

	Not Interested in Participating and Do Not Participate in	Participate in if Required	Actively Participate in
Have not participated in yet	4.38%	42.23%	53.39%
Have participated in	6.78%	23.73%	69.49%

### 5.2. Scope of Participation in EDM

We divided the scope of public participation in EDM into three categories: the formulation of environmental laws and regulations, the formulation of environmental policies, plans, and schemes, and EIA of construction projects. According to the questionnaire data, among the public who have participated in EDM, 59.03% of ordinary people have participated in EIA of specific construction projects, 65.38% for staff of relevant government departments, and 59.80% for experts and scholars (Table 5). In terms of the other two categories—the formulation of environmental laws and regulations, and the formulation of environmental policies, plans and schemes—the proportion of public participation is relatively small.

**Table 5.** Scope of participation in EDM.

	Ordinary People	Staff of Relevant Government Departments	Experts and Scholars
Formulation of environmental laws and regulations	23.79%	12.82%	17.65%
Formulation of environmental policies, plans, and schemes	17.18%	21.80%	22.55%
EIA of specific construction projects	59.03%	65.38%	59.80%

### 5.3. Ways of Participation

According to the questionnaire survey, the public mainly participate in EDM in traditional ways stipulated in Chinese legislation, such as the submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium, and consulting expert opinions. The proportion of the public who have participated in EDM in emerging ways such as community pollution control reporting meeting and environmental round-table dialogue is relatively small. Compared with the surveyed staff of relevant government departments, experts and scholars, the proportion of the surveyed ordinary people who participate in EDM in emerging ways is smaller (Table 6). The emerging ways of collaborative participation—such as environmental round-table dialogue—have been successful in practice as shown in the following case. In addition, through questionnaires and interviews, it was also found that ordinary people are more willing to participate in EDM through non-face-to-face ways, such as leaving a message on the governmental website and interacting with official Weibo or WeChat.

**Table 6.** Ways of participation in EDM.

	Ordinary People	Staff of Relevant Government Departments	Experts and Scholars
Emerging ways	16.46%	47.76%	25%
Traditional ways	83.54%	52.24%	75%

**Case:** Jiangsu Runtai Co., Ltd. is a chemical company. Since 2013, some employees of surrounding companies and Runtai company have experienced severe physiological reactions due to the exhaust emissions from Runtai company. They continuously complained to the local environmental department. On 30 April 2015, a round-table dialogue on the decision of Runtai company's pollution was held by representatives of the local environmental department, the local Judiciary department, the economic development department of Development Zone, Eco-Homes Association (an NGO), Runtai company, and the representatives of affected public. The dialogue was chaired by the chairman of the Eco-Homes Association. Representatives of all parties visited the company before the dialogue. During the dialogue, all participants freely expressed their opinions at the stages of statements, questions, discussions, and consultations. Finally, a consensus was reached: Runtai company should improve pollution control; the local environmental department should strengthen the supervision. The participants especially—the public and Runtai company—were satisfied with the procedure and results of the round-table dialogue [63].

#### 5.4. Participation Procedure

In the context of informatization, the public can obtain information through various channels such as newspapers, websites, Weibo, WeChat and other new media. However, various channels do not necessarily mean that the public can get access to the information of public participation in EDM. This is most evident in the surveyed group of ordinary people. According to the questionnaire data, 74.15% of ordinary people surveyed do not know the procedure of their participation in EDM. The reasons for not knowing are mostly “I don't know the channel to know (66.11%)” and “the procedure is closed so I cannot learn about relevant information (25.24%)”. The questionnaire for the group of staff of relevant government departments supported this result. Among the respondents who participated in EDM, 40.38% of staff of relevant government departments believed that they participated in EDM through “internal negotiation and discussion”, and that the procedure was not transparent. The following case provides an example where a nontransparent procedure led to an environmental protest.

**Case:** The Paraxylene (PX) plant in Pengzhou city, Sichuan province started in 2005. The EIA report of the Pengzhou PX plant was published on the website of Pengzhou local Public Information Network for 10 days in January 2008. However, the EIA report was not announced in Chengdu city, which is about 60 km from Pengzhou city, and the Chengdu residents had no chance to express their opinions in time. Due to the lack of transparency on information disclosure, the operation of the Pengzhou PX plant led to a protest in Chengdu in May 2008 [64,65].

It is indicated that from the questionnaire data that the environmental department accepts opinions from respondents in most cases (Table 7). We also learned from the interviews with the staff of the environmental department that the environmental department as the decision-maker does consider public opinions. The staff of relevant government departments have the highest rate of opinion acceptance, followed by experts and scholars, and ordinary people. Regarding the feedback after public participation, the environmental department is more likely to give feedback when public opinions are accepted; on the contrary, feedback is rarely given when opinions are not accepted. According to the questionnaires, when the opinions of the respondents are not accepted, the feedback rate of the group of experts and scholars is 14.29%, that of the ordinary people is 13.64%, and that of staff of relevant government departments is 0 (Table 8).



**Table 7.** The environmental department's acceptance of the opinions of the public who participated in EDM.

	Ordinary People	Staff of Relevant Government Departments	Experts and Scholars
Not accepted	37.29%	9.37%	35%
Accepted	62.71%	90.63%	65%

**Table 8.** The environmental department's feedback on the opinions of the public who participated in EDM.

	Accepted		Not Accepted	
	No Feedback	Feedback Given	No Feedback	Feedback Given
Ordinary people	21.62%	78.38%	86.36%	13.64%
Staff of relevant government departments	10.34%	89.66%	100%	0
Experts and scholars	51.92%	48.08%	85.71%	14.29%

In terms of feedback ways, there are obvious differences between the surveyed groups of ordinary people, staff of relevant government departments, and experts and scholars. As shown in Table 9, the environmental department mainly gives feedback to ordinary people, experts and scholars through contemporary communication tools, such as telephone, e-mail, Weibo, WeChat and other new media; the feedback to staff of relevant government departments is mainly given in written form. It is learned from interviews with the staff of environmental department that, convenient contemporary communication tools can better deal with the restriction on distance; while relevant government departments have fixed office space and time, so “official to official” written feedback is more in line with the working habit of administrative departments.

**Table 9.** Ways of feedback on public opinions.

	Ordinary People	Staff of Relevant Government Departments	Experts and Scholars
Feedback by telephone, e-mail, Weibo, WeChat, other new media	74.47%	6.67%	82.76%
Written feedback	19.15%	76.66%	17.24%
Face-to-face feedback	6.38%	16.67%	0

## 6. Challenges for Public Participation in EDM in China

A relatively complete legislation framework for public participation in EDM has already been established and implemented in China. This section analyzes the challenges for public participation in EDM from both the legislation-text level and the practice level, based on the above overview of the legislation text and description of survey results.

It is necessary to clarify some limitations of the discussion. First, due to the limitations of volunteer sampling mentioned in Section 3, the data collected from questionnaires may not accurately reflect the overall situation of public participation in EDM in China. Special attention is thus paid to combining questionnaire data with the legislation text, interview notes, and relevant research papers, to make the discussion as prudent as possible. We are cautious when making conclusions and will not overgeneralize our conclusions. Second, although the questionnaire items of the group of ordinary people involve the respondents' gender, age, and education background, considering the Chinese population, the rather small sample size may lead to an unscientific conclusion on the correlation between the respondents' gender, age, and education background and their attitude towards

participation in EDM. We admit that it would enrich the discussion on Chinese practice of public participation in EDM if there were a correlation analysis; however, it does not affect the focus of this study—the scope of the public, participation scope, participation ways, and participation procedure without the correlation analysis. Therefore, the correlation analysis is not covered in the discussion. In summary, it is believed that this study provides some valuable information for the research related to public participation in EDM in China. Of course, the robustness of the conclusions of this study should be further analyzed in the follow-up studies.

### *6.1. Low Public Participation in EDM*

The percentage of the public have participated in EDM is low in our survey. A similar problem has been found in research on Fujian province, China [66]. Specially, among the three groups of the public, ordinary people have the lowest rate of participation in EDM. There are two possible reasons for this problem. For one thing, Chinese legislation has not clearly defined the public; moreover, there is no distinction between “interested public” and “disinterested public”, either. Then, the environmental department has greater discretion to decide whether to involve the public in decision-making and which group of the public to invite to participate, due to the vague scope of what constitutes the public in legislation. The environmental department is more inclined to involve experts and scholars participating in EDM considering their professionalism, or the staff of relevant government departments, due to their affinity as an administrative department. The environmental department firmly controls the opportunities for public participation, which is a typical embodiment of decision-maker-oriented public participation mode. For another thing, ordinary people are not enthusiastic enough to participate in EDM overall. From the questionnaire data, a considerable number of respondents in the group of ordinary people believe that participation in EDM is an additional “obligation”, and they will only participate when required.

### *6.2. Narrow Scope of Participation in EDM*

Although the legislation stipulates a rather broad scope of EDM that the public can participate in, it is still unclear that what types and levels of laws, regulations, policies, and schemes that the public can participate in. As for plans, the scope of public participation in specific plans is limited by two conditions “causing adverse environmental impact” and “directly relates to public environmental interests”, while the two conditions have not been clearly defined in current legislation, either. Hence, it is indicated from our survey that the public mainly participate in the decision-making of EIA of specific construction projects whose scope has been clearly stipulated, rather than formulating environmental laws and regulations, or formulating environmental policies, plans, and schemes. The unclear scope of participation in current legislation leads to the relatively random selection power of the decision-maker, which also reflects the top-down characteristics of decision-maker-oriented public participation mode.

### *6.3. Unbalanced Ways of Participation in EDM*

Firstly, the ways of participation are dominated by traditional ways and tend to be formalized. In order to reduce costs and improve efficiency, the environmental department tends to learn about public opinions through traditional ways, such as the submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium, and consulting expert opinions, or even by directly replacing public participation with the opinions of his own staff, leading to public participation in EDM becoming formalized [67]. Furthermore, the traditional participation ways are ultimately dominated by the environmental department. The public (especially ordinary people) “passively” participate, and “whether a person can say something”, “whether a person dares to say something”, “whether a person is allowed to say something” and “whether a person must say something kind” become factors that restrict the public from freely expressing opinions. This intensifies the formalization of public participation in EDM.

Secondly, the application of the emerging participation ways such as community pollution control reporting meeting and environmental round-table dialogue has been neglected. From the interviews with the staff of the environmental department, it is learned that there are two possible reasons for this. On the one hand, the emerging participation ways are not clearly defined in current legislation. For the decision-maker, even if there is a precedent, it is “wading across the stream by feeling the way”. In most cases, he is unwilling to try such a way that may increase the costs or even the institutional risk. On the other hand, the emerging participation ways as the embodiment of collaboration public participation mode requires a decentralized participation. However, it is psychologically difficult for the decision-maker to collaborate with the public on an equal footing in EDM. According to the questionnaire data, the proportion of staff of relevant government departments participating in EDM through the emerging ways is higher than that of the ordinary people and experts and scholars. This indirectly confirms that the equality of status has a significant impact on the choice of participation ways. The environmental department as the decision-maker and relevant government departments as the public in a broader sense are both administrative departments with equal status, which makes it easier to collaborate with each other and reach a consensus.

#### *6.4. Unreasonable Participation Procedure in EDM*

As for the procedure of information disclosure, the decision-maker considers more of his own convenience than the need of the public especially ordinary people. Through the interviews, it is learned that the environmental department usually discloses information through “announcements”, which are generally posted on the internet and in the notice board in the place where the specific construction project is located. If the announcement is conducted on the internet in undeveloped, rural areas, local people would fail to get access to the announced information. The inappropriate information disclosure would lead to low public participation in turn. In addition, the period of information disclosure is too short to ensure public participation effectively [68], for instance in the case of Pengzhou PX plant.

As far as the participation procedure is concerned, the current legislation only stipulates the procedure of hearing. Because there are no procedural regulations of other participation ways except hearing, the decision-maker is often casual about procedure. Naturally, it is difficult for the public to know the participation procedure in detail.

Current legislation emphasizes feedback when public opinions are not accepted and requires the public to be informed of the result of and reasons for their opinions not being accepted. However, the feedback rate of the public’s participation opinions is low, especially when opinions are not accepted in the questionnaire survey, which shows that practice deviates from legislation seriously. It may deepen the gap in communication between participants and the decision-maker.

In summary, Chinese legislation on public participation in EDM is not good enough to provide an institutional guarantee. With the imperfect legislation, the environmental department is often perfunctory in dealing with public participation in practice. According to the analytical framework of this study, public participation in EDM in China is still largely a decision-maker-oriented mode: the environmental department controls the key issues of public participation in EDM, including the scope of the public, participation scope, ways, and procedure, and, generally, lacks in collaboration with the public.

### **7. Improvement for Public Participation in EDM in China**

The improvement for public participation in EDM in China mainly depends on changing decision-maker ideas. From management to governance, the construction of a service-oriented government has triggered a challenge of the relationship between government, market, and society. The contemporary good governance emphasizes the participation and collaboration of multiple actors in governance. Accordingly, in the field of EDM in China, more emphasis should be put on

public participation, particularly the participation of ordinary people, gradually changing from a decision-maker-oriented mode to a collaboration mode.

With the change to a collaboration mode, it is believed that the improvement of China's public participation in EDM should be also based on the legalization of citizens' environmental rights. Human rights were explicitly written into the Chinese Constitution in 2004. However, the meaning of human rights is not clearly defined in legislation. Chinese scholars believe that environmental rights belong to human rights and should also be confirmed in the Constitution and other high-level legislation [69,70]. From an international perspective, the Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) in 1972 has defined environmental rights as man has the fundamental right to freedom, equality, and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being. The United Nations Economic Commission for Europe Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) in 1998 has clarified that environment rights include the rights of access to information, public participation in decision-making, and access to justice in environmental matters. Until 2017, 85 countries had stipulated environmental rights in their constitutions [71]. Public participation in environmental matters in Japan has been undergoing a transformation to a combination of voluntary-based and rights-based approaches, in line with the Aarhus Convention [72]. Therefore, China should also clearly define citizen's environmental rights in the Constitution; furthermore, the citizen's right to participate in EDM—which is an essential part of a citizen's environmental rights—should be recognized by high-level legislation. Only in this way will the decision-maker pay more attention to public participation in EDM. Following specific suggestions for improving public participation in EDM in China are given in relation to four aspects: the scope of the public, scope of participation, ways of participation, and participation procedure.

### *7.1. Clearly Defining the Public in EDM*

Scholars usually divide the public into two categories of “interested public” and “disinterested public” according to whether the EDM has an impact on the public. International conventions and domestic legislation in many countries have adopted this definition. For instance, the Aarhus Convention makes the similar distinction between the two categories of the public. The United States divides the participants in EDM into two levels: one level is “stakeholders”; the other level is the participants randomly selected according to social and economic criteria, who do not require the decision to affect them and participate in decision-making as a “neutral” [34]. China should consider learning from the Aarhus Convention and the US legislation to define the public in a broad sense, that is, to include the interested public and disinterested public. Furthermore, in view of the problem that ordinary people are not enthusiastic enough about participating in EDM, publicity and education on the right to participate of the public should be strengthened, especially publicity explaining that ordinary people who have no direct interests in EDM also have the right to participate.

### *7.2. Expanding the Scope of Participation in EDM*

In consideration of cost and efficiency, it is not realistic to involve the public in any decision that may have an impact on the environment in the short term. However, the restriction on the scope of participation in EDM by legislation should be within a certain limit. An appropriate relaxation of the conditions for public participation in construction projects could be considered, such as including the construction project which might cause a slight impact on the environment and needs to submit environmental impact report forms into the scope of participation in EDM. At the same time, the current criteria for “adverse environmental impact” should be clearly defined, through generalization and enumeration to clarify the scope of participation in special planning. Through further expanding the scope of participation in construction projects and clearly defining the scope of environmental planning, it is expected that the public participation in broader issues of EDM will increase.

### 7.3. *Balancing the Ways of Participation in EDM*

The emerging participation ways with obvious collaboration characteristics are more in line with the idea of good governance. The aforementioned case of Runtai company shows that the emerging participation ways have good effects. In fact, the World Bank and Propaganda and Education Center of the Ministry of Ecology and Environment of China began to conduct pilots of round-table dialogue in EDM in several cities in China from 2006. However, the rather mature pilot of round-table dialogue has not yet been confirmed in legislation pertinent to public participation in EDM. Hence, it is suggested that the legislators stipulate round-table dialogue as a participation way in EDM. Besides, it should also be noticed that the emerging participation ways have other forms besides round-table dialogue, for instance, a citizen jury [73]. For these other emerging participation ways, a prudent approach is to conduct pilots such as round-table dialogue, and incorporate them into legislation gradually.

As for the choice of participation ways, it should not be ignored that the environmental department as a decision-maker has multiple functions, and promoting public participation is often not his first consideration. Practice in the UK has also shown that the decision on environmental permits balances between increased public participation and better regulation, with a preference for the speed and consistency in decision-making [74]. Because traditional ways are controlled by the decision-maker and are more efficient, the environmental department tends to adopt traditional ways. For this reason, the public should be given the right to choose participation ways under specific circumstances. For example, in cases of EDM with large local social impacts, if the public desire to participate in the form of a round-table dialogue, the decision-maker must adopt it instead of other ways, e.g., a questionnaire.

### 7.4. *Increasing the Reasonableness of Participation Procedure in EDM*

In terms of the ways of information disclosure, the characteristics of various ways should be considered to make the disclosure more flexible and appropriate. The importance of the internet—especially new social networks in this information age—is unquestionable. For instance, Italian practice showed that an integrated system based on information and communications technology and face-to-face communication could increase public participation in decision-making [75]. However, due to the regional differences of economic development in China, the extent to which local people use the internet is different. Therefore, disclosing information about EDM through the internet should be prudent. Using multiple disclosure ways at the same time should be considered, including the internet, newspapers, posting a notice, etc., which would be more accessible to the public. It has been shown that the acquisition of environmental impact information is important to the judgment of participants in EDM and affects their satisfaction with the participation procedure and results [76]. Besides, the period of information disclosure should be extended. Foreign legislation generally gives a period of 20 to 30 days. However, it is believed that the period of 20 to 30 days is still short considering the technological factors involved in organizing participation [77].

Regarding the participation procedure, it is necessary to make clear procedural regulations in the legislation on each of the participation ways except hearings. For instance, Wang suggested that the reasonable procedural regulations of round-table dialogue should be developed by covering the following three stages: publicity, planning, and preparation; dialogue organization and holding; post-dialogue summary and decision execution tracking [63].

Last but not least, to resolve the illegal behavior of when the decision-maker does not give feedback to the public, a feasible approach is stipulating clear liability for this behavior, increasing the cost of violation, and forcing the decision-maker to comply with the law.

The above measures, including clearly defining what constitutes the public group, expanding the scope of participation, balancing the ways of participation, and increasing the reasonableness of participation procedure can enhance the public's capacity of participation in EDM, reduce the public's distrust and dissatisfaction, reduce potential environmental conflicts, and achieve environmental justice. Meanwhile, it should be noted that the improvement suggestions are provided mainly from



the legislation level. The regulations of public participation in EDM stipulated by legislation can, at best, provide an uniform reference; the likelihood of its implementation should still be based on the conditions of China and needs of the local populations, which vary greatly with various factors related to their characteristics such as socio-economic conditions, environmental conditions, and internet services.

**Author Contributions:** Conceptualization, L.F.; Investigation, Q.W. and L.F.; Methodology, L.F. and W.W.; Supervision, W.L.; Writing—original draft, L.F. and Q.W.; Writing—review and editing, L.F., W.L. and W.W. All authors have read and agreed to the published version of the manuscript.

**Funding:** Lu Feng has received support from the National Social Science Foundation of China (No17CFX017). Wenjie Liao has received support from the National Science & Technology Major Project of China (No2016ZX05040001). Weijun Wu has received support from Promoting Philosophy and Social Science Research Project of University of Electronic Science and Technology of China (NoZYGX2016SKT), Social Science Research Project of Chengdu City (No2019R03), and Social Science Research Project of Sichuan Province (NoSC19ZT007).

**Acknowledgments:** The authors thank Weixi Zeng for his enlightening guidance on the methodology. The authors also appreciate four anonymous reviewers and the academic editors for their constructive critiques on improving the manuscript.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

### Questionnaire for the participation of ordinary people in environmental decision-making

Dear Sir/Madam,

Thank you for your participation! This questionnaire is to investigate the participation of ordinary people in environmental decision-making. Each of your answers is important. We promise that your personal information and answers will only be used for academic research; so, please feel free to answer. Thank you for your support!

Environmental decision-making is a process in which the departments of ecology and environment (hereinafter referred to as environmental departments) assess construction projects, formulate environmental plans, schemes, and policies, formulate environmental laws and regulations, and propose other actions that may have a significant impact on the environment, and make final decisions after analysis and evaluation.

1. What is your gender?
  - A. Male
  - B. Female
2. What is your age?
  - A. 0-17 years old
  - B. 18-44 years old
  - C. 45-60 years old
  - D. Over 60 years old
3. What is your education?
  - A. Primary school
  - B. Junior high school
  - C. High school
  - D. Technical secondary school
  - E. College
  - F. Bachelor
  - G. Master and above

4. Do you usually care about environmental issues?
  - A. Care about
  - B. Do not care about
  - C. Only care about when the participant is involved
5. What is your attitude towards participation in environmental decision-making?
  - A. Actively participate in
  - B. Participate in if required
  - C. Not interested in participating and do not participate in
6. Do you agree that the environmental department should encourage the participation of ordinary people in environmental decision-making?
  - A. Strongly agree
  - B. Rather agree
  - C. Somewhat agree
  - D. Disagree
  - E. Strongly disagree
7. What kind of environmental decision-making do you think you can participate in?
  - A. Formulation of environmental laws and regulations
  - B. Formulation of environmental policies, plans, and schemes
  - C. Environmental impact assessment of specific construction projects
8. Have you participated in environmental decision-making?
  - A. Have participated in
  - B. Have not participated in yet
9. What environmental decision-making have you participated in?
  - A. Formulation of environmental laws and regulations
  - B. Formulation of environmental policies, plans, and schemes
  - C. Environmental impact assessment of specific construction projects
10. Do you know the procedure of participating in environmental decision-making?
  - A. Know
  - B. Do not know
11. Why do not you know the procedure of participating in environmental decision-making?
  - A. Do not know the channel to know
  - B. the procedure is closed so the participant cannot learn about relevant information
  - C. No need to know
  - D. Other reasons
12. In what ways have you participated in environmental decision-making?
  - A. Traditional ways (such as submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium and consulting expert opinions)
  - B. Emerging ways (such as community pollution control reporting meeting and environmental round-table dialogue)

13. In what ways do you prefer to participate in environmental decision-making?
  - A. Traditional ways (such as submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium and consulting expert opinions)
  - B. Emerging ways (such as community pollution control reporting meeting and environmental round-table dialogue)
  - C. Leave a message on the official website of environmental departments
  - D. Interact via official Weibo or WeChat
  - E. Other ways
14. Have your opinions about environmental decision-making been accepted?
  - A. Accepted
  - B. Not accepted
15. Have you received feedback from the environmental department after participating in environmental decision-making?
  - A. Received
  - B. Not Received
16. How do the environmental department give you feedback?
  - A. Feedback by telephone, e-mail, Weibo, WeChat, other new media
  - B. Written feedback
  - C. Face-to-face feedback
17. What do you think are the obstacles you face in participating in environmental decision-making?
  - A. Unclear of the rights and obligations
  - B. Unclear of the specific procedure for participation
  - C. Unable to know the facts related to environmental decision-making
  - D. the effect of giving opinions is difficult to guarantee
  - E. Other

#### **Questionnaire for the participation of staff of relevant government departments in environmental decision-making**

Dear Sir/Madam,

Thank you for your participation! This questionnaire is to investigate the participation of staff of relevant government departments (i.e., the administrative departments that are not the decision-maker like environmental departments but are related to the proposed actions) in environmental decision-making. Each of your answers is important. We promise that your personal information and answers will only be used for academic research; so, please feel free to answer. Thank you for your support!

Environmental decision-making is a process in which the departments of ecology and environment (hereinafter referred to as environmental departments) assess construction projects, formulate environmental plans, schemes, and policies, formulate environmental laws and regulations, and propose other actions that may have a significant impact on the environment, and make final decisions after analysis and evaluation.

1. What is your gender?
  - A. Male
  - B. Female

2. What is your age?
  - A. 18-44 years old
  - B. 45-60 years old
  - C. Over 60 years old
3. What is your education?
  - A. College and below
  - B. Bachelor
  - C. Master and above
4. Which government department do you work?
  - A. Political and administrative management departments
  - B. Scientific, educational, cultural and health management departments
  - C. Financial and economic professional management departments
  - D. Financial and economic comprehensive management departments
5. What do you think is the role of relevant government departments in environmental decision-making?
  - A. Formally protect public participation
  - B. Substantially protect public interest
  - C. Practically consider the interest of government departments that have a stake in decision-making
  - D. No effect
6. Have your department participated in environmental decision-making?
  - A. Have participated in
  - B. Have not participated in yet
7. How often does your department participate in environmental decision-making?
  - A. No participation
  - B. Once a year
  - C. Twice to five times (including five times) a year
  - D. More than five times a year
8. What is the attitude of your department towards the participation in environmental decision-making?
  - A. Ask for participation
  - B. Participate only when invited
  - C. Both situations of A and B exist
  - D. Neither situation of A nor B exists
9. What kind of environmental decision-making have your department participated in?
  - A. Formulation of environmental laws and regulations
  - B. Formulation of environmental policies, plans, and schemes
  - C. Environmental impact assessment of specific construction projects
10. In what ways have your department participated in environmental decision-making?
  - A. Traditional ways (such as submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium and consulting expert opinions)

- B. Emerging ways (such as community pollution control reporting meeting and environmental round-table dialogue)
11. How open is the procedure of environmental decision-making in which your department participates?
    - A. Rather closed, only internal government consultations exist
    - B. Participations of other groups of the public, such as ordinary people, experts and scholars, exist
    - C. Both situations of A and B exist
  12. How does your department get information about environmental decision-making?
    - A. Proactive notification from environmental departments
    - B. Obtained through government bulletins, notices, etc.
    - C. Learn from public opinions
    - D. Get no relevant information yet
    - E. Other ways
  13. Has your department provided any comments or suggestions in the environmental decision-making process?
    - A. Have made
    - B. Have not made
    - C. Do not know
  14. Have the comments or suggestions provided when your department participates in environmental decision-making been accepted?
    - A. Accepted
    - B. Not accepted
  15. Have your department received feedback on the comments or suggestions after participating in environmental decision-making?
    - A. Received
    - B. Not Received
  16. How do the environmental department give your department feedback?
    - A. Feedback by telephone, e-mail, Weibo, WeChat, other new media
    - B. Written feedback
    - C. Face-to-face feedback
  17. After your department participates in environmental decision-making, have the comments or suggestions made practical effects?
    - A. Good effect
    - B. Fair effect
    - C. Poor effect
    - D. No effect
  18. Regarding the participation of relevant government departments in environmental decision-making, do you have any urgent needs and suggestions for improvement?



**Questionnaire for the participation of experts and scholars in environmental decision-making**

Dear Sir/Madam,

Thank you for your participation! This questionnaire is to investigate the participation of experts and scholars in environmental decision-making. Each of your answers is important. We promise that your personal information and answers will only be used for academic research; so, please feel free to answer. Thank you for your support!

Environmental decision-making is a process in which the departments of ecology and environment (hereinafter referred to as environmental departments) assess construction projects, formulate environmental plans, schemes, and policies, formulate environmental laws and regulations, and propose other actions that may have a significant impact on the environment, and make final decisions after analysis and evaluation.

1. What is your gender?
  - A. Male
  - B. Female
2. What is your age?
  - A. 18-44 years old
  - B. 45-60 years old
  - C. Over 60 years old
3. What is your education?
  - A. College and below
  - B. Bachelor
  - C. Master and above
4. What is your affiliation?
  - A. University
  - B. Research institute
  - C. Enterprise and institution
  - D. Other
5. Do you think the state encourages public participation in environmental decision-making?
  - A. Strongly agree
  - B. Rather agree
  - C. Somewhat agree
  - D. Disagree
  - E. Strongly disagree
6. Have you participated in environmental decision-making?
  - A. Have participated in
  - B. Have not participated in
7. What kind of environmental decision-making have you participated in?
  - A. Formulation of environmental laws and regulations
  - B. Formulation of environmental policies, plans, and schemes
  - C. Environmental impact assessment of specific construction projects

8. Do you think public participation in environmental decision-making is sufficient?
  - A. Strongly agree
  - B. Rather agree
  - C. Somewhat agree
  - D. Disagree
  - E. Strongly disagree
9. In what ways have you participated in environmental decision-making?
  - A. Traditional ways (such as submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium and consulting expert opinions)
  - B. Emerging ways (such as community pollution control reporting meeting and environmental round-table dialogue)
10. In what way do you think it is more appropriate to involve the public in environmental decision-making?
  - A. Traditional ways (such as submission of public opinions, questionnaire, hearing, expert argumentation meeting, symposium and consulting expert opinions)
  - B. Emerging ways (such as community pollution control reporting meeting and environmental round-table dialogue)
11. For public participation in environmental decision-making, what benefits do you think should be considered first?
  - A. Environmental interest
  - B. Economic interest
  - C. Social interest
  - D. Other interests
12. What do you think is the biggest limitation of public participation in environmental decision-making in current China?
  - A. High cost
  - B. Inequal status between participants and the decision-maker
  - C. Contradiction between representativeness and professionalism
  - D. The conflict between procedural justice and consequence justice
  - E. Other limitations
13. Have your opinions about environmental decision-making been accepted?
  - A. Have been accepted
  - B. Have not been accepted
14. Have the environmental department given you feedback?
  - A. Have given
  - B. Have not given
15. Do you think the environmental department should give feedback?
  - A. Strongly agree
  - B. Rather agree
  - C. Somewhat agree
  - D. Disagree
  - E. Strongly disagree

16. How do the environmental department give you feedback?
  - A. Feedback by telephone, e-mail, Weibo, WeChat, other new media
  - B. Written feedback
  - C. Face-to-face feedback
17. In the last decade, environmental mass incidents have emerged continually. What is your opinion about this?

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