Transparency and Public Participation in Water Resources Management in China

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Abstract

This report starts with a historical review of water resources management in China and then summarizes the legal system for public participation and policy evolution in water resources administrative department. Based on experiences and case studies, the report analyzes public participation practices in water resources management in China and puts forward the revised Vroom-Yetteon model for public participation options.

The report suggests that the main issues of public participation in water resources management in China are as follows: first, the administrative department makes insufficient analysis on applicability of public participation options. Second, public participation options are restrained by various factors when put into practice. These issues make the effects of public participation in water resources management deviate from the public's expectation. More common understandings could be reached between the general public and the water resources administrative department by further improving policies and regulations, enhancing propaganda and education, fully exploring public participation options, making good use of the third party and strengthening self-restraint. Therefore, it is expected that the Chinese government will achieve more in improving water resources management efficiency and promoting sustainable development of water resources.

Introduction

Water resources are increasingly scarce today and the water crisis is ever more severe. All countries are making efforts to seek solutions (see Table1) and to transform traditional water resources management methods. One of the important changes is to encourage the public and interest parties to participate in water resources management.

Along with population growth and rapid economic development, the conflicts between water resources supply and demand in China are being intensified. Water resource has become a scarce natural and economic resource, and even a crucial strategic resource. To realize sustainable use of water resources, the Chinese government has absorbed the advanced experiences of developed countries. The conventional approach of "government-dominance in water resources management" has been gradually changed and many valuable studies have been made in policy transparency and public participation.

Table 1 Public Participation Policies in Different Countries

	Policies and Measures	Contents

European Union	*The Arhus Convention* signed in 1998, took effect in2001	Rights of the public to know, to participate and to question
	The Framework Guidelines in Water Resources Management took effect in 2000	Encouraging all interest parties to be involved based on the Arhus Convention
	The Guidelines for Public Access to Environmental Information formulated in 2003 and took effect in 2005	Rights of the public, responsibilities of the administrations, means of public information service
United States	*Clear Water Act, The Resource Conservation and Recovery Act, The Safe Drinking Water Act,* 1979	The importance, policy requirements and suggestions to public participation in public decision-making
	Public Involvement Policy, 2003	Specific requirements on public involvement
France	*Water Law,* 1992	Four levels of water supervision managed by the state, local community and users
Britain	*The Committee of Water Consumers established in* 2005	Supervising the operation of water service companies on behalf of water consumers
Singapore	*Special Activities to Make Singapore Clean and Clear, Clean and Green Week and Educational System*	Strengthening public education on water resources

I. Historical Review of Water Resources Management in China

In the Chinese history, the property rights of water resources have been continuously controlled by the state. All previous feudal dynasties including Tang, Song, Ming, and Qing carried out unified management in water resources across the country. Historically, China emphasizes the lawmaking in water resources management. The concept of unified management and the power of the administrative department have been constantly strengthened; however, the protection of civil rights is neglected. The unified administrative system plays an important role in the construction of large water resources projects, but it is obviously weak in water resources allocation and intermediation of water disputes.

II. Policies, Regulations and Development Trends in the Water

Resources Administrative Department

A. Government-dominance in Water Resources Management

The *Water Law* (2002) stipulates that the ownership of water resources belong to the state, and the State Council exercises the ownership on behalf of the state. However, public participation and public access to information are less mentioned in the provisions of Water Law, while the responsibility and authority of the water resources administrative department are overemphasized.

B. Gradually Making Government Affairs Public by Water Resources Department

In 2004, the State Council promulgated *The Program for Comprehensively Implementing Government Administration in Accordance with the Law*. In 2005, the *Opinion of the General Office of the Central Committee of the Communist Party of China (CPC) and the General Office of the State Council on Further Enforcing Government Administration Publication* was made public. These two documents play an important role in promoting the publicity of water resources administration to publicize government affairs. In June 2005, the Ministry of Water Resources drafted *The Opinion on Further Enforcing Government Affairs Public*. The *Opinion* prescribes that the transparency and efficiency of water administrative affairs should be further improved in order to promote good governance in administration and strengthen control and supervision in accordance with the law. Different levels of the water administrative departments have to make all government affairs public except those involved with national secrets, business secrets and personal privacy protected under law. The to-be-opened affairs should be made known to the public in a convenient and quick manner.

The *Opinion* requires that the government affairs that have to be made public include: the establishment of administrative agencies; responsibilities; relevant national polices and regulations; departments in charge of administrative licensing and other administrative approval affairs, contents, basis, conditions, procedures, standards, time limits and the final results. Means for public access to water resources affairs include: government report, government notice board, guidelines for government services. Different kinds of media shall be taken into full use, such as newspaper, magazine, broadcasting, television and internet. News press system shall be further improved to release water administrative information regularly. Water resources affairs like administrative licensing and public services shall be made known through local comprehensive service centers and the water administrative approval hall (office). The decision process and result made by water administrative departments should be publicized through notice, public hearing, expert consultation and public gallery. E-government building in water administrative departments should be speeded up and the on-line services have to be gradually expanded to provide

convenient and rapid service for the public.

The Interim Provisions on Government Administration Publication of the Ministry of Water Resources, released in May 2006, defines the responsibilities of the water administrative departments based on *the Opinion*s: the Leading Group for Public Access to Government Affairs of the Ministry of Water Resources (MWR) is responsible to organize and lead the work of ensuring transparency in government affairs and deciding the major issues in this regard. The responsibility system for transparent government affairs is implemented in the MWR. Each department should open the administrative affairs within its function and authority. The department director should also ensure government affairs are known to the public. Supervision and inspection of transparency in government affairs is carried out by the Supervision Bureau and Discipline Inspection Group in MWR.

According to the *Provisions,* the issues that should be publicized include:

a. Departments in the Ministry of Water Resources, their functions and means of contact.
b. International conventions, state laws, administrative rules, regulations, and policies that the MWR is obligated to implement or supervise.
c. Rules and normative documents issued by the MWR.
d. Key national water projects and major government procurement projects.
e. National water resources conditions and their development; water and soil erosion and control; flood and water conditions of the main rivers and streams.
f. Plans implemented by the MWR
g. Emergency response plan formulated by the MWR; the emergency occurrence and treatment.
h. Technical standards of water industry.
i. Departments in charge of water administration approval and other administrative affairs and the content, basis, condition, procedure, standard, time limit for processing a case, the result and the relief method.
j. Qualifications, procedure and the result of recruiting civil servants in the MWR
k. Other issues that should be made known to the service target and the public

The procedures to publicize government information are as follows:

a. Checking the issues that to be released and examining whether the issues are under secret protection.
b. Getting approval from the department directors.. Significant issues should be approved by the Leading Group for Public Access to Government Affairs of the MWR;
c. Choosing proper channels to go public;
d. Collecting public feedback through various channels.

Channels for public access to information include:

a. Website of the MWR;

b. News conferences and other news releases;
c. Government reports and notices;
d. News media such as broadcasting, television, newspapers and journals;
e. Notice boards, touch screens, service guidelines, etc.

Forms of public consultation include:
a. Inviting experts to discuss and give opinions;
b. Releasing the draft, soliciting opinions and suggestions from related organizations, service target and the general public;
c. Organizing public hearings in accordance with law.

C. Bringing Water Activities under Administrative Licensing

According to the *Implementation Measures for Administrative Licensing of the Ministry of Water Resources* formulated in 2005, the definition of the administrative licensing is that the behavior of the water administrative department to permit citizens, legal persons or other organizations to implement specific water activities based on their applications after being examined in accordance with law. The implementation department of water administrative licensing should specify the jurisdiction, scope, qualification, procedure and time limit for licensing. The process and decision-making of water licensing should also be made public. However, issues that are concerned with national secrets, business secrets and personal privacy should be excluded. Mechanisms of investigation, withdrawal, hearing and scientific decision-making need to be established in order to ensure fairness and justice of water administrative licensing. Applicants that meet the legal qualifications and standards have the equal rights to obtain administrative licensing according to the law and regulation. The water licensing department should not discriminate against qualified applicants.

The *Implementation Measures* prescribe the entitled rights of the public as follows: water administrative licensing should provide convenience for citizens, legal persons or organizations to exercise their rights of statement, defense, requirement for damage compensation and administrative reconsideration according to the law. Public hearing and argumentation meeting should be held by water administrative departments who are assigned to grant water administrative licensing in provinces, autonomous regions and municipalities. The water administrative department should comprehensively evaluate the necessity and feasibility of water administrative licensing and its possible impacts on the economy and society. The water administrative department shall also explain assessment and public responses to the licensing department. The policy-drafting department should be informed of assessment opinions and public responses.

The Provisions for Public Hearing on Water Administrative Licensing, released by the Ministry of Water Resources in May 2006, clarifies issues that need to be under public hearing in water administrative licensing:

a. Major issues related to rivers, streams, lakes, and underground water resources;
b. Major issues related to the protection of water ecological areas and water ecosystems;
c. Major issues related to the safety of a water project;
d. Major issues related to the security of flood control;
e. Major issues related to the prevention of water and soil loss;
f. Major issues related to the boundary rivers or rivers across different zones;
g. Major issues involving public interests.

In addition, *the Provisions* regulate the pre-examination of the hearing, public notice, selection of representatives, responsibilities of the working staff, scope of the participants, etc.

D. Public Announcement of Administrative Approval Issues and Public Participation

The *Regulations on Management of Water Abstraction Licensing and Water Management Charges* was issued on April 15, 2006. According to this regulation, departments that exercise administrative approval should conduct a comprehensive review on the application for water abstraction. Overall consideration shall be made to evaluate the impacts of water abstraction on water resource protection and economic and social development before the approval. If the administrative department believes that public interests are involved in the water abstraction application, it should make announcement and hold a public hearing.

E. Encouraging Participation of Social Groups and Cooperative Organizations in Water Resources Management

The public participation in water resources management was first introduced in the form of participation by social groups and cooperative organizations and the pilot projects have produced marked effects in different regions. These attempts won success in the following aspects: enhancing farmers' consciousness of democratic management, strengthening the tie between water supply and demand parties, improving field project management and the maintenance, enhancing irrigation and draining service in the field, promoting water saving, and raising the rate of water charges collected. For these purposes, the Chinese government made a specific policy to promote the public participation of social groups and cooperative organizations across the country.

In Oct. 2005, the Ministry of Water Resources, the National Development and Reform Commission (NDRC), and the Ministry of Civil Affairs (MCA) together issued the *Opinion on Strengthening the Construction of Water-Consumption Farmer Households' Association* (WFHA), which includes the guidelines, basic principles, responsibilities and establishment procedures of the WFHA.

In conformity with this *Opinion*, the WFHA owns property rights, operation rights and management authority on irrigation and drainage facilities within the scope of national law and regulations. The WFHA accepts policy instructions from the water resources administrative department and registration department for social groups. Technical instructions from the irrigation administrative agencies are also welcomed. The WFHA is also involved in supervision and management in the irrigation area while participating in water activities.

The relationships between WFHA and the administrative department of an irrigation area are as follows: a mutually cooperative relationship is established in the construction and management of water engineering facilities, while in water trade the relationship is based on a commercial deal.

The management mechanism of WFHA is flexible and diverse. Projects that are undertaken by WFHA could be managed by the association, the individual or the team in the form of contract.

The WFHA is responsible to set up a comprehensive supervision mechanism. All water related business, financial performance, and personnel recruitment have to be open to water consumers, local government and society. Regular reports to the committee of representatives of the WFHA are required. The standard of water charge, the consumption volume, and the income and expenditure of water fees shall be publicized to water consumers in the notice board in a striking place. The WFHA shall be financially independent. The WFHA of large scale shall establish a board of supervisors.

Responsibilities of the related administrative departments are:

a. Water administrative departments of all levels and the administrative body of the irrigation area have to make the information open to the public in order to create good conditions for the operation of the WFHA.
b. Carrying out more training programs, the backbones of the WFHA, to enhance their service skills and comprehensive quality.
c. Enhancing the social status of the WFHA and expanding its influence by publicizing benefits and experiences of advanced examples.
d. Adopting all kinds of measures that help to attract more water-consumption households to take part in the management of irrigation.
e. Providing opportunities for water-consumption households to express their opinions and demand.
f. Adequately respecting the opinion of the WFHA on subjects closely related to water consumers, such as decision-making for significant events, irrigation project planning, water allocation, water price, water charges collection, and project constructions, management and maintenance.

From the policy evolvement in the water resources management department, we can see that the public has already been an important participant in water resources management. The public participation mechanism and approach have become one of the important aspects in decision-making by the water resources administrative department.

III. Public Participation Options and Applicability in Water Resources Management

A. Public Participation Options in Water Resources Management

Along with the deepening of Chinese market reform, the depth and width of Chinese public participation in the public affairs has kept expanding. In the area of water resources management, relevant laws and regulations have already specified the public's right to know, right to express opinions, and right to participate in decision-making. Administrative departments of all levels have to guarantee the public's rights by means of information dissemination, public hearing, expert consultation and negotiation. These practices have produced certain effects and the right of the public as the interested party has also been realized in the decision-making process. However, this system is still under evolvement and improvement, in particular, the administrative departments, which are restrained by the traditional management concept and special interests, may influence the implementation effects by taking the public participation as a mere formality.

Followings are the main approaches for the Chinese public to be involved in water resources management:

A. Seeking public opinions

The administrative department releases the information to seek public opinions through certain channels and the public could express their opinions freely. This approach involves a higher degree of public participation and people can fully express their opinions. However, without proper selection, the participants have very different knowledge background and the interests they represent may not be clear-cut as well. If there is no scientific and standardized process control, the public opinions are prone to deviate from the subject. There are often two circumstances: one is that it is unable to reach a mainstream opinion; the other is to form a subjective and one-sided opinion because of media misleading. For the reasons mentioned above, this kind of public participation approach can only be used as a pre-decision tool, which can not be seen as the proof for the decision.

B. Public hearing

The administrative department may hold a public hearing on certain water resources issue. The public concerned can register and the host party may select some representatives from the applicants according to the relevant regulations. The participants could attend the hearing and express their opinions. Compared with public opinions consultation, the participant selected for public hearing can specify the interests they represent and reflect opinions from all related parties in a more objective manner. However, the selection process is prone to be manipulated by the host party and the minutes of public hearing can not impose restrictions on administrative department. Therefore, the qualification of representatives and the result of public hearing are often questioned by the public. Currently, this kind of public participation approach has contributed a few successful cases in water resources management (See Box 1: Public Participation in the Lake-lining Project of Yuanmingyuan Park) and also failed ones.

Box 1: Case 1—Public Participation in the Lake-lining Project of Yuanmingyuan Park

On March 22nd, 2005, Professor Zhang Zhengchun from the Life Science School of Lanzhou University found workers laying a seepage control membrane on the lake beds to prevent water seeping away, when he was visiting the Yuanmingyuan Park (the Old Summer Palace).

On March 28th, 2005, the article of *Laying Seepage Control Membrane on the Lake beds of Yuanmingyuan Park is a Disaster to the Ecosystem* appeared on the People's Net. And subsequent media reports quickly made the issue a hot topic for public debate.

On March 31st, 2005, the Minister of State Environment Protection Administration (SEPA) declared that the lake-lining project of Yuanmingyuan Park was illegal because the park administrators failed to undergo the required environment impact assessment before construction. The project should be stopped at once and apply for an environmental effect assessment approval.

At 4pm on April 1st, 2005, management department of Yuanmingyuan Park stopped the project after receiving official notice from the SEPA.

On April 1st, 2005, Friends of Nature together with Blog China held a Workshop on Yumingyuan Ecosystem and Site Protection, in which experts, government officials and citizen representatives expressed their opinions. In the same day, a dozen non-government environmental protection organizations including Friends of Nature submitted an announcement calling for a public hearing towards the lake-lining project of Yuanmingyuan Park to government departments and the management department of Yuanmingyuan Park (MDYP).

On April 6th, 2005, SEPA declared they would hold a public hearing for the lake-lining project of Yuanmingyuan Park at 9am on April 13th to seek opinions from experts, social organizations, public, and other related government departments.

On April 12th, 2005, eight environmental protection organizations together

released Five Suggestions to problems arising from the lake-lining project of Yuanmingyuan Park.

On April 13th, 2005, a public hearing for the lake-lining project was presided over by SEPA. The participants totaled 73 people including an academician from the Chinese Science Academy. The youngest citizen representative was only 11 years old. Representatives mainly were experts in environmental protection, culture heritage, construction, planning and water resources so as to balance participants from all corners of the society.

On May 9th, 2005, SEPA asked MDYP to submit an environment impact assessment report within 40 days; otherwise, the fine would cap 200,000 RMB. This was after more than 40 days of the disclosure of the lake-lining project and one month of public hearing.

On May 17th, 2005, SEPA said that Tsinghua University would undertake the environmental impact assessment for the lake-lining project.

On July 7th, 2005, SEPA announced, after serious examination of the environment impact assessment report made by Tsinghua University, it accepted the conclusion of the report and required a complete correction of the lake-lining project in Yuanmingyuan Park. The requirements were as follows: first, for the east part of Yuanmingyuan Park, where no seepage control membrane had been laid on the lake beds, natural clay should be chosen as a water proof material instead. Second, for the lake in Qichun Yuan, the seepage control membrane that had been laid should be removed. Clay and the original mud of the bottom should be backfilled. Seepage control membrane should not be laid on the side face of the lake bank. Third, for the lake in Changchun Yuan, the area which is 40.7 meters above the lake bottom should have the seepage control membrane removed at once and clay should be backfilled. No seepage control membrane should be laid on the side bottom of the lake. Fourth, for the lake in Fu Hai, the seepage control membrane should be reconstructed. The backfilled sandstone should be removed, and natural clay should be laid and all the original bottom mud should be backfilled except for 10 meters around the port. All the other barge areas should remove the side seepage control membrane to ensure abundant filtering replenishment.

All corners of Chinese society made comments on public participation in the lake-lining project of Yuanmingyuan Park. (See Box 2-Comments on the Event of Yuanmingyuan Plastic)

Box 2: Comments on the Lake-lining Project of Yuanmingyuan Park

—Individual role. Scholar Wu Renwei and Yang Jimei thought that Zhang Zhengchun could realize the existence of the problem and initiate actions due to his acute sensitivity. The sensitivity comes from his continuous research on ecology and his endearment of Chinese classical garden. Therefore, the individual difference among the public has an influence on the sensitivity.

—Effect of public hearing. "Oriental Horizon", a CCTV program, conducted an opinion poll before the SEPA public hearing was convened. The result showed that the public had lower anticipation towards the impact of public participation. 9% of the public thought it has “great influence” and “public participation can improve the democratic participation in decision-making"; 27% thought "it has influence to some extent, showing the attitude toward listening to the public opinion"; as much as 64% thought that "it has little influence and the public opinion is seldom adopted". After attending the public hearing, the NGO, "Friends of Nature", commented like this: This public hearing convened in a hurry before the environmental impact assessment of the lake-lining project of Yuanmingyuan Park. Due to the lack of an environmental impact assessment report, representatives of the hearing could not focus on a clear target, though they eagerly expressed their opinions. In addition, most representatives fell short of experience in attending hearings so their speech was lacked logic. Although arguing intensely, they could not provide sufficient facts and data, which conformed to the objective of hearing. However, in any case, "the public hearing of lake-lining project of Yuanmingyuan Park" was the first SEPA has presided over since the National Environmental Impact Assessment Law came into effect, and the biggest public hearing under the official procedure in China’s environmental protection field. Through this hearing, public awareness of participation has been increased, and the degree and quality of public participation has made considerable progress.

— Public opinions survey. From May 28th to June 5th, 2005, SEPA carried out a pubic opinion survey through both on-line and on-site investigation. In 273 questionnaires answered by visitors and local residents in on-site investigation, 65.4% thought part of the seepage control membrane should be removed , 20% considered it should be demolished. In an on-line survey, 510 of 1805 total respondents had the same answer and a similar IP address, thus these votes had been statiscally excluded. In the valid 1305 votes, 44.6 % approved the lake-lining project, 47% disfavored it. After comparing the results, experts from SEPA deemed the on-line survey had the problem that the interested parties voted in large volumes for themselves, therefore, the survey should be primarily carried out in the form of an on-site investigation. On-line investigation mainly serves as a platform for the pubic to freely express their viewpoints.

—About the whole event. On July 8th, 2005, a short comment in

Guangming Daily wrote: "this is an effort of public participation in decision-making. Making government affairs public is an important characteristic of legalistic society. From this point, the Yuanmingyuan Event benefited both the government and the public. The Government learned the experience of opening government affairs, while the public tried to be involved in decision-making.

C. Expert Consultation

The administrative departments may summon or invite experts to attend discussions on the importance and feasibility of a certain issue. The feature of this participation approach is that the participants have specialized knowledge and they could give professional and authoritative opinions, which can provide reference to the decision-making. However, the selection of participants is based on their professional background; therefore, the expert opinions would be limited in technology demonstration rather than the interest demand. Meanwhile, since most professional participants do not represent the related interest parties, there are potential moral risks for participants to cater to the powerful interest parties or without strong sense of responsibility. This public participation approach, which is widely adopted in China, has already played an important role in water resources management but sometimes it is seen as mere a formality. (Limitations of expert consultation see Box 3: Case 2—NGO Participation and Expert Consultation in Nujiang River Hydropower Development.)

Box 3: Case 2—NGO Participation and Expert Consultation in Nujiang River Hydropower Development

Nujiang River area is one of China's most important ecological protection zones, and one of the most poverty-stricken regions as well. In August 2003, *Hydropower Planning in the Middle and Lower Reaches of Nujiang Rive Area*, drafted by Nujiang City of Yunnan Province, was approved by the National Development and Reform Commission (NDRC). This report planned to install a hydropower station with a gross capacity of 21.32 million kilowatts and a project of two reservoirs and thirteen sub-dams in Songta, Bingzhongluo, Maji, Lumadeng, Fugong, BIjiang, Yabiluo, Lushui, Liuku, Shitouzhai, Sailuo, Yansangshu and Guangpo in the middle and lower reaches of Nujiang River.

The environmental protection department and investment department disagreed with each other. Environmental protection experts and water conservation experts had vastly different opinions. The core point of the anti-development party was to "leave the ecological treasure to our posterity" while the reason for pro-development was to "give a way out to the Nujiang people".

The process for the Chinese non-government environmental groups imposing

their influence on the project went as follows:

On September 3rd, 2003, in the public hearing presided over by SEPA, some scholars in environmental protection and social science harshly criticized the Nujiang River dam project. Journalists from dozens of media spread the opponent voices to the public.

On October 25th, 2003, 62 people from fields of science, culture and arts, media, and environment protection signed petition to oppose the building of Nujiang River dam.

In late November, 2003, in the World Rivers and Anti-Dam Conference held in Thailand, a coalition of NGOs from more than 60 countries signed the petition in the name of the conference to call for protection of Nujiang River. That had been initiated by the Chinese environmental NGOs. This joint signature was finally handed over to the United Nations Educational, Scientific and Culture Organization (UNESCO) and received a reply letter saying that the UNESCO was paying attention to the River.

From February 16th–24th, 2004, 20 journalists, environment protection volunteers and scholars carried out a review in the Nujiang River area. Afterwards, a large amount of reports concerning biodiversity and cultural diversity of Nujiang River appeared on the media.

In January 2004, scholar Li Xiaoxi submitted a report to Premier Wen Jaibao of the State Council.

In February 2004, Premier Wen made comments on *The Report of Hydropower Planning in Middle and Lower Reaches of Nujiang Drainage Area* submitted by the NDRC, "Prudent study and scientific decision-making should be made for big hydropower projects which attracted extensive attention of the society and with different voices in environment protection." Nujiang River hydropower project was immediately called to stop.

In the process of NGO participation, expert consultation in environment assessment has drawn much criticism from all corners of the society. For example:

Assistant chief engineer He Shaofen from the China Institute of Water Resources and Hydropower Research said: “an environmental impact assessment agency is often hired by the assessed subject itself, how can we expect that it would keep its independence in this case?”

Professor Li Mudun in Tsinghua University said: “if the expert holds a different voice in the first conference, he will be excluded in the next conference.”

Director Dang Chenglin of the Ecosystem and Animal and Plant Research Center of Yunnan University said: “Environmental impact assessment for a large project always has involved a lot of money, which is very attractive to some research agencies. Therefore, whose bread I eat, his song I sing.”

In April, 2004, the dam project was suspended.

D. Multi-parties negotiation

The administrative department consults with related interested parties on a certain issue. The feature of this approach is that it can assure the expression of each party's interest,

since all the participants are from relevant interested parties. However, it may be difficult to reach a consensus since the participants always compete for their immediate interests and try to outweigh the opponents. Therefore, the capability requirement for justice, authority and coordination of the president is very high. This kind of public participation approach is still on trial in water resources management in China. The authority and credibility of government administrative departments often play a dominant role in the multi-parties negotiation.

B. Analysis on Applicability of Public Participation Options

At present, the Chinese public is involved in water resources management fields that include: initial allocation of water rights, water price hearing, decision-making in water resource p rojects, environmental protection, etc. Various interest groups are involved in specific issues in which different levels of professional background are required. Therefore, only the most appropriate public participation approach can achieve the best outcome.

Research on public participation options was first introduced in behavioral science studies in corporate management. In the 1950-60s, scholars in behavioral science research proposed the concept of participative management and applied the theory into small-scale groups in the enterprise. It is expected that the employee would be motivated through participative management to improve decision acceptability and inculcate organizational goals. In 1973, Victor Vroom and Philip Yetton developed the Vroom—Yetton model by absorbing the above referenced research. The model can be applied not only in corporate management, but also in public decisions. The following is the revised model based on the characteristics of water resource management decisions and then summarizes the public participation options.

1. Vroom - Yetton Model

The Vroom—Yetton model asks managers to answer seven questions one by one, following the different branches of a tree diagram in which a yes or no answer has to be made. At last, five most-effective participation options are listed for solving different problems (see Table 1).

A1： Managers make the decision using the information available at the present time;
A11： Managers obtain any necessary information from subordinates, and then decide alone on a solution to the problem;
C1： Managers share the problem with the relevant subordinates, getting their ideas and suggestions without bringing them together as a group, and then make the decision themselves;
C11： Managers share the problem with their subordinates as a group and obtain their ideas and suggestions. The decision made by managers may or may not reflect

subordinates' influence;

G11：Managers share the problem with their subordinates as a group and jointly make the decision.

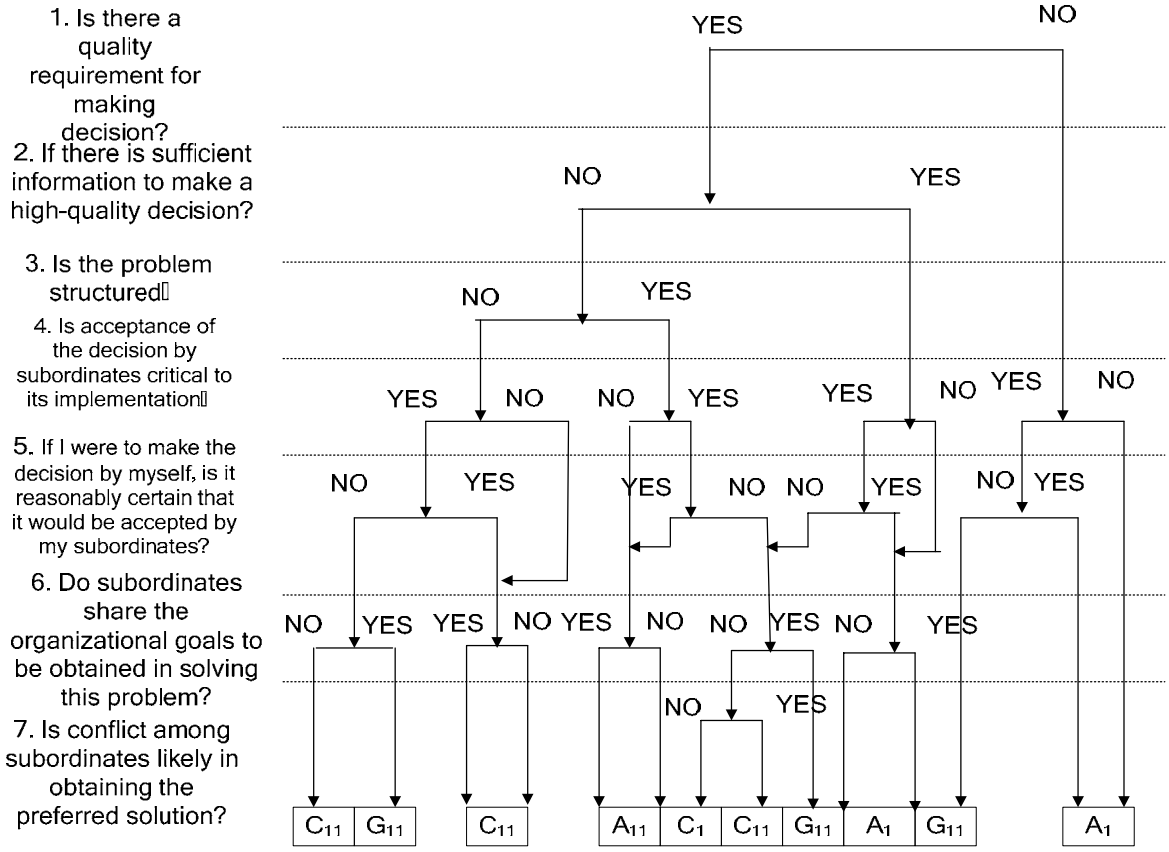

Table 2 Diagram of Vroom-Yetton Model

2. The revised model

The Vroom-Yetton model selects four parameters of quality, acceptability, time and information sharing among group members as the criteria for public participation options. Among the seven questions, question 1, 2, and 3 are quality-related, respectively, quality requirement, information required to make a high quality decision and the structured level of the problem to meet quality standard. Questions 4,5,6 and 7 are acceptability-related, respectively, the importance of acceptance by subordinates to implementation, the participation level required for acceptance, the information sharing level decided by managers based on organizational goal consistency, and the involvement level decided by the nature of conflict reconciliation.

In the water resources management decisions, the public participation options are similar to that of in the corporate management. Factors like if the decision-maker has sufficient information, and if there will be conflict among the public for the preferred solutions have to be taken into consideration when selecting the appropriate

participation approach. The dissimilarities like if the public have relevant professional knowledge and if there are multi-parties involved in decisions should also be considered.

1. Do administrators have sufficient information to make a high-quality decision?
2. Is the problem structured (i.e. is there lower potential for adjustment to candidate solutions?)
3. Do the public have the required professional knowledge?
4. Are multi-parties involved in decisions?
5. Is there conflict among the public for the preferred solution?

Combining the characteristics of water resources management, we develop a Vroom-Yetton public participation model in water resources management by revising the original questions (see Table 2).

A1：Administrators make the decision using the available information at the present time without public participation;
A11：Administrators obtain any necessary information from segments of the public, and then decide alone on a solution to the problem;
C1：Administrators share the problem with segments of the public, getting their ideas and suggestions without bringing them together as a group, and then make the decision reflecting public influence;
C11：Administrators share the problem with the public as a group; obtaining their ideas and suggestions, and make the decision reflecting public opinions;
G11：Administrators share the problem with the public as a group and jointly make the decision.

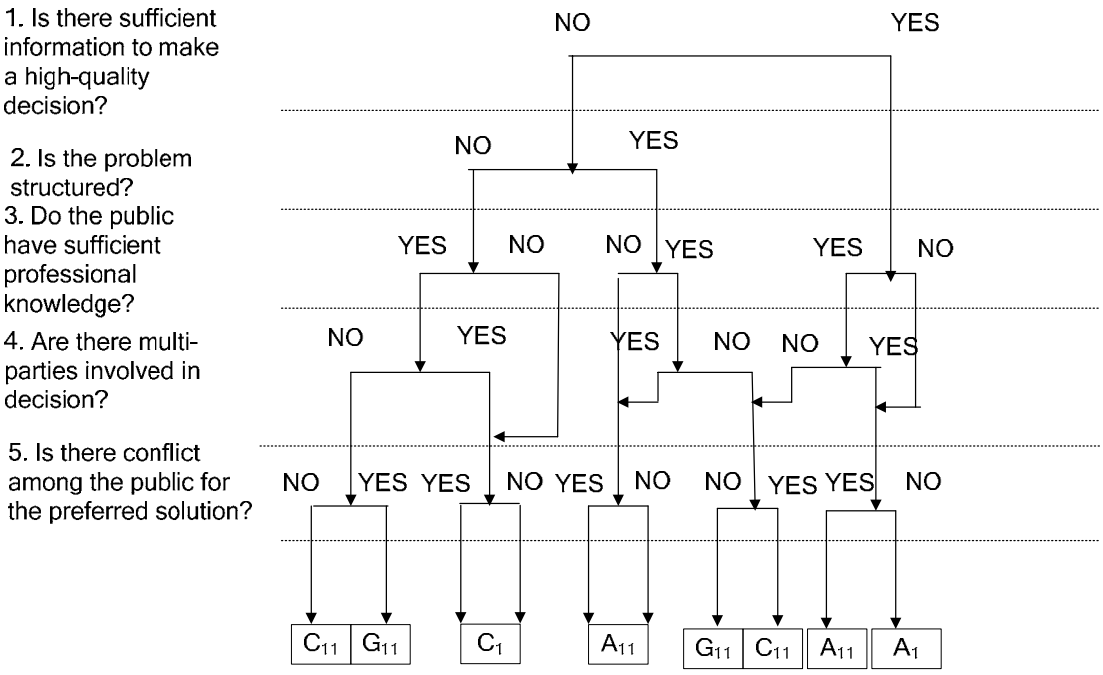

Table 3 Vroom-Yetton public participation diagram in water resource management

3. Applicability analysis

In the revised model, there are advantages and shortcomings for each public participation approach in water resources management and different preconditions are required to be satisfied. Therefore, the administrative department of water resources management has to make serious evaluation and prudential consideration on the decision-making context. On that basis, the reasonable forms of public involvement have to be selected and designed for decision-making.

First, the water resources administrative department must decide on the sufficiency of information for making decisions. The information required for making decisions includes two parts: one is the decision-related professional information such as technology, capital and law; the other is the public-related social information. The former could be obtained through expert calculations, experience accumulation, etc; while the latter has to be evaluated on the basis of thoroughly understanding the local life conditions and traditions. In fact, it is not easy to justify the information sufficiency for decision-making. The complexity and constantly-changing reality may lead to implementation failure, whereas the collection of too much useless information may affect decisions and implementation efficiency. In Table 2, if the government departments obtain sufficient information to make a high quality decision (Problem 1), administrators can make the decision alone by using the available information at present time without public participation.

Second, when seeking public suggestions and collecting necessary information for decisions, administrators must face up to the impact imposed by the structured decision on public participation options. The highly-structured decision which is restricted by technology, cost and law has lower potential for adjustment, thus it requires less time and public participation. Under such circumstance, the blindly selected participation approach that requires higher public involvement may lead to public frustration, which could entail the public's distrust of government administrators. In Table 2, in water resources management decisions, if there is insufficient information to make a high quality decision (Problem 1), while the problem is a structured one, and the public are not equipped with the necessary professional knowledge (Problem 3), administrators have to make the decision themselves after getting the necessary information from segments of the public.

Third, when strong professional background is demanded for decisions which the general public is not supposed to have, the decision approach should focus on expert consultation with engaged professionals. In table 2, in water resources management decisions, if the public does not have the required professional knowledge (Problem 3), while multi-parties are involved in the decisions, and there is possible conflict

among the public for the preferred solution (Problem 5), administrators should share the problem with segments of the public without bringing them together as a group, and thus make the decision that reflects the public influence after obtaining their ideas and suggestions (C1).

Fourth, before decision making, the government should analyze the interested party involved in the decision. Only ideas and suggestions are solicited from the interested party if there is a single and definite one. It is not conducive to generate a consistent and mainstream suggestion if citizens irrelevant to the interests are also engaged in the decision. In Table 2, in water resources management decisions, if there is only one interested party, and there is no conflict among the public for the preferred solution, administrators could obtain ideas and suggestions from the public by bringing them together as a group, and make the decision that reflects the pubic influence (C11).

Fifth, based on the reasonable analysis and forecasting on the public's acceptance to the preferred solution and their likely reactions, the government administrators should have a general understanding of the possible conflicts of interest in the decision process. It is also suggested to provide some communication channels, communication means and public participation options to the public. If separate interested parties are involved in the decision, a stalemate may be followed by the self-opinioned and not-yielding parties when being brought together in the decision-making negotiation. The escalated conflicts among interested groups may even result in a decision failure. Under such circumstance, the government should learn the background of each interested party to provide appropriate communication channels and platforms and design proper communication means. In Table 2, in water resources management decisions, if multi-parties are involved and there is no possible conflict among the public for the preferred solution, administrators should organize the public as a group and collectively make the decision.

The above-mentioned model analyzes the applicability of different participation options in which decision-making information, public characteristic, and interested parties are considered dependent variables. From another perspective, the applicability of different participation approaches can also be explained by taking four problems in water resources management as the dependent variables, that is, water price, environmental protection, water resource projects and water rights.

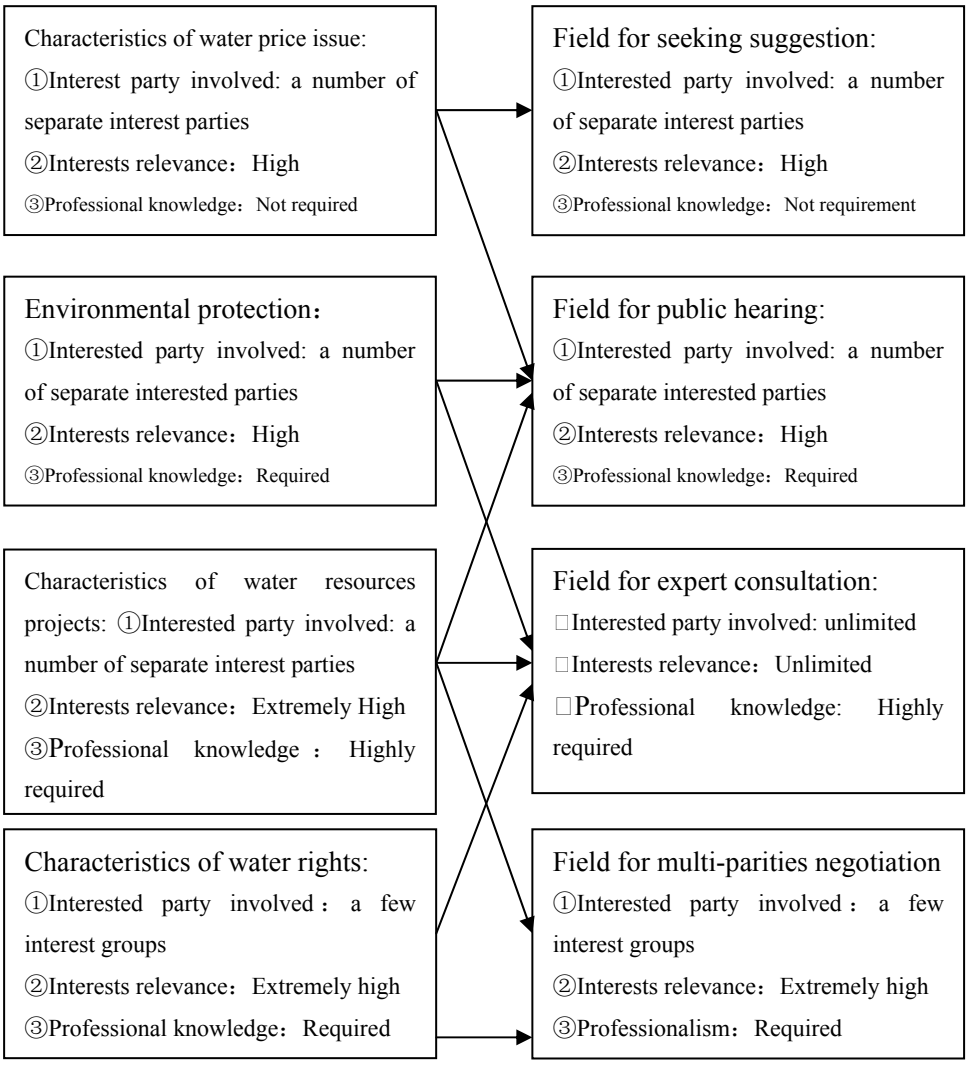

Table 4 Relations between issues in various fields and corresponding public participation options

IV. Issues in Public Participation in Water Resources Management

A. Inadequate Analysis in the Applicability of Public Participation Options

In decision-making process, there is no participation approach that can be applied in all circumstances. Considering the procedure justice in public participation, most studies show that a properly-handled participation approach can help the public accept the decision much easier. However, in another circumstance, higher involvement may lower public's acceptance and satisfaction to the decision. Therefore, before the decision is being finalized by the administrative department of water resources management, issues that need to be extensively studied include: how to select the most appropriate participation approach according to the context, at what

circumstance the public participation is required, and what specific public participation approach is needed.

Although the revised Vroom-Yetton model can help the government select the appropriate public participation approach and proper involvement level in water resources management, decision-making still represents a complicated process when being put into practice. Before any decisions being formulated, the relevant department must make serious evaluations and give prudential consideration to the decision and the current context. At present, China's water resources department has not paid adequate attention to the applicability analysis in public participation options, which largely constraints the effects and initiatives of public participation.

B. Issues for Different Participation Options

Currently, there are some limitations in various public participation options when the Chinese public is involved in water resources management. In sum, there are two aspects of limitations: one is the limitation in each participation approach, such as differences in interest representation due to the number of participants, differences in the objectivity of opinions due to participants' pertinence to interests, and differences in the technical contents of suggestions due to participants' professional backgrounds. The other is the mechanism deficiency in procedure design and implementation, such as being misled by the media, behind-the-scenes manipulation, and the moral risk of participants.

To be specific, the problem in soliciting suggestions is that the diversified public opinions are prone to be misled by media, which has limited impacts on government decisions. The problem in a public hearing is that the participant selection is often subject to manipulation by the host party. The public hearing representatives can hardly demur to the pricing plan because of information asymmetry and the hearing minutes can not impose explicit constraints on government decision. There are also problems in expert consultation like the selected participants do not represent relevant interested parties; therefore, they may bear the moral risk of lacking a strong sense of responsibility. In the approach of multi-parties negotiation, in many cases, since organizations representing the related interested parties are under development, the relevant government departments are often forced to act as the spokesman, which can not fully represent the interests of involved parties.

V. Policy Recommendations for Promoting Public Participation in Water Resources Management

A. Establishing and Improving Laws and Regulations to Provide Adequate Legal Guarantee for Public Participation

Public participation mechanism is a systematic project. Without powerful laws and regulations to safeguard the public rights and to strengthen control and supervision over the government, public participation can hardly be realized in this asymmetric power game. Therefore, the legal research into the participation mechanism should be enhanced, and laws and regulations should be enacted to bind the participation process like organizing, operating, and decision-making to provide mechanism guarantee for public participation.

B. Promoting Wide Propaganda to Raise the Awareness of Public Participation

The influence of various media channels should be utilized to promote and spread the experiences in water resources management of different regions. By regularly publicizing water resources information, the public's right to know should be fully respected. The social awareness of water crisis and water resources management stands to be improved to reinforce public initiatives in water resources management.

C. Establishing Open Information Channels between the Government and the Public

Establishing open information channels in water resources management and its decision process can help the involved interested parties conduct efficient consultation, engaged dialogue and productive decisions, which can also improve the public's enthusiasm for participation. The influence of water-oriented environment NGOs should be given full display and be guided toward professional development. These groups could become the bridge between the government and the public, providing specialized information and suggestions in formulating plans, policies and programs; while supervising the implementation of decisions and polices. A constructive cooperation partnership should be established between these groups and the government as well.

D. Solving Problems of Different Participation Options Step by Step

For the information soliciting approach, two aspects should be further improved: one is to design a scientific control process in order to ensure concentration of the public opinions; the other is to enforce information sharing to keep the public informed and prevent media misleading.

For the public hearing approach, it should be focused on process transparency and the introduction of third-party supervision. First, working out and publicizing the qualifications and procedures for participant selection; second, introducing the third-party of notarization institutions to supervise the whole process of participant selection; third, publicizing investigation measures against violators to avoid behind-the-scenes manipulation at the maximum degree.

For the expert consultation approach, two aspects should be strengthened: first, changing the expert selection procedure. The host party should map out the selection criteria. As the spokesman of the interested parties, experts should be recommended by the involved groups according to specific criteria; second, establishing an accountability mechanism for experts. The negative impacts caused by expert's irresponsibility or flattering of the powerful interested parties should be investigated.

For the multi-parties negotiation approach, the pressing issues are to promote the development of public water organizations, and spread the advanced experiences of different regions.

E. Building An Environment Lawsuit Mechanism

Building a mechanism that supports the pubic interest action on the environment is the best way to ensure the participation rights of the public. However, due to the absence of present law, public interest actions are usually unacceptable in China's legal practice. In fact, except the government, other social members are also closely involved in environment protection and reinforcement. With the social progress and improvement in public awareness of environmental protection, there will be an increasing number of public environmental lawsuits, which deserves greater encouragement and support.

Appendix

Public Survey on the Lake-lining Project of Yuanmingyuan Park[1]

Yuanmingyuan Park is the Protection Unit of the National Key Cultural Relics and the world famous historical cultural relic. Due to the shortage of water resources, the maintenance of its water environment and water scenery are faced with difficulties. The management department of Yuanmingyuan Park carried out a rehabilitation project in August 2003.

The rehabilitation project includes several sub-projects such as site protection, refit of bulkhead wall, clearing dregs and dust, reshaping the hills, cleaning up lake silt, lake-lining, burying pipelines in advance, and the whole greening project, in which, the lake-lining project is widely criticized. The lake bottom of Yuanmingyuan Park is in the ancient river course. Along with the overdraft of ground water in Beijing, water leakage through the lake bottom is a large volume and water supplements have to be done three times a year. The management department of Yuanmingyuan Park holds the view that through the lake-lining project, water resources could be saved and beautiful scenery could be rehabilitated. However, many experts and the public think that the lake-lining project completely destroys the inherent water network, aquatic ecosystem, and the high water-holding silt layer. The growth of terrestrial vegetation and ability of lake water self-purification are affected. The environment will change, and the cultural relic and aesthetic value of Yuanmingyuan Park is reduced.

For collecting opinions from the public, the Ministry of Environment Protection Administration carried out both on-site and on-line surveys from May 28th to June 6th, 2005. This appendix is based on the result of public survey.

I Targeted People and Approaches of the Survey

1. Targeted people

The targeted people include: Beijing citizens from all walks of life; visitors from other places in the country; working staff from Yuanminyuan Park as an interest group and project implementation body.

[1] This appendix is based on "Environment Impact Assessment Report of the Lake-lining Project in the East of Yuanmingyuan Park" of the Ministry of Environment Protection Administration.

2. Approaches

Public participation is in the form of both on-site and on-line surveys combined together. Content of the questionnaires is the same. 300 questionnaires were distributed on the locale and 273 valid ones were received. The 30 questionnaires sent to the staff of Yuanmingyuan Park were received entirely. The on-line survey received 1815 questionnaires and valid ones total 1305.

II On-site Survey Results and Analysis

1. Analysis on the results of all valid 273 questionnaires

A. Analysis on the results

The public survey indicated that the dominant opinion was to protect the ecosystem of Yuanmingyuan Park and to keep its relic style and features. The Park's function of entertainment held the lowest rate. See figure 1.

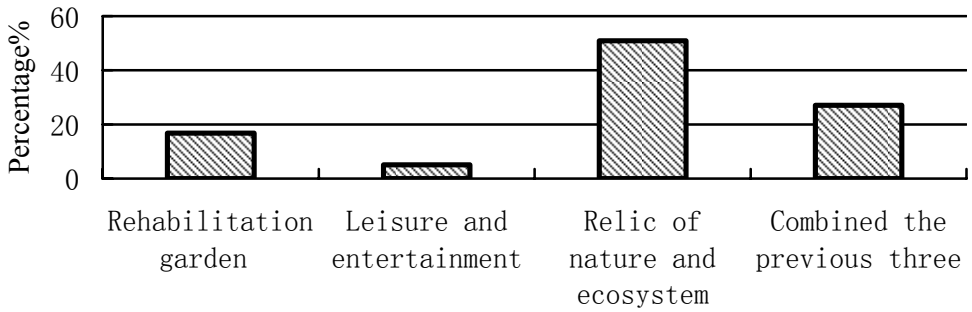

Figure 1- Result of public survey on the positioning of Yuanmingyuan Park

In the answers to whether you support the seepage control membrane being laid at the lake bottom, the result showed that over a half of respondents against this. See figure 2. However, most people knew little about the seepage control membrane; only less than 2% knew the character of it.

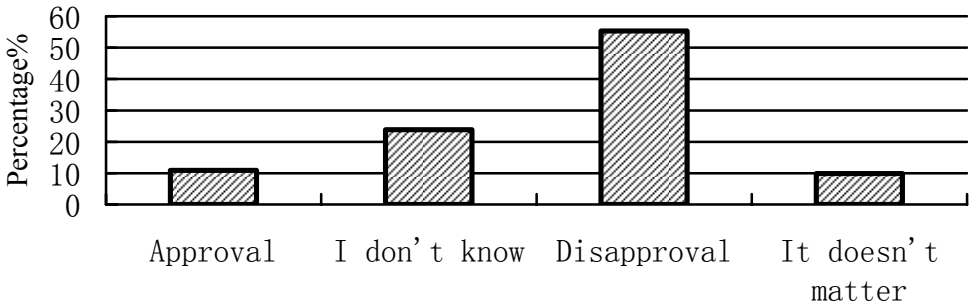

Figure 2- Result of public survey on seepage control membrane

Referring to the following development of Yuanmingyuan Lake-lining project, 65.4% of respondents thought that part of the seepage control membrane should be dismantled, and remediation or substitution measures should be adopted. Nearly 20% held the view that the seepage control membrane should be totally dismantled. Only a minority supported the project to continue according to the original plan. See figure 3.

For the reuse of recycling water in Yuanmingyuan Park, results showed that 76.5% of respondents agreed to use recycling water as a supplementary water resource for irrigation if its quality could meet the criteria after being strictly processed. 45.7% agreed to use it for entertainment needs.

The on-site survey results are illustrated as follows:

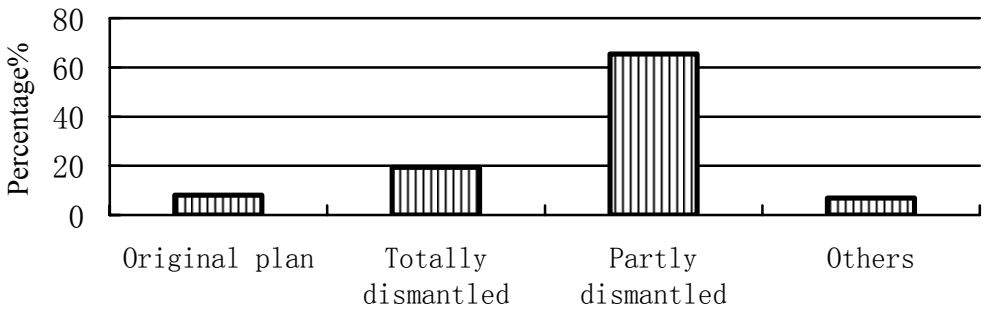

Figure 3- Result of public survey on future development of Yuanmingyuan lake-lining project

（1） 59.3% of respondents had visited Yuanmingyuan Park after March 2005, 20.8% had visited the Park both before and after March 2005. Among respondents, 52.7% had a college or university diploma; 44.6% were aged from 18 to 40, 32.9% were over 60.

（2） 45.0% of respondents learned of the project through TV, and 41.7% learned of it through newspapers. 61.1% paid attention to the lake-lining project of Yuanmingyuan Park, while 10.6% paid much attention to it, and 28.2% didn't care about it at all. People who knew about the lake-lining project totalled 57.8% while 31.1% of them knew a great deal about it.

（3） 60.0% of respondents went to Yuanmingyuan Park with the intention of looking for the historical site, and appreciating the original natural view of the park; 57.8% aimed to know its' history and to receive historical education. 50.9% of respondents believed that the positioning of Yuanmingyuan Park was to protect a natural ecosystem and to preserve its relic style and features, while 27.1% of them thought that Yuanmingyuan Park should have comprehensive functions.

（4） About the future development of Yuanmingyuan Park, 76.5% of respondents expressed their view that other measures should be adopted to keep certain water area and water depth, and to maintain the aquatic and terrestrial ecosystem, according to the climate and water resources conditions of Beijing, as well as the economic situation of the Park. An entertainment function should not be pursued.

（5） 38.0% of respondents thought that the problem of lake-lining project of Yuanmingyuan Park was a scientific and rational problem of the project itself; 36.9% believed that the development program of Yuanmingyuan Park has problems; 36.9% held that the project was not conforming to the relic nature of Yuanmingyuan Park.

（6） 53.4% of respondents had the opinion that the lake-lining project destroyed the survival environment of aquatic animal and plant, ability of water self-purification and terrestrial vegetation growth were affected; 50.9% thought that the project would have negative impact on bottom-dwelling organisms, algae, and the microbial community in the lake. 50.1% considered that the project would influence the partial water cycle and integrated ecosystem; destroy characteristics of classical garden as well.

（7） 65.5% of respondents thought natural plant should be kept as much as possible. 42.4% preferred a natural clay bulkhead wall, while 33.3% preferred an irregular bluestone bulkhead wall.

（8） 47.2% of respondents thought the price of the tickets of Yuanmingyuan Park should be lower that 10 Yuan, 44.6% thought it should between 10 －20 Yuan.

B. Summary of public suggestions

Some respondents gave suggestions and opinions of the lake-lining project of Yuanmingyuan Park. The summary is as follows:

（1） Yuanmingyuan Park should be a patriotism education base; therefore, the site destroyed by Anglo-France forces should be protected as much as possible to keep its original appearance. Water entertainment equipments should not be built.

（2） The seepage prevention plan should be considered in the long-term. Some of the previously built projects that were uncoordinated with the surroundings should be adjusted to the best it could. Commercial establishment should be minimized.

（3） This lake-lining project was a lesson for future improvement of the environmental impact assessment management system. The social status and influence of the environmental industry should be enhanced. Only when the overall environment is improved, could the water shortage of Yuanmingyuan Park be truly resolved.

2. Results and analysis of 16 important questionnaires

16 in 273 valid questionnaires were answered by people who had special knowledge and knew the lake-lining project, and were living in the neighborhood of Yuanmingyuan Park at the same time. Therefore, their opinions had higher reference value. Compared with the whole sample, the obvious differences lied in:

（1） If the lake-lining project had not yet started, the rate of people who disagreed with the project was 93.7%, much higher than the general public (55.3%).

（2） 75% of them held the view that "development programming of Yuanmingyuan Park itself has problem", much higher than 36.9% of the general public.

（3） 68.7% of them thought it should "dismantle part of the seepage prevention membrane, giving consideration to both effects of seepage prevention and ecosystem protection", higher than 45.7% of the general public.

（4） 56.2% of them preferred irregular bluestone bulkhead wall, higher than 33.3% of the general public.

（5） 62.5% of them hoped to position Yuanmingyuan Park as a garden to "protect the natural ecosystem, and preserve its relic style and features", higher than 50.9% of the general public.

III On-line Survey Results and Analysis

The on-line survey took into account the IP address. The votes with same answer or adjacent IP address were deleted and disposed. The ultimate total of valid votes was 1305.

1. Survey results

（1） Among the respondents, 55.0% of the total held college or university diplomas and 36.3% have a master’s degree or above. 44.1% of the respondents were between 41-60 years old, while 31.1% were between 18-40. 63.6% of the respondents learned the project through portal websites. The attitudes toward the lake-lining project in Yuanmingyuan Park were as follows: 53.8%—generally concerned, 36.7%—much concerned. 63.0% of the total respondents knew this project.

（2） For the purpose of visiting Yuanmingyuan Park, 100% of the respondents said they wished to visit the historical relics and enjoy the original natural scenery of the Park, while 93.4% hoped to learn about its’ history and receive an historical education. For its positioning, 46.6% thought the Park has comprehensive functions, 41.8% believed that the Park should preserve its natural ecosystem and maintain the original relics.

（3） For the future development of the Park, 53.1% of the total respondents supported the Park in taking measures to sustain certain water areas with appropriate water level, and protect its water and terrestrial ecosystem by considering Beijing's climate and water resources and the economic conditions of the Park. No entertainment function should be pursued.

（4） For the Park's positioning, 40% of the respondents said the lake-lining project did not match the Park's positioning, and 38.8% believed the planning of the Yuanmingyuan Park was debatable.

（5） For the seepage control membrane, 67.5% of the respondents said they knew something about it and 15.6% were very informed.

（6） For the ecological impacts of the seepage control membrane, 45.8% of the respondents thought the water ecosystem could be rebuilt after the lake-lining project was finished. The ecological system would not be destroyed if the vegetation on the river banks was irrigated by manpower. 45.7% believed that the lake-lining project would impose negative impacts on the bottom-dwelling organisms, algae and microbial community. 45.5% said the lake-lining project would destroy the surviving environment of aquatic animal and plant; weaken the capability of water self-purification and influence the growth of terrestrial vegetation.

（7） If the lake-lining project had not been launched, 47.0% of the respondents opposed laying the seepage control membrane at the lake bottom and 44.6% favored.

（8） 72.1% of the respondents believed that more natural vegetation should be reserved according to the conditions.

（9） For the use of recycling water, 82.2% of the respondents agreed to channel the qualified recycling water, which had been under strict processing into Yuanmingyuan Park as the supplementary water to irrigate trees and green belts. 46.2% favored the recycling water for the entertainment use.

（10） For the form of the bulkhead wall, most of the respondents favored the irregular bluestone wall, while the minority supported the natural clay wall.

（11） For the following development of the lake-lining project, the on-line survey results obviously differed itself from the on-site survey. Illustrated in Table 4, 45.4% of the on-line voters advocated laying the seepage control membrane as planned, while the on-site survey showed only 19.4% favored this option.

（12） 33.8% of the respondents said the Park's entry fee should be charged under 10 Yuan, while 26.9% favored above 30 Yuan.

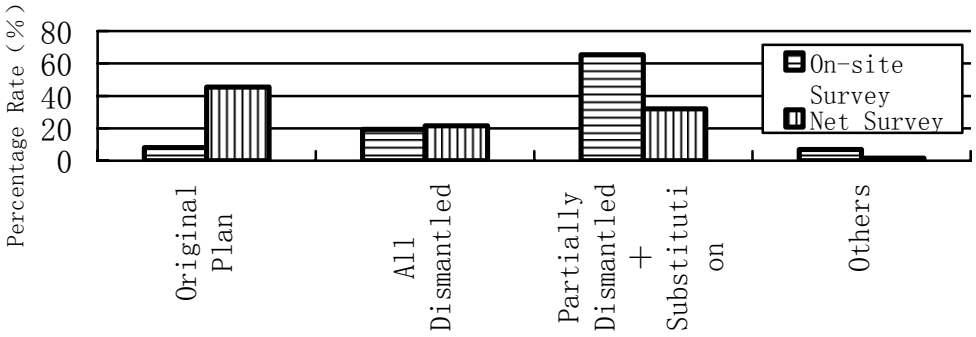

Table 4 Public opinions comparison on the suggestion of the lake-lining project in the Yuanmingyuan Park

2. Summary of public opinions

（1） For the positioning of Yuanmingyuan Park, some respondents believed that it was not necessary to lay large numbers of seepage control membranes to keep the water level for the entertainment need. Large-scale water amusement activities do not comply with Beijing's natural conditions.

（2） Laying seepage control membranes in the Yuanmingyuan Park was the best practice to protect the Park. Aquatic plants can be grown under the lake reserving the water in the Park, could only be done by laying soil on the seepage control membrane.., ultimately preserving the Yuanmingyuan Imperial Palace. However, some respondents believed that there was no need to lay the membrane at the bottom of the lake or even solidify the lake bank. A certain water level should be maintained to keep the lake from drying.

（3） For public participation in environment management, some respondents thought a perfect public participation mechanism should be established in order to avoid the waste of national resources.

IV Analysis on Interest Groups Survey (30 copies)

The interest group of the survey—the working staff of Yuanmingyuan Park made similar answers to the key questions in the survey. Most of the respondents believed that Yuanmingyuan should be built into a comprehensive park. All the respondents expressed their strong concern about the project and favored a seepage control membrane. In their opinions, the project construction should be continued following the original plan. Other favorable opinions include: maintaining the natural vegetation of the park and placing an irregular bluestone bulkhead wall. 73.3% of the respondents hoped the ticket could be above 30 Yuan.

V Survey Conclusion

（1） The public showed great concern to the lake-lining project in the east part of Yuanmingyuan Park. The media served as the main channels to intensify public's concern. Most tourists hoped to visit the historical relics, enjoy the natural scenery of the park, learn its history and receive an historical education. Measures should be taken to maintain the Park's water areas without pursuing entertainment function. The development of the Park should be kept in accordance with Beijing's natural conditions and the Park's economic conditions.

（2） The majority of the respondents believed that the lake-lining project in the Yuanmingyuan Park should be further improved by dismantling partial seepage control membranes. The seepage-proof function and ecological protection should be given equal attention.

（3） The main issues of the project focused on the reasonability and scientific feasibility of the lake-lining project and the development plan of the park. Half of the respondents disfavored laying a seepage control membrane since the project would impose damage and negative effects on ecosystem.

（4） Most respondents hoped to preserve the natural vegetation of the Park as much as possible and agreed to irrigate trees and green belts with recycling water. Nearly half of the respondents favored the recycling water as the supplementary water for amusement activities. A majority of the respondents hoped the bulkhead wall could be made of natural materials.

（5） The ticket charge should be controlled under 10 Yuan or 10-20 Yuan. There was potential for upward increase.

VI Gains from the Public Survey and Recommendations

（1）It is conducive to make the public learn the status quo and existing problems of the lake-lining project in the east part of the Yuanmingyuan Park, which can mitigate possible misunderstanding and prejudice caused by information asymmetry.

（2）It is conductive to learn the ideas and suggestions of the relevant government departments, experts and the public on the lake-lining project in Yuanmingyuan Park so as to draw on the wisdom of the masses.

（3）It is conductive to explore and research the effects and approaches for the public to participate in the decision-making process of the lake-lining project in the Yuanmingyuan Park, which could also improve the effectiveness and acceptability of the environmental impact assessment, guide the public to be involved in the plan discussion and raise environmental protection awareness among the public.

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