

AN ABSTRACT OF THE THESIS OF

Huaxia Zhong for the degree of Master of Public Policy Presented on May 27, 2016.

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Abstract approved:

Abstract

In 2003, due to the dramatic growth of economy, China's National Development and Reform Commission proposed to build 13 dams on the Nu River to fulfill the nation's rapidly growing demand for hydropower. The 13 dams that comprise the Nu River Project (NRP) are considered among the biggest hydropower development projects in the world. Once completed, the project will generate 131.4 billion kwh of electricity per year. However, international and domestic criticism regarding the project's economic and environmental viability has made it one of the world's most controversial development projects due to its potential adverse environmental impacts and its displacement of large numbers of people. The debate about whether NRP should be built has continued for more than a decade. During this time, NRP was suspended twice -- in 2004 and 2009. It was ultimately approved in 2013. This paper used the Multiple Stream Approach (MSA) to examine the policy process associated with the NRP. Specifically, it explored the factors that help explain why the project was suspended during the early stages (2003-2009), but approved at the later stages (2009-2013). Secondary qualitative data was analyzed to draw a distinct picture of the background, issues, solutions and interactions of one or more individuals, groups, communities, or institutions involved in the policy-making process. The qualitative data included a wide range of existing literature on NRP published in English and/or Chinese. This literature consisted of books, research papers and government reports, official policy documents and newspapers that discuss the social, economic and political context of the decision-making process of NRP. The findings showed that public participation is not the only factor that drives policy changes. The public had neither the power to influence the decisions nor technical capability to engage effectively with the decision-makers. To this extent, this research carries implications for improving public/citizen advocacy in China's public policy-making process by strengthening public participation and enhancing social accountability among public officials and governmental agencies. Equally important, the application of MSA demonstrates that policy entrepreneurs can devise political strategies to advance their goals.

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**Understanding policy change in hydropower development by using MSA: A
case study of the Nu River Project, China**

by
Huaxia Zhong

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Signature Page

Master of Public Policy essay of Huaxia Zhong presented on May 27th, 2016

APPROVED:

Bryan Tilt, representing Anthropology

Alison Johnston, representing Political Science

Todd Pugatch, representing Economics

I understand that my project will become part of the permanent collection of Oregon State University. My signature below authorizes release of my project to any reader upon request.

Huaxia Zhong, Author

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Introduction

Dams have historically played an important role in human development by providing irrigation, navigation, flood control, recreational opportunities, and electricity. By the end of the 20th century, about 45,000 large dams (measuring more than 15m in height) and an estimated 800,000 small dams had been built worldwide (WCD 2000). These dams accounted for more than 65% of the fresh water that flows to the oceans. In some countries, an increasing number of dams have been decommissioned and removed from operation due to their age or growing public concerns about their adverse environmental impacts (Doyle et al. 2003). Moreover, new dam construction has declined globally. Nevertheless, many dams continue to be built in Africa, Asia and Latin America in response to demographic and economic growth, and rising demand for energy.

The history of China's dam construction dates back more than 2,000 years ago when Dujiangyan Irrigation Infrastructure was built in Min River in Sichuan Province. The infrastructure, which is still in use today, irrigates over 5,300 square kilometers of land. China, a world leader in small and large hydropower projects, has built 22,000 large dams, a figure roughly equal to the total number of dams in the rest of the world. Moreover, as the world's second largest and fastest growing major economy, China has been facing energy challenges in recent years. China has the potential to generate 384 GW of hydropower – that's more than any other country. Not surprisingly, then, many of the country's energy corporations and government agencies believe that dam construction is the best way for China to meet its future energy needs. According to current forecasts, the growing impact of global warming (caused by CO₂ emissions from fossil fuel plants and other fossil-fuel-based energy resources) will generate significant

political pressure over the next decade to pursue sustainable energy alternatives? As a result, demand for hydropower - the oldest and most developed form of renewable energy - will grow.

While bringing considerable benefits to China's development, the construction of dams and reservoirs often, if not always, involves tremendous costs for both the environment and society as a whole. Official statistics show that 10.2 million people have been relocated as a result of dam construction in China. Critics contend that the number is likely much higher. According to the study of Wang and his colleagues, by 2006, some 22.8 million people had been relocated because of dam construction in China.

In China, environmental deterioration and contentious social issues resulting from dam construction have prompted an increasing number of people to participate in the policy-making process. In 2003, Yunnan Province and Huadian Corporation proposed a hydropower development project in the Nu River valley that called for the construction of 13 dams. The proposal, which generated a heated debate in Chinese government and society, was suspended twice by the Premier Wen Jiabao in 2004 and 2009. However, plans to build the 13 dams were included in a 2011-2015 energy-sector blueprint released by the State Council on 1 January 2013. This policy change has made the project a landmark case in the most recent chronicles of large dam construction in China. Both researchers and critics in China and elsewhere have attributed the suspension of Nu River Project (NRP) in 2004 and 2009 to growing public awareness and policy dissonance in China regarding large dam construction (Yardley, 2004). However, in my view, the policy-making process and, more specifically, policy change of the NRP cannot be explained simply by those rationales. Instead of focusing exclusively on the impact of public participation and the dissonance of Chinese government, a more complex description of policy process is necessary.

Therefore, there are two research questions I planned to answer in this paper. First, what was the policy making process of the NRP in two different time periods, namely the early stages (2003-2009), and the later stages (2009-2013). Second, what were the differences in the NRP policy-making process resulted in the different fates of the NRP. In order to answer the questions, qualitative content analysis method was used. The secondary qualitative data were collected from a wide range of literature on NRP published in English and/or Chinese. This literature consisted of peer-reviewed publications, government reports, official policy documents and newspapers that discuss the social, economic and political context of the decision-making process of NRP. This study suggests that the MSA provides a good framework for describing the complex and often unpredictable forces within the policy process that have led to the suspension and subsequent approval of NRP. The findings implied that public participation was not the only factor that drove the suspensions of the NRP. The public had neither the power to influence the decisions nor technical capability to engage effectively with the decision-makers. Instead, a policy decision results from negotiations among the public, interest groups and policymakers. To this extent, this research carries implications for improving public/citizen advocacy in China's public policy-making process by strengthening public participation and enhancing social accountability among public officials and governmental agencies. Equally important, the application of MSA demonstrates that policy entrepreneurs can devise political strategies to advance their goals.

In the following sections, I first provide an overview of the NRP from 2003 to 2013. I then, describe the methodology used to analyze the issues. I subsequently examine the problem, policy and political streams as they have evolved, leading to the suspension of NRP at the early stages (2003-2009) and its approval at the later stages (2009-2013). Finally, I provided a discussion

section focusing on a comparison to identify the differences of the policy-making processes resulted in different fates of NRP in the two time periods.

An overview of Nu River Project from 2003-2013

The Nu River originates on the Qinghai-Tibetan Plateau and runs through Yunnan Province in Southwest China before joining the Salween River in Myanmar to form the border with Thailand. It continues to flow downstream until it enters the Indian Ocean some 2800 kilometers/1700 miles from its source. It forms the second largest river basin in southeast Asia.

Possible exploitation of the Nu River for hydroelectricity was first incorporated into China's national hydropower development plan in 1989 after the National Energy Survey was conducted to collect information pertaining to dam development on the Nu. In 1999, the National Development and Reform Commission (NDRC) solicited plans for the development of hydropower in the middle and lower reaches of the Nu River in Yunnan Province, which eventually led to the proposal for a 13-dam cascade on 14 March, 2003. (see Figure 1) After public bidding, two institutes, the Beijing Investigation and Design Institute and the East China Investigation and Design Institute, were given responsibility for the design and planning of the project, and China Huadian Group was granted a monopoly for developing the project. Through its subsidiary, Yunnan Nujiang Hydropower Development Company, China Huadian Corporation enjoys close ties to the provincial government in Yunnan and exerts considerable influence over water-resources development in the region (Tilt 2015). Following four years of investigation and discussion, they presented a broad proposal to build 13 cascade dams along the 384-mile-long (618 km) Yunnan stretch of the river with a total installed capacity of 21,320 megawatts – 58.6 % of the river's theoretical potential. When complete, the project was

projected to produce 131.4 billion kwh of electricity per year, which is larger than the total capacity of the Three Gorges Dam (Magee and McDonald 2006). The height of the 13 dams ranges from the 35.5-meter Liuku Dam in County to the 307-meter Songta Dam in Zhayu County, Tibet. An estimated 56,009 people will have to be resettled as a result of the cascade. More than 42,000 of these people hold rural hukou, or household registrations.

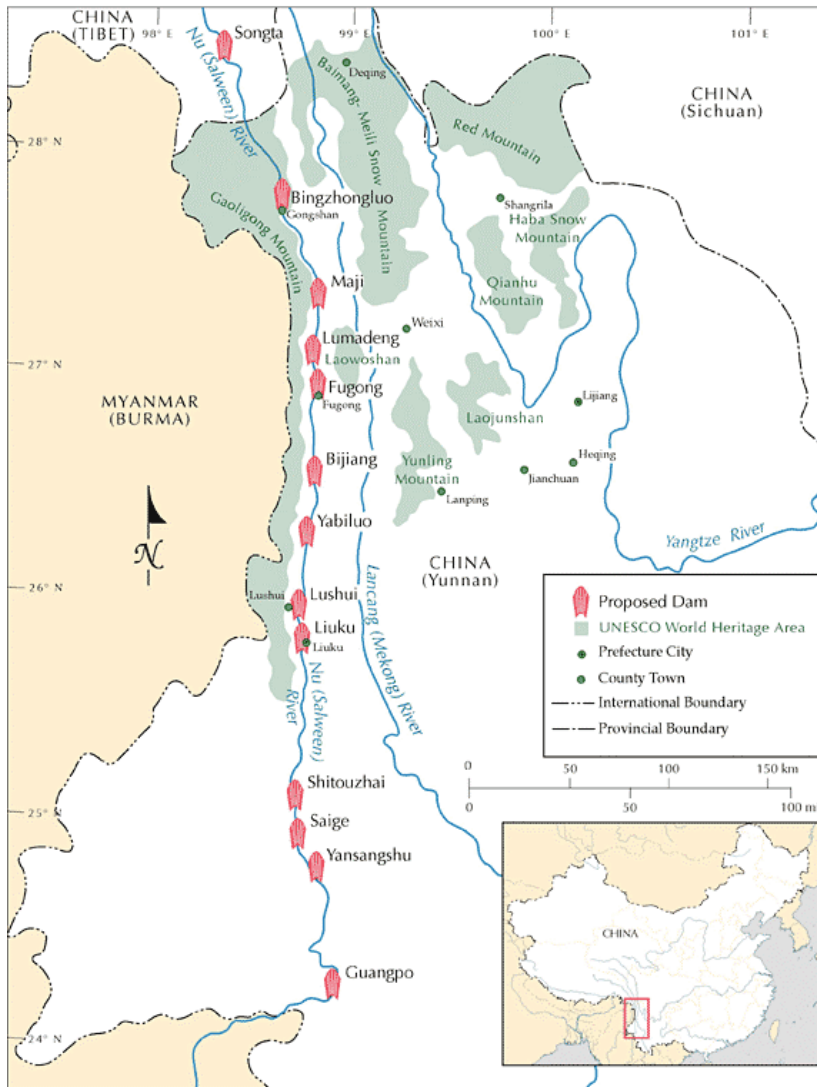
Construction on the first dam in Liuku Township was planned to start on 20 September 2003 and to be completed before the 2007 flood season. Engineering designs for the Maji, Bijiang, Yabiluo, Lushui, Saige, and Yansangshu dams was also scheduled to start in 2003. However, obstacles first surfaced on August 2003, when the National Environmental Protection Bureau organized the ‘Conference on the Nujiang Middle Lower Reach Hydropower Development and Ecological and Environmental Protection’. Experts at the conference could not reach an agreement on balancing the benefits of hydropower for development with the costs to the ecological system. Three additional conferences were held in September and October 2003. The debate over the project, in fact, continued unabated until 18 February, 2004, when Premier Wen Jiabao intervened and placed a halt on the project, calling for more thorough investigations into its potential dangers.

In response to Premier Wen’s concerns, the National Development and Reform Commission and the National Environmental Protection Agency organized a committee to review hydropower development on the Nu River. One year later, “Wen Weipo”, a Chinese-language newspaper based in Hong Kong, reported that the committee decided to proceed with construction of four dams – Maji, Liuku, Yabiluo, and Saige – and stated that construction would begin on January 11, 2006. Environmental assessments on the four dams were to be concluded by that time. According to Brown and Xu’s field visit to the Nu River Valley (2010),

dam construction at Liuku and Saige had secretly begun in 2008 without the government's permission. But because the Nu is a transboundary river, as per existing Chinese law, the results of the assessment were kept confidential, which continued generating heated debate within the Chinese government and society. The ongoing debate led Premier to again suspend the project in April 2009. (Brown & Xu 2010) Premier Wen Jiabao told local authorities not to resume construction until the impact of NRP on the ecology and local communities was fully documented. In 2010, interest groups such as the National People's Congress and Nujiang prefecture officials sent their NRP proposal to every Yunnan representative as part of a larger effort to get support for this project from the provincial government and NDRC (Chen, 2010). Not surprisingly, the local government remained eager to develop the Nu River Valley. And, in February 2011, Chinese officials conveyed their desire to resume the Nu River dams in the China's 12th Five-Year Plan, which calls for the generation of up to 140 GW of new hydropower capacity to help meet the nation's renewable energy targets. Actual approval of NRP was confirmed in January 2013, when China's new leadership included the four dams in its modified 2011-2015 blueprint for energy development and the State Council simultaneously announced plans for four of the 13 dams to start construction by 2015. Following the project's approval, Huadian started to construct roads to transport construction materials to the Liuku dam site.

Figure 1: Map of Proposed Dams

(Source: <http://chinarivers.com/Fugong/Flat%20Busted%20in%20Fugong%20Chapter3.html>)



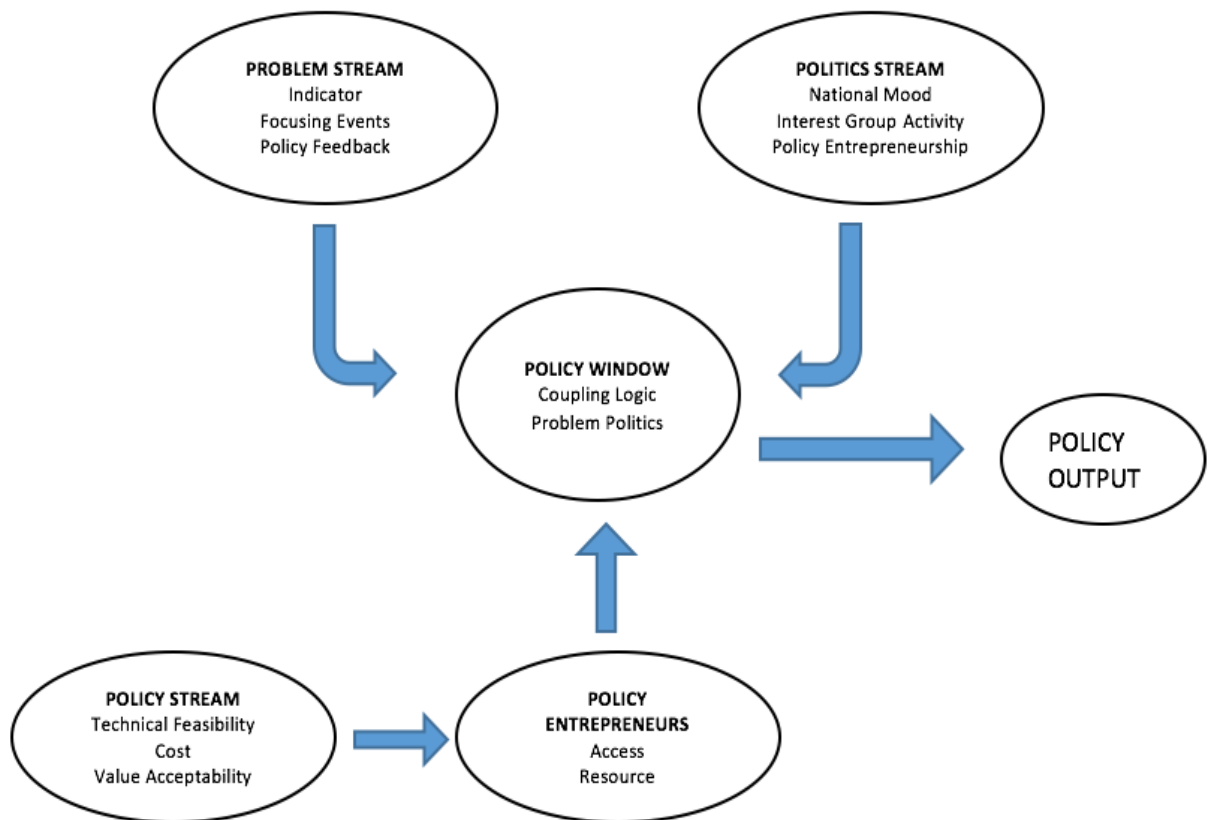
Introduction to Multiple Streams Approach

MSA is a lens or framework that explains how policies are made by government under conditions of ambiguity. Ambiguity refers to “a state of having many ways of thinking about the same circumstances or phenomena”. These ways may not be reconcilable, creating vagueness,

confusion, and stress. MSA yields insight into the dynamics of the entire policy process – agenda setting, decision-making, and implementation (Sabatier, 2014). The framework contains five structural elements: problem policies, politics, policy windows, and policy entrepreneurs (see Figure 2) All the elements of the three streams (problem, policy, and politics) closely mirrors Kingdon’s (1995) theory, with some slight modifications.

Figure 2: Diagram of the Multiple Streams Framework

(Source: Weible Sabatier (2014), Theories of the policy process)



Kingdon (1995) identified three streams flowing through the policy process: problems,

policies, and politics. Each is conceptualized as largely separate from the others, with its own dynamics and rules. The problem stream consists of various problematic conditions that need to be addressed. Examples of problematic conditions can be environmental disasters, government budget deficits, and so on. Policymakers find out about these conditions identifying indicators, focusing events, and policy feedback. Indicators can tell the existence and magnitude of problems. Focusing events can increase the awareness of specific evaluative dimensions of particular problems. Policy feedback is the reflection of outcomes of existing programs or initiatives. When problems are identified, a solution is needed. Policies are solutions generated by experts, academicians, bureaucrats, and policy makers to address the problem identified. However, only a few solutions ever receive serious consideration after being assessed in various forums and forms, such as hearings, papers, and conversations. To be viable, the solution must have technical feasibility (are doable), are affordable, and acceptable to the policy community. Finally, politics may be either an impetus or a constraint for the passage of a policy, and it can be identified through national mood, pressure group campaigns, and administrative or legislative turnover. The national mood refers to the shared belief conceived by a large number of individuals in a given country. The national mood swings from time to time. In addition to the national mood, legislative or administrative turnover, such as the advent of a new national leader, is likely to drive the issue of deregulation into high prominence.

An important feature of Kingdon's argument is coupling. Issues rise on the policy agenda when these streams are joined together at critical moments in time. These moments are considered policy windows and defined as "fleeting opportunities" for advocates of proposals to promote their solutions, or to focus attention to their special problems. Policy window is open for a short period of time and may be as predictable as annual budget allocations or as unpredictable

as earthquakes. When windows open, policy entrepreneurs must immediately seize the opportunity to initiate action. Policy entrepreneurs are individuals or corporate actors who attempt to couple the three streams. Their success depends heavily on access to policy makers, resources, and manipulating strategies (Zahariadis, 2007). To sum up, “the combination of all three streams into a single package dramatically enhances the chances that policymakers will adopt a specific policy.” (Sabatier, 2014, p26)

There were two rationales explaining why NRP fits well with MSA to examine the policy making process. First, according to Blankenau (2001), MSA is a model that can readily applied to the entire policy-formulation process. It can thoroughly capture the complex and largely unpredictable factors within the policy process that are imperative for the suspension and approval of NRP. A number of previous studies on the suspension of NRP only focused on the influence of public participation. However, to my point of view, the policy making process and the policy change of the NRP cannot be explained simply by the impact of public participation. Let alone the fact that many researchers such as Büsgen (2006), Li (2008), and Song (2011) have approved that The public had neither the power to influence the decisions nor technical capability to engage effectively with the decision-makers. Therefore, instead of exclusively focusing on the impact of public participation, I would like to use MSA to explore the complexity of the NRP’s policy process. Second, the MSA deals with policymaking under conditions of ambiguity. Ambiguity refers to a state of having many ways of thinking about the same circumstances or phenomena (Sabatier 2014). The ambiguity to a certain extent can explain why the factors opposing NRP were dominant at the early stages of NRP, while factors supporting NRP came to be the focus of attention at the later stages. As it is known that the costs and benefits of the NRP were objectively existent throughout the early and later stages of its

decision making processes. Thus, it is unreasonable to assume that the approval of the NRP is because the ecological impact of NRP has been eliminated at the later stages. Similarly, it is hard to say the suspension of NRP indicated that China didn't need hydropower for economic development at the early stage of the NRP. The fact is that the ambiguity is the "glue" of politics. It allows people to agree on laws and policies because they can read different meanings into the words and leads people to determine their preferences toward a certain decision. Apparently, MSA can explain how the policy entrepreneurs use the concept of ambiguity to guide people to focus on the costs of the NRP at the early stages, while emphasize the benefits of the NRP at the later stages with the attempt to promote the passage of it.

Methodology

Data collection

A case study approach was employed to explore the policy change of the NRP. Secondary qualitative data was adopted to draw a distinct picture of the background, issues, solutions and the interactions of one or more individuals, groups, communities, or institutions involved in the policy-making process. The qualitative data included a wide range of existing literature on the NRP and other hydropower development projects published in English and/or Chinese. This literature were collected from peer-reviewed publications, government reports, , official policy documents, and newspapers, all of which holistically discussing the social, economic and political context of the NRP's decision-making process. All literature was gathered from digital libraries and physical books.

The reasons guided my choice in using secondary data can be explained in several ways: 1) Inability to access participants for interviews, surveys or observation due to the political structure

and sensitivity of the topic itself. Plus, innumerable interest groups, policy entrepreneurs, and people affected were involved in this project, which made it difficult to decide who to interview and which group will provide the most reliable information; 2) interviews, surveys, observations or focus groups wouldn't allow me to collect data that showcased the complete background of the policy-making process from 2003 to 2013, on the contrary, secondary data can reveal a great deal of studies on the project conducted by previous researchers.

The data selection criteria for this project was based on a hierarchical system of information reliability and the need to collect the largest amount of relevant information. The most reliable source of information was published books and peer-reviewed journal articles. This type of information source provided peer-reviewed studies on the social, economic, environmental and political background of hydropower development, including comments and analyses of the issues involved in the NRP project. Governmental policy documents and government reports were ranked second on the hierarchical system, which reflected the policy making process and the political context of the NRP from the aspect of governmental agencies and their officials. The third source of information was from news outlets that provided information to the general public about issues the local governments, stakeholders, and special interest groups did not want released.

Considering there was a vast amount of relevant data, Bryan Tilt's book *Dams and Development in China-The Moral Economy of Water and Power* was used as the starting point to find relevant information on the Nu River. The book captures detailed information by thoroughly conducting hands on research of the Lancang and Nu River dam projects and cited more than one hundred references that guided my further collection of relevant journal articles and research papers. Since the project proposal was initiated in 2003, and the study of it is continued into

2016, the year of published literature I collected was ranging from 2003 to 2016. Additionally, the official policy documents and newspapers articles were collected through a library catalog search, using key terms such as ‘Nu River campaign’, ‘ENGOS and Nu River Project’, ‘12th five-year plan’, and so on.

Data analysis

The data analysis included three stages: the first stage was to skim through all 150 relevant documents collected based on Bryan Tilt’s book, and key terms such as “Nu River Project”, “Anti-dam campaign and Nu River”, etc. At the same time, I took notes and listed out the main ideas on NRP and hydropower development studied by the writers. These main ideas helped me identify a list of themes later, which included the social impact and environmental/ecological impact of dam construction, political climate, and public participation involved in the policy making process of NRP. According to Maxwell (2005), “the themes are abstract, often fuzzy, constructs which investigators identify before, during, and after data collection. They come from reviewing the literature and the phenomena being studied, and they also come from already agreed-upon professional definitions, from local common-sense constructs, and from researchers’ value, theoretical orientation, and personal experience with the subject matter.” The code book that encompassed a list of the themes drawn from the data collected has been included in the Appendix A. Through out the first stage, some relevant cited work in the reference section of each document was also reviewed to find more useful information. At the second stage of data analysis, I reorganized the themes by categorizing them into two different time periods: early stages of NRP (2003-2009) and later stages of NRP (2009-2013). Namely, if the themes discussed the policy-making process of the early stages, they were grouped into the early stages

of NRP; and if they discussed the policy-making process of the early stages, they were grouped into the later stages. Afterwards, I incorporated the themes into each corresponding element of MSA based on the definition and meaning of each element. At the final stage of data analysis, a comparison of each stream of MSA was conducted to examine how the three streams interacted to cause the different fates at the early stages and later stages of NRP.

Application of MSA to Nu River Project

This section provided a systematical analysis of the three streams associated with the NRP's early and later stages. It is worth noting that the NRP was suspended twice during the early stages. And, even though the two suspensions were grouped in the same category (early stages). I had dedicated to digging out any different situations between them. For example, the focusing event related to the the first suspension was the opposing dam meeting, but it was the earthquake at the second suspension.

1. The early stages (2003-2009)

1.1 The Problem Stream

Indicators. A number of research showed that dam construction has made massive impacts on the ecology. For instance, the research of the impact of Three Gorges Project by Xu et al. (2013) suggested that the water quality in over 38 small tributaries (each with a water shed area larger than 100 km²) of Yangtze River had declined dramatically since 2003. In 2003–2007, sediment averaged 142 Mt per year, which was equivalent to 40% of the estimated 355 Mt per year in the EIS Report. The latest data for the 2008–2010 period, at the 175 m pool level, showed that the sedimentation demonstrates a gentle upward trend (on average 176 Mt per year), and that the

peak of sedimentation appeared in the backwater section of the reservoir. Also, the risk of secondary geological disasters such as landslides and mud-stone was evidenced. 1302 landslides under close field investigations were reported in 1991–1999. “This figure climbed to 3053 landslides by 2009” (Xu et al., 2013), according to the geological hazard monitoring and warning system in the reservoir area. Soil erosion is another contentious issue, which can have a direct effect on the sedimentation of the reservoir, the lifespan of the Dam, the capacity to control flooding, and ecological status in the upper and middle reaches the basin. Yangzi Water Resources Commission stated that the total amount of soil erosion, and the eroded area, in the TGRA decreased significantly, by 27% and 28% respectively, from the 1980s to 2007 (Brown and Xu, 2010, p784).

A handful of ecologists such as Wang have revealed that the dam construction planned in Nu River will have considerable influence on the biological diversity around the area. As it is well known that the Nu River region is home to a rich collection of flora and fauna. Among the estimated 6,000 species of plants and animals found in the region, 1,397 are listed as protected species, including 20 ‘first degree’ protected animal species and 40 ‘second degree’ protected animal species. 70% of 48 known species of fish in the Nu River are endemic and four of which are considered endangered. At the request of the Yunnan provincial authorities, the Three Parallel Rivers (san jiang) region was approved to be a World Heritage site by United Nations Educational, Scientific and Cultural Organization (UNESCO) On July 3, 2003, which somehow placed a barrier to the project after its proposal on 14 March, 2003.

Dams can also block migratory paths, and reduce the variety species, possibly driving some species to extinction. Many aquatic species in rivers have their own migratory pattern during their life cycles. Many species, such as spawning, juveniles, and sexual maturation, shift

to different reaches of a river during different life stages. Some large dams have established fish bypasses (ladders) to mitigate the negative effects on migratory species, but the percentage of large dams with such structures is very low, and ladders can only help certain species. Also, “these structures sometimes do not work effectively, since the migration of different species requires various navigational cues, such as strong currents” (Wang et al., 2011, p93). In addition to the impact on aquatic species, the risk of reduction in plant species around the reservoir had equally caught attention of experts, policy makers, as well as the general public. Large-scale habitat fragmentation and ecosystem alterations caused by dams had adversely affect both terrestrial and aquatic biodiversity (Wu et al. 2004). Wang conducted surveys of key species in the Manwan and Xiaowan reservoir areas in 1997 to quantify species dominance and their ecological risk imposed by the dams. The results showed that the dominant tree species were *Castanopsis delavayi* and *Castanopsis fleuryi* before dam construction, but *Pinus yunnanensis* became the dominant species post dam construction and *Castanopsis fleuryi* vanished. The results show that “dam construction can lead to a decrease or even loss of the dominant species and an increase in nondominant and invasive plants in the riparian zones.” (p69)

The ecological and environmental impacts of dam construction were controversial topics and remain dominant problems through out the policy making process from 2003 to 2009. The negative impact of dam construction on ecology is not limited to those mentioned above. Table 1 below provided a complete list of potential ecological impacts of dam construction in Nu River upstream and downstream.

Table 1: A hierarchical framework of upstream and downstream impacts of dams on river ecosystems

(Source: Wang, P. et al. (2013). Large Dam Dilemma an Exploration of the Impacts of Hydro Projects on People and the Environment in China)

Location in relation to dam	Category of impact	Impact
Upstream	First-order impacts	Modification of thermal regime
		Accumulation of sediment in reservoir
		Changes in water quality
	Second-order impacts	Evaporation and greenhouse gases
		Changes in channel configuration
		Increased growth of plankton and periphyton
Downstream	Third-order impacts	Increased growth of aquatic macrophytes
		Reduced biomass and diversity of riparian vegetation
		Changes in distribution and abundance of invertebrate, fish, bird, and mammal populations
Downstream	First-order impacts	Changes in the timing, magnitude, and variability of daily, seasonal, and annual flows
		Changes in water quality
		Reduced sediment flows
	Second-order impacts	Alteration of channel, floodplain, and coastal delta morphology
		Change in plankton and periphyton assemblages
		Increased growth of aquatic macrophytes
	Third-order impacts	Change in riparian vegetation
		Change in channel, floodplain, and coastal characteristics
		Changes in distribution and abundance of invertebrate, fish, bird, and mammal populations
		Increased salinity of estuaries

Focusing events. In 2004, the focusing event that brought the issue of NRP to the public attention was the the conference organized by the National Environmental Protection Bureau. The theme discussed in the conference is about the Nujiang Middle Lower Reach Hydropower Development and Ecological and Environmental Protection, during the conference experts split on the merit of hydropower development relative to keeping the Nu as a ‘primitive ecological river’. Despite three more rounds of conferences during September and October 2003, no consensus was reached on this issue. Other focusing events were the Opposing Dams meeting and the open

letter from Thailand. According to Mertha (2008), the World Rivers and People Opposing Dams meeting was held in Thailand in November 2003. The Chinese activist NGOs (Wang Yongchen), Friends of Nature, Green Island, and Green Watershed (Yu Xiaogang) were invited to the meeting. At this meeting, NGOs from over sixty countries signed a petition to protect the Nu River and sent it to UNESCO. Later on, a reply from UNESCO stated that it is paying close attention to the NRP, and that the NRP threatened the sensitive ecological areas that were part of its protected area plans. In addition, an open letter was signed by more than eighty NGOs in Thailand and sent to the Chinese ambassador in Thailand on the Nu River issue.

In 2008, when the magnitude-7.9 Wenchuan earthquake struck, a feverish debate on whether the reservoir is to blame was flooding the social media, ENGOs' activities etc. Since the much-maligned Three Gorges Dam is too distant, experts considered the Zipingpu Dam the enemy, which was just 500 meters from the fault that failed and 5.5 kilometers from the quake's epicenter. When using "Wenchuan earthquake and dam construction" (Wenchuan di zhen he da ba jian she) as a key term to search for relevant information, I found that there were numerous of newspapers and journal articles mentioning the potential impact of dam construction on earthquake. Some of them suggested that dam construction can trigger devastating earthquake by imposing mechanical disturbance such as removing fluid or rock from the crust. Even though at the same time some articles were published by the China's government and its internal experts to dispel the rumors about the Wenchuan earthquake, due to the sensitive situation in the 2008 earthquake and the fact that the Chinese government was tightly holding key data, people's attention was bound to be caught by the controversy itself and tend to believe the rumor.

Policy feedback. During the early stage of NRP the policy feedback was the failure in the resettlement policy for other dams in China and the facts that corruption was involved

through out the planning, construction, and implementation process of dams. The population displaced was forced to experience a marked decline in its living standard, income, education, and social connection. Although the resettlement policy was made to compensate the population displaced by dam construction, the actual compensation given to the resettlers was far less than planned. Galipeau and his colleagues (2013), studying resettlement for dam projects nearby on the Upper Mekong River, claimed that “the entities controlling the hydropower project also control the distribution of its benefits and costs. As a result, compensation for displacement and resettlement is not in the hands of the villagers but rather rests with the government.” (p3) And often times, the local government officials appropriated the resettlement compensation for personal use. Furthermore, in August 2003, the Huadian Group rushed to get its NRP proposal approved by the State Council before the EIA Law came into effect on December 1, 2003 in order to free them of the constraints of the law. The proposal itself was simple and didn’t provide any environmental impact assessment (EIA) of NRP. Beyond question, the unqualified proposal and the trick played by Huadian raised the suspicion of the ecologists and the officials in the Environmental Impact Assessment Office. Another policy feedback from the resettlement issue was the lack of participation of the affected population in the planning and implementation of the resettlement, which in turn resulted in poor decision making on addressing the needs and concerns of the displaced population.

1.2 The policy Stream

Technical feasibility. When it came to technical feasibility of developing hydropower project in Nu River Valley at the early stages, the policy makers had to evaluate the nation’s capacity to mitigate and prevent the environmental and social impact of dam construction, at the same time

take into account the capacity to manage dam construction. However, evidence showed that the technical feasibility was still low at the early stage of NRP. Especially, the National EIA Law just went into force on December 1, 2003, a few months after the proposal of NRP. In addition, even though the Social Impact Assessment (SIA) research and practices have been undergoing in China for nearly two decades, the application and effects of SIA in China was very limited in general, and the establishment of the SIA framework in China was still facing challenges in legislation and institutional capacity building (Li and Shi, 2011). Aside from that, when Lei and other researchers (2008) analyzed the three development phases (from 1978-2006) of dam safety management in China, the results showed that the dam safety management in China is still facing a great challenge such as how to gradually transit the dam projects from the planned economy system to the market economy system, how to specify different functions of the government and the dam owners, and how to lead dam safety management to a path of favorable circulation.

Cost. Wang and other researchers argued that many large dam projects overran their budgets significantly, due to underestimating the technical difficulties, the compensation costs associated with the relocation processes, and changes in external conditions, such as the costs of labor and/or construction materials. During the debate on the NRP, the anti-dam coalition expressed their concern on the financial feasibility of the project and dam planners diverting the compensation for population displaced or any other purpose. Over and above, it is recognized that the secondary costs of dam construction to the local community articulation and disappearance of ethnic culture were often unmeasurable and irreversible. To make things worse, the absence of policies and inadequate legal regulations to counteract the aforementioned adverse effects have pushed the costs to increase.

The over budget issue of dam projects can be approved by International Rivers, a prominent NGO whose mission focuses on river conservation, published a database in 2013 based on a literature review, media reports, site visits, and expert interviews. The database focuses on recent trends in dam development on Southwest China's major rivers, including the Yangtze, Mekong and Nu. When having a look at the International River database, which include all dams built and under construction in Lancang river, and Yangtze River in China, I found that the actual cost on 23 out of 145 dams built at both Lancang and Yangtze River was far higher than their planned cost (see Table 2), the rest of 145 dams only have either the actual cost or the planned cost.

Table 2: Comparison of the planned cost and actual cost of dams in China
(Source : International River)

Note: The cost is in hundred millions of CNY

DAM	PLANNED COST	ACTUAL COST	PERCENTAGE INCREASE
A Hai	85.06	207	143%
Da Chao Shan	35.3	77	118%
Er Tan	285.54	330	15%
Guan Di	67.05	92.61	38%
Guan Yin Yan	132.55	307	132%
Guo Duo	26.7	38.3	43%
Huang Jin Ping	84.7	117.68	39%
Jin An Qiao	86.44	147	70%
Jin Ping II	183	196.8	8%
Jing Hong	79.37	101	28%
Li Yuan	94.08	161.2	71%
Liang Jia Ren	145.62	169	16%
Long Kai Kou	77.14	96	24%
Lu Di La	88.86	178	100%
Man Wan	26.62	37.89	42%
Nuo Zha Du	242.07	610	152%
Shuang Jiang Kou	158	247	56%
Tai Ping Yi	14.5	15.73	8%
Three Gorges (Sanxia)	900.9	1975	119%
Tong Zi Lin	29.93	62.44	109%
Upper Tiger Leaping Gorge	144.12	389	170%
Xi Luo Du	445.73	792.3	78%
Xiang Jia Ba	289.88	542	87%
Xiao Wan	222.52	277.3	25%

Value Acceptability. Setting overly ambitious goals in dam projects had caused a negative effect on social development. Chinese central and Yunnan provincial government had treated forced resettlement as an opportunity to introduce major changes in rural areas such as improving irrigation, adding cash crops, attracting tourist investment, or eradicating poverty. Unfortunately, these ambitions often failed due to the resistance and the inability of resettlers to cope with so many changes at once. Many relocation schemes failed to consider the possible negative effects on people who moved to a new and different community. People relied on specific skills such as farming to make a living, but moving to a totally new place characterized industrialization will impair the effectiveness of their mastered farming skills. The lack of education and proper training had made the situation worse. Uneven distributions of costs and benefits of dam construction made the NRP unaccepted to the public, especially the local population affected. For example, the electricity generated from hydropower dams was sent to the major cities to satisfy the needs of the citizens and industrial development, rather than for the use of the people living in rural areas. What is noteworthy is that in the “Third Meeting of China and the United States Environment Forum” held in November 2003 the participants argued that after the dam was built, local people might be forced to pay higher rates for electricity than their counterparts in urban areas. According to the evidence above, building dams to fulfill the needs of electricity was a problematic and unacceptable solution at the early stages of NRP.

1.3 Politics Stream

National mood. Environmental protection was the most sounded voice in the heated debate surrounding NRP between 2003 and 2009. The anti-dam campaigns were under the control of

the domestic and international ENGOs, social media, and the environmental bureaus. Under the influence of the campaigns, the public attention was moved away from the “economic development is good for the western part of China” party line and toward such notions as respecting cultural heritage and biodiversity in the Nu River cascade.

Interest group activity. According to Han (2013), “the decision-making process underlying large dam construction in China used to be dominated either by powerful leaders or by bureaucratic departments pursuing parochial organizational interests.” (p313) However, from 2003 when the Nu River hydropower development project was proposed, a wide array of non-state actors, including nongovernmental organizations (NGOs) and international entities, emerged as a new sources of policy input and influence. They advocated the policy makers and bureaucratic departments to pay more attention to the environmental and social impacts of large dams and public participation in policymaking of dam projects. In order to achieve these goals, they formed coalitions based on shared beliefs and preferences to take on a series of anti-dam campaigns and adopt various strategies to make their voices heard, such as complaint letters, picture show, plea to the Chinese People’s Political Consultative Conference (CPPCC) and Communist Party of China (CPC), etc. The following paragraphs highlighted a few activities took place during the period of anti-dam campaigns. And the activities conducted by the ENGOs can be categorized according to a hierarchy of different advocacy objectives (see table 3), which illustrated a process of politicization among ENGOs throughout the campaign by increasing addressing the underlying problems and their causes related to the Nujiang dam.

On October 25, 2003, the NGO Green Earth Volunteers (GEV) invited sixty-two people from the fields of science, arts, journalism, and grassroots environmental protection to organize a

petition expressing their opposition to the NRP at the second meeting of the China Environment and Culture Promotion Society. This petition was published in the media and mobilized widespread public support in opposing the project.

In like manner, a group of twenty journalists, environmental protection volunteers, scholars, and other experts, led by Wang Yongchen and traveled to the Nu River in February 2004 for a nine-day survey in order to gather more convincing evidence against the pro-dam coalition. Later on, a presentation, based on the survey trip, entitled “Protect the Natural Flowing of the Nu River, Stop Hydropower Development” (Baohu tianran dahe Nujiang, tingzhi shuidian tiji kaifa) was delivered in the Chinese People’s Consultative Conference meeting. Also, Green Earth Volunteers continued to host the Green Journalist Salon as a regular forum for ENGOs, scholars, journalists, and concerned officials to discuss various environmental issues (Yang & Calhoun, 2007).

Distrusting the legitimacy and validity of both the revised plan and its EIA, the opponents also called for the release of the complete EIA report. In 2005, for instance, ENGOs and journalists released a petition endorsed by 92 organizations and 459 individuals to request a strict implementation of public participation and information disclosure rules under the EIA Law. This struggle between the two groups lasted until 2009, when the Premier intervened again and suspended the NRP.

Table 3: Hierarchy of Advocacy Objectives in the Nu River Campaign

(Source: Büsgen, Michael. (2006) "NGOs and the Search for Chinese Civil Society Environmental Non-governmental Organisations in the Nujiang Campaign.")

<i>Advocacy objectives</i>	<i>Example of the Nujiang campaign</i>
1. Advocating environmental conservation	<ul style="list-style-type: none"> • Petition to preserve ‘China’s last remaining virgin river’
2. Advocating adherence with existing legal and administrative procedures	<ul style="list-style-type: none"> • Advocating for an EIA, conducted according to the EIA law • Advocating fair economic compensation for dam-migrants • Advocating that hydropower projects are only done in accordance with comprehensive watershed development plans and national plans for hydropower development (not the case in Yunnan)
3. Advocating an expansion of existing legal and administrative procedures	<ul style="list-style-type: none"> • Advocating to conduct social and cultural impact analysis • Advocating to make the approved EIA public • Advocating that the EIA is conducted by independent experts
4. Advocating social equity through promoting participation and rights of affected communities	<ul style="list-style-type: none"> • Bringing local communities to participate in debates and conferences on the dam • Organising workshops to inform local communities on potential environmental, social and economic impacts, and their rights • Advocating public hearings on construction plans
5. Advocating a change of dominant development paradigms which lead to unsustainable and un-equitable development	<ul style="list-style-type: none"> • Opposing exploitation of natural resources by profit-driven corporations • Advocating to factor-in social and environmental externalities in the feasibility study for the dam • Advocating to explore alternative development opportunities which are based on indigenous development potentials of the local communities and ensure direct benefit by them

Policy Entrepreneurship. Domestic as well as international ENGOS, scholars and experts were three major domestic groups voicing opposition for the project. They rallied to mount a campaign against the project by mobilizing public and citizens, sending opposing petition, publishing stories and research papers about the negative impact of dam construction based on their interview and survey with the population affected. ENGOS and journalists also conveyed their knowledge of impacts of dams to the Chinese government. They worked with scholars, including geologist Fan Xiao, to disseminate information about a potential relationship between reservoirs and earthquakes in China’s southwestern regions (Brewer, 2008). Most researchers studying NRP suggested that the effort of three main players was the driver to Wen Jiabao’s

twice suspensions on the project. Even though the local people were also involved in the anti-dam campaigns, their opinion of this project was unknown due to a lack of related research and power in influencing policy making. Therefore, for the following paragraphs, I only focused on the primary player in the campaign and presented what they did to influence the policy making.

Journalist Wang Yongchen and scientist He Daming who were considered the principal policy entrepreneurs for the NRP opposition. (Mertha, 2008). Wang Yongchen, a senior reporter with China National Radio and founder of Green Earth Volunteers, had been pivotal to the twists and turns of the Nu River controversy. “She entered the fray not as an expert but as environmental activist from faraway Beijing.” (p49) She dedicated to increasing her power of opposing voice by making multiple trips to the Nu River Valley, from which she obtained reliable information and kept the issue alive through the monthly salons she held for open discussion. He Daming, was head of the Asian International Rivers Center at Yunnan University, known as a river expert on the Nu. Having researched rivers in Yunnan for decades, he had more information on the Nu River than any other single person in China. In the first week of September 2003, He presented his opposition to the NRP at the “Nu River Valley Hydropower Development and Ecological Environmental Protection Issue Expert Forum” organized by SEPA in Beijing, the attendees included more than seventy experts (and ten journalists). As the first local scholar to oppose Nu River Development, His opinion quickly caught on and snowballed dramatically.

The main ENGOs engaged in the campaign included Green Earth Volunteers, Friends of Nature, Green Islands, the Institute for Public and Environmental Affairs, Global Village Beijing, and Green Watershed. The first ENGO to take on this coalition was Green Watershed. Deng (2008) argues that 37 out of at least 116 articles carried by 14 major newspapers from 2003 to

2005 identified ENGOs as major policy actors in this anti-dam movement. The head of Green Watershed Yu Xiaogang was perhaps the most fascination of the policy entrepreneurs, in part because he appeared to be so willing to take on risk to engage in activities that consistently embarrass the authorities. He utilized his academic background to conduct research on the social impacts of dams on local residents and led a multitude of education campaigns to increase local residents' awareness of impacts of the NRP.

In addition to the entrepreneurs mentioned above, the national leaders' attitude might to some extent affect the policy-making process of the NRP during the early stages. President Hu Jintao and Prime Minister Wen Jiabao appear less enamored of the big projects than their predecessors. Neither man attended the ceremony for the completion of the Three Gorges Dam.

2. The later stage (2009-2013)

2.1 Problem Stream

Indicator. China's rapid urbanization and industrialization had resulted in a dramatic increase in energy consumption. However, air pollution caused by non-renewable energy had become a serious threat to the well-being of Chinese citizens and efficiency of the industrial development, especially in recent decades. Coal is the primary energy accounted for about 74% of the total energy consumption in China. The urban air quality of China has been seriously polluted with high concentrations of sulfur dioxide (SO₂) and total suspended particle (TSP) for many years mainly due to its coal-dominated energy structure. About 40% of China suffers from acid rain pollution. "If no further actions are taken to control air pollution, the emission of SO₂, NO_x, VOC and NH₃ in 2020 will increase by 17%, 50%, 49% and 18%, respectively." (Wang et al., 2012, p4) The global meta-analyses of epidemiologic studies had indicated that indoor air

pollution from solid fuel use in China is responsible for approximately 42,000 premature deaths annually, and approximate 300,000 premature deaths attributed to urban outdoor air pollution in the country. (Zhang and Smith, 2007)

Additionally, the Chinese Ministry of Environmental Protection reported that the cost of environmental degradation in China was about \$230 billion in 2010, or 3.5 percent of the gross domestic product, and three times the amount in 2004 in local currency terms. But it was unclear to what extent those numbers took into account the costs of health care and premature deaths because of pollution.

Given air pollution has become one of the top environmental concerns in China, the 11th Five-Year Plan set targets to reduce the national energy consumption per unit GDP output and SO₂ emissions of 20% and 10%, respectively, measured in 2010 against 2005 levels. And considering the construction of the Three Gorges Project had reduced the coal's consumption over 30 million tons as well as SO₂ 0.5 million tons, China has believed firmly in the environmental benefits for energy conservation and emission reduction brought by hydropower.

Focusing events. An event, which was named “airpocalypse” in international media, led the general public and Chinese media to discuss air pollution with unprecedented intensity. (Schwade and Hassler, 2015) The air pollution had been getting headline treatment on local news bulletins and in the domestic media in the last few years. The year indicating the peak of air pollution was 2010, when a report showed that air pollution contributed to 1.2 million deaths in China. And a research done by Fu and Dan (2014) also released that the the annually mean haze days had reached 34.09 days, which was unprecedented over central and eastern China during 1960-2010. Perhaps, the most appalling facts, though, concerned how air pollution was affecting

children. Greenpeace found that in 2011 coal plants killed 9,900 people in Beijing, Tianjin and Hebei, including 40 babies in the capital. This shocking news made a stir in China. Increasing attention on the environmental costs of fossil fuels had contributed to broad public discussion in China about alternative energy sources, including hydropower.

Policy feedback. The deterioration of air quality has prompted China's central government to issue unusually ambitious measures to deal with air pollution more effectively. Beijing has been taking emergency action: shutting down some building sites and polluting factories temporarily, and taking almost a third of official cars off the road. It's also vowing to cut air pollution by 15 percent over the next three years. But the surrounding provinces are actually stepping up coal consumption, dooming such pledges, according to Greenpeace's Zhou Rong.

Obviously, Beijing city does the mitigation work alone and simply cutting the number of cars and factories will never bring better air quality back to China. As it was argued by several researchers that the limit line policy in Beijing was not as efficient as the government suggested, and it is not feasible in every city struggling with air pollution. (Cao et al., 2014)

2.2 Policy Stream

Technical feasibility. Having constructed almost half of the world's 45,000 large dams within China's borders, Chinese dam builders have accumulated a vast knowledge base (McDonald et al., 2008). However, when it comes to the technical feasibility of dam construction, there are a few factors need to be considered: dam safety, management of dam planning, construction, and implementation, and the policy and regulation to mitigate the social and environmental impact. Li's (2008) study of the dam safety and risk management in China showed that the dam safety

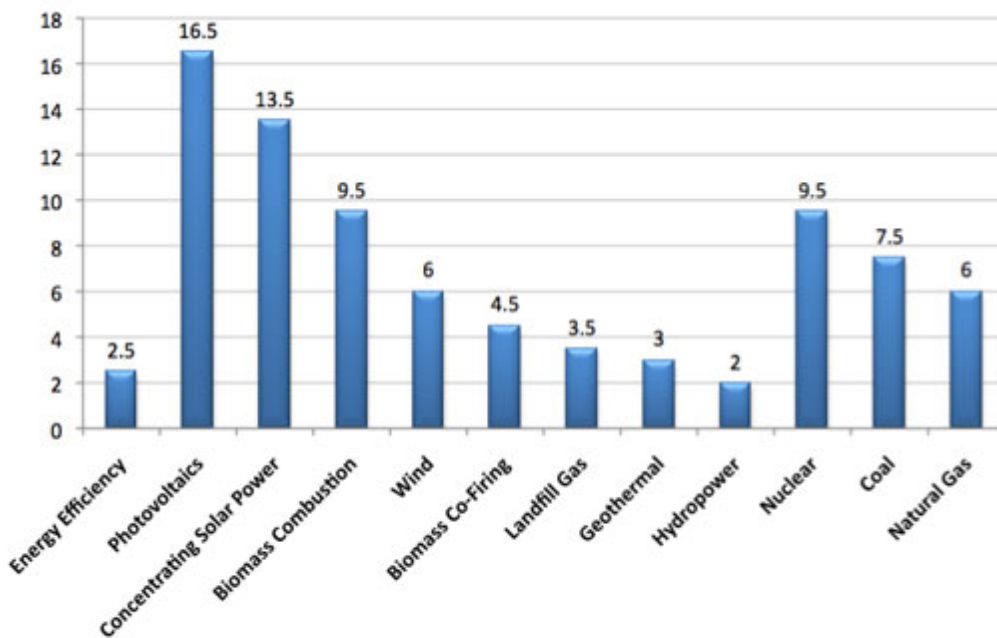
assurance system is being continuously strengthened and the dam safety management level has been substantially raised.

Among the three factors, the policy and regulation should be the fundamental factor and was being discussed the most in the last decades. It is demonstrated that effective policies and regulations were being made to alleviate some of the regional environmental problems as part of the ongoing challenge of achieving sustainable development in the Three Gorges reservoir area. The Chinese government invested abundantly to protect the environment in line with the development of the regional economy in the reservoir area. Along with the dam construction, regional infrastructure had been improved and the economic development of the 20 counties in the reservoir area indicated by GDP increased by 259% from 1996 to 2007.

Cost. China once was struggling to build big dam projects before 1970s. Today, dams are a huge business that attract both government and private investment money. The cost of dam construction is no longer a headache for China due to its increasingly stronger economic power. In the past 30 years, China's economy has maintained relatively rapid development speed with the annual growth rate of more than 9%, and now has grown to become the second largest economy in the world. In addition, the 12th Five-Year Plan specified that "the investment of hydropower will be 130 million and the total installed capacity will reach 300 million kW by 2020." (Zhao et al., 2012, p1) Additionally, compared to other clean energy projects, the five major power groups in China prefer to make hydropower development a priority due to the ready access to high quality resources and low cost at the same time. Furthermore, according to a recent study from Navigating Consulting and the American Council on Renewable Energy (ACORE), hydropower offers lower levelized cost of electricity compared to fossil fuel and other

renewable energy sources, and costs even less than energy efficiency options. (National Hydropower Association) The levelized cost of electricity (LCOE) is a measure of a power source which attempts to compare different methods of electricity generation on a comparable basis. It is an economic assessment of the average total cost to build and operate a power-generating asset over its lifetime divided by the total energy output of the asset over the lifetime. The LCOE can also be regarded as the minimum cost at which electricity must be sold in order to break-even over the lifetime of the project. As it is shown in Figure 3 that the LCOE reflects the relatively low cost of hydro in terms of maintenance, operations and fuel costs when compared with other electricity sources and across a full project lifetime.

Figure 3: Levelized Cost of Electricity for Various Power and Energy Efficiency Option, ¢ /KWH



Assumes Federal & state incentives. CSP assumes trough technology. Natural gas price of \$4.57/MMBTU. Source: Navigant Consulting, Inc. 2010

Value acceptability. Hydropower, in fact, is the centerpiece of one of China's most praised green initiatives, a plan to rapidly expand renewable energy by 2020. Many experts and officials believe that optimizing the energy structure is the foundation of solving the air pollution issues. The belief along with people's concern about the air pollution has made the proposal of development renewable energy including hydropower more acceptable.

It is proved that hydropower is considered to be cleaner than electricity generated by burning fossil fuels. (Wang, 2013) It has almost zero CO₂ emission. Data showed that the Three Gorges Dams generated the equivalent amount of electricity as burning 50 million tons of coal annually, which reduced greenhouse gas emission by 10,000 tons of carbon dioxide, 1.2-2 million tons of sulfur dioxide, and 10 tons of carbon monoxide as well as eliminating the release of large quantities of particulate matter (Wang et al., 2013, p43) Besides, the 13-dam cascade comprising the NRP is one of the biggest hydropower development projects yet conceived in China, and once completed, will generate 1.2 times more electricity than TGD, but would require the resettlement of only 50,000 residents, which is 5% of TGD's resettled population (Brown et al.,2010) On that account, hydropower development in Nu River cascades might be a more desirable and acceptable solution to reduce air pollution.

2.3 Politics Stream

National mood. Dam for hydropower are constructed in China as an important development approach. From a national point of view, China has favored hydropower development for a long history, which can be seen in the Chinese national development policies. The first is the "Great

Western Opening” policy, which is intended to develop western China’s remote, rural, and generally poor and marginalized regions by building large scale infrastructural development to narrow the sizable economic gap between China’s western and eastern provinces. The second national policy is the “Send Western Electricity East policy,” which is designed to harness western China’s rivers to develop hydropower in order to meet the high demand for power in eastern China’s large cities. (Tilt et al 2009) With the continued economic growth and striking growth in energy use, the traditional energy won’t fulfill the requirements of the rapid growth of the national economy and the sustainable development goals as well, for this reason, the hydropower which has the high net asset growth rate will become exceedingly crucial for China’s development.

Moreover, it has been understood that building dams will generate opportunities for economic and social development at both local and national levels. At the national level, hydropower dams can generate cheaper and cleaner electricity than that produced by burning fossil fuel. Cheap electricity could reduce the costs of many industries and benefit the economy in general, and the profit from electricity could increase local government revenues and stimulate local economy. (Wang et al., 2013, p17) At the local level, first, hydropower dam construction will provide employment opportunities for local people and stimulate local economies because the construction of dam will convene a large number of workers; second, the prerequisite of dam construction is the construction of infrastructure such as roads and bridges. The building of the infrastructure will allow the local communities to access other regions, and sell their products in distant markets.

Over a long history, state-controlled media had been the only information source for important events available for the public in China, and it reported only the positive sides of the

policies and governance of Chinese government. However, after the active public participation in the decision making of NRP at the early stages, an accountability regime change has happened in social media, which enhanced transparency and openness in governance. As a result, compensation policy tends to be determined by the interaction among government, private sectors, and civil society, which to some extent might ease the anti-dam coalition's resistance to dam construction.

Interest group activity. It was once approved at the early stages that the slow pace of development for hydropower is mainly due to the extreme reactions of environmental protection agencies, however, the voice has been barely heard from the ENGOs since the second halt on NRP. At the later stage, the activities from the opponents were not as dominant or influential as they were at the early stages of NRP. Similarly, the ENGOs might have turned their attention to other initiatives in China rather than the NRP. During my search for activities taken on by ENGOs and international entities surrounding NRP, nearly all the activities discussed by the literature took place during the early stages of NRP. Even though various search engines and journals were used to conduct the searching, literally no information was found on anti-dam campaign during the later stages of NRP.

On the contrary, the pro-dam groups were vigorously promoting the approval of NRP at the later stages. Since 2010, China Power Investment Corporation has had considerable presence in southwest China, especially in hydroelectric development. An insider from the China Power Investment Corporation reported that their focus has been the middle and upper reaches of the Yellow River. But China Power Investment Corporation has the smallest share out of the five major state-owned power production groups; they are looking to expand. Organizations and

experts formerly involved in hydropower projects have met in Yunnan Province to discuss the current hydropower situation and hope that the government will officially announce the resumption of projects. On December 20th, China Power Investment Corporation General Party Manager Lu Qizhou met in Kunming with Yunnan Provincial Party Committee Member and Vice Governor Luo Zhengfu and Kunming Municipal Committee Secretary Qiu He about further cooperation in hydroelectric development. (Xie & Chen 2011)

Policy Entrepreneurship. Interestingly, during the later stages of the policy making process of NRP, the once powerful anti-dam policy entrepreneurs seemed to disappear from the scene, and nearly no information on objecting NRP was published in the social media. The only activity by the anti-dam was the joint petition signed by a researcher at the Beijing Research Institute of Uranium Geology Sun Wenpeng and other 3 geologist at the end of February of 2011, the petition was addressed to the State Council voicing their latest opinions regarding the Nu River development project: “Due to the Nu River’s unique and complex geology, the region’s geologically high-risk nature and other such considerations, building a dam on the Nu River would be exceptionally risky.” However, no attention of the general public or social media was brought to the petition. The anti-dam coalition had lost their power in influencing policy making. As one of the sayings trotted out when people try to explain Chinese politics is, “The mountains are high, and the emperor is far away.”, which describe the limits on the power of the central government and the ability of local authorities to do much as they wish. (TIME 2013). By the end of 2012, the Tibet Daily reported that hydropower companies were secretly working towards damming the Nu River and had garnered support from the local governments. (Liu 2014, p245) In comparison, the dam proponents were actively pushing the NRP in various ways. For instance,

China Electricity Council vice chairman Wei Zhaofeng suggested that the development of hydropower has become a priority, and that large and medium-sized hydropower projects will be granted approval. (Economic Observer, 2011) Also, Chinese Society of Hydroelectric Engineering deputy secretary-general Zhang Boting said that the hydropower programs set out in 11th Five-year Plan have been completed, but that the rest will be resumed during the 12th Five-year Plan.

In early 2011, top officials again decided to move forward with the NRP in a scaled-down form. Shi Lishan, the deputy director of the Energy Department, was quoted in *The China Daily* newspaper as saying, “I think it’s certain that the country will develop the Nujiang River” (*China Daily* 2011). On January 23, 2013, the State Council announced that Songta Dam, located in the upper reaches of the watershed in the Tibet Autonomous Region, would officially begin construction during the Twelfth Five-Year Plan period (2011–2015). A pre-feasibility study was approved in late 2014, moving the Songta Dam one step closer to beginning construction. Four more dams—Maji, Yabiluo, Liuku, and Saige—are also undergoing feasibility studies and will likely move forward as part of the scaled-down version of the Nu River Project (International Rivers 2013).

Discussion

In this section, a comparison of the policy making process of NRP between its early and later stages will be discussed based on the five structural elements of MSA: problems, policies, politics, policy windows, and policy entrepreneurs. A table summarizing and evaluating each element of the three streams in the two time periods of policy making of NRP is provided below. However, instead of simply summarizing the description of each element, I evaluate and explore

the differences in the policy making process at the early and later stages of NRP by explaining why the NRP was favored at the later stages but suppressed at the early stage. The red highlighted column indicated that the elements identified at the early stages were against the NRP, while the green highlighted column suggested that the elements analyzed at the later stages were in favor of the NRP.

Table 4: Comparison of Problem, Policy, and Political Streams

Streams	Element of Streams	Early Stages (2003-2009)		Later Stages (2009-2013)	
		Summary	Evaluation	Summary	Evaluation
Problem Stream	indicators	Negative ecological impact of dam construction	This concern from anti-dam coalitions directed policy-makers and the public to oppose the NRP	Air pollution by non-renewable energy	Turned public attention to develop hydropower in order to reduce air pollution
	Focusing events	Opposing dams meeting, the open letter, Wenchuan earthquake	Anti-dam coalition dominated the events against the NRP	Health issues caused by air pollution in 2010 and 2011	Urge the policy-makers to solve the problem and the hydropower development became favored
	Policy feedback	Resettlement issues, corruption	The pro-dam coalition such as the local government were in trouble due to the corruption issue	Policy on reducing pollution didn't work	A more feasible solution was needed, hydropower development was one of the potential solutions
Policy Stream	Technical feasibility	EIA and SIA were incomplete	The anti-dam coalition doubted the government's ability of reducing the environmental and social impacts of dams	Technique of dam construction has been improved	The NRP was more acceptable
	Cost	Over budget of dam projects in China	The anti-dam coalition concerned about the financial feasibility of the NRP	Hydropower is high quality resource with low cost	Hydropower became the top priority of energy development
	Value acceptability	Ambitious goal of developing rural areas	Unacceptable to policy-makers or villagers affected	Use of hydropower to reduces air pollution	It was proved to be a more helpful plan in reducing air pollution than the existing policies
Politics Stream	National mood	Favor ecological protection	Most people, especially anti-dam coalition preferred protecting ecology over hydropower development	The entire nation desires economic development characterized energy efficiency	The NRP can fulfill the requirement of renewable energy target
	Interest group activity	Anti-dam campaign, petition, meeting, social media appeals	The campaigns and activities were influential	Proponents actively promote the project	The pro-dam voices were dominant
	Policy entrepreneurship	National leaders were less enamored of the large dam projects	The NRP lacked support from influential decision makers	Anti-dam coalition lost power, pro-dam coalition were active	The pro-dam coalition was in charge.

Problem Stream

The problem stream consists of various conditions that policymakers and citizens want to deal with. For instance, the conditions of dam construction include the negative social, economic, environmental, and cultural impacts. However, as Kingdon asserts, not all conditions become problems. In fact, whether a condition becomes a problem depends on the interpretation/views held by politicians, the media, policy analysts, and key interest groups. At the early stage of NRP, policymakers and citizen attention was directed to the negative ecological impact of dam construction and the potential adverse social consequences of resettlement issue, as described by the social media and ENGOS. At the later stages of NRP, concerns over air pollution caused by high consumption of non-renewable energy catapulted into prominence. As such, the project was assumed to be problematic at the early stages. Later on, in a reversal of fortunes, the project was believed necessary to address air pollution problems. Also, resettlement challenges and strong indications of corruption at the early stages had shaken the public's belief in the benefits brought by dam construction and raised question about whether the contractors and government could be trusted. In contrast, at the later stages, the failure of previous efforts to address air pollution problems called for new solutions, which gave the green light to hydropower projects, including NRP.

Policy Stream

Once a problem is identified, the search for a solution may begin. At the early stages of NRP, the solutions provided were neither mature nor effective enough to convince the public to accept the dam construction in the Nu River Valley. The many flaws inherent in EIA and SIA were not adequately addressed. Moreover, the lofty goals for eradicating poverty in the western

China were too ambitious to be achieved. This weakened the public's trust in the dam planners. Under pressure from the anti-dam coalition, a halt on the NRP became inevitable. However, at the later stages of NRP, high consumption of non-renewable sources of energy (and its attendant environmental problems) posed a threat to sustainable development in China. To boost the economy and the development of the society as a whole, building hydropower dams became a top priority.

According to Kingdon, policymakers often do not have the luxury of taking their time to make a decision. Time constraints, in turn, limit the range and number of alternatives to which attention is given as a sense of urgency comes to dominate/monopolize discussions. (Sabatier, 2014) Accordingly, NRP became acceptable to policymakers, rising to the top of the policy agenda as an urgent solution to both the shortage of energy and growing concerns over the impacts of air pollution on public health and the environment.

Politics Stream

At the early stages, the Chinese top-down political decision-making process was broken by the public participation advocated by ENGOs, experts, scholars and journalists. A dominant belief in protecting the public and the environment from the fallout of dam construction represented the national mood. At this stage, policymakers had no choice but to suspend the controversial NRP. At the later stages, the organized and impelling anti-dam coalitions formed during the first stages of NRP might have lost their power and turned their attention away from the NRP. The anti-dam campaign quietly disappeared from the social media as pro-dam coalitions supported by powerful and politically connected interests, gained the upper hand. Consequently, the project was eventually approved at the later stages.

Policy Window and Policy Entrepreneurs

When the three streams (problems, policies, and politics) combine, coupling occurs and a window of opportunity opens for advocates to bring their issue to the fore. (Kingdon, 1995). A policy window of opportunity opened at the later stages of NRP when the 12th five-year plan announced by Chinese Communist Party emphasized the need for energy efficiency, emissions reduction and renewable energy development. At the time, the three streams were moving in the same direction of favoring the NRP: (a) compelling problems were framed (energy shortage and air pollution), (b) a proposed solutions of developing hydropower to solve the air pollution problems became both desirable and acceptable, and (c) organized policy entrepreneurs were willing to spend energy and time to bring the problems and solutions to people's attention and to insert the project onto the government's agenda as an urgent solution. During the early stages of NRP, when the problems diagnosed and the solutions proposed stood in opposition to the NRP, the efforts by pro-dam coalitions generated a great deal of public participation. As a result, and the primary policy entrepreneurs, including ENGOs, experts and scholars, took great efforts and applied strategies to prevent the policy window from being opened by keeping the three streams going parallel without merging.

Conclusion

This study suggests that the MSA provides a good framework for describing the complex and often unpredictable forces within the policy process that have led to the suspension and subsequent approval of NRP. As stated earlier, the suspension of NRP at the early stages did not mean decision-makers dismissed the project's benefits. Similarly, the subsequent approval of the

project did not mean the project was free of flaws. The proposal, as we have seen, always involved ambiguity. While the “final” decisions (which as it turned out, were not always final) could not avoid a “yes” or “no” response, the decision-making process itself always entailed a careful assessment of benefits and costs to the society.

The decision-making process in this case study is not uncommon. Sometimes the costs catch the policy makers’ eyes more and sometimes the benefits do. While decisions may seem final, the decision-making process usually remains fluid. Whether the costs or benefits can gain more attention, and whether a proposal becomes part of the policy agenda depends on how policymakers and the public interpret a myriad of complex issues that are shaped, for example, by changing perceptions of solutions that may or may not be acceptable and whether interest groups choose to work together to seize the opportunity to push the policy through when a policy window opens.

The implication of this study is threefold. First, the findings implied that public participation was not the leading factor that drove the suspensions of the NRP. In a country like China, the public on its own cannot exert a great deal of influence on the decision-making process. Instead, a policy decision results from negotiations among the public, interest groups and policymakers. In addition, when MSA was used to analyze the policy process of the NRP, the results showed that the suspension or approval of a policy not only depend on who were involved and what roles they played in the process, but also rely on the social and political conditions when a policy was planned, proposed, and discussed. Second, the study also shows that public participation is driving a new trend in policy-making in China that has yet to reach the point in which public participants have either the power to fundamentally influence policy decisions or the technical capabilities to engage effectively in policy discussions. This can be

explained by the waning influence of anti-dam coalitions at the later stages of NRP compared to the coalitions' strength at the early stages. To this extent, this research has implications for improving China's public policy making process by strengthening public participation and enhancing accountability among governmental agencies. Third, although this paper does not take sides in supporting or objecting to NRP, it does imply how policy entrepreneurs can adapt their goals and strategies to influence decision making. For example, proponents of policy change need to understand their policy/political environment and be alert for any changes that will advance or impede the policy they proposed.

The possible limitations of this study include: (1) The paper intended to analyze the policy process and policy change of the NRP. Yet as a case study, it may not be possible to generalize the findings to other hydropower projects or the policy making process in general in China or other countries. Especially, this project to some extent lacked a comprehensive understanding of the viewpoint of the anti-dam and pro-dam coalitions, let alone China's political structure, which might vary over time and differ from that in other countries. (2) There are other underlying factors that could not be captured by Kingdon's theory, most notably ideology, class structure, and the leaning processes. (3) Data related to the later stages is limited, since the NRP was approved just 3 years ago. In addition, literature on the policy making process at the later stages was finite and may not fully reflect what happened just prior to the project's approval. (4) The emphasis of the MS framework on the description of policy-making process over prediction, and its application is prone to problems of *ex post facto* analysis, which can lead to a skewing of data to fit the framework. Therefore, subjectivity is undeniably inherent in the operationalization, measurement and interpretation of the variables.

As a result of this study's limitations I would recommend the following additional research. First, the lack of several potentially insightful perspectives in the framework calls for the employment of more than one analytical model. A study focusing on theories or frameworks other than MSA would provide a more comprehensive understanding of the factors resulting in the policy change of NRP. Second, policy change depends on social learning by government, business and the wider society. In understanding policy change, we need, among other things, to focus on elite opinion and factors that encourage shifts in belief systems over time. Third, if possible, surveys and interviews should be conducted to a better understand why the anti-dam coalitions, including ENGOs, retreated from the debate on the NRP at the later stages.

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Appendix A: Code Book

Themes	Sub-themes	Definition
Environmental/ecological impact	Negative impact on ecology	Biodiversity, fish, earthquake, including upstream and upstream
	Positive impact on air quality	Reduce CO ₂ emission
Social impact	Resettlement issue	Living standard, job opportunity, land
	Loss of traditional culture	When resettled, it is hard for the local people to keep their tradition in a new community
	Community articulation	When resettled in a new community, conflict often occur between the new comers and the local residents
	Poverty eradication	Dam construction bring advanced infrastructure, job opportunities to local residents
	Economic development	Hydropower provide energy to promote urbanization and social structural change
Political context	Corruption	Dam planners and local governments embezzle public fund for dam construction and resettlement
	Flawed policy	EIA and SIA still need to be improved
	Improved compensation policy	The compensation policies were somehow improved recent years
Public participation	Participants	NGOs, media, local community, international participants like Thailand
	Activities	Making videos, publish papers, anti-dam meetings or campaigns like demonstration, petition
Economic feature	Over budget	23 out of 145 dams built at both Lancang and Yangtze River is far higher than their planned cost, the rest of dams only have either the actual cost or the planned cost.
	High quality resource with low cost	Hydropower offers lower levelized cost of electricity compared to fossil fuel and other renewable energy sources