

“Environment and Development in China: from a public policy perspective”
-- Course design and teaching experience to introduce Chinese
environmental policy to the world

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(Draft)

Abstract:

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As a nation having the largest population in the world, China experienced a dramatic economic development during the past two decades. However, China has been haunted by the pressure of a large and ever-growing population, degrading environment, depleting natural resources, and the shortage in energy supply for now. To react to international pressure, China could neither duplicate the historical development pattern of developed countries that exchanged environment quality for economic development, nor could it give up economic growth in exchange for environment quality. Balancing economic development and environmental protection is a critical task to achieving sustainable development, and has always been a challenge to Chinese government in recent history.

To introduce China's concurrent effort to the world, thus, would contribute to the global community in three ways. First of all, as the country hold the world largest population, China's rapid economic growth left important issues in environment. China bypassed US to be the world largest carbon dioxide emitter in 2008 serves as one evidence that the China's environment issue is not solely national anymore, but rather international. Secondly, recording and analyzing China's experience would contribute both theoretically and practically. China is a large developing country tries to maintain economic growth rate while fulfilling environmental protection task, which would contribute the world with practices in development options that differ from existing ones. Both its success and failure experience would enrich the world with lessons on how to achieve the "economic-environment" balance. Therefore, thirdly, China and Chinese reform on environmental governance become living teaching material to students in the

areas of public administration, business administration, environmental engineering, or others.

The course: “Environment and Development in China: from a public policy perspective” started in 2006 when Syracuse University Education Abroad Program was launched in Beijing. Specially designed for this program, this course has basic requirements for its implementation. Firstly, it is designed to be a seminar with 10 to 15 students in each session. The small size of the seminar will guarantee student discussion and active participation. Secondly, this course should reflect concurrent changes and situation in China, especially on environment. Theories only serve as basic framework for students to build basic analysis and can not serve as the major topics of the course. Rather, this course should provide students with most updated information and field trips so that students learn from observing realities, not theories; Thirdly, this course should also be built as a platform for students coming abroad to connect with Tsinghua students.

Therefore, the course is partially open to Tsinghua university students as far as the size of the class is controlled.

Besides these basic requirements, we are still flexible to decide the topic, structure, and teaching methods for the course. To make the course more relevant and clearly targeted, we started to make students survey starting from spring 2008. For the past three semesters, 38 students attended the course and provided information about themselves and their expectations of the course. Course syllabus has been changed accordingly.

Following session illustrate the survey information and set the goal of the course.

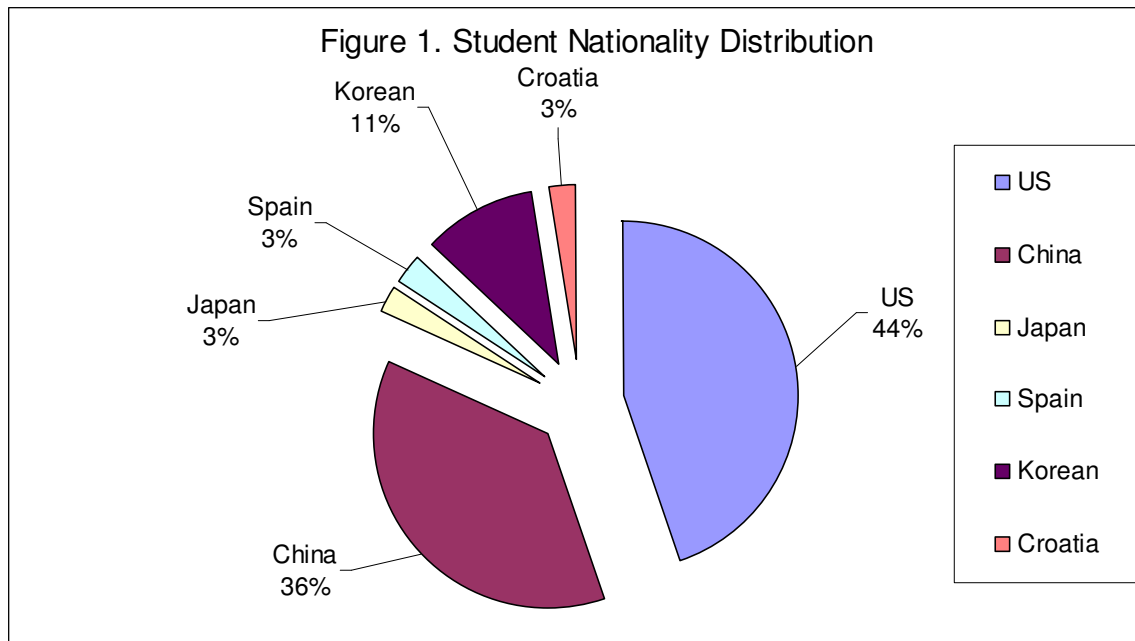
1. Goal Setting of the class

To make the goal of the course accurate for better marketing, the course has been doing student survey since spring 2008 both to students from Syracuse University Education Abroad Program and to Tsinghua University students. Here shows descriptive statistics of 38 students in three semesters.

1) Descriptive statistics of students

- Background information (nationality, degree, major, age)

Students joining the education abroad program come from different nationalities, with 17 out of 38 students are US citizens, and 14 of them come from China, this course also represents students from Korean, Spain, and Japan (*Figure 1*). Diversity in students' nationality provides the opportunity for the course to make international comparison on the one hand; the equally distributed students from China and U.S. makes it possible for the course to focus on comparison between these two countries.



- Academic Background

Most of students from abroad are majoring in social science, such as International Relationships (Figure 2, 3) from foreign students, while majority of students from Tsinghua University are engineering background, majoring in computer science, automation or electronic engineering. Only few Tsinghua students come from School of Art and Science in Tsinghua University, such as Department of Marketing or Department of Philosophy.

Majority of students, however, are from school of art and science and have a social science background. This is important while designing the course content and theory background for the students where more social context are mentioned and policy analysis literatures are included. For other students with diverse academic background, this course would be better serve as an introductory course rather than a course specially focused on some of environment issues in China. Trying to cover different policies and topics in the course would build a base for these students for further study and discussion.

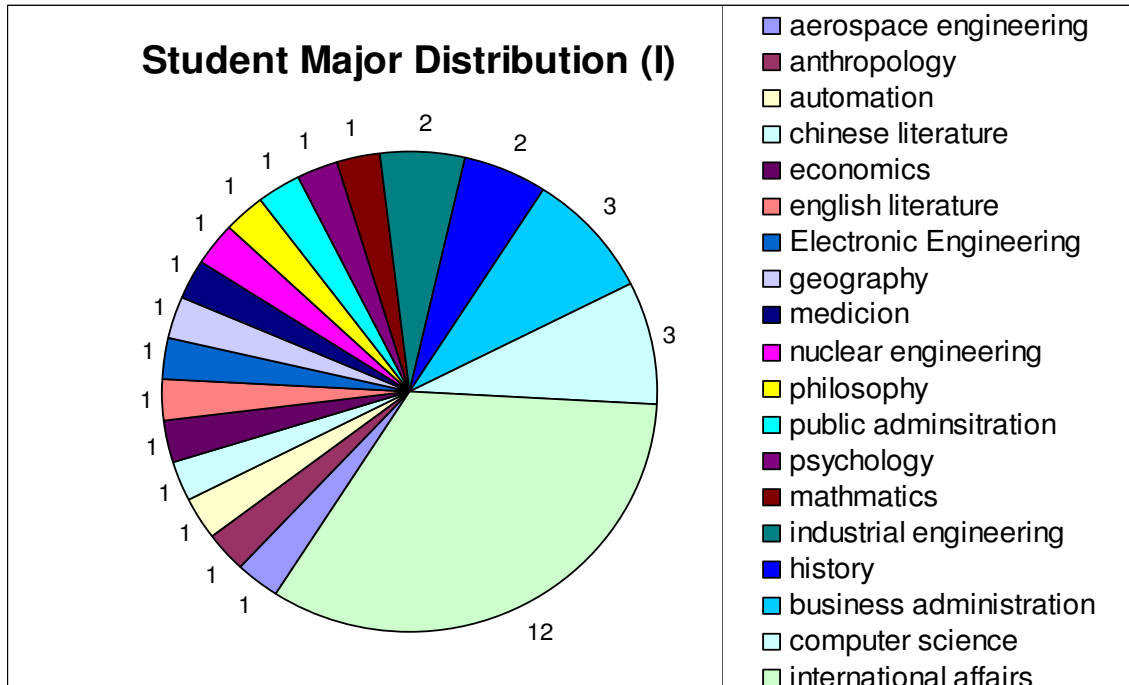


Figure 2. Students' major distribution according to academic field

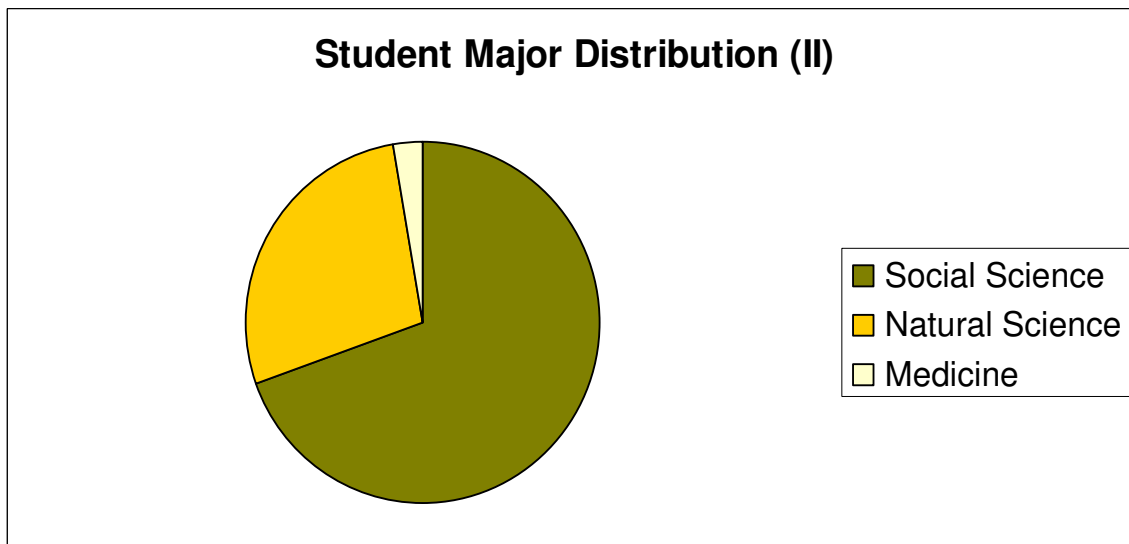


Figure 3 Students' major distribution according to social/natural science

- Motivation for selecting this course

According to our student survey for the past three semesters, students who have taken this course shared interests focusing on three issues: 1) What is the basic economic development situation as well as environmental situation in China; 2) What are the concurrent environmental policies China adopting and how are they implemented; 3) How does Chinese environmental issue connect to global environmental issues. Table 2 illustrates major students' interest towards the class.

Table 2. Most interested questions selecting the course

	Typical Questions Students Were Interested in
China's environmental situation & economic development	<ul style="list-style-type: none"> ■ Current environmental situation in China ■ Relationship between investment/development and environment in China ■ Renewable energy development in the western provinces in China ■ Environmental ethics
Chinese Policy and Implementation	<ul style="list-style-type: none"> ■ What are the environmental policies in China? ■ How important environmental concerns are to the government? And how does Chinese government take sustainable development into policy consideration? ■ How do Chinese government implement these policies ■ What have been done in china to save the environment ■ How would China switch from western way of development into a more sustainable way
Connecting to Global environmental issues	<ul style="list-style-type: none"> ■ How would Chinese environment affect environment in other countries ■ What role would china play in response to global warming ■ Interested in international comparison on environmental policy ■ Technology transfer between China and other countries ■ What China would contribute to global warming? ■ How could China solve the dust storm problem that has influenced other countries such as South Korea?
International Communication	<ul style="list-style-type: none"> ■ What are local people's perspective towards environmental protection* in other countries ■ Why do people (esp. students in Beijing) do not see

	environment as a huge problem? ■ Improve English skills*
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Source: re-organized according to students surveys

*: This is a very important reason for students from Tsinghua University to take this course.

It is clear that students' interest developed on three topics along the line of policy development. Firstly, they are interested in basic facts about China, including even the basic information about China, such as its geographic features, its natural resources and its population and ethnic groups. More interests are put over concurrent economic situation and environmental situation. Students have been raising questions such as: "I know China is experiencing a rapid economic growth, how is this connected to its environment?" or "I noticed the air pollution and water pollution in Beijing, I was wondering what is the environmental situation in China". Students got information about China from sources such as media, internet or news or opinions from others which may generate stereotypes. The first goal for this course, therefore, is set to provide basic information and facts about real China, including its economic development and environment situation.

Secondly, students are interested in governmental policy, implementation and enforcement. Shown little knowledge in this area, they are particularly interested in questions such as "How important environmental concerns are to the government?", "How does Chinese government take sustainable development into policy consideration?", "How do Chinese government implement these policies", and "What have been done in China to save the environment?" These interests indicate two parts of the syllabus design. One is the policy making and implementation process in China, the other concerns with introduction of detailed environmental policy.

Finally, students would like to know how Chinese environmental issues are connected with international environmental protection and policy making. They are more concern of how Chinese emission in carbon dioxide would influence the global warming, or how the dust storm in china would influence other areas such as South Korea. As a response to this concern, the syllabus is designed to cover knowledge about global environmental protection juggles. Concepts such as sustainable development, global warming, low-carbon development are designed as important part of this global connection.

- Knowledge about environmental issues in China

Although this course does not expect students have any background about Chinese environmental and related policies, it is still important to know students' baseline in order to design the context. Therefore, our survey collects information about students' pre-course knowledge by letting them ranking three most important environment issues in China according to their knowledge. Table 2 shows the results.

From their personal experience, students all regard environmental issue as very important; and they realize that China, as a country having rapid economic development is facing many environmental challenges either from newspaper reports, or from paper reading, or from their personal feeling after they arrived in China. Issues students raise include many concurrent environmental challenges China is facing, with water pollution and dam building ranks the first, followed by carbon emission or global warming, air pollution, energy shortage. However, students from different countries have different understandings about content as well as ranking of Chinese environment issues.

Table 2. Students' knowledge about Chinese Environment Issues: a Pre-test*

(figures in shows answers from Chinese students)

	Coal Burning/ CO ₂ emission	Air Pollution	Water Pollution	Energy Usage and Shortage	Environmental NGOs	Sand Storm
2008 Spring	4	2	5	2	0	1
2008 Fall	4	7	7	2	1	1
2009 Spring	5	1	6	5	1	1
Total	13(2)	10(4)	18(8)	9(3)	2(0)	4(1)

* Results come from the answers to the questions of “please name three Chinese environmental issues and rank them in the order of their urgency to the world”.

Though the data might be limited by its sampling scope and does not have high degree of external validity, it shows that US students concerns more about carbon dioxide emission while this gains relatively low attention among Chinese students at the beginning of the class. At the same time, students from both countries share similar degree of awareness to water pollution and air pollution but from different aspects: foreign students are more concerned about drinking water safety, while Chinese students are concerned about flooding control, industry waster water treatment and water shortage.

Conclusively, students who take this course would likely to have following characteristics: they have interests in China but not necessarily have enough information about China or environmental issues in China, especially environmental governance; they have personal experience of environmental issues to some degree; and they want to know more and details about all aspects of Chinese environmental challenges.

2) Goal setting and adjustment of the course

Given information above, the goals of the course are threefold: Firstly, introduce **basic knowledge about China**, especially basic political and administrative framework setting of the country, which will form the baseline for students to understand all environmental issues in the country; Secondly, to cover **Chinese environmental challenges and concurrent actions** through a comprehensive framework through pubic policy analytical angel. Therefore, students could both get a general view of major environmental issues in China and learn an analytical framework about policy for which they build their own analysis; Lastly, to connect China’s environmental practice with the world’s experience.

2. Syllabus design and modification

Syllabus has been modified in each semester to reflect goal setting for the course in three aspects: topic design, exercise and project design, and field trip design.

1) Lecture topics:

- Session I: Knowledge about China and Policy Analysis

Starting from introducing the government structure and policy making process in China, this course covers basic knowledge about Chinese environmental policy through four lectures serving the underlying purpose of introducing basic policy analysis framework to understand Chinese environmental issues. This framework is not introduced through special lecture, but is rather embedded through introductions to China's administration system in the first few lectures and through specific policy analysis in later sessions.

Therefore, the first session focuses on four topics: the governance structure of the country with particular emphasis on the relationship between central government and local government; the leader nomination process and performance measurement system; tax transformation among different government; law making process and implementation as well as the role of non-government organizations in the system. These topics include aspects students need to consider when they understand an environmental policy, and therefore, serve as the background and basic knowledge for students to understand detailed environmental policies introduced in the following session and to start doing their own analysis on different environment problems.

Reading materials not only include classical readings such as: Governance and Politics of China by T. Saich (2004), and OECD (2005) report on Governance in China, but also include newly draft research papers such as Environmental Governance in China done in 2009.

- Session II: Knowledge about the most updated environment topics in China

Detailed information is elaborated in five topics in the second session: air pollution management, water management, solid waste management, arable land management and urbanization. Environmental policy and environmental issues could not be fully understood without a detailed understanding of the economic and social context.

Although the first session has clearly illustrated the administrative and judicial structure of the country, we still use a overview-to-special-topics method to introduce detailed topics in environment issues.

For example, when the class discusses energy policy, we put half of the lecture time introducing resource restriction and institutional barriers of energy management. Topics cover energy structure in China, and the cost of heavily-coal-relied development, such as carbon dioxide emission caused by coal burning, threats to national security due to the shortage of alternative energy resource, and energy efficiency management; The other half of the class is assigned to a discussion on what have been Chinese governments, both central and local governments, tried to boost renewable energy industry that provides clean energy as well as economic development point. Trial projects and newly built manufactories are introduced in many middle-size localities to inform students about concurrent situation of this industry. At the same time, discussion questions have been

raised of whether governments put too much emphasis on this industry. Questions covered include: is renewable energy an ideal industry to develop? What are policies the government set to develop the industry?

- Session III: Trends in environmental protection all over the world

It is inevitable to talk about environmental solutions all over the world even on a course focusing only on Chinese environmental issues. Therefore, the final session connects students with hot discussions on sustainable development and low carbon development both as the wrapping up of the course as well as the beginning exploration of students' life-long journey on environment protection. Environment protection and environmental policy should go beyond policy boundary but reflect human being's development philosophy.

2) Exercise and Project Design

The major purposes for exercise and project design in this course are two-folds. First of all, the purpose is to connect students from other countries to real environmental challenges in China; On top of it, the course also tries to compare environmental practices in different countries to make the best usage of nationality diversity of the course. Therefore, two projects are designed.

- Exchange project

Exchange project needs efforts both from Chinese students and students abroad. The purpose of the project is to share environmental governance experience in different

countries. Countries are different due to its geographic feature, its culture, its environmental situation and natural resource, and its social and political system, so does the way they deal with environmental challenges, especially in governance perspectives. The project, therefore, is firstly designed to collect cases from all over the world to illustrate how countries handle similar environmental challenges similarly or differently. One step further, the discussion follows the project would encourage students to think over key factors for these similarities and differences.

Two exchange projects are designed in fall 2008 and spring 2009 semesters successively. The topic for the first semester is “Governance in Environmental Hazard”. Firstly, students are given examples of environmental hazards in different countries, such as “Love Canal”, “Anderson et al. v. W.R. Grace et al: Woburn pollution case”, and “Anderson vs. PG&E: Hinkley town pollution in CA” in the U.S. and river poisoning event in He Long River, blue algae in Tai Hu Lake, and PX pollution project in Guangdong in China. Then, each group chooses one case either from the written list or from other resources and write a case report with focusing on how the government handled the hazard. When each group comes back, a group presentation and discussion connects all the cases together for an international comparison of hazard management governance.

Echoing the trend of sustainable development, climate change and new development model, this semester, the suggested topic for students is “Low Carbon Development: new developmental model in the future”. Suggested cases include state of California as a case to study their long time effort in energy saving and renewable energy industry

development, London and Tokyo as first cities among the world to raise low carbon economic and society plans. Table 3 concludes all the cases students studied in this project.

Table 3. Selected cases of the exchange project

Semester	Theme	Cases
Fall, 2008	Governance in Environmental Hazard	<ul style="list-style-type: none"> • Anderson vs. PG&E • Ebro water in Spain • Minamata Disease, Japan • Blue Algae, Tai Lake, China • Kornati Tragetly, • Offshore Drilling, US
Spring, 2009	Low-Carbon City Design and Development	<ul style="list-style-type: none"> • Tokyo, Japan • Kyoto, Japan • California, US • Toronto, CA • London, UK • Rizhao, China • Zhang Jiagang, China

- “Tsinghua goes green” project

This newly designed project is trying to make student’s exploration relevant to their short stay in Beijing. Tsinghua University will celebrate its 100 anniversary in 2011. One of the activities held for this important moment is to build “environmental friendly green campus”. Although the university has been working toward this goal for few years, there are still “un-green” parts on campus. This project is focusing on finding out those un-green parts by foreign students with first-hand data collection.

The whole class is divided into two groups. Each group decides it own topic. One group focusing on environmental impact of smoking on campus and made a short movie out of it; They found that there is culture root for smoking in China, but this has been changing

and more and more students on campus are against smoking in the public area now. The other group traced the river that flows across the campus and study possible pollutions that may clean the river. For both groups, they need to provide first-hand data, such as interviews, survey, or statistics to form the base for discussion and conclusion. A class presentation as well as a paper report is expected.

3) Field trip design

The course designed a list of field trips as substitute of the lecture part (Table 4). Students are required to report their gains and thoughts in fieldtrip report after the visit. Not all the fieldtrips could be arranged in one semester due to time constrain. But at least one fieldtrip will be organized. We are following three roles to make the fieldtrip effective.

First, we use the school connections with local government or NGOs to make “deep” fieldtrip. For example, one of the school alumni works as the director in a county in suburb area of Beijing where an eco-village was built. The class, then, contact this alumni to bring students over there. Since the director went out and introduced the policy forming process as well as the detailed construction design of the village. Students, therefore, got enough chance to answer questions and listen to people who made strategic plan for the villages. After the trip, students reported that they learned a lot from it.

Second, we arrange follow-up discussion for each field trip so that students would not take this only as a scene seeing event. For example, after bringing students to the Beijing Tapped Water Museum, a discussion about Beijing’s water management system had been arranged and students were required to hand in a memo about their leanings and reflections of the visit. Thirdly, which is also very important, we try to make field trips a combination of academic learning and entertainment. For example, after discussion and

visiting the 798 Art Zone as part of the discussion of Brownfield revalidation, we also give students free time to visit the art exhibitions in the area.

Table 4. Selected fieldtrips designed in the class

Field Trip	Content and purpose
Beijing 798 Art Zone	Re-vitalization of brown field
National Olympic Park	Wetland management; Water management
Beijing Taped Water Museum	Taped water management and history in Beijing
Beijing Eco-village site	Eco-village building and sustainable development
Miyun Reservoir	Local government management; water management

4) Term paper design (topics highly relevant to China with comparative feature)

Term paper was designed as a free research paper in which students can make study on any topics related to Chinese environment policy. This format of final project has been used till spring 2009. As the traditional format for term paper at graduate level, this is not very useful to this particular course for the following two reasons. Firstly, students who could not speak Chinese encounter great difficulties finding enough materials. Journal database that they could access to are major in English with valuable research they could refer to but in a limited number and topics. It is hard for them to catch most updated environmental issues in China and then reduce students' enthusiastic about term paper to some degrees. Table 5 lists some of the term paper topics in year 2008, which are not very exciting. Secondly, students are lacking of basic policy analysis knowledge due to their diverse academic background. It is unnecessary to require students finish a policy analysis piece of study. As the proof, by reading students' term paper in 2008, we strongly feel that students are more to collect relevant information than to analyze. This may be solved by introducing more analysis tools to students as normal policy analysis

course. In the meantime, this could also be solved by changing the term project format into another format.

- This semester in spring 2009, we tried the format to a less academic form – asking students to collect their own data to observe in Chinese environment challenge. This project is entitled as “Chinese Environment and Me” Sample topics includes: student’s participation in one of the environment activities on campus; compare about opinion difference between US people and Chinese people; or student may choose to do a traditional term paper analyzing a piece of Chinese environment policy. It turned out that non group select the traditional format of the term paper, but rather creatively choose topics.

Table 5 Selected topics of Term paper

Semester	Selected Topics
Spring, 2008	<ul style="list-style-type: none"> • Cellulosic Ethanol's Potential Role in Chinese Transportation Energy Structure and Climate Policy • Sustainable Management of Arable Land Resource in China • Policies for the Prevention of Arsenic Poisoning in Guizhou Province • Water Resource and History in China
Fall, 2008	<ul style="list-style-type: none"> • Sustainable Development and the Policy-making Process: A Comparative Study between China and the United States • A Comparison of Arsenic Poisoning in Guizhou Province and Bangladesh • Low-Carbon City in a China Scenario in China: Tailoring a Chinese Version from Japan • Sustainable water management in Tarim River basin • Water Pricing System in China • Policy Implementations and Development in Loess Plateau

3. Conclusion

- 1) A good education on environmental issue starts from local situation

This course is the only course in Tsinghua University teaching environmental policy and governance in English. Therefore, the course takes the duty of providing basic education

about Chinese environment both to students abroad and to Chinese students. Besides lectures, the course also introduces sources of environmental data, concurrent database online, updated NGO websites and other information for students to further check. There is an old Chinese saying: “Teach student how to fish is more valuable than giving them fish to eat”. To provide information, basic knowledge and analytical tools would provide students to develop further research interests. We decide to make the syllabus keep following this philosophy.

2) A good education on local environmental issue could not be separated without introducing the global trend and situation

To connect Chinese environmental governance with practice in other countries has been beneficiary experience both to the course and to students. The course has been emphasized that environmental issue is never local, but more of a global one. It is the best way to present this philosophy by illustrating how different countries and different governments deal with similar environmental challenges. Students of different nationality serve as natural delegation from different nations. Similarities as well as differentiations are clearly shown during discussion, which partially shows the trends in global environmental governance as well as special concerns each country may have. For example, many nations regard low-carbon development as future development model of the country that forms a global trend. Under the same concern, however, Tokyo works more on its transportation system management to reduce emission and release traffic jam, California works more on alternative source of energy, while Baoding tries to develop a whole new renewable energy industry with a well-designed city to balance the industry emission and city development.

Noticing this global similarity and differences help students both enlarging the knowledge pool to find reference for local solution and focusing on local situation for a realistic solution rather than idealistic one.

3) Analytical framework is as important as real world data

Given the fact that students select this course have interests in Chinese environmental situation, this course presents large amount of facts. Statistic data, graphs, cases are used to provide students with as much more information as possible to know the basic situation in environmental governance in the country. However, the underlying theme this course emphasized is not presentation of facts, but rather the way of analyzing Chinese environmental dilemma.

The analytical framework tries to encourage students think of three words: WHAT , WHO, HOW. Firstly, students need to know basic facts of the country, especially in about governance: what are the political as well as administrative restrictions in the country's governance structure for environmental protection? What might be advantages in the governance structure to reach the goal? What are factors different levels of government consider when they make policy? Knowledge about governance WHAT form the base for students to develop their own comprehensive framework of analysis.

Secondly, students are encouraged to think more of WHO are key players in environmental governance along with different players' interests. With central government and local governments being traditional players in the game, private sectors, non-governmental organizations (NGOs), general public and international organizations are all involve into environmental governance in the country or at locality level. What

interests do different players have directly decides their behavior in different stages of policy making. Therefore, player analysis and interests analysis is introduced in detailed policy topics as part of the analytical framework.

Last but not the least, HOW factor in the framework reminds students of multiple possible ways to reach the same goal given the diversification of local situation in China. How would government, especial local governments, implement a law or enforce the commission to a regulation varies from north to south, from east to west based on different levels of economic development, social development, governance philosophy, and even the area of environmental policy. There is no “one-size fit all” environmental policy or governance structure. Understand this may help students to understand the different policy effect in different cities and trigger their interests in exploring details about the real situation.