



Environmental Policy Analysis

PUBPOL 800K

Fall 2017

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Dates / contact hours: 150 minutes for 14 weeks/300 minutes for 7 weeks

Academic Credit: 1 course

Course format:

### Instructor's Information

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Dan Guttman

Dan Guttman is teacher, lawyer and has been a public servant. He served in the Clinton Administration as Occupational Safety and Health Review Commission Commissioner, a Presidential bioethics advisory commission, was special counsel to U.S. senate investigations of US government energy and environmental programs, and has been UNDP advisor on China environmental public interest law. As a private lawyer he has represented citizens, workers, whistleblowers and governments in energy, environmental, labor, anti-corruption and antimonopoly litigation. He is clinical Professor at NYU Shanghai and has taught at Johns Hopkins, Peking, Tsinghua, Nanjing, Fudan and Shanghai Jiao Tong universities. He co-authored *The Shadow Government*, a seminal study of the contracting out of the U.S. government, texts on American law and public interest law, and has shared in journalism awards. He is a member of the Board of Shanghai Roots and Shoots, and a Fellow of the US National Academy of Public Administration.

## Course Description

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As the 21<sup>st</sup> century proceeds, it is said that environmental limits to development will be the primary shaper of countries and their fortunes, and indeed the globe as a whole—with China (and India), with huge population and rapid development, and the U.S., with high per capita consumption, as keys to the future of the planet.

The question is whether environmental challenges will be left to accident and force or addressed by reflection and choice. This course will begin the process of teaching students to be policy analysts. It will introduce the role of policy analysis and policy analysts in bringing to bear reflection and choice.

The course will introduce the concept of policy analysis, and the special challenges posed by environmental policy analysis. These include the importance of translating core terms and concepts between cultures—such as China and the U.S.—so that policy analysts in differing countries can learn from one another’s experiences – “translating between operating systems or OS” --and cooperate in devising policies to address common challenges.

In the context of “translating between OS,” the course will introduce common strategies, tools and kinds of expertise that policy analysts must be familiar with. We will explore the common but differentiated constraints and enablers that policy analysis/analysts in any country face: government structures and traditions, laws and other rule sets, leaders, politics, bureaucracies, and the public. We will explore common challenges faced by environmental policy analysis/analysts—the necessity to make policies where facts and evidence may be limited, uncertain and in dispute, the necessity to provide for crises whose likelihood is near certain but whose nature and time not sure, the necessity to choose among competing social values, and choose among policies where harms and benefits may be differentially spread, and the necessity to ensure that policies are both implemented and have the intended effect(s) of sustaining and improving environmental quality and life.

## Course Goals / Objectives

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In this course, students will

---demonstrate the ability to discuss basic concepts of policy analysis and the work policy analysts do;

---develop an awareness of special challenges and concepts involved where policy analysis is

used to address environmental problems; including dealing with competing and often incommensurable values (e.g., GDP and environment), decision-making under uncertainty, environmental and public health risk and risk analysis, expert bias, and questions of equity and social justice.

--understand the evolving body of frameworks, regulatory approaches, tools and varieties of expertise with which environmental policy analysts must be familiar.

-- demonstrate the ability to read guides and keys to “translating” policy analysis tools and concepts between U.S. (and other western systems) and today’s China.

Through continued writing assignments and a final paper, students will use the concepts studied in the course to understand how an environmental challenge of interest has been or is being addressed by China and the U.S. (or other country of choice). Thus, the ultimate objective,

---for students to begin to use tools and concepts employed by environmental policy analysts.

### **Required Text(s)/Resources**

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The course will rely on articles and readings that will be available on the Sakai site. Further readings will be added as student interests suggest. Students will not be required to purchase textbooks.

### **Recommended Text(s)/Resources**

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See above

### **Additional Materials (optional)**

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See above

### **Course Requirements / Key Evidences**

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Students will be expected to actively engage in the reading materials, to participate in class, to write analytically, including a final paper that will be based on the interests of each student and discussion with the professor.

The ability to express ideas and information in written form (with appropriate visual or media aids) is a, perhaps the, core policy analysis skill. Writing assignments will be at the core of the class.

### ***Sheng Ci (new words) and Observations—continuing writing assignment***

These two writing assignments will address two core aims of the course, the development of vocabulary (*sheng ci*) and the development of the habit of making observations that will serve as the basis for the final project paper.

The study of environmental policy involves many (often English) key words or concepts (*sheng ci*) that are now used globally, but whose meaning may differ from place to place. These include, for example, “governance,” “government,” “law,” (and “rule of law”), “Ngo,” “policy,” “sustainability,” “externality,” “awareness,” “accountability,” “transparency,” “public interest,” “cost benefit analysis,” “market based regulation,” and “civil society.”

In this context, the posting of “*sheng ci*” (new words) shall be required weekly written assignments-to be posted on the class website and shared and discussed with fellow students (and teacher).

In addition to readings, the study of environmental governance must draw on day to day observations – what is seen, heard, smelled, touched, or tasted in daily life. In addition to “sheng ci,” students will be expected to post observations, with explanations of why the observation is of interest, and questions that the observations raise.

### **The final paper**

The final paper will draw from, and may well be based on, *sheng ci* and observation posts (as well as readings and class discussion). The paper will be the subject of discussions between student and teacher. As paper topics crystallize, students will organize into groups through which students will discuss their papers, focusing on common themes and questions for brainstorming and a presentation of papers (preparatory to their finalization) at the last class session.

Beginning at session one, students will identify policy questions they are interested in and would like to learn more about. The final paper will explore how policy analysts—in China, the U.S., and/or elsewhere-- are addressing these questions. For example, students will look at how analysts (and their policies) have collected and analyzed evidence relating to the question, chosen among regulatory strategies and tools, dealt with relative constraints and enablers (for example, law, leaders, politics, bureaucracy, central-local relations, and the public). Students will consider the value conflicts analysts had to address, and choices made.

Students will address how analysts anticipated and addressed policy implementation challenges, and how the effectiveness of the policy(ies) has in fact been assessed.

Based on what was found in the exploration, the final paper should be in the form of a memo with supporting analysis (totaling 10-20 pages) to an official or group that the analysis is advising (for example, to a government official, a think tank or citizens group or a business association) summarizing what has been found and suggesting what next steps might be taken to further develop a policy and related strategy for its effectuation.

### **Specific Writing requirements**

1. As stated above, On Sakai, beginning in the first week of class, students will post *sheng ci* and "observations" (with reply posts) about topics of interest. These posts will stem from what the students see, hear, touch, taste, smell in their days in DKU (for example, air or water quality, food concerns, noise, urban development, transport, traffic, noise.), as well as from their readings of the day's news. These posts will inform both class discussions and the papers students will develop.

2) By class 5/6 each student will pick a policy he/she would like to focus on-for further development as discussed above. Each student will provide a brief memo which identifies the policy question to be explored, the countries to be compared, and explains why the topic is of interest, the hypotheses on which the work will proceed, and the research approaches to be used (for example, in addition to "library" research, personal observations, discussions with/learning from fellow students, interviews of experts).

3) By class 7/8 each student should provide a more detailed research agenda-what research tools will be used. This of course will include the "library" (web). But it also must include one or more tools that go beyond library to take advantage of being at DKU-a China/US school with students from all over the world. This can include, for example, personal observations in China, surveys/talks with fellow students.

4) In class 8 or 9 we will divide the students into teams. The core idea is to pair students who will be able to brainstorm together and bounce ideas off one another.

5) For the last class (14) draft papers will be due, and the student teams will make presentations. The presentations will not be graded, but are intended to encourage cooperative brainstorming with the class as a whole to improve all papers.

The instructor would be pleased to meet with students throughout the semester, as may be arranged between student and teacher, to discuss the paper, the class, and/or other relevant topics.

Final papers due at the end of exam week.

## **Technology Considerations**

The course will include videos or films, which should be downloadable from the web.

## **Assessment Information / Grading Procedures**

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The final grades will be based on class participation, weekly assignments, a short answer quiz to test “sheng ci” learning, and the final paper. To aid and stimulate work on the final paper, prior to the last class, students will organize into groups to brainstorm on final papers, and the final class shall include group presentations, which address common questions encountered by the group, and questions which the group would like the help of class members on.

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Class participation 20%

Weekly writings 20%

Mid term quiz 20%

Final paper 40%

## **Course Policies and Guidelines**

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### **ACADEMIC INTEGRITY:**

- Each student is bound by the academic honesty standard of the Duke Kunshan University. Its Community Standard states: “Duke Kunshan University is a community composed of individuals of diverse cultures and backgrounds. We are dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Members of this community commit to reflect upon and uphold these principles in all academic and non-academic endeavors, and to protect and promote a culture of integrity.”

### **CLASS ATTENDANCE:**

- Students are expected to engage in active classroom discussion, thus class participation and attendance is mandatory. This includes reading assigned articles, submitting reading reports, leading discussions and participating in classroom debates.

### **POLICY ON MAKE-UP WORK:**

- Students are allowed to make up work only for medical reasons, consistent with DKU policy. You must notify the instructor in advance if you will miss a report or presentation.

## Tentative Course Outline or Schedule

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### **Part One: Introduction to Environmental policy analysis and policy analysts, and to translating between China and U.S. Operating Systems (OS)**

#### **Session 1: Introduction: What do policy analysts do and where do they do it? and Translating between China and US OS**

Introduction of teacher and students, and overview of the course.

*Readings:*

Garrett Hardin, "The Tragedy of the Commons," *Science*, 162 (1968):1243-1248.

<http://www.sciencemag.org/content/162/3859/1243.full>

Pan Yue (China environmental official) Interview with *Der Spiegel* on GDP and the Environment (conflict between GDP growth and environment in China today)

<http://www.spiegel.de/international/spiegel/0,1518,345694,00.html>

Guttman: "Different Operating Systems" (*Environmental Forum*, November/December, 2008)

#### **Session 2: China and US Policy analysis: Some Alternative Frames**

There are many perspectives on the actual role of policy analysis and policy analysts; this session will introduce some "frames" or perspectives on how policy is in fact made in the U.S. and China.

*Readings:*

Beland and Howlett "The Role and Impact of the Multiple-Streams Approach in Comparative Policy Analysis:" <http://www.tandfonline.com/doi/abs/10.1080/13876988.2016.1174410>

Lindblom, "The Science of Muddling Through," *Public Administration Review*, Vol. 19, No. 2 (Spring, 1959), pp. 79-88;

<https://faculty.washington.edu/mccurdy/SciencePolicy/Lindblom%20Muddling%20Through.pdf>

Wang, Hu, Yan: "Wisdom-pooling Decision-making Model of the Central People's Government of the People's Republic of China: A Case Study of the Formation of 12<sup>th</sup> Five-Year Plan"

### **Session 3: Policy analysis and Environmental policy analysis: core procedures and concepts**

Introduction to the ideal of policy analysis and core challenges faced in environmental policy making

*Readings:*

Bardach: "The eightfold path" from Bardach: *A Practical Guide to Policy Analysis*

Oran Young, "Natural Resources: Solving Collective Action Problems" (Chapter one of *Environmental Governance*)

### **Session 4: Core Environmental Policy Frameworks and China/US translation: Part 1: Assumptions about Human Nature**

Can countries, individually and collectively, craft policies to meet 21st century environmental challenges? How do we even think about the questions? Sessions 4-5 will provide basic frameworks, comparing how they translate between US and China (and other) systems. The sessions will also consider the wide variety of disciplines brought to bear in developing these core frameworks for environmental policy analysis- natural science(s), the social sciences, engineering and humanities.

Session 4 will focus on differing assumptions about human nature and their implications for environmental policy analysis.

*Readings:*

Hardin, "Tragedy of the Commons" (from first session)

Aldo Leopold, "The Land Ethic" <http://home.btconnect.com/tipiglen/landethic.html>

Confucius, excerpts from *The Analects (Lun Yu)*

Brooks: *The troubled empire: China in the Yuan and Ming dynasties*: Harvard; 2007: Chapter 5 "Economy and ecology;" Section "Trees and tigers"

### **Session 5: Core environmental policy frameworks and China/US translation: Part 2; Assumptions about governance and technology**



This session will focus on what analysts assume about the capacity of “governance” (meaning government, but also markets, civil society and citizens) and “technologies” to address environmental challenges- with or without regard for differing assumptions about human nature.

*Readings:*

U.S. National Academy of Sciences *Drama of the Commons* (chapter one).

Michael Spector, “The Climate Fixers” (from *The New Yorker*)

CCICED (China Council for International Cooperation on Environment and Development), Final Report: “National Capacity for Green Transformation”: Introduction (October, 2015).

### **Session 6: “Common” global policy Strategies and Tools-- and policy learning**

While they may operate differently in different systems, the U.S., China and other countries in common share evolving “strategies” in approaching environmental challenges; multiple “tools” for implementation of these strategies, and the view that “policy learning” is core to eventual success

*Readings:*

Mazmanian. “Three Epochs of the Environmental Movement:”  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1516819](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1516819)

Bardach: “Things Government Do” (Appendix B to *Practical guide to policy analysis*)

Schreifels et al: “Sulfur dioxide control in China: policy evolution during the 10th and 11th Five-year Plans and lessons for the future:”  
<http://www.sciencedirect.com/science/article/pii/S0301421512005228>”

### **Part Two: Policy analysis: comparative constraints and enablers**

In every country policy analysis and policy analysts are both constrained and enabled by a host of formal and informal “institutions” and forces. These include: (1) differing government structures and cultures; (2) differing formal rules of the game-law but also other “rule sets”; (3) the changing but enduring role of leaders, politics, and bureaucracies; (4) the citizenry, including citizens devoted to focus on environmental policy. How do policy analysts learn about, and think about, these constraints and enabling factors and forces?

## **Session 7: Making policy work: Core China/US environmental governance processes: Law, Plan, Policy and other “Rule Sets,” and Central-Local Relations**

In China, U.S. and other countries policy analysts are constrained and enabled by the basic “rules of the game,” and the assumed “governance processes.” This session will compare China and U.S. environmental governance processes in which policy analysis and analysts must work.

### *Readings:*

Guttman, Dan, and Yaqin Song. "Making Central-Local Relations Work: Comparing China and America Environmental Governance Systems." *Frontiers of Environmental Science & Engineering in China* (2007): 418-33.

Young, Guttman et al: “Institutionalized Governance processes; comparing environmental problem solving in China and the United States:” *Global Environmental Change*, 31, 163- 173

Sabatier and Mazmanian: “The implementation of public policy: a framework of analysis”

## **Session 8: U.S. environmental policy: going more deeply into politics, leaders and bureaucracy**

In addition to the rule sets and core governmental relations constraining and enabling policy analysis and analysts, the policy process is constrained and enabled by leadership, politics and bureaucracy. This session will provide some perspectives on how these worked during the Obama administration’s efforts to implement climate change and further environmental policy-and how they may work during the Trump era.

### *Readings:*

Romm: “What Theda Skocpol Gets Wrong About The Climate Bill Fight: Who Is To Blame For Failure Of Climate Bill in 2009, 2010? Hint: The People Who Opposed It, Ignored It Or Undersold It!;” <https://thinkprogress.org/what-theda-skocpol-gets-wrong-about-the-climate-bill-fight-9e1c2a859871#.2hpirlej8>

Lizza: “Who is to blame as the world burns”<http://www.newyorker.com/magazine/2010/10/11/as-the-world-burns>

Heinzerling: “Inside EPA: A Former Insider ’s Reflections on the Relationship Between the Obama EPA and the Obama White House:”

<http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1741&context=pehr>

*Current articles on Trump administration:*

Revkin, "Trump's climate impact could be vanishingly small;"  
<http://www.climatechangenews.com/2016/12/30/trumps-climate-impact-could-be-vanishingly-small>

Lee and Pearce, "How Trump Can influence climate change," *New York Times*,  
<https://www.nytimes.com/interactive/2016/12/08/us/trump-climate-change.html>

### **Session 9: China's Environmental Policy analysis today: Going deeper into plan, experiments and policy learning**

*Readings:*

Kostka: "China's Evolving Green Planning System: Are Targets the Answer?" Frankfurt School Working Paper Series No. 201:  
<https://www.econstor.eu/bitstream/10419/80338/1/756522137.pdf>

Zhao and Wu, "Interpreting the Evolution of Energy Saving Target Allocation System in China (2006-2013) A view of Policy Learning" *World Development*, 2016

Xufeng et al, "Patronized local initiative; the low carbon development path of China" (unpublished paper)

Progress under the 2013 PM 2.5 "Action plan" (current materials to be provided)

### **Session 10: Citizens in aid of policy analysis: Global policy entrepreneurs**

This session will address the emerging role of "environmental policy entrepreneurs," with focus on their success in addressing problems that cross borders-climate change and multinational supply chains.

*Readings:*

Durwood Zaelke and the amendment of the Montreal Protocol to address climate change:

Molina, M., Zaelke, D., Sarma, K. M., Andersen, S. O., Ramanathan, V., and Kaniaru, D., *Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO2 emissions*, Proceedings of the National Academy of Sciences (US) (2009).

Institute for Governance and Sustainable Development Website:

<http://www.igsd.org/about/people/durwood-zaelke/>

Ma Jun and the introduction of information based regulation to China to address multinational supply chains: *Readings*:

Ma Jun IPE website: <http://www.ipe.org.cn/>

Current "PITI" and "CITI" (public and corporate transparency reports)

*New York Times* articles on N Hexane poisoning of workers on Apple China supply chain (to be provided)

### **Part III Policy analysis: common challenges faced by all policy analysts**

In any country, environmental policy analysts face basic and common questions. These include: (1) how to assess and address risks to public health and environmental damage that may be hard to measure and that may not eventuate for years to come? (2) how to assess and address crises whose nature and time cannot be certain, but whose likelihood is near certain; (3) how to weigh choices involving competing public values and/or differential costs and benefits to different groups of people? (4) how to assure policies are implemented and, then, actually protect and improve the environment and human wellbeing?

### **Session 11- Decision-making under uncertainty: Long term latent risk: Environmental Public Health and Policy Analysis**

As countries develop and life spans lengthen, the role of oft difficult to assess environmental factors in determining public health is of increasing importance, with particular attention to risks that are not acute, but latent, and that may manifest themselves in harm only years later, and then only to some of those exposed to the risk. This session will introduce the emergence of environmental public health, including sources of expertise which policy analysts must rely on to understand these risks (for example epidemiology, human subject research), and questions of public risk perception and awareness and expert bias in crafting policies.

*Readings:*

Anna Lora-Wainwright, "An Anthropology of Cancer Villages: villagers' perspectives and the politics of responsibility" *Journal of Contemporary China*, January, 2010

Jennifer Holdaway, "Environment and Health in China: an introduction to an emerging research field," *Journal of Contemporary China*, January, 2010

Yang et al, "Rapid Health Transition in China, 1990-2010; findings from the Global Burden of Disease Study," *Lancet*, June 8, 2013

Mukherjee, *The Emperor of Maladies*, chapters "Coffins of black" and "A thief of the night" (pages 237-257)

**Session 12: China and U.S. Crisis Management; Going Deeper into crisis management: the millennial old water management tradition and current cases; Lake Tai, food safety, industrial accidents**

*Readings:*

*Eco-Environmental Risk Management*, Report for China Council for International Cooperation on Environment and Development (CCICED), November, 2015 (excerpts)

Pietz, *The Yellow River: The problem of water in modern China*, Chapter 2 "Management and Mismanagement in the Imperial Period"

Choose three of the following:

An and Wang, "Human Induced Drivers and the Development of Lake Tai Hu" and Stone, "China Aims to Turn the Tide Against Lake Pollution" (*Science* magazine)

"Tianjin Explosions were result of mismanagement, China finds," *New York Times*, February 5, 2016 and "China faults management, safety supervision in Shenzhen mudslide," *Wall Street Journal*, July 15, 2016

*New York Times*, "Unsafe lead in the water not limited to Flint"

Jenny Fu, "The 2008 milk scandal and the role of the government in corporate governance in China"

**Session 13: Competing Values: GDP and economic transformation -going deeper into double or triple wins?**

*Readings:*

World Resources Institute: China's Green Tech Rise (two parts) (WRI website)

Dan Guttman, "Electricity Market Reform in China" (PPT)

Current materials from the 13<sup>th</sup> Five Year Plan economic transformation, sustainability targets and green technologies

### **Session 14: Paper presentations**

At this session students, in teams, will present papers for class discussion and final paper development.

### **Bibliography**

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#### **Supplemental Materials**

The materials that follow cover three areas: (1) sources on “current events,” (2) basic background on China’s government today; (3) background readings on policy analysis and environmental policy analysis, China and U.S. environmental history and on the history of environmental thinking. The instructor would be pleased to suggest further materials on request.

#### ***Current Events***

In addition to the class readings, students will be expected (as will be discussed in the first class) to follow developments reported in the daily and periodic press, such as *New York Times*, *Wall Street Journal*, *Financial Times*, *Economist*, and the English language China press (*Shanghai Daily*, *Global Times*, *China Daily*, *South China Morning Post*) and Chinese language press where students read Chinese) and Periodicals (see below for *Caixin* and *Caijing* websites). The readings can form the bases for weekly “observation” homework assignments, as well as class discussion.

*Chinese press on the web in English include ; e.g., China Daily/<http://www.chinadaily.com.cn/>, South China Morning Post/ [w.scmp.com/frontpage/hk](http://www.scmp.com/frontpage/hk), Global Times/<http://www.globaltimes.cn/index.html>; *Caixin*; <http://english.caixin.com/caijing/> <http://english.caijing.com.cn/>; *Shanghai Daily*/<http://www.shanghaidaily.com/>; *Caijing*: <http://english.caijing.com.cn/>; *Global Times*; <http://www.globaltimes.cn/china/>*

In going deeper (and preparing for papers) useful China environment websites include (there are many more):

Woodrow Wilson Center China Environment Forum website:  
<http://www.wilsoncenter.org/program/china-environment-forum>

Natural Resources Defense Council china website;  
<http://switchboard.nrdc.org/blogs/chinagreenlaw/-forum>

Energy Foundation (China Project); <http://www.efchina.org>

World Resources Institute FAQ China website: <http://www.chinafaqs.org/>

Yale Forestry School 360 website; <http://e360.yale.edu>

U.S. EPA china law website; <http://www.chinafaqs.org>

*Some Basic Background on China's government system and structure-which will be key to course understanding-can be found at:*

Understanding China's Political System, Susan Lawrence, Congressional Research Service

<http://www.fas.org/sgp/crs/row/R41007.pdf>

China's Political Institutions and Leaders in Charts, Congressional Research Service, November, 2013; <http://fas.org/sgp/crs/row/R43303.pdf>

**Some foundational Texts on Policy analysis and environmental policy analysis**

**Some foundational Texts on Policy analysis and environmental policy analysis**

**Bardach and Patashnik:** Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving (Fifth Edition): CQ Press: 2016

Mazmanian and Kraft: Toward Sustainable Communities; Second ed.: MIT Press: 2009

Press and Mazmanian: ENVIRONMENTAL POLICY: NEW DIRECTIONS FOR THE TWENTY-FIRST CENTURY, 9th Edition, CQ: 2009.

Vig and Kraft: Environmental Policy: New Directions for the 21<sup>st</sup> Century (8<sup>th</sup> ed); CQ: 2015.

Weimer and Vining: Policy Analysis: Concepts and Practices (5<sup>th</sup> ed,) Routledge: 2016,

Young: Environmental Governance: **Paradigm: 2014**

***Some books that provide background on China and U.S. environmental history and the history of environmental thinking:***

*China and U.S. environmental history*

Mark Elvin; *The retreat of the elephants*: Yale: 2006.

David A. Pietz; *The Yellow River: the problem of water in modern China*: Harvard: 2016

Robert B. Marks; *China: its environment and history*: Rowman & Littlefield: 2012

Judith Schapiro; *Mao's war against the environment*: Cambridge: 1999:

William Cronon; *Nature's Metropolis; Chicago and the Great West*: W.W.. Norton: 1991

Marc Reisner; *Cadillac Desert; The American west and its disappearing water*: Viking: 1986

Donald Worster; *Dust Bowl; the southern plains in the 1930's*: Oxford: 1979

*Global Environmental Thought /Philosophy/Ethics*

Elizabeth Barlow Rogers; *Green Metropolis; The extraordinary landscapes of New York City as Nature, History and Design*: Penguin Random House: 2016

Robert MacFarlane; *Landmarks*: Hamish Hamilton: 2015

Marc Sagoff; *The economy of the earth ;philosophy, law and the environment*: Cambridge: 2009

Donald Worster; *Nature's Economy: a history of environmental ideas*: Cambridge: 1994

Andrea Wulf; *The Invention of Nature: Alexander von Humboldt's New World*: Alfred A. Knopf: