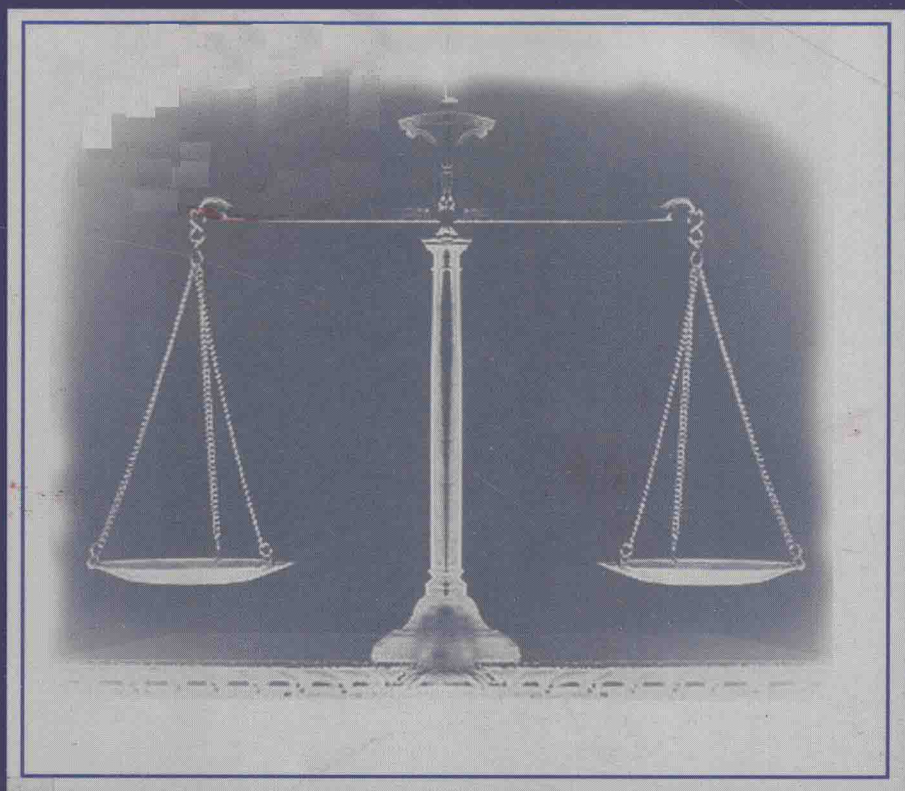


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# Environmental Justice Analysis

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*Theories, Methods, and Practice*



Feng Liu

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# Preface

A classroom debate at the Wharton School turned out to be a preface to this book. The professor, an economist, handed out an internal memo prepared by Lawrence Summers, then chief economist of the World Bank. He wrote:

Just between you and me, shouldn't the World Bank be encouraging more migration of the dirty industries to the LDCS [less developed countries]? I can think of three reasons:

1. The measurement of the costs of health-impairing pollution depends on the foregone earnings from increased morbidity and mortality. From this point of view a given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages. I think the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that.
2. The costs of pollution are likely to be non-linear as the initial increments of pollution probably have very low cost. I've always thought that under-populated countries in Africa are vastly *under*-polluted; their [air pollution] is probably vastly inefficiently low compared to Los Angeles or Mexico City. Only the lamentable facts that so much pollution is generated by non-tradable industries (transport, electrical generation) and that the unit transport costs of solid waste are so high prevent world-welfare-enhancing trade in air pollution and waste.
3. The demand for a clean environment for aesthetic and health reasons is likely to have very high income elasticity. The concern over an agent that causes a one-in-a-million change in the odds of prostate cancer is obviously going to be much higher in a country where people survive to get prostate cancer than in a country where under-5 mortality is 200 per thousand. Also, much of the concern over industrial atmospheric discharge is about visibility-impairing particulates. These discharges may have very little direct health impact. Clearly, trade in goods that embody aesthetic pollution concerns could be welfare-enhancing. While production is mobile the consumption of pretty air is non-tradable.

The problems with the arguments against all of these proposals for more pollution in LDCS (intrinsic rights to certain goods, moral reasons, social concerns, lack of adequate markets, etc.) could be turned around and used more or less effectively against every Bank proposal for liberalization.

The professor started the debate by defending these arguments, and we were to come up with counter arguments. Initially, there were some voices against these arguments. A few minutes later, I found myself the lonely voice. Finally, I heard some agreements with the professor. This school produces leaders of national and international business management. The memo and debate have troubled me since.

Years later, on the morning of May 12, 1999, I read David Harvey's *Justice, Nature & the Geography of Difference*, Chapter 13 of which began with a description

of the Summers episode. During the same morning, coincidentally, it was reported that Robert Rubin was resigning his post as Treasury secretary, after more than 6 years as a member of the Clinton Administration. During the afternoon, the president named Rubin's deputy secretary, Lawrence Summers, as his replacement. The source speculated that Summers might face some opposition from Republicans on Capitol Hill as he was viewed as more liberal than the market-oriented Rubin.

Years later, I still find myself puzzled and concerned about the debate. While writing this book, I am thinking about the small debate in the context of a large debate on environmental justice. I am thinking about the perspective that I would like to offer to my readers. Is this only an economic issue? No. Is this a social issue? Is this a moral issue? Is this a political issue? Is this a scientific issue? It is all of them. This is what I would like to present to you: How to analyze environmental justice issues using a multi-perspective, a multi-disciplinary and interdisciplinary approach.

This book is a comprehensive and analytical treatment of theories and methods for analyzing and assessing environmental justice and equity issues. I strived to keep this book well-balanced, carefully and critically examining both sides of the debate and contributing to the debate with first-hand analysis. A lot of attention is focused on the debate on various methodological issues of environmental justice research.

This book provides readers with a holistic framework for conducting rigorous equity analysis, and particularly demonstrates how cutting-edge technologies and methods such as the Internet, Geographic Information Systems, and modeling tools can contribute to better equity analysis and policy evaluations. It covers a wide range of policy areas such as air pollution, solid waste management facilities, hazardous waste management facilities, toxic release facilities, Superfund sites, land use, and transportation and a wide variety of geographic scales. It is a reference resource for professionals, undergraduate and graduate students, academics, activists, and any other individuals who are interested in environmental justice issues.

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## Author



Feng Liu has been working and conducting research in the environmental and planning areas since the early 1980s. His work has embraced a wide spectrum of environmental and planning issues such as air and water pollution, environmental impact assessment, GIS, environmental modeling, land use and transportation modeling, environmental justice and equity, transportation planning, land use planning, and smart growth. His recent papers have appeared in *Environmental Science & Technology*, *Environmental Management*, and *Journal of the Air & Waste Management Association*.

Dr. Liu has worked in a variety of organizations, including academic research institutions, environmental organizations, regional planning agencies, and state government. He currently works at the Maryland Department of Planning, the lead agency in the implementation of Maryland's nationally renowned Smart Growth policies and programs. Before joining MDP, he worked for the Baltimore Metropolitan Council, Environmental Defense, University of Pennsylvania, and Beijing Normal University. He received a B.S. from Zhongshan University, an M.S. from Beijing Normal University, and an M.A. and a Ph.D. in city and regional planning from the University of Pennsylvania.

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## CHAPTER 12

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This book grows out of my long interest in the distributional issue of environmental pollution and the use of modeling in scientific inquiry. I am indebted to Professor Y. Tang of Zhongshan University, and to Professors (deceased) Peitong Liu and Huadong Wang of Beijing Normal University, who inspired my interests in environmental research.

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My daughter, Ivy, reminds me of my family role every day. She always says "baba" or "daddy" when she passes by my study room. Every time, I cannot resist her call, not because she is "spoiled," I just know that she is eager to help me out and speed the whole thing up when she sits on my lap and types wildly on my keyboard. She does not know that she and her mother, Vivien, have already helped me understand a lot of things much better. For example, I learned, first hand, that susceptibility varies with the life-cycle (infant, toddler, pregnant woman, senior) and with race/ethnicity. Indeed, there is no average person, and each person should be treated as an individual. Each individual should be treated with compassion, even though rationality might be compromised.

**Feng Liu**  
**Baltimore, MD**

# *Dedication*

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*In Memory of My Mother Jianhua Liu*

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# 1 Environmental Justice, Equity, and Policies

## 1.1 THE ENVIRONMENTAL JUSTICE MOVEMENT

Aurora Castillo was a soft-spoken woman in her early sixties. A resident of East Los Angeles, she led the efforts during the late 1980s to defeat California's plan to locate the state's first hazardous-waste incinerator near her predominantly Hispanic neighborhood (Russell 1989). Not far away in south-central Los Angeles, Sheila Cannon, a single parent and part-time nurse, spent several hours a day mobilizing her community in an attempt to scrap the city's siting proposal for a garbage incinerator in the predominantly African-American neighborhood. It is people like Aurora Castillo and Sheila Cannon who have defined the concept of environmental justice.

The environmental justice movement is "a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities" (Lee 1992). It represents a diverse, multi-racial, multi-national, and multi-issue coalition and calls for equal protection of all people from environmental harms, regardless of their race, ethnicity, origin, and socioeconomic status. "As with other social movements (i.e., antiwar, civil rights, women's rights, etc.), the environmental justice movement emerged as a response to industry and government practices, policies, and conditions that many people judged to be unjust, unfair, and illegal" (Bullard 1996:493). It has emerged from grassroots activism and organizations and penetrated national and international arenas. It is this grassroots environmental justice movement starting from the early 1980s that pushes the environmental justice and equity issue into the national and international environmental policy agenda. It is this grassroots environmental justice movement that has made a difference in the environmental thinking and policy making in the U.S. and will continue do so worldwide well into the 21st century.

The environmental justice movement originated in the struggles of people of color against toxic waste dumps and waste facility sitings in their communities. A milestone event occurred in a rural, low-income, predominantly black community in Warren County, North Carolina, in 1982. At that time, the State of North Carolina had decided to site a polychlorinated biphenyl (PCB) disposal landfill facility in Warren County. This siting decision sparked strong opposition from local communities. Local residents, grassroots organizations, regional and national civil rights groups, and politicians joined together to protest the decision. The protest to block the PCB-laden trucks resulted in the arrest of more than 500 people, including Walter E. Fauntroy, then Congressman from the District of Columbia; Dr. Benajamin F. Chavis Jr., then Executive Director of the United Church of Christ (UCC) Commission for Racial Justice (UCC 1987).