

**THE LOGIC AND PURPOSE OF THE  
GRADUATE PROGRAM IN EARTH SYSTEMS SCIENCE, POLICY AND  
MANAGEMENT  
BY  
STEVEN COHEN,  
DIRECTOR  
OCTOBER 11, 2001**

Welcome to Columbia University's School of International and Public Affairs and the Columbia Earth Institute and our new Master of Public Administration Program in Earth Systems, Science Policy and Management. Who are and what we are about? We are about training policy analysts and managers for public service careers aimed at protecting this planet's environment. We are about creating a new kind of public sector problem solving professional. Unlike most law schools we teach management and economics. Unlike many business schools we teach politics. Unlike typical environmental policy programs we require a firm understanding of earth systems and environmental science. The environmental leaders of the 21st century will need a firm understanding of science, politics, management, economics and policy analysis if they are to succeed.

Why do we care about public service and the environment? Because it is important, and the country needs more well trained people serving the public and ensuring that our environment is protected and enhanced. There are over 21 million government workers and about 10 million people working in nonprofits in the U.S. but only 30,000 students in public policy schools--only 9,000 MPAs & MPPs are produced each year. There are millions of career opportunities in environmental protection. There is a tremendous market in government--especially state and local government, and a booming market in the nonprofit sector. There are increasing opportunities in the private sector as industry learns that being green is not a luxury and an issue for their PR department, but an essential for profitability in the 21<sup>st</sup> century. We care about the environment because we only have one planet and our survival depends on it.

How do we define public service? Careers that have as their aim improving the world rather than improving your bank account. People in public service can make a good living, but if your main motivation in life is money--you've probably come to the wrong place. Public service is government, but not just government anymore. It also includes non-profits, private companies as they interact with government, and in privatized government functions designed to protect the environment. Public service for environmental professionals also can result in careers in environmental policy and management consulting.

How are we unique? We are the first Columbia degree program located at Columbia's new Biosphere campus near Tucson Arizona. Our program is totally oriented to the environment--no matter what subject you are learning with us,

from management to finance, from statistics to economics, you will learn those concepts by applying them to environmental problem solving. Every student in the program will focus on this single but complex issue. For one intensive year amidst the stunning beauty of the Sonoran desert we will be immersed in the study of the earth. We will study how it works and how to ensure its protection and sustainable development. This amazing and unique setting is already home to a range of undergraduate programs and it is now time to use its quiet and beauty to develop the professional skills needed to preserve this planet.

Our curriculum is practical. It is designed to apply what we know about science, policy analysis, politics and management to addressing the world's pressing environmental problems. With six billion people on this planet and one billion in poverty, what alternative do we have but to dedicate ourselves to learning how to stop poisoning the planet, and learning how to feed its children, maintain its forests, protect its biodiversity and ensure that its water and air are preserved for future generations.

Our goal is to create problem solving public sector professionals. Our core curriculum is practical and analytic. We emphasize field-level environmental science—not to make you an environmental scientist, but to make it possible for you to work with environmental scientists and really understand what they are talking about. Our management, quantitative and policy analysis courses are designed to help you *solve* environmental problems—not just think and write about them. Each of our three semesters features a workshop course that lets you integrate what you have learned and lets you apply your knowledge to solving real-world environmental policy and management problems. Our political context courses build your perspective and understanding about why these environmental policy problems emerged in the first place.

Our focus is on practical skill building: Working in teams, managing meetings, learning about group dynamics and conflict resolution. Learning not just to analyze problems, but to communicate their solutions with well crafted memos, carefully planned briefings and presentations using visual programs such as Powerpoint. The idea is to not just learn how to analyze policy but how to influence it.

A profession is characterized by a shared view of how the world works, or a shared paradigm. Members of a profession possess a common definition of problems and have a skill set designed to understand problems and build solutions. Earth system professionals must be able to work on specific small-scale projects, while maintaining a broader understanding of how the world works. Rene Dubos was correct when he said we must learn to *think globally* and *act locally*. Earth system professionals must also *think systemically* and *act pragmatically*. They must be able to move away from problems in the manner permitted by our incremental policy process, but at the same time must seek to ensure that the solution to one problem is not the cause of a more serious

second problem. Earth Systems professionals must be capable of developing innovative approaches to problem solving based on field-level empirical data with a profound understanding of earth systems functioning and interactions.

What are the skills and concepts needed to build a profession of environmental problem solvers?

The skills and concepts include an understanding and knowledge of:

- The connections between policy intent, program design, organizational capacity and political feasibility.
- Scientific method, including observation, hypothesis generation and hypothesis testing.
- The chemical processes affecting environmental quality and public health.
- Collection and analysis of field and laboratory data.
- Systems modeling.
- How to explain science to nonscientists.
- How to manage the work of scientists.
- The relationship of program to organization and organization to budget.
- The design of studies that are methodologically rigorous and defensible within the constraints of available resources.
- The fundamentals of measurement and social science research methodologies.
- Program design.
- Organizational design.
- Financial controls and performance management.
- Organizational change and innovation.
- Options analysis.
- Criteria development and analysis.
- Methods for measuring program costs and benefits.
- How to work in groups and deal with group conflict.
- How to manage interdependent analytic projects.
- Memo and report writing.
- The techniques for developing and conducting formal oral briefings.
- How to operate under tight deadlines.
- How to accept criticism.
- How to deal with clients, bosses and bureaucratic clearances.
- How to conduct analysis within the constraints of the political environment.
- How to read legislation, write budgets, and write position descriptions.
- Managing, stimulating and learning from citizen participation.

- Conflict resolution and negotiations.
- Economic and sustainable development.
- Public and environmental ethics.
- The political and economic environment of policymaking and management.
- Perceptions of environmental quality and environmental values.

How do you learn these concepts? Through intensive course work in three semesters at our Arizona campus.

The Earth Systems Concentration is comprised of both natural and social science courses. The three natural science courses are:

- Environmental Chemistry and Toxicology
- Climate and Water
- Life and Land

The three social science courses are:

- Environmental Politics, Policy and Management
- Environmental Economics and Sustainable Development
- Environmental Ethics and Justice

The science component of the concentration is designed to enable students to understand enough science to manage the work of scientific experts. The goal is for you to be capable of more than passive consumption or understanding of environmental science. However, we do not expect MPAs to become producers of scientific research. The goal is to develop enough understanding and confidence with environmental science to manage experts and to know what you don't know. The focus of the environmental science taught in the program is to develop an understanding of ecological processes that *directly* effect human health and well-being. The policy and management issues we focus on include global change issues such as global warming but also deal with:

- The provision of safe drinking water;
- Environmentally-sound sewage treatment and disposal;
- Solid and toxic waste management, and:
- The control of local sources of air pollution.

The science required in this concentration is designed to support global and local environmental decision making and management.

Let's turn to the MPA core of the program. The core provides the skills to analyze and understand the formulation and management of public policy. As its related MPA Program has evolved at Columbia, its core has increasingly

included specific professional and vocational skills such as memo-writing, oral briefings, group process and team building, spreadsheet and other forms of financial analysis, use of computer programs and the World Wide Web. *The principle goal of the core is to provide students with the analytic, communication and work skills required to be problem solving earth system professionals.* The program's core curriculum focuses its case studies, examples and policy and management exercises on earth system issues. Students obtain the same functional skills as any Master of Public Policy and Administration student, but learns to apply the craft of policy and management analysis to earth system problems and programs.

The core includes course work in four critical areas:

- **Public Management** is required because public policy is implemented by large complex organizations and you must understand how to make those organizations work.
- **Financial management** is required because the allocation and tracking of resources are two of the main methods used by managers to steer and monitor the work done by an organization...Money Talks.
- **Microeconomics** is required because it provides a formal and structured way of looking at alternative courses of action and the probable impacts of those actions.
- **Statistics** is required because with over 6 billion people on this planet we cannot understand the reality they create by looking at the world one case at a time. Statistics allows us to understand the world by looking at a random sample of it, rather than all of it.

The program also includes three hands-on workshop courses. In the summer and fall semesters, the Workshop emphasizes management issues. . The emphasis in the summer workshop is to develop tools for managing the work of scientists and explaining science to policy makers. Students enroll in

small, faculty-advised project teams and design a detailed operational plan for addressing an important public policy problem. In the summer semester the workshop focuses on the science basis of the management problem and groups write reports explaining the environmental science aspects of a management problem to political decision makers who are not scientists. In the fall semester the workshop completes the operational plan for implementing the program.

In the spring semester, new groups are formed and analytic projects are undertaken for real-world clients in government and nonprofit agencies. These teams, working under the supervision of faculty members, write a report analyzing an actual environmental policy or managerial problem faced by a government or nonprofit organization.

Is Columbia for you? This is an individual choice that only you can make. We are looking for a bright, diverse, student body with a deep commitment to public service and protecting the environment, and an interest in being part of a community of like-minded people.

How do we compare to the other places teaching environmental policy? We're better. More practical, more student oriented, more science oriented, more focused on this critical issue and more engaged in the real world.

We are building a new campus and a new program exclusively focused on environmental policy and management. Some of us from New York will be traveling back and forth from New York to Biosphere to teach in the program, and we are hiring a core group of faculty to join with the Biosphere campus Earth Semester faculty to teach in this program. We are excited about the opportunity to train the 21<sup>st</sup> century's environmental leaders and hope you will consider joining us in this exciting and important endeavor. We are about public service and building the expertise needed to make this world safe and sustainable for the future.

I would be happy to address any questions you might have about the new program.