Developing a Specialized Master of Public Administration Program: The Case of Columbia University’s Master of Public Administration Program in Environmental Science and Policy

By Steven Cohen
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Environmental Science and Policy

By Steven Cohen, Director

1. OVERVIEW

In June 2002, Columbia’s School of International and Public Affairs and Earth
Institute launched the Graduate Program in Earth Systems Science, Policy and
Management at the Biosphere 2 Center in Oracle, Arizona. The program joined a set of
one-semester and summer undergraduate programs in environmental science and
astronomy offered there. Four full time faculty and a number of part time and adjunct
faculty were hired to teach the class which began with 43 students in June 2002 and
graduated 39 in May 2003.

By November 2002, Columbia had a new President, the Earth Institute had a
new director, and the university, like the city and the nation, operated in a tougher
economic environment than the one enjoyed during the 1990’s. The new Earth Institute
Director, Jeffrey Sachs, was committed to developing a comprehensive set of
educational offerings in environmental policy, science and sustainable development. He
and the Dean of SIPA decided that the strategy of building educational offerings in this
field at Columbia would be better served by moving the program to Columbia
University’s Morningside campus in New York City and its Lamont-Doherty Earth
Observatory in Palisade, New York. In late November 2002, SIPA Dean Lisa Anderson
announced the program would move to New York. In June 2003, 46 students attended
the program’s orientation session in New York City and at Columbia’s Lamont Doherty
Earth Observatory just north of the city.

This paper presents a case study of the development and modification of a
student recruitment campaign, the effort to recruit and move the faculty (three of the
four faculty accepted the university’s offer to move from Arizona to New York), and the
program’s curriculum. The paper will discuss the process of receiving internal and
external approval to conduct the program and will conclude with a discussion of a formal
program evaluation commissioned by the program and conducted by an education
scholar at Teacher’s College of Columbia University.

2. BACKGROUND

In 1981, I left the U.S. EPA to become an Assistant Professor of Political Science
at Columbia University, with 100% of my time assigned to the Master of Public
Administration program of the newly-renamed School of International and Public Affairs.
Columbia’s MPA program was only four years old and Columbia was working hard to
reestablish the public administration tradition it had abandoned years earlier. My appointment letter said, among other things, that one of the four courses I was to teach would be a newly-developed course in environmental policy and politics. That was a course I did not teach until 1987. A colleague told me confidentially that it would be a mistake for me to teach such a course. “No one comes to New York City to study the environment”, he said; “You’d be better off teaching another public management course instead”. I took that advice and did not teach in my field until a delegation of students came to me when I was associate dean of curriculum for SIPA and demanded a course in environmental policy.

In the late 1980’s SIPA started a concentration in environmental policy studies as part of Columbia’s MPA program and Master of International Affairs programs. We offered some courses in our school, but also relied on courses from The School of Public Health and the Urban Planning program to provide key components of the curriculum as well. The concentration was small, but successful, and provided students with the option of specializing in this field. In the early 1990’s we added a required course in environmental science for policymakers taught by faculty from Columbia’s Department of Earth and Environmental Sciences. The faculty worked hard to distill the entire field of environmental science into one course that could be helpful to future policy makers. While I believed the course was successful, they were quite frustrated at the areas they could not cover. In some ways, their frustration was the start of the process that resulted in Columbia’s Environmental MPA.

In the fall of 2000, Columbia’s Executive Vice Provost and Acting Earth Institute Director Michael Crow was in the process of developing educational programs for the Biosphere 2 Center in Oracle, Arizona. For several years undergraduate semester programs were offered in environmental science and policy and Crow wanted to develop a masters program that combined environmental science and policy. I was asked by Crow and SIPA Dean Lisa Anderson to develop and direct this new program.

The first stages of program development were largely research and brainstorming. Professor Sheldon Kamieniecki, then chair of Political Science and head of the Environmental Studies Program at the University of Southern California, and I convened a conference at Biosphere 2 on environmental policy curricula. The conference was attended by nearly 30 experts in environmental policy studies and produced some very useful insights on curriculum structure and delivery. I also traveled to about a dozen of the best known environmental education programs in the United States to benchmark our new program against the best programs in the field. Finally, our staff conducted a thorough web search and a summary of all environmental education programs in the United States.

When the research phase of program development ended around January 2001, I was ready to produce a proposed curriculum for the new program. The first, and perhaps most significant conclusion I drew, was that the program should be a Master of Public Administration program, not a Master of Arts or a Master of Science program.
There were several reasons for this. First, a new program in a critical new policy area would benefit from a curricular and professional base in an existing, well recognized professional education tradition. Second, many of the issues faced by environmental professionals required an understanding of public management, politics, economics, and quantitative analysis. Finally, a new concentration in an existing degree program would not require approval by Columbia’s Faculty Senate and New York State’s Department of Education. It would be considered a relatively minor curriculum change in an existing program within the purview of the School of International and Public Affairs Committee on Instruction.

It turned out that while the program’s curriculum did not require additional approvals, the program’s novel initial location did require a series of approvals. As noted earlier, in the 2002-2003 the program was offered at the Biosphere 2 Center in Oracle, Arizona. This location required approval by the Arizona State Board for Private Post Secondary Education. It also required review by the Commission on Higher Education of the Middle States Association of Colleges and Schools as a campus location for Columbia University. At Columbia, the Faculty Senate’s Education Committee agreed that the curriculum did not require review, but a number of senators did believe that the location required Senate review, as they were concerned that the program had been located at Biosphere 2 without the appropriate review. The Education Committee agreed to permit the program to go forward under the condition that an independent evaluation of the program’s first year be conducted. The Earth Institute contracted with Susan Lowes of Teacher’s College to conduct this evaluation. The assessment proved useful, but ultimately not for it’s original purpose since the program relocated to New York and Columbia ultimately ended its relationship with Biosphere 2 Center.

3. THE CURRICULUM

As noted above key early step in curriculum design was the decision to create an “Environmental MPA”. For most MPA students, including those at Columbia, a typical curriculum includes:

- A core including functional skill building courses in public management, financial management, quantitative analysis, and applied microeconomics. These provide the degree’s professional analytic core.
- A set of contextual courses on the environment of public administration including courses on the political, social, ethical and economic environment of public policy and management.
- A concentration in a field of public policy such as social welfare policy, urban policy, health policy, national security, or environmental policy.
- A capstone experience—typically a client-based workshop or a thesis.

Most of the core and contextual courses rely on cases and examples from a variety of areas of public policy. Examples are used to explain concepts and to provide insight by comparing one issue area to another. In this program, every example, case study, research paper and workshop project pertains to the environment. When we teach
public finance, we use the example of a sewage treatment plant, rather than a school. The analytic tools we develop in our students orient and enable them to tackle environmentally-specific issues. As they obtain knowledge about typical MPA analytic methods and context, students obtain a tremendous depth of understanding about this single area of interest. This depth of knowledge is not cost-free. It is “purchased” at the expense of a breadth of knowledge of other issue areas. It sacrifices the advantages of comparison between issue areas. However, it provides students with intense exposure to the field of environmental policy. In addition, students in the program are exposed to a “summer of science” curriculum that consists of three courses in environmental science. Environmental issues are very difficult to understand without a rudimentary knowledge of earth systems science, therefore we require an intense sequence in environmental science as part of the program’s concentration.

3.1 The Curriculum in Detail

**Exhibit 1: The MPA in Environmental Science and Policy Curriculum at a Glance**
(Total: 54 points)

**Summer Term**
- Environmental Chemistry and Toxicology (4 points)
- Climate and Water (4 points)
- Life and Land (4 points)
- Workshop in Applied Earth Systems Management
- Earth Systems and Environmental Politics, Policy and Management
18 points

**Autumn Term**
- Public Management
- Microeconomics and Policy Analysis
- Quantitative Techniques and Systems Analysis in Policymaking and Management
- Political Context of Public and Private Management
- Ethics, Values and Justice
- Workshop in Applied Earth Systems Management
18 Points

**Spring Term**
- Financial Management
- Microeconomics and Policy Analysis II
- Quantitative Techniques and Systems Analysis in Policymaking and Management II
- The Economics of Sustainable Development
- Workshop in Applied Earth Systems Policy (6 points)
18 Points
The Mission of the ESSPM Core

The core curriculum provides 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 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 in addition learns to apply the craft of policy and management analysis to earth system problems and programs.

The MPA In Environmental Science and Policy Core Courses

This section will describe the content and goal of each course in the core curriculum:

*Public Management*

The fall semester required core course in public management attempts to translate academic study in organization theory, bureaucracy, and public management into practical lessons for public managers. We develop a framework for understanding and applying tools that can be used to influence organizational behavior, and can be useful in obtaining resources from the organization's environment. It also has the goal of teaching professional vocational techniques in writing, oral and audio-visual presentation, and group work.

The public management course is a survey course that uses about fifteen earth system-related case studies to present a set of problems for public managers to address. There is a focus on state and local environmental management cases, and treatment of local land use and NIMBY issues. Cases deal with public, private and nonprofit environmental management, and include U.S. and non-U.S. cases. Each week students either hear a briefing from a group of their colleagues dealing with a case or submit a two-page memo, written to a prescribed format, on that week's case. The course presents a set of traditional functional management tools and newer innovation tools for influencing an organization's internal operations and dealing with the political, social, and economic environment of the organization.

The course covers the following topics:

1. What is Public Management?
2. Managing Public Bureaucracies: Traditional Management Tools
   - The Use of Contracts: Non-profits and Private Firms
   - The Use of Organization Structure and Organizational Design
   - Hiring and Influencing the Behavior of Staff
     - Recruiting and Utilizing Women and Minorities
     - Labor Unions and Civil Service
   - The Use of Budgeting, Financial Management, and Management Information Systems
   - The Role of Leadership and Standard Operating Procedures

3. Organizational Strategy Formulation: Dealing with The Bureaucracy's Environment
   - Facing the Challenges of a Changing Society
   - Political Management
   - Public Participation
   - The Role of Civil Society in Environmental Policy, Politics and Management
   - Ethics in Government

4. Integrating the Organization's Environment and Operations: the Use of Management Innovation Techniques
   - Privatization/ Competition
   - Total Quality Management
   - Team Management
   - Benchmarking
   - Reengineering

Quantitative and Systems Analysis

This is a yearlong course designed to familiarize first year MPAs with the quantitative techniques that are used and should be used in organizational decision making. The course seeks to teach students how to formulate and design policy questions amenable to empirical enquiry and how to identify and apply specific measurement and analytic methods appropriate to particular questions. It introduces students to the foundations of systems analysis: how to model and understand the design, operation and impact of a system.

The course begins with a discussion of the formulation of policy questions, the collection and organization of data, and the analysis and presentation of facts. It covers the basic concepts of measures of central tendency, descriptive quantitative measures and advanced inferential statistical techniques. This includes multiple regression, time series and factor analysis, as well as the organization and presentation of advanced...
statistical analyses. Students are introduced to the use of computer-based data analysis, and the rudimentary modeling of systems.

The course covers the following topics:

2. The Probability of Events: Should We or Shouldn’t We?
5. The Analysis of Variance: Group it and Control It.
6. Regression Analysis: A Linear Point of View.
9. Probit and Decision Analysis.
10. Factor Analysis.

Early in the fall semester the class is divided into several groups to work on specific earth-system policy problems. They draw samples, design survey instruments, conduct surveys, code, clean, set-up and analyze data. They also write and present analytic reports, as the course places a heavy emphasis on presenting information to decision-makers.

Microeconomics and Policy Analysis

The main goal of this course is to show students that it is both possible and useful to think about public policy rigorously and analytically to see what assumptions are working, to understand how formal models operate, to question vagueness and cliches, to make ethical arguments with sophistication and self-awareness. An important goal of the class is to have students work in groups to apply microeconomic concepts to current public policy issues.

The course includes problem sets designed to teach core concepts and their application. In the spring semester there is more of an emphasis on applying the concepts to thinking about and analyzing contemporary policy problems. The policy emphasis in the course is on urban environmental and earth system issues, with some attention paid to international trade and regulation and industrial organization issues. In some years, a few ideas about macroeconomic policy (growth, development and unemployment) have been introduced. Students not only learn microeconomic concepts; they are expected to be able to explain them to decision-makers. Each group takes on a specific earth system policy issue, analyzes options through the use of microeconomic concepts, and then makes an oral presentation to the class.
The following concepts are typically covered in the yearlong class:
1. Introduction to supply and demand and consumer theory.
2. Choice constraints and individual demand.
3. Individual and market demand.
4. Elasticities.
5. Exchange.
7. Labor supply basics.
8. Discounting and time.
10. Uncertainty.
11. Risk Perception and Analysis
12. Asymmetric information.
15. Auctions and bidding.
16. General equilibrium and production.
17. Game theory and rationality.
18. Rent, consumer surplus, producer surplus.
20. Power and monopoly.
22. Unemployment.

Financial Management

The goal of the class is to introduce students to the use of budgeting and financial control as a means of influencing the behavior of a public organization. Resources are a necessary, though not sufficient, condition for stimulating specific organizational behaviors. Without resources nothing can happen---with resources present the trick is to make sure the right thing happens. A primary goal of this course is to introduce students to the complex world of financial management. At a minimum we hope to impress upon them the importance of consulting with competing experts when making financial decisions. A second goal of the course is to provide students with experience in conducting financial analysis and facility with spreadsheet programs.

This is a survey course in financial management. It covers the way governments and nonprofit organizations raise revenues and then allocate and spend them. The course addresses the basics of the budget process and taxation, intergovernmental revenues, municipal finance, bonds, control of expenditures, purchasing, debt management, productivity enhancement and nonprofit finance. This course introduces students to the roles, processes, challenges, and salience of financial management in the public sector. Students learn about the fiscal demands and problems that managers
typically face, and how they seek to address them. Case materials will utilize earth system issues to the extent feasible. A computer lab section is an essential aspect of the course, as it teaches students to use spreadsheet software to perform several practical exercises regarding the budgeting and financial management of a hypothetical state environmental agency.

The course covers the following topics:

1. Taxation: Principles of taxation; income taxes and consumption taxes as means to raise revenue.
2. Alternative Revenue Sources and Tax Administration: Property taxes; non-tax revenues such as user fees and proceeds from legalized gambling; tax expenditures; intergovernmental grants; revenue collection; managing revenue.
4. Budgetary Methods and Practices: A closer look at the techniques and procedures commonly used to assemble and evaluate public and nonprofit budgets, including trend analysis, line-item budgeting, program budgeting, and performance budgeting.
5. Reform and Innovation in Public Budgeting: Discussion of budget innovations such as productivity measurement, PPBS, Management by Objective, Zero-Based Budgeting, TQM, target budgeting, and global budgeting.
6. Capital Budgets and Cost Benefit Analysis: Distinction between capital and operating budgets and discussion of the means for evaluating capital investment decisions, especially cost-benefit analysis.
8. Accounting and Expenditure Control: The instruments & politics of internal budget control, including payroll and public accounting.
11. Risk Management: Funded and unfunded liabilities, insurance, and pensions.
12. Auditing and Reporting: Purpose of audits, challenges of public auditing, internal vs. external audits, information needs, and reporting procedures.
13. Evaluating Productivity and Efficiency: What is productivity? What is efficiency? What are the dangers of an emphasis on efficiency? What are the components of fiscal health for government and nonprofit agencies? How is fiscal health evaluated?
Political Context of Public and Private Management

This course focuses on the role of politics, interest groups, elected leaders, public opinion and governmental institutions in the formulation and management of public policy and programs. It includes a discussion of agenda setting, political management and political-executive relations. The course also discusses campaign finance rules and the development of international environmental regimes. It will analyze the impact of citizen participation and the media on public policy with an emphasis on environmental policy.

The Workshop

The chief advantage of this Workshop experience is the practical training gained by working on real problems where student analyses and reports may have an impact on actual public sector operations. The basic objective of the Workshops in Applied Earth Systems Management and Applied Earth Systems Policy Analysis is to teach students how to integrate knowledge and organize an effort to solve an earth systems public policy problem. It provides an opportunity to move beyond multi-disciplinary learning to integrative interdisciplinary problem solving. In the Workshop, Masters students integrate their understanding of natural science, social science, policy studies and management in a problem solving exercise. One of the outputs of SIPA Workshops is a case study that can be used for instruction elsewhere in the curriculum. Case study development in this program will help to meet the need for contemporary earth system cases for use in other courses.

Summer and Fall Semester: The Workshop in Applied Earth Systems Management

In the summer and fall semesters, the Workshop emphasizes management issues. Students enroll in small, faculty-advised project teams and design a detailed operational plan for addressing an important public policy problem. Each workshop faculty member selects a piece of proposed, but not yet enacted, state, federal or local environmental law (or a U.N. Resolution) and students are then asked to develop a plan for implementing and managing the new program. In the summer semester the workshop focuses on the science basis of the management problem and groups are required to 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. The emphasis in the summer workshop is to develop tools for managing the work of scientists and explaining science to policy makers. In both the summer and fall workshops the projects selected will be central issues in the two earth systems problem themes that the cohort will focus on throughout their three semesters of study.

Spring Semester: The Workshop in Applied Earth Systems Policy Analysis

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. Again, projects will be selected to be relevant to the cohort’s single earth system problem theme. An output of each workshop project will be a case study for use in other parts of the program’s curriculum. As noted earlier, there will also be a unit in this class devoted to extrapolating the lessons of the class policy themes to other earth systems policy issues.

The Mission of the Concentration

Human impacts on the planet have reached truly global proportions. We have increased the amount of carbon dioxide in our atmosphere by about one-third since the start of the industrial revolution. This greenhouse gas is probably the cause of the warmest global temperatures on record, certainly for the century, and if paleoclimate records are right, for the millennium. We have nearly doubled the amount of nitrogen available to plants and microbes, fertilizing the globe. We are in the midst of the most rapid extinction of species the Earth has ever experienced. Humans directly or indirectly use about 40% of the terrestrial plant production and at least half of the world's river flow, limiting the availability of these resources to other species. We have punched holes in the Earth's protective ozone layer and emit more toxic metals to the environment each year than all natural processes combined. We have also made new types of chemicals with adverse health effects that persist in the environment and have spread around the globe.

When we put this all together, we must conclude that humans are "managing" some significant parts of the Earth system, and for the most part have been doing this unintentionally. We did not set out to warm the planet or drive creatures to extinction; these are unintended consequences of our other activities. Until recently, we did not even know that many of these consequences existed.

So now we know, or at least some of us know, the effects of our actions. What do we do about it? Unfortunately, there are no easy answers. Certainly, our current management through ignorance is not going to serve us well in the long run. However, any plan to change the rates at which humans alter parts of the Earth system has its own share of unintended consequences. It is the premise of the Earth System Concentration that it is better to know what these are and to face them squarely than to proceed in the dark. If this is the case, we have a lot of learning to do.

In the Earth System Concentration we learn the fundamental science of Earth Systems and Conservation Biology, as well as examine how science is used, not used or misused in human management of ecosystems. Students in the program learn the fundamentals of Earth systems and ecosystems, including their human dimensions. Students with an undergraduate background in natural and physical sciences come to better understand the social implications and consequences of environmental science research. Students with an undergraduate background in Social Sciences and
Humanities will develop a better understanding of the processes involved in collecting and analyzing natural science data.

Students develop a multi-faceted understanding of the human role in environmental change and will be able to compare human-induced change to natural variability. They are able to critically evaluate efforts to manage the human role in environmental change and can apply their knowledge at a variety of spatial and temporal scales.

The concentration provides a solid foundation in environmental policy and social sciences with courses that build on the core curriculum by analyzing the economic, political, ethical and management issues raised in the study of earth systems policy problems.

The Earth System Concentration Courses

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

- Environmental Chemistry and Toxicology (4 points)
- Climate and Water (4 points)
- Life and Land (4 points)

The three social science courses are:

- Earth Systems, Environmental Politics, Policy and Management
- The Economics of Sustainable Development
- Ethics, Values 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 our students 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 our graduate are being trained to address include global change issues such as global warming but more frequently focus on:

- 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.
Environmental Chemistry and Toxicology

The first course is called “Environmental Chemistry and Toxicology” and is designed to teach basic techniques for getting to know an environment and understand key chemical processes central to understanding environmental science. It is in this course that students are introduced or re-introduced to the scientific method through short field-based projects. They learn techniques for collecting and analyzing field samples and data. Students learn to understand some of the key chemical processes related to pollution generation and control. The goal is not to make the students chemists, but rather to give them the ability to understand how to analyze chemical processes they will encounter as environmental managers. Subjects discussed include: Chemical characteristics of key pollutants; Industrial ecology; chemical production and use waste management; Processes influencing the distribution of contaminants in the air, water, sediments, and biota; Organism uptake and toxicological effects; Public health and ecological vulnerabilities.

Climate and Water

The study of climate and water. Students learn the science of oceans and freshwater. They are introduced to the hydrologic cycle as well as the science of water quantity and quality. Students build an understanding of the causes and effects of floods, droughts, heat waves, tornadoes, blizzards, hurricanes, nor-easters, and other weather phenomena. They learn the issues involved in planning for climate changes on interannual, decadal, and centennial time scales. A goal of the course is to teach the non-linearity of climate change.

Population and Land Use

One of the major goals of our science curriculum is to provide students with an understanding of the scientific concepts that must be understood by environmental policy makers. In the final analysis this involves sustaining the renewability of life and land. This course will focus on the science needed to design communities for the future. This includes the science of biodiversity, ecosystem services, agriculture and sustainable development. It also includes a lab where students learn to use Geographic Information Systems.

Earth Systems and Environmental Politics, Policy and Management

The first social science course in the earth systems concentration is “Environmental Politics, Policy and Management”. Its goal is to take a system-level approach to environmental policy problems. Issues presented include: defining the environmental problem, the politics of the environment, environmental agenda setting, pollution prevention, U.S. pollution control through regulation, public works and market incentives, cross-media and cross national environmental problems, and the response
of societies, economies and political systems to environmental issues. The course will also discuss international environmental regime development, conflict resolution and citizen participation in environmental decision-making.

*The Economics of Sustainable Development*

This course builds on the first half of the core microeconomics course and addresses issues of environmental and resource economics. The focus in “The Economics of Sustainable Development” is on the interaction between markets and the environment, policy issues related to optimal extraction and pricing, property rights in industrial and developing countries and how they affect international trade in goods such as timber, wood pulp and oil. The use of the world’s water bodies and the atmosphere as economic inputs to production are also examined. The economics of renewable resources is described and sustainable economic development models are discussed and analyzed.

*Ethics, Values and Justice*

This course in “Ethics, Values and Justice” examines the way in which the earth is viewed by various societies and cultures today and over time. Differing views of the relationship of humans to the environment are discussed and debated and the impact of ethical systems on environmental policy and practices are described and analyzed. The issues of environmental values, perceptions, norms and behaviors are studied and analyzed. The issue of environmental justice and the impact of racism on environmental outcomes are also discussed in detail. The course discusses the environmental policy and management process from the standpoint of ethics, as distinct from efficiency, effectiveness, expertise, cost or other organizational considerations. Attempts are made to discover some guidelines for ethical stewardship of the planet and for formulating policy decisions with ethical considerations factored in.

4. THE START-UP: LEARNING, PROCESSING, STAFFING, MARKETING

Exhibit 2 provides a workplan and OTPS budget for the development of a new degree program. It details the learning process pursued at the start of the program. This included travel to a number of key environmental policy and science programs, a brainstorming retreat, and the development of an advisory board to help shape the program’s goals and curriculum. In the spring of 2001 the School of International and Public Affairs Committee on Instruction approved the program. In the summer, syllabi for the new program were developed, along with a program viewbook, website and other promotional materials.

In the fall of 2001 student recruitment began with a variety of direct mail, email, and newspaper advertisements, as well as recruitment visits to undergraduate campuses and open house events on the Columbia campus in New York. The
EXHIBIT 2 BUSINESS PLAN FOR DESIGNING AN “MPA” IN ENVIRONMENTAL SCIENCE, POLICY AND MANAGEMENT

WORKPLAN

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<tr>
<td>1.0 BRAINSTORMING RETREAT</td>
<td>BETWEEN 11/13/00 &amp; 12/8/00</td>
<td>GOALS AND OBJECTIVES OF THE PROGRAM</td>
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<td>2.0 FACT-FINDING/ BENCHMARKING/DRAFT PROGRAM DEVELOPMENT</td>
<td>12/11/00-3/01/01</td>
<td>DRAFT MISSION STATEMENT &amp; CURRICULUM DESIGN- DECISIONS ON DEGREE, CONCENTRATIONS, SCHOOL</td>
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<td>3.0 ESTABLISH AND MAINTAIN ADVISORY COMMITTEE</td>
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<td>AGENDA, MINUTES, EDITS COMMENTS ON PROGRAM MATERIALS</td>
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<td>8.0 ADD PRACTITIONERS TO ADVISORY COUNCIL</td>
<td>6/1-7/31/01</td>
<td>BROADER GROUP TO ASSIST IN RECRUITMENT, PLACEMENT, FUNDRAISING</td>
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<td>9.0 RECRUIT PROGRAM FACULTY</td>
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<td>HIRE ADJUNCT, FULL TIME AND CURRENT CU FACULTY TO BEGIN TEACHING AY 02-03</td>
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<tr>
<td>10.0 DEVELOP PROGRAM MARKETING PLAN</td>
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<td>11.0 IMPLEMENT MARKETING PLAN</td>
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<td>50 APPLICATIONS FOR AY 02-03 (FOR 1ST PROGRAM)</td>
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<td>11.1 BULLETIN DEVELOPMENT &amp; PUBLICATION</td>
<td>6/4/01-8/3/01</td>
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</tr>
<tr>
<td>11.4 RECRUITMENT TOUR, OPEN HOUSES</td>
<td>9/101-3/22/02</td>
<td>10-15 BRIEFINGS TO UNDERGRADUATES AT KEY INSTITUTIONS, 10-15, AND 3-5 OPEN HOUSES AT CU</td>
</tr>
</tbody>
</table>

1 Assumes that New York state approval is not needed.
<table>
<thead>
<tr>
<th>TASK</th>
<th>START/ END</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.5 DESIGN AND PLACEMENT OF PRINT, INTERNET ADS</td>
<td>8/3/01-3/22/02</td>
<td>ADS FOR RECRUITMENT EVENTS, GENERAL PROGRAM ADS BOTH WEB/PRINT</td>
</tr>
<tr>
<td>11.6 ADMIT STUDENTS</td>
<td>1/7/02-4/19/02</td>
<td>FORM FACULTY ADMISSION COMMITTEE TO REVIEW APPLICATIONS WITH A GOAL OF 30 ADMITS FOR A CLASS OF 15</td>
</tr>
<tr>
<td>11.7 ENTICEMENT CAMPAIGN FOR ADMITTED STUDENTS</td>
<td>1/7/02-5/17/02</td>
<td>REGISTER AT LEAST 15 STUDENTS</td>
</tr>
<tr>
<td>11.8 SCHEDULE CLASSES FOR AY 02-03</td>
<td>11/5/01-12/14/01</td>
<td>CLASSROOMS, REGISTRATION COURSE CODES</td>
</tr>
<tr>
<td>12.0 ORIENTATION/ SCIENCE MATH BOOT CAMP</td>
<td>5/24-6/03/02 (ASSUMING JUNE 02 START-UP)</td>
<td>REVIEW OF SCIENCE AND MATH NEEDED FOR 1ST YEAR COURSES, SOCIAL EVENTS, TEAM BUILDING TO DEVELOP GROUP IDENTITY/ HIGH MORALE</td>
</tr>
<tr>
<td>13.0 FACULTY CURRICULUM PLANNING, ADMISSION COMMITTEE MEETINGS AND TEAM BUILDING</td>
<td>1/07/02-5/18 (MONTHLY FACULTY LUNCHES OR DINNERS)</td>
<td>PREPARE ORIENTATION PROGRAM, LEARN CONTENT OF OTHER COURSES, BUILD GROUP IDENTITY</td>
</tr>
</tbody>
</table>

### BUSINESS PLAN

<table>
<thead>
<tr>
<th>TASK</th>
<th>OUTPUT</th>
<th>OTPS COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 BRAINSTORMING RETREAT</td>
<td>GOALS AND OBJECTIVES OF THE PROGRAM</td>
<td>TRAVEL: $2,000</td>
</tr>
<tr>
<td>2.0 FACT-FINDING/ BENCHMARKING</td>
<td>DRAFT MISSION STATEMENT &amp; CURRICULUM DESIGN- DECISIONS ON DEGREE, CONCENTRATIONS, SCHOOL, EXECUTIVE, NON-EXECUTIVE GRADUATE DEGREES</td>
<td>TRAVEL: $10,000</td>
</tr>
<tr>
<td>3.0 &amp; 7.0 ADVISORY BOARD MEETINGS 01-02</td>
<td>PROGRAM DESIGN, MARKETING, PLACEMENT, FUNDRAISING ADVICE</td>
<td>REFRESHMENTS, TRAVEL, DUPLICATION: $5,000</td>
</tr>
<tr>
<td>4.0 SIPA COI APPROVAL OF CURRICULUM DESIGN(^2)</td>
<td>APPROVED SIPA DEGREE</td>
<td></td>
</tr>
<tr>
<td>5.0 FACULTY SENATE APPROVAL</td>
<td>APPROVED DEGREE</td>
<td></td>
</tr>
<tr>
<td>6.0 ARIZONA APPROVAL</td>
<td>LICENSE</td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) Assumes that state approval is not needed.
<table>
<thead>
<tr>
<th>TASK</th>
<th>OUTPUT</th>
<th>OTPS COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0 COURSE DEVELOPMENT-</td>
<td>SYLLABI, WEB SITES,</td>
<td>WEB SITES- 15 COURSES: $50,000—COURSE DEVELOP. 15 COURSES: $90,000</td>
</tr>
<tr>
<td>9.0 RECRUIT PROGRAM FACULTY</td>
<td>HIRE ADJUNCT, FULL TIME AND CURRENT CU FACULTY TO BEGIN AY 02-03</td>
<td>TRAVEL &amp; ENT.: 3 FULL TIME FACULTY SEARCHES $10,000</td>
</tr>
<tr>
<td>10.0 DEVELOP PROGRAM MARKETING PLAN</td>
<td>MARKETING PLAN, BUDGET</td>
<td></td>
</tr>
<tr>
<td>11.0 IMPLEMENT MARKETING PLAN</td>
<td>50 APPLICATIONS FOR AY 02-03 (FOR 1ST PROGRAM)</td>
<td></td>
</tr>
<tr>
<td>11.1 BULLETIN DEVELOPMENT &amp; PUBLICATION</td>
<td>10,000 BULLETINS FOR 2002-2004</td>
<td>DESIGN &amp; PRINTING: $50,000</td>
</tr>
<tr>
<td>11.2 CONTRACT FOR APPLICATION PROCESSING</td>
<td>REQUEST &amp; APPLICATION PROCESSING</td>
<td>TO SIPA: $3,000</td>
</tr>
<tr>
<td>11.3 WEB, CD ROM, POSTER, BROCHURE DEVELOPMENT AND PUBLICATION, AD DEVELOPMENT, PLACEMENT</td>
<td>WEB SITE, RECRUITMENT POSTER, PROGRAM CD &amp; BROCHURE</td>
<td>DESIGN, DEVELOPMENT, PRINTING: $100,000 AD DESIGN PLACEMENT: $75,000</td>
</tr>
<tr>
<td>11.4 IMPLEMENT MAIL CAMPAIGN</td>
<td>MAILINGS TO PROSPECTIVE STUDENTS, FACULTY, BUSINESS CONTACTS, ALUMS, HR DIRECTORS, ETC.</td>
<td>TO MAIL HOUSE: $20,000</td>
</tr>
<tr>
<td>11.5 RECRUITMENT TOUR, OPEN HOUSES</td>
<td>10-15 BRIEFINGS TO UNDERGRADUATES AT KEY INSTITUTIONS, 10-15 BRIEFINGS AT FIRMS FOR EXEC. PROGRAM, AND 3-5 OPEN HOUSES AT CU</td>
<td>TRAVEL &amp; MEETING COSTS: $30,000</td>
</tr>
<tr>
<td>11.6 DESIGN AND PLACEMENT OF PRINT, INTERNET ADS</td>
<td>ADS FOR RECRUITMENT EVENTS, GENERAL PROGRAM ADS BOTH WEB/PRINT</td>
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<tr>
<td>11.8 ENTICEMENT CAMPAIGN FOR ADMITTED STUDENTS</td>
<td>REGISTER AT LEAST 15 STUDENTS</td>
<td>POSTAGE, PHONE, TRAVEL: $5,000</td>
</tr>
<tr>
<td>12.0 SCHEDULE CLASSES FOR AY 02-03</td>
<td>CLASSROOMS, REGISTRATION COURSE CODES</td>
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<td>REVIEW OF SCIENCE AND MATH NEEDED FOR 1ST YEAR COURSES, SOCIAL EVENTS, TEAM BUILDING TO DEVELOP GROUP IDENTITY/ HIGH MORALE</td>
<td>INSTRUCTION, MEETING COSTS $10,000</td>
</tr>
<tr>
<td>14.0 FACULTY CURRICULUM PLANNING, ADMISSION COMMITTEE MEETINGS AND TEAM BUILDING</td>
<td>PREPARE ORIENTATION PROGRAM, LEARN CONTENT OF OTHER COURSES, BUILD GROUP IDENTITY</td>
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</table>
recruitment campaign was successful. Approximately 100 prospective students applied for admission, and 50 were offered admission. We assumed a typical yield 50% and were surprised when 45 students accepted admission and 43 actually arrived when the program began in Arizona in June 2002.

While student recruitment was underway, we conducted a number of junior faculty searches. These searches were quite successful and we attracted our first choice in four searches. We hired three policy faculty and one environmental science professor. The policy faculty included one in environmental public management, one in quantitative analysis and one in environmental economics. We hired adjunct faculty in to round out the teaching staff. Several were Arizona-based, but several were from New York (one was from Atlanta) and visited at Biosphere for the summer.

The program had a typical number of first-semester glitches, but overall seemed to go well. The workload was quite intense, but the level of commitment to the issue and the program was high and a great deal of learning took place. The fall semester also went well, and the program was receiving positive feedback from students and faculty. Near the end of the fall semester, in late November 2002 Columbia decided to move the MPA program from Arizona to New York in June 2003. In May 2003, the first 39 students graduated from the Environmental MPA program. More than half attended SIPA's graduation ceremony at the Church of St. John the Divine and, given the poor economy at the time, the initial placement record of the program was quite good.

5. THE MOVE

The decision to move the program was based on three major factors. First the university was reexamining its relationship with the Biosphere. Second, the Earth Institute was developing an ambitious agenda of new educational programs in New York and wanted the program's faculty to be involved in that effort, better serving the strategy to build educational offerings in the fields of environmental policy, sciences and sustainable development. Third, the program was seen as important to the university and the leadership of SIPA and the Earth Institute did not want to have it affected by the ongoing discussions about Columbia's overall relationship with Biosphere 2.

The move of the program was announced by SIPA Dean Lisa Anderson in late November 2002. In an e-mail to faculty explaining the move, Dean Anderson observed that:

“...after extensive consultations with the Earth Institute, Lamont-Doherty Earth Observatory, and other units of the University, SIPA has decided to relocate the MPA in Earth Systems, Science, Policy and Management to New York from Arizona at the end of the academic year.... We believe that this move to New York will further strengthen the vital link between the sciences and public policy by providing access to the natural and social sciences available at Columbia's Lamont-Doherty Earth Observatory, NASA's Goddard Institute for Space Studies
at Columbia University, the Department of Earth and Environmental Engineering, and other units at the Morningside Heights campus. Optimizing our resources and utilizing these facilities will allow us to develop an even more robust and distinguished program."

The most immediate issue that we faced in the move was informing applicants to the program of the change of venue. The program begins in June and has a November 1 early decision deadline and a early January final deadline. We communicated with all of our applicants and offered to refund their application fee if they decided to withdraw their application. No applicant asked for a refund. We also informed everyone who had requested information from the program and informed them of the change of venue. This had the effect of increasing applications. It turned out that most people who are considering studying at Columbia assume they will be attending school in New York. When some people learned that our program was in Arizona, they lost interest in it. When we announced the move to New York, approximately 25 prospective students who had decided not to apply to the program in Arizona decided to apply to the program in New York.

The second critical issue we faced was the need to move the faculty from Arizona to New York. We hired four new full time faculty to teach in Arizona and all had bought houses and had begun the process of settling in the Tucson area. After extensive negotiations, three of the four decided to move to New York, while the remaining professor accepted a position at Arizona State University in Phoenix.

Other changes included modifying all of the program’s promotional and informational material, and securing classrooms, housing and office space for the program in New York. An extraordinary effort by senior university officials and by Lisa Anderson, the Dean of the School of International and Public Affairs, secured faculty apartments, student housing slots, and a newly renovated office suite in SIPA’s building. On June 9, 2003, an entering class of 45 students began the program’s second year of study.

6. The Future

In the program’s second year and second home it might make sense to simply maintain the program and not consider any changes. Nevertheless, in the Spring of 2004 we plan to begin a faculty discussion of the curriculum and in the fall of 2004 begin discussion of curriculum changes with students and other members of our community at Columbia. The program’s curriculum was designed for a place that did not offer any graduate courses other than those offered in the MPA program. On Columbia’s New York campuses, we offer thousands of graduate courses. One of the first changes I am sure we will make is to provide some opportunities for our students to enroll in elective courses in place of some of our required ones.
The program has benefited from a formal evaluation study conducted by a senior researcher at Columbia University’s Teacher’s College. That study, “Report On The First Year Of The Earth System Science, Policy, And Management MPA Program At Biosphere 2”, by Dr. Susan Lowes focused exclusively on student perceptions of the program. A great deal of the study focused on issues related to the program’s location, issues that are no longer germane. However several other issues were mentioned by students and they will become agenda items for the program’s curriculum review. Students thought the program should:

- Do more to integrate some of the science lessons into the policy courses during the fall and spring semesters.
- Provide more detail on the specifics of U.S. environmental law.
- Reduce the emphasis on economics.

While I suspect the faculty will work to include the first two issues in the curriculum review, I doubt that the program will reduce the number of required economics courses. The current microeconomics requirement mirrors that “generic” MPA program’s requirements, and a course on the economics of sustainable development seems quite central to an Environmental MPA program.

Other issues that might be rethought include:

- The program’s schedule—three consecutive semesters of 18 graduate points each semester.
- Career services- The program’s first graduates have had to find work in one of the worst economic downturns in a quarter century. While substantial program resources have been devoted to this function, more may be required for this specialized career path.
- Integration of the program and its faculty into the broader community at SIPA, The Earth Institute and Columbia University.

The other issue that is of broader importance is to assess the value of the specialized MPA. Is this curriculum model a good one? The MPA is a general professional degree of use in a variety of policy settings. While most students select a policy concentration and focus in one area, many become “functional” specialists in areas such as finance, human resources or information management. An advantage of a more generic degree is that it provides greater flexibility for professionals throughout their career. There is also an advantage to learning functional and analytic skills through lessons obtained in a variety of policy areas. On the other hand, the more specialized MPA degree allows a student to demonstrate a focus and commitment to a single area and allows them to develop some depth of understanding in that single area.

There is a trade-off between breadth and depth, and my own view is that something is gained in a specialized MPA program, but something is lost. In the case of an environmental MPA, we gain the ability to teach environmental science as part of the curriculum. We also gain the out of class synergies of a community of students and faculty who share a deep and intense interest in an issue area. A danger is that we
must be careful not to confuse advocacy for analysis—a tendency that is all too prevalent when working in an area such as the environment. For some, the environment is as much a “cause” as it is an issue area. What is key when undertaking a specialized MPA program is that faculty and students understand both the costs and benefits before they begin their work in the specialized program. This can provide a self-consciousness that can permit the program to avoid some of the dangers of overspecialization.