

# **Proposal for an International Master's in Environmental Policy (IMEP) Program at Duke Kunshan University**

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**Revised March 23, 2015**

The Nicholas School of the Environment (NSOE) and Sanford School of Public Policy are proposing a highly innovative and analytical 2-year International Masters in Environmental Policy (IMEP) program for DKU.

## **I. Rationale and clarifications:**

### **I.a. What is environmental policy?**

The study of environmental policy is an applied field that examines the formation, design, application, evaluation, and impacts of public policies with a focus on providing solutions to environmental problems. The field of environmental policy takes into account the analysis of both contemporary national and international environmental problems, including for instance the study of energy, water, oceans, forests, and urbanization. Professional public policy schools and environment schools often approach the study of environmental policies through an interdisciplinary lens, as the field straddles multiple disciplines, including economics, public policy, political science, law, and geography, as well as the natural sciences. These programs seek to train decision-makers and future leaders in influencing the environmental policy process. Many graduates of professional environmental and public policy programs go on to work as policy analysts and environmental economists in government or in the nongovernmental sector. Other environmental policy experts will work in the private sector.

### **I.b. Key features of the new program**

The Nicholas School of the Environment (NSOE) and Sanford School of Public Policy are proposing a 2-year International Masters in Environmental Policy (IMEP) program for DKU. The overall goal of the proposed DKU IMEP program (described in greater detail below) is to create a highly analytical and innovative master's degree based on the Duke Master of Public Policy (MPP) and Master of Environmental Management (MEM), but with an emphasis on both international and Chinese experience and contexts, and to train students to be global environmental leaders. The program will be 4 semesters and include 16 courses for a total of 48 course hours. The program will allow DKU students to spend one semester at Duke. The program will simultaneously create a one-semester program in China for our MPP (Sanford) and MEM (NSOE) students. We expect to have an equal exchange of students moving between Duke and DKU. Through its design, we expect the program to experiment and innovate with curricular frameworks, classroom dynamics, pedagogical approaches, and the integration of research, teaching, and outreach. The proposed IMEP program will also strengthen the

international training of our Duke students through access to a broader array of classes, internship opportunities, networking, and a distinctive study abroad experience (also discussed in greater detail below). All together, the IMEP program aims to not only enhance the educational experience at DKU, but also create mechanisms and opportunities for feeding lessons learned at DKU back to the Durham community of educators and researchers.

We have opted to call the program an International Masters in Environmental Policy (IMEP) after consulting with colleagues in China and the US on how best to brand the program. Concepts like “professional degrees” and “public policy” do not have the same interpretation in the US and China. A “professional” program is frequently associated with something like a trade-school degree in China. Marketing the program as an international program is likely to enhance the attractiveness of the program to a broader international student body as well as to distinguish our program from the more conventional 3-year MA or MS programs in China.

### **I.c. Why does China need an International Masters in Environmental Policy (IMEP) Program?**

Environmental challenges have become a high-priority issue in China with a strong focus on devising both technological and policy solutions to address national and local environmental problems. Chinese research and academic programs, however, tend to be stronger in the natural sciences and engineering than in the social sciences, and there is limited interdisciplinary work. Simply put, while environmental degree programs that focus on natural sciences or engineering exist in China and elsewhere in Asia, a “Scoping Report on Exploring Options for a Duke Kunshan University Environmental Policy Program” found that the number of programs that include a substantial policy component is very limited and that the “‘Environmental Planning and Management’ programs are still significantly underdeveloped when compared to the environmental policy programs in the United States” (see Turner and Dong 2013, p. 6). The main Chinese competitor is the newly constituted environmental policy and management program at Renmin University, which had its first enrollment in 2013. Similar to other programs in China, this program still adheres to the conventional format for Chinese graduate programs that are 3-year research based programs and is unlikely to be as focused on developing professional skills and client-based internships; it is also tied to management and environmental science and engineering programs and unlikely to be as comprehensive and interdisciplinary as a Duke program. Yet because this program is situated in one of the leading social science universities, it is likely to be attractive for students who wish to stay in China for their graduate studies.

Another competitor is Tsinghua University, which also offers an International Master Program in Environmental Engineering and Management in English ([http://www.tsinghua.edu.cn/publish/enven/6285/2013/20131207233754073753361/20131207233754073753361\\_.html](http://www.tsinghua.edu.cn/publish/enven/6285/2013/20131207233754073753361/20131207233754073753361_.html)). Similar to the conventional programs offered in China, this program focuses too on environmental engineering and science, and environmental management and planning. This program is a two-year program and requires an internship in addition to a thesis. While international applications were low the first five years, they have substantially increased in the last two years. Last year they received 40 international

applications and this year 94 applications. About 1/3 came from US and Europe, 1/3 from Africa and 1/3 from Asia (mostly from Pakistan). Overall acceptance rate for the Tsinghua English masters program is 1/3.

For many of the specific programs, information is hard to derive because it is generally not available on the school websites. From examining this information, in general the cost for graduate school in China is generally 5,000-8,000 RMB/semester. The cost for the DKU program is significantly higher, but it is not a direct comparison. The academics and research are expected to be of western-style, and as such the cost is greater. The students will rely on scholarship funds, as they do for graduate school in the US. There is significant scholarship funding for the DKU graduate programs because these are the initial years of the program and they are emerging fields in China.

Details from school websites:

| <b>Masters Programs</b>   | <b>Enrollment</b> | <b>Duration</b>      | <b>Cost</b>          | <b>After Graduation</b>  |
|---|-------------------|----------------------|----------------------|--|
| <b>Peking University</b><br><br><b>Department of Environmental management</b>   | <b>36 total</b>   | <b>Not specified</b> | <b>Not specified</b> | <b>10% phd</b><br><b>90% found jobs in higher education, research institute, government and private companies.</b> |
| <b>Tsinghua University - Yale</b><br><br><b>Master of Science in Environmental Engineering degree from Tsinghua</b><br><b>+</b><br><b>Master of Environmental Management, Master of Forestry, Master of Environmental Science, or Master of Forest Science degree from Yale F&amp;ES.</b> | <b>6/yr</b>       | <b>3 yrs</b>         | <b>Not specified</b> | <b>Start in August 2015</b>  |
| <b>Chinese Academy of Sciences' Institute of Urban Environment</b><br><br><b>Urban Environmental Planning and Management</b>  | <b>68 (2009)</b>  | <b>Not specified</b> | <b>Not specified</b> | <b>Not specified</b>   |

| Masters Programs   | Enrollment  | Duration | Cost          | After Graduation   |
|--|---|----------|---------------|--|
| Renmin University<br>Environmental Policy and Management Program   | N/A (70/yr for the school of env)   | 3 yrs    | 8000 RMB/yr   | Not specified  |
| Fudan University<br>Environmental Management   | 7/yr  | 3 yrs    | Not specified | For the whole Department of Environmental Science and Engineering, there were 46 graduate students in 2014.<br>*2 Ph.D at Fudan<br>*5 Ph.D abroad (U of Hong Kong, California Institute of technology, U of Tennessee<br>*39 found jobs (3 of them found government jobs)<br><a href="http://environment.fudan.edu.cn/Show.aspx?info_lb=367&amp;info_id=1580&amp;flag=235">http://environment.fudan.edu.cn/Show.aspx?info_lb=367&amp;info_id=1580&amp;flag=235</a> |
| Nankai University – Glasgow University<br>in Urban & Regional Planning, International Relations and Environment Management | 75 first year<br>180 in 2018 (Glasgow website)<br>360 total (Chinese website) | 2 yrs    | Not specified | Start in 2015  |
| Xiamen University – University of San Francisco<br>Environmental Management  | 30/yr   | 3 yrs    | Not specified | Started in September 2004  |

Because devising policy solutions to complex environmental problems requires inputs from multiple social science disciplines and professional fields, including economics, political science, sociology, history, and law, an IMEP program will fill a gap in the environmental arena in China.

#### I.d. Why should Duke help establish an IMEP at DKU?

Duke University has been training leaders in the public, private, and nonprofit environmental sectors for decades. Its environmental policy expertise spans multiple schools and institutes, including the Nicholas School of the Environment, the Sanford School of Public Policy, the Duke Law School, the Nicholas Institute for Environmental Policy Solutions, and the Duke Global Health Institute. Environmental policy expertise is also a key element of Duke's brand. Both the Nicholas School and the Sanford School offer professional Master's degree programs that are

highly analytical and provide students with the skills and tools necessary to understand and influence the environmental policy process – specifically, the MPP and MEM programs. Moreover, the Nicholas’ program offers a policy concentration while Sanford’s offers an environment concentration. Drawing on these strengths, Duke is well-positioned to extend its educational training in environmental policy to DKU, where it can help meet the rapidly rising demand for more effective management policy responses to the severe environmental degradation that afflicts China and neighboring countries in Asia.

The IMEP program is a new program and distinctive from both the MEM and MPP programs currently offered at Duke. Instead, it combines the core classes in public policy and environmental management to create a program specifically focused on environmental policy with an emphasis on both international and Chinese experience and contexts.

To remain competitive globally, Duke needs to expand its environmental programs to China. There are a small number of foreign universities operating in China to create cooperative programs and joint-degree programs in the environmental realm. Most notably, the Yale School of Forestry and Environmental Studies and Tsinghua University’s School of the Environment announced a collaborative dual degree program to begin during the 2015-2016 academic year (<http://environment.yale.edu/news/article/fampes-unveils-dual-degree-with-university-of-tsinghua-in-china/>). Yet, this program and other programs do not have a physical equivalent to the DKU campus. They are simply connecting two different degree programs, rather than considering an integrated program drawing from both. Moreover, they do not incorporate active research into their programs like the proposed IMEP program does (see below for more details). Nor do these programs embrace pedagogical innovation in their design. Additionally, the Tsinghua/Yale program is a three-year program where students will be required to apply to both programs and to spend equal amount of time at each institution.

Both the Nicholas School and the Sanford School are deeply committed to public engagement to create more effective public policies and training of policy makers and practitioners globally. The IMEP program thus provides an opportunity for both the Sanford School and the Nicholas School to strengthen their international engagement in accordance with Duke’s Global Vision ([https://global.duke.edu/sites/default/files/images/A\\_Global\\_Vision\\_For\\_Duke\\_University\\_1.pdf](https://global.duke.edu/sites/default/files/images/A_Global_Vision_For_Duke_University_1.pdf)) as well as to foster interdisciplinary collaboration between the two schools. To date, the Nicholas School and the Sanford School have a track record of collaboration in the design and implementation of a joint Ph.D. Program – that is, University Program in Environmental Policy.

**I.e. Vision:**

Our vision for this program is to create a new cadre of environmental leaders in China and Asia that will influence the policymaking realm at all levels, ranging from national government to the local government. Beyond government, we foresee these environmental leaders as serving as incubators of new ideas for improving environmental quality in the private and non-governmental sectors. For students in the Duke MEM and MPP programs, our vision for the new IMEP program is to help to strengthen the international training of Duke students on the Durham campus through access to broader array of classes, network of internship and career

opportunities, and distinctive study abroad experience. Combined, the IMEP program will contribute to the Duke's global vision to prepare students for global citizenship and active engagement in devising solutions to global challenges, particularly in the environmental realm. More so, the innovative and experimental orientation of the curriculum will enable us to expand pedagogical approaches that integrate research, teaching, and outreach with a global focus.

## **II. Program Structure**

### **II.a. Comparison with existing programs; competitive advantage and value added:**

Chinese-oriented master's programs are tightly regulated by the government (i.e., quotas on how many students can be admitted and types of programs that can be offered) and are mainly oriented towards "academic" rather than "professional" training, tending to serve faculty research activities. Because of the limited fields of study listed in the Chinese Ministry of Education's Catalog of Disciplines, environmental policy and management master's programs either provide degrees in environmental science focused on management, or management/economics focused on environment. Most of these programs are more aligned with public administration than public policy. That is, they focus on the mechanics of government operations—budget and finance—and do not offer the analytical skills/tools to inform and influence the environmental policy process both within the public sector and private/nongovernmental sector. There are a number of western-oriented economic programs, particularly English-language MBA programs at Fudan, Tsinghua, and PKU, a finance program at Fudan, a public policy program (predominantly management and administration) at PKU, but nothing on environmental management/policy. See <http://www.cucas.edu.cn/>.

The main competition for a DKU environmental policy program would then be US programs, such as the Duke Master of Environmental Management (MEM) degree or the MEM program at Yale's School of Forestry and Environmental Studies (mentioned above).

To this end, there are a number of key features to the proposed IMEP that will give it distinctive value and undergird an effective marketing strategy:

- *A combination of environmental management and public policy.* To date, students at Duke can apply for a joint-degree program (MEM-MPP) between the NSOE and Sanford, which allows them to earn two degrees in three years but creates a number of redundant requirements. Or, students can take electives from one program while matriculating in the other, but they then miss out on those core components that are not redundant. Instead, the IMEP program focuses on environmental public policy, drawing together the important core requirements in each, which is often the reason for why students seek the joint-degree program at the Durham campus.
- *A Duke degree.* Given the early stage of DKU and that it has not had time to establish a reputation, and the need to compete with US and Chinese programs, the program will

need to be credentialed by Duke. Moreover, by giving a Duke degree, we are not constrained by the Chinese Ministry of Education in terms of numbers of students or the title of the degree. (Note: All DKU graduate programs currently award Duke degrees).

- *Access to Duke.* In order to compete with opportunities to study in the US and other joint degree programs, the proposed DKU program will provide a semester at Duke. This provides greater access to faculty, English-language experience, and networking with US contacts. In addition to the students spending a semester at Duke we propose the following:
  - Each semester, plan for two Duke courses to be offered as electives by remote telepresence. These courses would be taught at 8am or 7pm in Durham, so DKU students can engage remotely (11 hour time difference). The Nicholas School already is well-equipped for offering courses through remote telepresence. DKU classes could also be offered at Duke on a reciprocal basis.
  - Rotate Duke faculty to DKU each semester to teach electives. Thus, we would ensure a strong relationship between DKU and the Durham campus.
- *Networking and internships in China.* The main advantage of a program in China is for students to build a network and increase their job opportunities in China. This seems to be the main reason for why students would opt to enroll in a program in China rather than applying to a university outside of China.
- *Key skill development.* Students want skills they can use in their jobs: economics, statistics, program evaluation, policy analysis, and science translation that are finely tuned to the environmental policy realm. Other areas that could be particularly relevant include supply chain analysis and corporate social responsibility. Emphasizing the interdisciplinary nature of the program will also increase its competitive edge over Chinese programs that are still quite disciplinary in scope.
- *High quality faculty.* As in the US, students in China pay attention to the faculty who are teaching the courses. Thus, a strong faculty presence with solid experience and reputation at DKU will be vital for building name recognition and ensuring a high-quality program. We anticipate that the DKU faculty will have a connection to Duke, as this will not only strengthen the quality of teaching at DKU, but also strengthen the quality of research taking place at DKU.
- *Independent research center.* A large number of think-tanks in China are affiliated with a government ministry or institute. Many university researchers receive funding from government sources (including the local government) for policy-driven research and thus do not have the ability to determine their own resource agendas and may face tricky conflicts of interest with those government institutions. Moreover, much of their research becomes proprietary and is not publicly available. Thus, there is room for the development of an independent research center similar to Duke's Nicholas Institute for

Environmental Policy Solutions that publishes its work entirely in the public domain (see below for additional information on the research center and attached proposal). This is a major attraction for Duke faculty to participate in the teaching of the IMEP program, as they will also be able to deepen and grow new research programs.

## **II.b. Research Component to the Proposal**

To bolster the teaching mission and reputation of DKU, we have also proposed establishing an environmental research center at DKU (see attached proposal produced in the Research Subcommittee for DKU, April 2014 and letter of support from Vice Provost Carin, March 2015). An environmental research center at DKU would facilitate research to address an area of growing importance in China, to create synergies with current and future DKU and Duke academic programs, and to build a flexible, interdisciplinary program supporting both social and natural science research.

While the development of academic programs in environmental policy and management in China has been slow, a number of research institutions have been established, including several collaborative programs with foreign partners. Similarly, while many US researchers collaborate with Chinese colleagues on environmental policy and science issues, few of these research initiatives have been meaningfully assimilated into the teaching missions of either US or Chinese the universities.

***Building a top-notch environmental research center at DKU will help to distinguish DKU and the IMEP program from other research endeavors in China through its integration of research and educational programming on environmental policy and science.*** Given the environmental challenges facing China today and the increasing public and government awareness of the environmental impacts on both human health and the economy, the establishment of a cutting-edge environmental research center is particularly timely. Providing solutions to environmental issues such as air and water quality, urbanization pressures, and energy and climate change are relevant not only for China, but for other rapidly growing economies and populations in Asia. An environmental research center will thus provide a hub for faculty to engage in interdisciplinary and policy-relevant research in China and beyond; it will also facilitate collaborations between DKU and Duke faculty/researchers with faculty and researchers at Chinese universities, businesses operating in China, policy-makers, and non-governmental organizations. Having a strong research center at DKU will also be essential for building the reputation of the environment program and to attract high quality faculty, as they will require a place for them to carry out research. The research center will offer an important physical space for hosting visiting scholars and meetings/workshops, and provide a venue for students to work on applied research projects. Most importantly, because Duke is internationally recognized for its strong research programs in the area of the environment, a strong research center at DKU will also demonstrate that Duke is also committed to its core mission of integrating research, teaching and outreach at DKU.

Similarly to the Global Health program, we anticipate that the research faculty will also contribute to teaching in the IMEP program (discussed below). The research center at DKU could serve as a hub for innovative student research. Similar to the work that is being carried out on the Duke campus, we can imagine student projects being modeled on collaborative, vertically integrated, problem-focused, multidisciplinary research projects and linked to the research center. We also anticipate that the Nicholas Institute for Environmental Policy Solutions and the Energy Initiative at Duke will seek to develop research programs with the research center at DKU. What excites the Durham faculty about this program is the prospect of initiating new research projects in China when they are teaching at DKU, and as such the research center would serve as an incubator for research. There are a number of emerging areas of research between the NSOE and Sanford that are also of increasing importance in China and could serve as focal points for integrating research, teaching, and practice at DKU – e.g., food policy, urbanization, or regulatory policy in emerging markets.

***It is also important to underscore that an environmental research center at DKU will be distinguishable from many other research institutions in China owing to its status as an independent academic institution.*** For the most part, policy research in China has been conducted predominantly in government institutions (e.g., under the State Council) rather than in independent academic institutions. As such, an independent research institution at DKU will help the DKU-IMEP program attract research-oriented faculty of an international caliber that will make a sustainable and powerful academic program.

## **II.b. Curriculum for Environmental Policy Program at DKU**

Students in the proposed international masters in environmental policy (IMEP) program will gain the requisite knowledge, tools, and experiences to devise policy solutions to complex environmental problems. The program aims to provide students with the analytical skills to understand and influence the environmental policy process both within China and globally. Drawing upon the strengths of the Nicholas School of the Environment's MEM program and the Sanford School of Public Policy's MPP program, the new program is well positioned to meet the rapidly rising demand for more effective environmental policy responses to the severe environmental degradation that afflicts China and neighboring countries in Asia. The proposed program integrates many of the core courses from both programs to ensure that students gain rigorous training in environmental policy (including economics, politics, public policy, and law). Specifically, the first year structure of economics, statistics, and policy analysis, followed by a spring semester policy practicum, mirrors the MPP design. Moreover, we have sought greater integration of the courses by having one of the fall instructors teach the spring practicum. The additional requirement of environmental science, law, and a group masters project follows the MEM design. Politics is an element of both programs. As in the MEM program, it still requires an environmental science component, but the emphasis overall is on policy and the social sciences. Moreover, it draws more heavily on the Chinese experience and other comparative cases from Asia to distinguish the program from the ones in Durham.

Another goal of the DKU IMEP is to create an international experience with particular depth in China. We anticipate that all of the courses will have a strong focus on the Chinese experience and regional issues within China. However, we do anticipate DKU becoming a hub for Southeast Asia and that many IMEP graduates will operate in a global environment. Attention to regional and global issues will also be part of the curriculum. The curriculum does not have a fixed definition of what global is, but we expect the definition of global to evolve as the curriculum takes shape.

To further distinguish this program from other international programs in China as well as to enhance our own programs on the Durham campus, we are proposing that students in the DKU program will have an opportunity to spend one semester in Durham. In turn, the same number of students from Duke (NSOE and Sanford) will be eligible to spend a semester at DKU. This will allow students at DKU to benefit from the larger number of electives available on the Durham campus and to provide Duke students with a global experience during their time at the NSOE and Sanford. Given the gravity of China's environmental problems and its significance for solving many global environmental problems, Duke students with experience in China will be better positioned to be global environmental leaders.

The IMEP program is distinctive in that it does not replicate our MEM or MPP programs, which have a stronger domestic component. The IMEP program, furthermore, is not just China focused, but is also global oriented and is likely to reach a different study body – that is, one that is seeking a more global perspective on the environment with particular attention to Asia. In this way, the proposed DKU-IMEP curriculum will also be attractive for students outside of China who want a global environmental program. China not only faces the most daunting and challenging environmental problems worldwide, but it is likely to be a testbed for students who are interested in devising policy and technological solutions. This involves not just public sector jobs but also working with companies based in China. To illustrate, China is not only the world's largest consumer of energy, but also the largest producer of greenhouse gas emissions. More so, China has been at the forefront of building a more sustainable economy through investments in cleaner energy technologies. Thus, we foresee the IMEP program offering an educational platform for innovation in solving global environmental problems.

## **Structure**

Below we outline the basic components of the curriculum. We note that the scope, dimension, and character of the IMEP curriculum remains a provisional scaffolding, as much of the detail within the particular core courses and electives will depend not only on the faculty whom are hired, but also on what they learn through experience about what an environmental policy-centered curriculum looks like in the Chinese context. Given the innovative nature of this curriculum, which includes internships and client-based problem-centered projects, careful assessment of learning outcomes (discussed below) will be vital for its successful impact.

The curriculum for this degree will consist of 16 classes (48 course hours) spread out over 2 years. Students will be required to take 7 core classes (21 course hours of credit) so as to

ensure quality and consistency in the degree. They will also be required to enroll in a full year of the Masters Project class (MP, 6 course hours). Similar to the MEM and MPP programs and unlike the traditional MA programs in China, the IMEP program does not offer a thesis option but a capstone project. There will be flexibility with the 7 elective classes (21 course hours) so as to allow students to pursue particular environmental policy and resource issues as well as enhancing their methodological skills. Finally, they will be required to complete a summer internship in China, ideally connected to their MP.

The curriculum will include:

- 7 core classes (21 course hours)
- 7 elective classes (21 course hours)
- 2 MP capstone courses (6 course hours)
- Summer Internship

The program includes a statistics and economics prerequisite; students would be required to take two examinations prior to enrollment to ensure that they have the appropriate statistical skills and background in principles of economics. If not, we would have them take an on-line class prior to enrollment.

We would also administer an English reading and writing examination prior to enrollment. Because IMEP is an English-only program, students will need to be screened for language before they can enroll (discussed below in the section on admissions). For students that need additional support in writing, we would require that they enroll in one of the English-language classes offered through the writing program at DKU (in addition to their 48 credits). We would contract with the writing program at DKU (similar to the other programs at DKU) to provide additional writing support for our students throughout their studies.

Similar to the modules that the NSOE administers on its Duke campus for understanding plagiarism, responsible conduct of research, etc., we will require similar modules at DKU.

### **Core Courses**

(year/semester taken in parentheses)

**Environmental economics (1F)** – This course teaches students to apply modern microeconomics to environmental and natural resource policy problems. The course covers both conceptual and methodological topics and applies these tools to normative and positive aspects of current environmental questions. Material covered in the course includes: basic theory and methods of economic analysis applied to environmental problems; cost-benefit analysis and efficient policies; economics of the environment, particularly the economics of pollution control and regulation; and natural resource management. Cases will include air and water pollution, toxics, energy, fisheries, and forests.

**Statistics and Program Evaluation for Environmental Policy (1F)** – This course teaches students to use data to analyze the impact of policies, make recommendations, attempt to persuade

others, and make environmental policy decisions. It will cover the tools and techniques of program evaluation, familiarizing students with the various research methods that can be employed to evaluate the effect of environmental policies and innovations. It will also teach students to read empirical research in a more critical manner. Finally, through applied problem sets, students will become more proficient in the use of the STATA statistical software package.

**Environmental Policy Analysis (1F)** – The objective of this class is to learn how to organize and present analyses of data to solve important environmental problems. The course draws upon specific policy analysis tools and case studies to evaluate and distinguish between different policy issues and choices.

**Environmental science (1S)** – This course covers natural science aspects (physics, chemistry, and biology) of major environmental pollution problems (e.g., air, water, soil, climate change, human and ecological health).

**Environmental Economics Policy Practicum (1S)** – This course focuses on written and visual literacy. In order for policy-makers to be effective, they need to know how to communicate data and policies to the broader public. Building on their work in the fall, the course will begin with economic and quantitative analysis of a particular environmental or natural resource problem. Students will then develop written and visual presentations of their analysis (including policy briefs and public speaking skills), with final projects completed in teams.

**Environmental Policy Process (S)** – This class provides an introduction into the politics of the environmental policy process in comparative perspective. Throughout the course, we will focus on the formation and implementation of different environmental policies. To analyze effectively different environmental policy options and to understand why some get through the policy process and how policies are changed, topics covered include the role of different interest groups, institutions, and organizations and their impact on the policy process. Case material draws upon cases from China and the US within a comparative perspective to highlight specific problems in China and globally. Cases will include energy policy, water policy, pesticide policy, forest policy, and climate change among others.

**Environmental Law, Governance, and Regulation (S)** – This class explores issues of governance at different levels of scale, particularly dealing with treaties, regimes, laws, standards, and rules. Material examines implementation, compliance and institutional effectiveness. At the international level, the course will look at how and why states can succeed and fail to negotiate international governance regimes. At the domestic level, the class looks at government regulation (via laws, rules, standards) and implementation at the local level. The course will also cover private regulation, including voluntary mechanism and non-state market-driven mechanisms.

**MP capstone class (2F/S)** – This class will focus on research methods, proposal design, communicating with a client so as to facilitate the client-based masters projects that will be required as a capstone experience. Students will present their work in progress throughout the

year. At the end of their fourth semester, students will be required to present the results of their MPs in a public forum.

The client-based aspect is particularly important for making the program attractive, as conversations with colleagues in China and at the ERIC workshop at Duke indicated that students are likely to consider DKU if they believe it will enhance finding a job in China and gaining an internship experience. Data from the Academic and Career Services office at the NSOE shows that Duke MEM students are increasingly looking at industry, banks, consulting firms, and think tanks for employment in China. Thus, we expect that DKU students will work with clients in China and that staff at DKU will facilitate building the client network for group Master's Projects.

Students will require advisors for their Master's Projects. We would encourage students to work on projects in China to build their networks and job potential, and this would argue for advising by DKU faculty. Duke faculty may choose to advise IMEP MPs, but only after they have met their normal advising obligations for MPs at Duke; DKU advising will not replace their MP advising on the Duke campus. When DKU students are at Duke, the IMEP Program faculty lead on the Duke campus will be responsible for holding the MP class for DKU students. This will also ensure parity in the MP process across the two programs, as the IMEP faculty lead will provide another review of the MPs, which will be important for the first few years of the program, especially given that Chinese institutions do not have the equivalent of a MP. The MP will be evaluated through the same process as on the Duke campus whereby students must present their MP in a public forum and then submit it to their advisor for review. Students will also be required to submit a draft prior to the public presentation to ensure that they are on track for graduation.

Lastly, we will devise similar modules at DKU to many of the MP modules on the Duke campus that cover citation and reference programs and introduction to different software such as NVivo.

### **Sample DKU Elective Classes – 21 credits**

We anticipate being able to offer an array of elective classes that include analytical/tools classes and topical classes. In order to do so, we will (1) utilize distance learning at Duke to offer more elective classes; (2) seek to cross-list classes with the Global Environmental Health program at DKU; and (3) contract a few adjunct hires at DKU and/or visiting Duke professors from the undergraduate semester abroad program. In particular, we may be able to contract courses from distinguished faculty at Wuhan University (strong expertise in environmental law and GIS) or Fudan University (strong expertise in environmental and energy economics). Faculty would be vetted through the DKU environmental program in conjunction with Duke faculty input and the program management committee (see II.c below).

Below are possible ideas for electives taught by IMEP faculty, adjuncts, or visiting Duke faculty (cross-listed Global Environmental Health courses are listed at the end; distance learning opportunities remain TBD). These are just a sample of the classes that could be offered. We

hope the program will be of interest to Duke faculty outside of the NSOE and Sanford, including in history, engineering, law, and sociology, for example. As the program develops, we will continue to engage faculty from the broader social sciences in our curricular planning to discuss additional course offerings. For instance, we envision classes on the history of comparative regulatory policies and demography.

### **Applied Environmental Valuation Methods**

Course will cover empirical methods (e.g., contingent valuation, hedonic pricing, and benefits transfer) used to value non-market environmental and health outcomes, including morbidity and mortality, air and water quality, ecosystem services, and non-use values.

### **Environmental Impact Evaluation**

Program and impact evaluation is necessary to understand the effectiveness of current and future policies, as well as how they can be improved. This course will cover the process and methodology of designing and implementing state-of-the-art quantitative evaluations appropriate for environmental policies, including logic chains, metric choice, survey design, survey implementation, and relevant statistical analysis.

### **Climate Change Law and Policy**

Course will cover different policy instruments used to address climate change including legal regime, emissions taxes, allowance trading, regulatory tools at different spatial scale (local, regional, national, global).

### **Fundamentals of Geospatial Analysis**

Course will cover the fundamental aspects of geographic information systems and satellite remote sensing for various environmental applications.

### **Environment and Development Economics**

Course will focus on the challenges developing countries face in balancing environmental management and economic growth. Class will use economic analyses to examine these challenges and to devise policy solutions, especially given that developing countries often have weak institutional capacity and fewer financial resources to cope with environmental pollution.

### **Energy Economics and Policy**

Course examines the economics of markets and policies for different energy supply sources (such as petroleum, coal, natural gas, electricity, renewables, nuclear), energy demand and efficiency, and their interactions with each other and with the rest of the economy and environment. Other topics include markets for energy and energy-using technologies, energy price regulation, and energy security.

### **Business Strategy and the Environment**

Course will explore ways in which businesses are applying strategic management tools to incorporate sustainability and corporate social responsibility into decision-making and operations. Focus will be on different types of corporate/business structures (e.g., private

businesses, state-owned enterprises, and multi-national corporations) and the different environmental challenges they face.

### **Field-based Conservation Policy Class**

With the new tropical conservation initiative at Duke and ties between the Organization for Tropical Studies and several Duke faculty with the Xishuangbanna Tropical Botanical Garden in Yunnan, we might design a field-based course on conservation policy.

### **Cross-listed Global Environmental Health electives**

#### **Global Environmental Health**

Economics and Policy: Social science perspective on global environmental health. Students will learn to identify primary environmental causes of high burden diseases such as malaria, diarrhea, and respiratory infections; describe how to measure socio-economic impacts of global environmental health diseases; discuss key policies to control global environmental health problems based on private prevention and therapeutic behaviors; and propose frameworks to empirically monitor and evaluate global environmental health policies. A sub-module will focus on climate change and water-borne diseases.

#### **Expected 2-year schedule:**

##### **Fall Year 1:**

Environmental Economics  
Statistics and Program Evaluation for Environmental Policy  
Environmental Policy Analysis  
Elective

##### **Spring Year 1:**

Environmental Science  
Environmental Economics Policy Practicum  
Political Process  
Elective

##### **Fall Year 2 (at Duke Campus):**

MP Capstone  
Elective  
Elective  
Elective

##### **Spring Year 2:**

MP Capstone  
Environmental Law, Governance, and Regulation  
Elective  
Elective

### Envisioned Teaching Matrix

|                  | Fall Semester   | Fall Semester     | Spring Semester   | Spring Semester |
|------------------|-----------------|-------------------|-------------------|-----------------|
| DKU Economist    | Env. Econ.      | Stats & Prog. Ev. | Pol. Practicum    | Elective*       |
| DKU Social Sci.  | Policy Analysis | Elective*         | Political Process | Law & Gov       |
| DKU Scientist    | Elective        | Elective*         | Env. Science      | MP Capstone     |
| DKU Res. Dir.    | Elective        |                   |                   |                 |
| DKU Res. A. Dir. | Elective        |                   |                   |                 |
| DKU Researcher   |                 |                   | Elective          |                 |
| DKU Adjunct      | Elective        |                   | Elective          |                 |
| DKU Crosslist    | Elective        |                   | Elective          |                 |
| Duke visit       | Electives (2)   |                   | Electives (2)     |                 |
| Duke video       | Electives (2)   |                   | Electives (2)     |                 |
| Duke             | MP Capstone     |                   |                   |                 |

\* Depending on agreed teaching load.

#### Assumptions:

1. DKU teaching faculty would teach 3-4 classes per year. This corresponds to the teaching load for DKU faculty hired in the Global Health program.
2. DKU research faculty would teach 1 class per year.
3. The above matrix assumes research and adjunct faculty do not teach core classes. Ideally, if two core courses could be taught by those faculty, it would give more flexibility to the teaching faculty.
4. DKU students would rotate together to Duke in the Fall of year 2. Similar number of Duke students would rotate to DKU. Initial Duke students traveling to DKU will receive subsidized travel.
5. DKU students rotating to Duke would be required to take an MP class together
6. Duke would rotate 2 faculty to DKU each semester, providing 2 electives.
7. Duke would arrange 2 electives available by video.

DKU students will be able to register for NSOE and Sanford elective courses subject to existing size limits outside the priority window for NSOE and Sanford graduate students (similarly, NSOE and Sanford students can register DKU courses—including special access electives at Duke—outside of the priority window for DKU students). A Memorandum of Understanding will govern the initial semester rotation at Duke.

As experience with the DKU rotation is developed, adjustments will be made based on the Memorandum of Understanding among NSOE, SSPP, and DKU, including the number of DKU-funded faculty at Duke and/or the number of students rotating.

To summarize:

The link between supply and demand is as follows:

| Supply:                    | Demand:  |
|----------------------------|--|
| Three teaching faculty     | Seven core classes<br>One MP capstone<br>One elective (possibly as many as four, depending on teaching load) |
| Three research faculty     | Three electives  |
| Four visiting Duke faculty | Four electives   |
| Duke semester funding*     | One MP capstone<br>Four electives  |
| Duke telepresence          | TBD  |
| DKU cross-list             | TBD  |

The expected breakdown of core teaching among the teaching faculty is:

|                        |  |
|------------------------|--|
| Economist              | Environmental economics; Policy practicum              |
| Other social scientist | Policy analysis; Political process; Law & Governance   |
| Natural scientist      | Environmental science; Statistics & program evaluation |

As noted earlier, these classes could be shifted among these and other faculty depending on expertise and interest.

Ignoring telepresence and cross-listing from other DKU programs, the proposed budget creates seven core classes, two MP capstone courses, and between twelve and fifteen electives (depending on whether teaching faculty are hired with 3 or 4 course teaching loads). Between eight and eleven electives will be available at DKU, where students will have space in their schedule for four electives. During their semester at Duke, student will have access to the four electives created by DKU funding, as well as the broader set of classes at Sanford and NSOE. Cross-listing with other DKU programs and telepresence opportunities will further expand elective opportunities.

### **II.c. Accreditation and Assessment**

Because this is a new masters program, we are working the Office of the Vice Provost of Academic Affairs to obtain SACS approval and accreditation prior to the commencement of the program. Assessment of all aspects of DKU programs is an important factor in the ongoing refinement and evolution of DKU as an institution. Molly Goldwasser, EdD in the office of the Vice Provost for Academic Research and Deedra McClearn, PhD in the DKU Programs Office,

among others, are involved in establishing a variety of assessment methodologies for course content, pedagogical effectiveness, faculty experience, and student outcomes. Considerable data are being collected with the idea of making assessment not only of benefit for accreditation purposes but more broadly as a means to improve and refine the educational experience at DKU. We can envision that the IMEP program at DKU will be refined over time to take into account the lessons learned from these assessments, while remaining within the general scope of practice of this proposal. In that sense, the IMEP program will be experimental, but we do feel that its overall objectives that drive the vision for the type of training it can offer should remain. Certainly, innovations in educational experience borne out at DKU that are translatable to the Durham programs will be communicated back through regular discussions between program directors in Durham and Kunshan.

In addition, to ensure that the program meets the needs of students at both DKU and Duke, we also propose the establishment of a “management committee” that will likely include one staff and one faculty each from the Nicholas School of the Environment and Sanford School along with the IMEP director, the associate director, the director of admissions, and the director of career services (e.g., eight total). The management committee will convene on a biweekly basis, as needed, and should agree on all major program decisions (as well as being available for consultations on more minor issues). This will help to ensure open lines of communication between the different programs (IMEP, MEM, and MPP) and to ensure parity in quality across all the programs.

We will review the program every year in accordance with SACS accreditation. At the end of each year, the program direction will submit an annual report to the Vice Provost for Academic Affairs, taking into account admissions, aggregate course evaluations, exit/satisfaction survey, and job placement experience (all of which will be tracked on a yearly basis). After an initial three-year period, we will carry out a more extensive review process. We draw upon current assessment procedures at Duke for evaluating courses and teaching so as to ensure that the program is meeting the objectives laid out in our program plan. In particular, we will ensure that our assessment procedures comport with existing assessment procedures that are used for SACS in the Nicholas School, including standardized evaluation data on final Masters Projects (MP) and student exit survey data.

#### **II.d. Administrative structure (faculty, staff and resource requirement)**

##### *Faculty Staffing:*

To build and sustain the IMEP program at DKU, we need to hire a senior faculty person with international stature. Because this person will oversee both the research center and the IMEP program (and serve as director of graduate studies) (see attached draft job description), this person will not only need to have research credibility, but also to be an aggressive networker and recruiter. The ideal person should have the right contacts in China, be sufficiently charismatic to build a dynamic institution from scratch, as well as sufficiently skilled already in

policy analysis. We recognize that it is essential that we recruit a great director, as this person will have a good deal of influence over the IMEP program and help to shape the research priorities. Hiring the program director has already been granted by the DKU Board of Trustees, pending completion of the approval processes at Duke.

In addition, we propose a cluster hire for both the educational program and research center in which we hire the faculty for the environmental program as a group: three faculty positions for the education program and two research positions (including the associate director) for the research center. By hiring the faculty together, this will signal to the potential hires a firm commitment to the environmental program, which will further contribute to the building of an academically rigorous and sustainable program.

We would seek to hire the program director almost immediately (July 2015) and research staff soon after (January 2016). Having research faculty at DKU will help to facilitate research opportunities for both faculty and students affiliated with DKU and Duke. The senior faculty person would play a role in hiring the other research faculty as well as the teaching faculty.

Because of the strength of these hires, they may request Duke affiliations or joint appointments. We would anticipate that the faculty hired for the teaching component would also carry out research and enhance the research center and that those hired for the research center would also teach at DKU.

Similar to the Global Health faculty at DKU, teaching faculty would be expected to teach 3 or 4 courses, depending on their research program. Research faculty would be expected to teach 1 course per year, as they will have a more research-forward orientation. Both, however, will participate fully in the IMEP program, as research will flow into the classroom and students will have an opportunity to participate in the research life of the center.

In addition to full-time DKU faculty, the budget includes funding for 2 Duke faculty to rotate to DKU each semester to provide elective classes. We believe the existence of a research center at Duke will help to incentivize the sustainability of the program, as faculty will not only be teaching, but engaged in research. More so, Duke faculty have already taken advantage of the conference facilities at DKU to host events and we foresee this as being another incentive for faculty to want to teach at DKU. In particular, Professors Avner Vengosh (Nicholas School) and Marc Deshusses (Engineering) held a workshop on hydraulic fracturing and water during Fall 2014 at DKU.

Duke faculty who would like to teach at DKU would need approval of departmental chairs or deans to ensure that their courses and advising loads in Durham are fully covered. Durham-based faculty who teach at Duke may teach elective classes or may team-teach the core classes being offered at DKU.

We also envision that at least one of these courses being taught at DKU each semester by a Duke faculty person could be teleconferenced back to Durham so that Duke students could also

enroll in the class. The use of telepresence courses is meant to expand the elective opportunities at DKU and is not part of the core curriculum. Conversely, the use of a few telepresence courses could also provide access for Duke students to courses at DKU. We also have in mind a variety of means by which faculty might engage in cross-campus collaborations including jointly taught courses, with faculty and students in both places, as well as both synchronous and asynchronous teach approaches. Such collaborations and experimentation would be encouraged, and would be up to interested faculty, but would not be essential to the success of the program. Given that this is a new program, we plan to look at a variety of technological and pedagogical approaches.

The table below lists the new faculty positions in our proposed budget (also described in greater detail below under financial arrangements).

| DKU Faculty Positions                                | Course  | # of Classes |
|--|---|--------------|
| <b>IMEP Director and DGS/Head of Research Center</b> | Elective  | 1            |
| <b>Associate Director of Research Center</b>         | Elective  | 1            |
| <b>Research position</b>                             | Elective  | 1            |
| <b>Environmental Economist</b>                       | Economics, Statistics, Communications, elective                   | 3-4          |
| <b>Environmental Social Scientist</b>                | Policy Analysis, Political Analysis, Law and Regulation, elective | 3-4          |
| <b>Environmental Scientist</b>                       | Environmental Science, MP Capstone, electives                     | 3-4          |

*Administrative Staffing:*

In addition to the faculty positions described above, we expect 5.5 FTEs of staff to support the education program (a total of 4 FTE at Kunshan for the education program). For the IMEP program, we plan to hire an associate director (e.g., director of student services), an administrative support person, an admissions and marketing director, and career services director. We will hire another half time marketing person for Durham. Having a half-time marketing and recruitment person on the Durham campus will ensure that will adequately market the IMEP program in the US and coordinate marketing strategies with our NSOE and Sanford programs. The marketing staff for the IMEP program will work with the NSOE and Sanford School marketing staff to advertise not only the DKU IMEP program but also concurrently the Durham/Duke MPP/MEM programs so that the Durham programs will also increase their application pool and expand their exposure in China.

Because we anticipate that DKU students at Duke may require additional support, we have budgeted for a full-time Program Coordinator in the DKU office at Duke to oversee logistics for the DKU students coming to Duke as well as a part-time IMEP faculty lead to oversee a IMEP

Master's Project class at Duke. *Having a full-time program coordinator will insure that DKU students rotating to Duke are fully supported without burdening NSOE or Sanford administrative staff.* The program coordinator and IMEP faculty lead would also take the lead in advising DKU students on course selection and working with the schools to contract and hire teaching faculty for additional special access elective classes that may be warranted.

| Administrative Position                     | Responsibilities   | FTE | Expat or PRC | Start Month |
|---|--|-----|--------------|-------------|
| Associate Director of IMEP                  | Oversee daily operations of the IMEP program (Kunshan)                                 | 1.0 | Expat        | Jul-15      |
| Admin. Support IMEP                         | Provide admin support for IMEP (Kunshan)   | 1.0 | PRC          | Jul-15      |
| Admissions Director / Marketing person IMEP | Oversee recruitment and marketing of the IMEP program in China and East Asia (Kunshan) | 1.0 | either       | Jul-15      |
| Marketing and admissions person in US IMEP  | Oversee recruitment and marketing of the IMEP program in the US                        | 0.5 | US           | Jul-15      |
| Career Services Director IMEP               | Job placement, internship placement, building networks, training sessions, job fairs   | 1.0 | PRC          | Jul-16      |
| Program Coordinator (IMEP & research)       | Duke/NSOE staff that will help to support the program                                  | 1.0 | US           | Jul-15      |

*Other resource requirements:*

For the semester rotation to Duke, we have budgeted for the addition of up to four new special access elective classes at Sanford and Nicholas, and/or the expansion of two other classes (i.e., up to 4 total new and expanded classes), to accommodate the DKU students. Depending on the preferences of a management committee that will include faculty/staff from the NSOE, Sanford School, and DKU, the program may opt for different configurations of new classes and/or class expansion. This will then determine whether the program will use the allocated budget to contract faculty to teach these new elective classes or provide for additional support for Teaching Assistants (TAs) to offset any enrollment increases in already existing classes at Duke. We expect all courses to be taken within the Sanford and Nicholas Schools.

*Space and infrastructure requirements*

We will have space on the 3<sup>rd</sup> floor in the planned Innovation Building at DKU (see attached document on space). In the Innovation Building, there will be faculty offices classrooms, lab space (both wet and dry labs), and cubicles for students. Specifically, there will be two large wet labs.

In the interim, there is sufficient space in the Academic Building for classroom use, especially given in the first few years of the program, our student population will be smaller. Faculty persons that require lab facilities may be able to use commercial lab spaces in Kunshan or Suzhou before the completion of the Innovation Building.

Start-up funds will cover additional equipment, especially for the wetlabs at DKU. We have also budgeted for licensing agreements for software packages, especially statistical and GIS software and have consulted with IT. High-speed internet and VPN connection to Duke University at Durham is available.

### *Library resources*

We expect the IMEP students to use the Duke library during their semester at Duke. Because we anticipate an equal exchange of students and are starting with a small number of students, we do not foresee any additional burden on the library resources.

### *Faculty governance and ownership*

As this is a new program, we anticipate that the management committee (discussed above) will play a central role in dealing with program decisions. The Deans of the NSOE and Sanford Schools (letters attached) have endorsed the program and its governance structure. That the governance of the program will be carried out jointly testifies to the collaborative spirit of the program design. The management committee will meet with the two school Deans to ensure that the Deans are involved in logistical details and the first-stage probationary review of the IMEP.

The only program-related topics that would go directly to the faculty for a decision are graduation requirements. Changes in course content—even classes that satisfy requirements—will not go to the faculty. At DKU, the DGS would handle those decisions. However, new courses that may be proposed on the Durham campus for the semester at Duke will adhere to the same process as which transpires in the NSOE and Sanford – for example, at the NSOE to be vetted by the Education Committee.

The DGS also makes decisions about hiring adjuncts at DKU and the Vice Chancellor for Academic Affairs at DKU makes decisions about conferring visiting position titles. For The faculty only comes into play in making regular rank appointments. This sort of hiring would seem to be a generic DKU issue unrelated to our program proposal.

Procedures about appointments are outlined in the Cooperative Education Agreement (CEA). Specifically, a Duke committee nominates faculty whose names are then sent to the DKU Appointment Committee, which includes five Duke faculty and two from DKU and two from Wuhan University. This committee then makes recommendation to Executive Vice Chancellor for appointment. At this time, according to the CEA, there is no tenured faculty appointment at DKU, although consideration for such appointments will be part of an upcoming discussion with

the DKU Board of Trustees. Currently, a faculty appointment is a three-year appointment and the reappointment process is described in a typical offer letter below:

“Duke Kunshan University emphasizes teaching excellence, community service and scholarship. You will be evaluated by a faculty committee, including peers in your discipline, during the early fall of your third year. This committee will evaluate the quality of your teaching performance, community service and research accomplishments and make a recommendation to the relevant Dean and Executive Vice-Chancellor. Since the appropriate blend of these three responsibilities will differ from position to position you are invited to present a plan during the first semester to the appropriate academic dean or department leader. This plan, which can be updated from time to time, will provide the basis for your evaluation. Re-appointment will also be based on the academic needs of DKU at that time and funding availability. You will be informed of your reappointment status no later than December 1 of your third year.”

It is expected that for promotion, DKU will follow the same guidelines as Duke does for the promotion process.

As for conferring Duke affiliations or joint appointments at Duke, this would be handled through the appropriate channels at either the NSOE or Sanford – that is, through faculty meetings and approval by the Deans.

Lastly, given that this is a new program, we expect the IMEP leadership (especially the DKU DGS and Duke Faculty Lead) will have regular consultations with the Deans of the two schools. This is consistent with other joint programs between the NSOE and Sanford (specifically, the UPEP Ph.D. program).

### **III. Financial considerations**

A detailed budget plan is attached. The two financial documents can be identified as a 1) Budget Summary that includes Program Summary, Program Expenses and an overall IMEP Summary and 2) Scenario Summary focusing on staffing and associated staffing costs (allowances). The budget plan/business plan has been developed by the Provost’s Office (in consultation with Executive Vice Provost for Finance and Administration, Jim Roberts), taking into account data supplied by Erika Weinthal, Billy Pizer, and Jim Zhang from the Durham-based MEM and MPP programs.

The IMEP program like other DKU programs sponsored by a Duke unit is backstopped by the Duke Provost, and as such, DKU will assume all financial risk for Duke programs offered at DKU relieving the sponsoring program of any financial risk. We want to underscore that the faculty and staffing for this proposal is not significantly larger than comparable programs at DKU. The faculty and staffing for this proposal is in line with the Global Health program at DKU that also combines education and research. We have modeled our program on the Global Health

program, as its mission and design is most similar to ours. The medical physics colleagues are planning to propose a research center on medical physics and are currently in the discussion phase. The MMS program does not have an explicit research mission.

According to the DKU Master's Program Planning Document:

- *DKU will receive the revenue and pay the expenses for Duke programs offered at DKU.*
- *There is no revenue sharing or surplus sharing with Duke programs. Any surplus of operations will be re-invested for the further development of DKU.*
- *DKU will cover the following costs:*
  - *Faculty teaching, travel, housing*
  - *Administrative support for admissions and career services*
  - *Marketing and recruiting*
  - *On-the ground support of faculty and students*
- At the same time, All DKU programs must have a positive **Contribution Margin** to help pay for the indirect costs of operating programs at DKU (campus leadership, HR, Finance, IT administration, and operating costs of campus facilities and grounds). We anticipate that in 2020/2021, when the program reaches the targeted capacity of 45 students, the IMEP program will have a positive contribution margin. It could do considerably better than break even as synergies with a larger DKU campus emerge, including mixed classes with other programs, shared staffing, an expanded local presence that attracts local talent, and the possibility that the program could grow larger and/or attract philanthropic sponsors. On the other hand, if we cannot attract a sufficient number of high quality students, the program will not be viable, but we do not believe this is the case.
- We do not anticipate drawing upon existing Duke staff for admissions, career services, marketing, and recruiting. The budget ensures that there will be persons at DKU responsible for these tasks as well as a full-time Program Coordinator, a part-time faculty lead, and a half-time marketing and recruiting person on the Durham campus. Conversely, the fact that there will be a career services person in China to help with internship and job placement may provide a valuable service for our Durham campus and open up opportunities for the Durham students to explore internship and career opportunities in China and broader Asia upon graduation.

Highlights from the attached budget are as follows:

Tuition for non-Chinese will be set at either the current DKU price of \$45,760, or the current NSOE price of \$33,000. Chinese tuition is assumed to be \$26,016. At the more conservative non-Chinese tuition level, net tuition would be \$1.7 million when the program reaches the targeted size of 45 students per year. This assumes 45 percent financial aid for Chinese and 15 percent for non-Chinese, and a 2-1 Chinese-to-non-Chinese student ration.

Faculty pay is the main expense. The budget anticipates paying an average of \$160,000 per person for each of the three teaching faculty, plus benefits, as well as four course buyouts for Duke faculty each year (\$17,000 each, plus benefits). For the semester rotation to Duke, the budget includes \$90,000 (plus benefits) to be spent at Duke to cover two course buyouts for a faculty lead and five adjuncts. With support staff (program coordinators, career services, and marketing / admissions), the total compensation and benefits budget is \$1.1 million. The budget does not include a line item for electives taught by either the environment program research faculty, or by other non-environment DKU faculty (e.g., Global Health).

Other operating expenses total about \$0.4 million. This includes faculty allowances for relocation and education, as well as travel, seminars, events, software, and instructional costs.

The projected margin of income minus expenses becomes positive in FY 19/20 when full enrollment is anticipated, with net tuition exceeding expenses by about \$0.2 million. The greatest financial risk is failing to meet the enrollment targets and/or requiring higher amounts of financial aid to attract students. On the other hand, higher enrollment of non-Chinese student and lower aid packages could improve the margin. Moreover, the budget for activities on the Duke campus has assumed more DKU students travelling to Duke than vice-versa. That is, we have assumed it is necessary to add multiple classes or sections at Duke rather than assuming DKU students fill vacancies left by Duke students travelling to DKU. To the extent that fewer DKU students choose to rotate to Duke, or that more Duke students rotate to DKU, the faculty budget for the Duke campus would be lower.

Endorsements: Because this joint initiative of the Sanford and Nicholas Schools, we have included letters of support from Dean Alan Townsend and Dean Kelly Brownell. We have also included letters from the Nicholas School Faculty Council (Associate Professor Lori Benneer) and the Energy Initiative (Professor Richard Newell).

### *Contingency Planning*

In addition to our baseline budget scenario, we now present a “lagged enrollment scenario” where we miss our initial enrollment target of fifteen students and take four years to reach full enrollment. This budget shows a cumulative contribution margin that is roughly \$1 million higher than the baseline scenario over the same time horizon (a loss of 28 students at about \$35,000 net per student).

If our enrollment lags our projections, however, the program will take reasonable efforts to compensate in other areas. The program director, working with the management committee has several options:

1. Staffing changes at DKU. The environmental scientist position could be hired one year later, with the spring environmental science class covered by research center faculty or

visiting Duke faculty. Other faculty hires could start promptly at the beginning of 2017-18, rather than partly in 2016-17. The career service director could be hired one year later, with faculty managing internship placements. Visiting Duke faculty could be reduced to 2 or 3 slots per year initially.

2. Course offerings at Duke. With a more gradual ramp of students, it will be possible to accommodate students rotating to Duke with a more gradual ramp up in course offerings, lowering the expenses for the faculty lead and faculty adjuncts. During the first rotation, the DKU environmental scientist could spend Fall 2019 at Duke to manage the MP course and teach one course, eliminating all Duke teaching expenses.
3. Seminars and career services. With fewer students at DKU, we could reduce both seminars and career service activities (travel, workshops, training, etc.)
4. Duke student travel and DKU instructional costs. We could cut down on support for Duke students to travel to DKU and economize on DKU student instructional costs.

In the “contingency” scenario, layered on top of the “lagged enrollment” scenario, we show how a combination of these options can yield savings of \$1 million and maintain the same envelope with lagged enrollment.

Expected enrollment should become clearer in January 2017, when all applications have been received. At that point, we would expect decisions about whether to continue along the planned ramp up or to make adjustments. It will be up to the director and the management committee, in consultation with Duke and DKU leadership, to decide when and what steps to take. This will require balancing cost savings with, in some cases, some loss of program quality. The “contingency” scenario is one possible choice.

#### **IV. Students**

##### **IV.a Students (sources, characteristics, opportunities available to graduates)**

We anticipate the student body for this population would be (1) recent Chinese undergraduates; (2) students from broader Asia who want to stay closer to home and gain a more regional perspective; (3) US/European students who want a foreign program within China. Already Chinese programs attract a large number of foreign students from South Korea, for example. Given the significant presence of industry from Taiwan in Kunshan, we would also target the student population in Taiwan who may be interested in studying environmental policy and business. More so, given that it is increasingly common for companies and government ministries from Singapore, South Korea, and Taiwan to encourage and support their students’ education abroad, we plan to have recruiting and marketing efforts for the IMEP program to focus attention on exploring these markets as a potential source of international students. We also will explore the Australian market given the close proximity to China. There also may be some North American/European students who would want to experience a Duke program in China, especially if they want to work on environmental issues in China or with a major NGO or multinational corporation with programs/operations in China. For all of these students, conducting their studies in China and receiving a Duke degree will be particularly appealing. The curriculum is designed to provide the target student population with

appropriate training for finding jobs in a number of venues, including government, industry, research think tanks, international organizations and nongovernmental organizations. As such, it will be essential for recruitment and marketing to underscore the distinctiveness and value of the IMEP program (i.e., the integration of policy analysis and environmental science; the value of collaborative, interdisciplinary problem-solving under conditions of uncertainty, constrained resources, and complex political frameworks; and the access to internships and career networks).

We propose to recruit students during the 2015/2016 academic year to apply in Fall 2016. We will hire our recruitment staff in winter 2015-2016 in order to provide ample time for marketing and recruitment. We expect an initial class size of about 15 students, growing to a steady state of 45 students over several years. We are starting with a smaller class for a number of reasons. First, we have learned from the experience of other programs at DKU, enrollment numbers are often lower during the first year. Second, a smaller class during the first year will make program administration more manageable and help to resolve any unanticipated problems. Third, we want to ensure a highly competitive and selective student body. We expect two-thirds of the students to be Chinese, with the other one-third a mix of Asian and Western. To ensure that the program succeeds, we are also focusing our efforts on having faculty when in China meet with faculty in the leading environmental programs in China to begin recruitment efforts (e.g., Weinthal trip in May 2015). We are also planning a number of workshops and conferences at DKU during the 2015/2016 year to build our reputation so that colleagues in China will encourage students to consider the IMEP program.

|                                 | FY 2017/18<br>PY 4 | FY 2018/19<br>PY 5 | FY 2019/20<br>PY 6 |
|---------------------------------|--------------------|--------------------|--------------------|
| Enrollment Target (yearly)      | <b>15</b>          | <b>30</b>          | <b>45</b>          |
| Enrollment Mix                  |                    |                    |                    |
| China                           | <b>10</b>          | <b>20</b>          | <b>30</b>          |
| Other International             | <b>5</b>           | <b>10</b>          | <b>15</b>          |
| Aid Discount by Nationality Mix |                    |                    |                    |
| China                           | <b>45%</b>         | <b>45%</b>         | <b>45%</b>         |
| Other International             | <b>15%</b>         | <b>15%</b>         | <b>15%</b>         |

#### **IV.b. Admission**

Admissions to the IMEP program will follow a composite of Sanford, NSOE, and DKU processes, currently envisioned as follows: The director of admissions will be responsible for conducting an initial screen of applicants based on test scores and transcripts, using current NSOE and Sanford requirements as a minimum threshold. Qualified candidate applications will then be reviewed by a combination of DKU and Sanford/NSOE faculty—likely those slated to visit DKU and others recruited by the admission director. Each faculty would consider roughly a dozen

applications and rank definite admits, as well as separate the remaining applicants into definite declines and possible admits. We believe faculty involvement, particularly by Duke faculty, will be essential to establish comparable quality across programs. Finally, an admission committee, made up of DKU staff and faculty will construct a tentative admit and wait list, and conducting oral interviews of those candidates (by Skype or in person) to both verify English language skills and make final decisions.

#### **IV.c. Career services and professional development**

As noted above, Chinese students are likely to opt to study at DKU rather than abroad, if they know that the program will help increase their job opportunities in China. Thus, a career services office is vital for the success of the program. The IMEP program will have a career services office on the DKU campus to help with career counseling, internship placement, career networking, offering workshops and training sessions on resume preparation, oral presentation, networking, etc. To further assist with career development, we plan to hold a China environment career fair similar to the Yale-Duke career fair in DC.

We anticipate that IMEP graduates will find employment in many of the same areas that our current MEM and MPP students do, including the private sector, NGOs, research institutes, and government. Current trends in China suggest even more opportunities as Chinese state-owned enterprises become international companies and both the Asian Infrastructure Investment Bank and New Development Bank begin operations (the latter being located in Shanghai). With the increased importance placed on environmental and social safeguards both inside and outside of China, we expect an increased interest in hiring employees with a background in environmental issues and sustainable development.

The budget includes a career services director as well as programmatic funds to travel to meet potential job employers and internship placement opportunities, to hold training sessions (with some outside speakers), and to organize a career fair.

#### **V. Student Learning Objectives and Outcomes**

Learning objectives are for the students to gain the appropriate skills and tools necessary to understand and influence the environmental policy process. Learning objectives will be categorized according to whether students gained the appropriate knowledge and comprehension of the basic skills and their application to actual environmental problems. Students who fail to maintain a B average on their coursework will be placed on academic probation for a semester. Learning objectives will be available in written form and consistent with outcomes and assignments. Each semester, course syllabi will be collected and available for review. Faculty will be encouraged to develop assignments geared toward applying the skills learned in the classroom through policy evaluation and analysis exercises. As in the MEM and MPP programs, the MP will provide an opportunity for final evaluation.

The capstone project of the IMEP program is the client-based group MP project. Here, we will use the same matrices for evaluating the MP projects on the Durham campus to ensure parity in expected learning outcomes. These include assessing the student's knowledge base of concepts and practices appropriate for a master degree candidate, approach to use and application of quantitative and/or qualitative analytical skills, management skills to work with other professionals, originality and new insights into the problem explored, organizational presentation, and overall quality.

We plan to create a set of milestones for tracking student progress throughout the program. Students will have clear deadlines for devising their MP proposals, submitting IRB protocol, participating in required modules and deadlines for MPs submissions. As with our capstone projects on the Durham Campus, we anticipate that similar projects in China will require IRB approval. Before our program is launched, it is anticipated that DKU will have a fully functioning and independent IRB. Thus, we expect that all IRB approvals, exemptions, and waivers will be handled by the DKU IRB.

We will use course evaluations that are currently used in our Durham campus programs to ensure parity in the quality of classes being offered. We will conduct course evaluations at the end of each semester. Because this is a new program with a much smaller student body, we will introduce mid-term course evaluations to ensure that adjustments, if necessary, can be made to courses before the end of the semester. Summaries of the evaluations (subject to sample size) will be shared with students, faculty and administrators both at DKU and on the Durham campus.

The DGS at the DKU campus and the Durham Coordinator and Duke Faculty Lead will meet individually with each student to discuss progress and set timelines for meeting individual goals. We will also have exit interviews for each student before graduation to collect feedback on the program.

Below we discuss specific student learning outcomes and assessment tools for the IMEP program that will be used for SACS accreditation. These have been developed in coordination with the office of the Vice Provost of Academic Affairs.

### **Student Learning Outcomes and Assessment – IMEP**

- Objective: To provide the foundational knowledge and experience for students to practice as researchers and practitioners in environmental policy
  - Outcome: Students should demonstrate a strong understanding of the core knowledge of environmental policy, including statistics and program evaluation, environmental economics, environmental policy analysis, environmental political processes, environmental science communication, environmental law, governance, regulation.
  - Outcome: Students apply appropriate policy tools to solve real world environmental problems

- Objective: To prepare students to think critically and apply problem solving skills to environmental problems
  - Outcome: Students should gain experience applying coursework to real world problems and client-based research
  - Outcome: Students should become effective communicators to an array of constituents/stakeholders
  - Outcome: Students should demonstrate success in working in teams

Below we lay out our initial plan to assess the learning outcomes.

- **Outcomes Assessment Plan for Objective 1:** To provide the foundational knowledge and experience for students to practice as researchers and practitioners in environmental policy

| Outcome  | Evidence of Outcome  | Frequency of Collection  | Report Generated         |
|--|--|--|--------------------------|
| Outcome: Students should demonstrate a strong understanding of the core knowledge of environmental policy, including statistics and program evaluation, environmental economics, environmental policy analysis, environmental political processes, environmental science communication, environmental law, governance, regulation. | Rubric evaluated following final presentation in Environmental Economics Policy Practicum.<br><br>Rubric to be filled out following the student's capstone presentation (Masters Project). | After first year.<br><br>After capstone at end of second year. | After every spring term. |
| Outcome: Students apply appropriate policy tools to solve real world environmental problems  | Rubric evaluated following final presentation in Environmental Economics Policy Practicum.<br><br>Rubric to be filled out following the student's capstone presentation (Masters Project). | After first year.<br><br>After capstone at end of second year. | After every spring term. |

- **Outcomes Assessment Plan for Objective 2:** To prepare students to think critically and apply problem solving skills to environmental problems

| Outcome  | Evidence of Outcome   | Frequency of Collection   | Report Generated                |
|--|---|---|---------------------------------|
| <p>Outcome: Students should gain experience applying coursework to real world problems and client-based research</p> | <p>Rubric evaluated following final presentation in Environmental Economics Policy Practicum.</p> <p>Rubric to be filled out following the student's capstone presentation (Masters Project).</p> <p>Rubric to be filled out by client following the student's capstone presentation (Masters Project).</p> | <p>After first year.</p> <p>After capstone at end of second year.</p> | <p>After every spring term.</p> |
| <p>Outcome: Students should become effective communicators to an array of constituents/stakeholders</p>              | <p>Rubric evaluated following final presentation in Environmental Economics Policy Practicum.</p> <p>Rubric to be filled out following the student's capstone presentation (Masters Project).</p> <p>Rubric to be filled out by client following the student's capstone presentation (Masters Project).</p> | <p>After first year.</p> <p>After capstone at end of second year.</p> | <p>After every spring term.</p> |
| <p>Outcome: Students should demonstrate success in working in teams</p>  | <p>Rubric evaluated following final presentation in Environmental Economics Policy Practicum.</p> <p>Rubric to be filled out following the student's capstone presentation (Masters Project).</p>   | <p>After first year.</p> <p>After capstone at end of second year.</p> | <p>After every spring term.</p> |

|  |  |  |  |
|--|--|--|--|
|  | Rubric to be filled out by client following the student's capstone presentation (Masters Project). |  |  |
|--|--|--|--|

Follow-up actions will be determined upon collection of findings/data and subsequent analysis.

### **IMEP Student Outcomes Assessment Report –**

In the spirit of consistency with other degree programs currently offered at DKU, the IMEP self-assessment committee will explicitly review, discuss, and report upon the following items:

1. *What outcomes were you scheduled to assess during this annual reporting period? What outcomes did you assess?*
2. *What evidence did you collect? Summarize your findings.*
3. *What did you and your faculty learn about your program and/or your students from the evaluation of the evidence? What strengths and areas of concern have emerged?*
4. *As a result of your assessment, what changes, if any, have you and your faculty implemented or plan to implement to address areas of concern?*
5. *What outcomes are you planning to assess for the next annual reporting period?*

We are working with Office of the Vice Provost of Academic Affairs (including Molly M. Goldwasser, Manager of Institutional Assessment and Accreditation) on further developing our evaluation rubric with an estimated completion date of summer 2015 for submission to SACs prior to the fall of 2015.

### **VI. Challenges and Opportunities:**

Like any new program, we expect enrollment to be smaller in the first few years. Given that we are not the first program to begin at DKU, we expect, however, that it will be easier to attract students, especially given the strong ties built into the IMEP program with the Durham campus and the emphasis on internships in China. The challenge will be building the network of clients to host students. We plan to tap our alumni base in China to help build this network.

Another challenge will be to recruit appropriate faculty without tenure at DKU. We hope that a cluster hire will be attractive for faculty. We also anticipate that many of the faculty hired at DKU will have some form of affiliation with Duke, which would deepen research collaborations and make a DKU position attractive. In addition, if tenure slots are developed for DKU, that would further strengthen our ability to attract high quality faculty to DKU.

We would note that the challenge of hiring faculty without tenure lines at DKU is not unique to our program. This is a topic currently under discussion by the senior leadership and we expect some arrangement similar to those designed by New York University might emerge. Should the satellite campus close, NYU offers a severance package.

We anticipate that after the IMEP is established, we will begin to explore new opportunities for growth, including the possibility of executive education programs targeting more senior practitioners and policymakers. Ultimately, this could lead to a 1-year executive degree program. We also plan to explore devising shorter, targeted training programs for policymakers. While these additional opportunities would not be part of our IMEP program, these programs could have a different financial model than the IMEP where DKU takes all the financial risks but also reaps the potential rewards, thus contributing to a positive financial margin that would benefit all environmental initiatives at DKU including the IMEP. An executive education program would likely involve DKU, NSOE, and Sanford pooling the risk and reward.

### **Markers of Program Success:**

Beyond the assessment process laid out above, we have identified other criteria that would allow us to measure whether the IMEP program has achieved its objectives and goals. At a minimum, we would expect that after 3 years we have achieved our enrollment targets and revenue projections. We would expect that we have deepened our networks with government agencies, NGOs, and businesses that will facilitate internships and placements. The creation of a viable internship experience and job placement for the first cohorts will be indicative of whether we have met our objective of creating a program finely tuned for the global and Asia job market. We expect to see the emergence of vertically integrated research teams carrying out discrete environmental problem solving as part of the first cohort of students at DKU. During the first 3 years as our institutional capacity expands, we will expect to introduce some executive education programs, taking into account is more advantageous funding model for Duke programs.

In looking past the first few years (5-10 years out), we would also expect that the research center to develop into a leading place for conducting problem-focused policy research. We anticipate that our faculty (both at Duke and DKU) will be able to expand their research grants within China. As the IMEP program grows, we will also be able to gauge whether pedagogical innovations taking place at DKU are flowing back to Durham campus and conversely that DKU student are benefitting from pedagogical innovations taking place in Durham.

Other measures of success that may flow out of the development of the IMEP program are recruitment channels for Sanford and NSOE Ph.D. students and benefits for Duke-based students visiting DKU (including innovative course offerings)

### **VII. Approval Process:**

The IMEP proposal was developed over the course of two years. Beginning in early 2013, Jennifer Turner, the Director of the China Environment Forum at the Woodrow Wilson Center in Washington, DC, was contracted to produce a Scoping Report on Exploring Options for a Duke Kunshan University Environmental Policy Program. The final scoping report (October 2013) provided the foundation for the work of the steering committee in drafting a curriculum for an International Masters in Environmental Policy program. The scoping report surveyed environmental policy/management programs and research centers in China and the status of foreign universities cooperative programs in China. It identified particular areas where Duke could leverage its strength in environmental policy and anticipated challenges in attracting leading academics to DKU. The report also helped identify potential institutions and individuals for cooperation to build a robust education and research program for DKU. During spring 2014, we began to hold a set of cross-school seminars where we brought in leading academics and researchers working on environmental policy and science in China to consult with our faculties about building an environmental policy program in China. These included:

- Jianguo (Jack) Liu – the Rachel Carson Chair in Sustainability and is University Distinguished Professor of fisheries and wildlife at Michigan State University.
- Richard Morgenstern – Senior Fellow, Resources for the Future

We also began to simultaneously work on a proposal for an Environment Research Center for DKU (proposal attached) during the spring of 2014. In May 2014, Billy Pizer, Erika Weinthal, and Jim Zhang travelled to Beijing, Shanghai, and Kunshan to meet with leading research and educational institutions in China working in the area of the environment (focusing on environmental management and policy). Over the course of the week, the group met with academic, think tank, NGO, and private sector stakeholders to discuss the possibility of an environmental program at DKU that could include a 2-year master's degree in environmental management and policy and a research platform for Duke and DKU faculty. The findings from this trip have also informed the drafting of the curriculum proposal for the IMEP program (see attached trip report).

With funding from an Education and Research in China (ERIC) grant, Erika Weinthal, Billy Pizer, Jim Zhang, Giovanna Merli (Sanford School and Duke Global Health Institute), and Jeffrey Vincent (Nicholas School) organized a 1-day workshop on September 19, 2014 on environmental policy research and education in China. The objective of the workshop was to (1) to educate the Duke community about environmental policy research in China through presentations and a panel discussion, and (2) to bring outside experience to our discussions of the state of environmental policy programs in China, and where a DKU program might fit. Invited participants included:

- Joanna Lewis, associate professor, Science, Technology and International Affairs, Edmund A. Walsh School of Foreign Service, Georgetown University

- Benjamin van Rooij, John S. and Marilyn Long Professor of U.S.-China Business and Law School of Law, University of California, Irvine
- Shanjun Li, assistant professor, Dyson School of Applied Economics and Management, Cornell University
- Dr. Zhipeng Bai, Research Professor, Chief Scientist, Atmospheric Chemistry & Aerosol Division, Chinese research Academy of Environmental Sciences

During the fall of 2014, we vetted drafts of the curriculum to different gatherings of NSOE and Sanford faculties. Participating in these meetings and consultations were also faculty and staff from Fuqua, the Nicholas Institute, Energy Initiative, Duke Center for International Development, the Organization for Tropical Studies, and the Duke Lemur Center. A joint meeting was also held for the faculties of the NSOE and Sanford School with Dean Alan Townsend (NSOE) and Dean Kelly Brownell (Sanford School). In October, 2014, the NSOE Faculty Council voted unanimously on the proposal (letter attached). In November 2014 the Education Committee of the Nicholas School voted favorably on the proposal. In December 2014, the IMEP proposal was presented to a NSOE plenary and the final tally was 45 in favor and 4 abstentions. In November 2014, the IMEP proposal was presented to the full faculty of the Sanford School of Public Policy. Sanford faculty voted to approve and co-sponsor the proposal in December, with a count of 35 in favor, 5 against, and 5 abstentions.

**List of organization committee faculty:**

Erika Weinthal

Jim Zhang

Billy Pizer

**List of faculty, administrators, committees who participated in the proposal development include:**

Lori Bennear (NSOE)

Brian Murray (NIEPS, NSOE)

Emily Klein (NSOE)

Avner Vengosh (NSOE)

Dan Vermeer (Fuqua)

Matt Harding (Sanford, Energy Initiative)

Francis Lethem (Sanford, DCID)

Prasad Kasibhatla (NSOE)

Jeff Vincent (NSOE)

Liz Losos (OTS)

Tim Johnson (NSOE)

Jennifer Swensen (NSOE)

Lynn Maguire (NSOE)

Ken Rogerson (Sanford)

Steve Sexton (Sanford)  
Dean Urban (NSOE)  
Alan Townsend (NSOE)  
Kelly Brownell (Sanford)  
Nora Bynum (DKU Office)  
Cynthia Peters (Admissions, NSOE)  
Tim Profeta (NIEPS)  
Steve Hicks (Energy Initiative)  
Randy Kramer (NSOE)  
Alex Pfaff (Sanford)  
William Pan (NSOE, DGHI)

**Appendices attached:**

Appendix 1 -- Scoping Report on Exploring Options for a Duke Kunshan University  
Environmental Policy Program  
Appendix 2 -- China Trip Report  
Appendix 3 -- Budget  
Appendix 4 -- Space  
Appendix 5 -- Environment Research Center Proposal  
Appendix 6 -- Job advertisement for environment program head  
Appendix 7 -- Letters of Support (Dean Townsend, Dean Brownell, Professor Richard  
Newell, Associate Professor Lori Benneer, Vice Provost Larry Carin)