University of Notre Dame
Strategic Academic Planning Committee
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PROPOSAL COVER SHEET

Proposal Type: Full Grant _____ Seed Grant _____X

Proposal Title: Notre Dame Collaboratory for the Study of Adaptation to Climate Change

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Participants:

Last Name	First Name	Department
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ABSTRACT

Even if releases of greenhouse gases into the atmosphere were immediately reduced, Earth will experience significant climate change from past and future emissions. This inevitable warming compels humanity to develop strategies that allow societal "adaptation," and such adaptation necessitates an unprecedented coordination and mobilization of diverse kinds of information. Very few of the adaptation strategies mentioned in the media or proposed by academics or policymakers have been critically evaluated, and no academic institution has identified adaptation and its side effects as a critical research component of the climate crisis. Understanding these side effects is essential to choosing among adaptation innovations and the balance of adaptation versus reduction in greenhouse gas emissions.

We propose to tackle the scientific, technical, and social dimensions of climate change adaptation, building initially on adaptation for biological systems, toward a comprehensive research program that is broadly recognized by the academic and policy communities. Specifically, we propose to create a new online portal for transformative research and outreach that relies on pioneering disciplinary integration: the Notre Dame Collaboratory for Adaptation to Climate Change. This initiative builds on collaborative research that is already underway at the University of Notre Dame involving faculty in 4 colleges who are rising stars in their fields. "Collaboratory" evokes the idea of a virtual laboratory, where individuals across disciplines and geography work together to create new knowledge and solve important problems.

Given the speed with which climate-related decisions are being made and new scientific discoveries are revealed, information about diverse aspects of climate change adaptation must be compiled, distributed, and deliberated quickly. The Notre Dame Collaboratory will provide essential, cutting-edge information for the process of scientific expansion, policy development, and decision-making process. We also will use the collaboratory as a research tool to pursue novel academic research. For example, we will push the state of the art by building new tools for simulating the effects of climate change and potential intervention strategies (biology); we will pursue novel research on how expert opinion emerges in a new scientific field (political science); we will study existing and potential policy frameworks that enable adaptation (law); and we will use the collaboratory to study the process of decision-making under uncertainty (sociology). All of this will take place using existing software for online collaboration, new computational algorithms, and a knowledge discovery framework (computer science).

Researchers at Notre Dame and across the world will join in our research because they can run simulations, query legal databases, read the pulse of experts, and interact with one another in our collaboratory. Within a 3-year period, we will build the infrastructure of the collaboratory and populate it with information and tools relating to ecological adaptation. Our code will be open source so that others can contribute to our developing research program.

The lasting value of the collaboratory is the novel and important research focus that it will establish at Notre Dame. It will attract expertise and provide a visible face for Notre Dame research. It also will greatly and rapidly enhance Notre Dame's commitment to environmental sustainability. Notre Dame will take an early lead in an emerging, interdisciplinary study that imagines what kind of world we want to live in, what type of future we have the power and responsibility to create.