

Task Force on Sustainability in the Age of Development

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Introduction

Humans, their activities, and their byproducts are shaping a world in which the human prospect may be permanently diminished. Awareness of this state of affairs grows daily; informed people throughout the world are increasingly concerned, and much talk has occurred at all levels of society and governments about corrective actions. The label attached to these concerns is “sustainability.” President Lehman posed the following question in his *Call to Engagement*, “Should we be identifying special domains of research emphasis where Cornell is well situated to make enduring and significant contributions?” The preponderance of responses to his question made it clear that sustainability of development on a global scale provides precisely the kind of grand challenge that can benefit from a university-wide research and education focus. The formation of this Task Force on Sustainability in the Age of Development in February 2005 by Provost Martin followed.

As part of our charge, we surveyed (together with the other two task forces established at the same time) the entire faculty and academic staff at Cornell to assess their opinions and activities related to sustainability. The response was unusually large and helpful. A total of 835 people responded to one or more of the surveys of the three task forces. Of these, at least 556 responded to the sustainability questions. Some 430 provided written descriptions of their research or professional practice related to sustainability, approximately 340 listed the courses they taught, about 415 listed service or extension activities, approximately 420 listed centers or other organized working groups in which they participated, and around 260 took the time to provide their thoughts on how to promote cross-disciplinary communication and collaboration in the area of sustainability. The interest in sustainability on campus and the amount of activity is broad and deep.

Our task force, drawn from many, diverse departments in all colleges at Cornell, has from the start, understood "sustainable development" broadly. In the usage made familiar by the

Brundtland Commission of the United Nations, it is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Our discussions and our inventory of the interests and expertise of Cornell faculty have convinced us of the importance and the feasibility of enhancing Cornell's engagement in both the advancement and protection of a sustainable, sustaining environment and the promotion of economic, social and political processes in the interests of the peoples of developing countries and the global poor. In these areas, the prospects for life worthy of human dignity on the planet as a whole are at stake and the strengthening and integration of Cornell's resources have much to offer.

Questions of sustainability arise from the impacts that humans have on one another, and on the resources and environment of Earth. These global interactions continually increase both the challenges and prospects of sustainable development. In this report, we propose ways in which Cornell can exercise global leadership in pursuit of this urgent goal for humanity. For the purposes of our deliberations, we have taken sustainable development to comprise the interaction of development with institutions, the environment, and human wellbeing. This interaction embraces the social and cultural impact of development; consequences for the natural and built environments and options for their improvement; economic growth, poverty, and the quality of life both in developing and developed countries; food and energy systems; equity and inequality; governance, power, and politics. As in the succinct Brundtland description, these aspects reflect responsibilities to future generations and human obligations to the present generation.

We have concluded that Cornell should create a program on sustainability and development that has a dedicated physical space and the resources needed to establish globally recognized intellectual leadership in this area. Cornell's goal should be to nurture intellectual efforts that will be important and that will have impact. Sustainability problems are real, immediate, and answers must be found if we are to have a just and humane future on this planet. Multi-pronged approaches are required to deal with these

dimensions. We see the following as relevant:

- Disciplinary research of depth and of the highest caliber addressing the most important problems of a sustainable world.
- Cross-cutting research and scholarship, where problems such as food, water, energy, global climate change, and the natural environment, meet questions such as social justice and equity, war and poverty, human health, societal and political barriers to adoption of sustainable methods of development, and legal and ethical concerns.
- Fostering and nurturing revolutionary innovation, sometimes called “disruptive” innovation, in which conventional wisdom is turned upside down, leading to dramatically new paradigms of sustainability.
- Education in those areas of knowledge pertaining to creating a sustainable world.
- Creating a sustainable campus as an example; as a statement of commitment; as an environment in which teaching and education can be done with credibility and sincerity; and as a living laboratory.

The remainder of this report describes how we believe the University can proceed to create the environment and incentives needed to achieve these results.

Tasks and Resources for Global Leadership

We have identified four topics for research and teaching on sustainability and development, already foci of distinguished work at Cornell, which would have more powerful global impacts were a university-wide initiative to encourage integrative, innovative collaboration to be established. These are (a) the harnessing of energy technologies and essential resources to provide more effectively for the most urgent human needs: this is a topic in which inquiries into energy, food and water play leading roles; (b) global poverty, especially the wide-ranging controversies over the nature and causes of

deprivation in developing countries, means of overcoming it and obstacles to change; (c) the interactions of humans with the natural and built environments: in which environmental degradation and the goods and services provided by the natural environment are core concerns (environmental change and “green” design are examples); (d) development, institutions and political power: that is, the interaction of aspirations to autonomy and growth in developing countries with social, political and economic processes and institutions, local and international, shaping the course of development, environmental and resource management, and the trajectory of international affairs. In each case, Cornell expertise in studies of natural environmental systems, technology, food systems, economic and political processes and cultural and social systems have much to contribute, through mutual learning that will stimulate innovative solutions and new theoretical insights. But adequate integration will not occur spontaneously. There is a need for facilities that support and encourage work crossing divides among departments, colleges, disciplines and perspectives, and we see the interaction of diverse disciplines as central and distinguishing goals of Cornell’s initiative.

Energy Technologies and Essential Resources:

Energy, agriculture and food, and water are the most basic and essential elements to sustain human life. The relationship between these elements is intrinsic: energy is needed for agriculture and food production; water is needed for both energy and agricultural production; agriculture plays an ever increasing role in production of renewable energy through biomass supply; energy is required for the supply of water; and finally, energy utilization is *the* cause of anthropogenic global climate change, and the development and deployment of new energy technologies is the only way to mitigate and arrest global climate change. The scale of these elements is vast, and their abundances or shortages are among the root causes of wealth or poverty, and of peace or war. The invention of new energy technologies is the business of engineering; the adoption of any technology has large environmental impacts, and depends on its social and political acceptance. Social

and political acceptance depends on business, economics, culture, social norms, exercise of power and its preservation at levels from corporations to nations, among other matters, even including religion. These form an intimately interacting brew. Thinking about our energy future and with it global climate change involves the interaction of intellectual disciplines spanning the university: engineering, the physical sciences, agriculture, sociology, government, the environmental sciences, architecture, city and regional planning, business, law, economics, peace studies – the enumeration here is perhaps exhausting but not exhaustive and it can be extended further. Cornell has the breadth and talent to address the energy future – intellectual interactions reflecting the fundamental processes involved, however, are not now taking place, and their encouragement and promotion would be a major benefit of the sustainability initiative that our report addresses. Thinking about agriculture, food, and water involves the same kind of intellectual mix as the energy future. Examples of the kinds of cross-disciplinary interactions that could productively be pursued include studies of the social impact of energy technologies and the political processes determining its uses. Participating engineering faculty and students would learn from, teach and collaborate with those who study the lives of those vulnerable to and in need of technological change and those studying structures of local and global power. Those seeking sustainable improvements in the use of managed natural resources and agricultural systems could profit by interaction with faculty experts on the social and political barriers to effective resource use, environmental constraints and technological possibilities, and join in developing innovative solutions or powerful criticisms of dangerous trends.

Multidimensional Poverty, Vulnerability and Inequality:

Poverty has many dimensions, ranging from inadequate income to the failure to provide basic functioning, capabilities and needs, such as health, education, and food security. It also is critical to pay attention to the vulnerability to falling into poverty as a result of a range of household, community and national shocks, the natural course of the life cycle,

and changes in how public policy responds to these factors. Helping to put a rapid end, worldwide, to at least the most extreme forms of poverty and vulnerability is a widespread aspiration in developing and developed countries, including, the United States. Cornell can and should play a leading role in informing and shaping the global discussion of this vital goal. Cornell faculty have deeply informed perspectives on the question of global poverty and inequality, sometimes conflicting but always open to interchange. Social scientists in Economics, Business, Applied Economics, Development Sociology, Nutritional Sciences, Government, History, City and Regional Planning and elsewhere bring to bear insights derived, in many cases, from both their scholarship and their direct engagement with responses to poverty in developing countries on the part of policy makers, international aid agencies and the poor themselves. A number of these scholars have a special interest in the poorest region, sub-Saharan Africa, as do faculty in agronomy and other applied scientific fields. There is a similar wealth of complementary expertise concerning Asia, where most of the world's poor live, and Latin America, the site of vital controversies over poverty and development. In the US, there are also unique challenges of finding sustainable public policies, including managing our social and health security systems, to protect the most vulnerable segments of our society. Cornell social scientists in many departments contribute to critical debates on questions such as the prospects of dramatic and rapid reductions of poverty through massive increases in foreign aid, the proper role of markets and public investments, and the need for special measures to channel gains of growth toward the poor. Likewise, imperatives in improving global health, both in terms of fighting infectious diseases, such as malaria, TB and HIV/AIDS, that have long afflicted the poorest regions, as well as emerging challenges such as the alarming increase in chronic diseases and the prospects of unknown global pandemics, remain at the heart of reducing vulnerability and fighting deprivation. These needs will best be addressed by the social and behavior sciences working with the natural and life sciences to promote sustainable solutions to global health challenges. In the humanities, for example, Philosophy, Anthropology, English, Asian Studies, and in the Africana

Center, Cornell faculty study issues concerning the multiple dimensions of global poverty and inequality. These include questions concerning the duties of people in developed countries to forego advantages in the interest of the global poor, as well as the distinctive outlooks, cultural achievements and cultural and personal strategies of people who cope with severe poverty. The experiences of members of the Task Force make it clear that Cornell development scholars and humanists are mutually receptive to questions, arguments and conceptual innovations derived from many disciplines, and are willing and able to engage in vital discussions across disciplinary lines. It is clear from Task Force discussions that faculty with a primary research interest in agriculture, environment, engineering, business and law have much to contribute to a university-wide collaboration on the nature of poverty in developing countries (no doubt, importantly different in different countries) and the forms, prospects and limits of projects offered as relieving this burden. It is extremely unlikely that this collaboration will lead to a consensus on the single best approach. But with sufficient resources for enduring collaboration, Cornell can provide a model of academic cooperation that reveals pitfalls, best prospects and new ways of thinking in the fight against global poverty.

Natural and Built Environments:

The human population is increasing in size at a rate wholly unprecedented in the two million year history of our presence on Earth. Within the past one hundred and fifty years our technological advances have not only bettered our standard of living, but have enormously magnified the impacts we have on the natural environments in which we live and upon which we depend. Natural ecosystems and the plants, animals and microbes that comprise them provide an array of “goods and services” to humans, many of which are already well known, many that we are only now discovering, and undoubtedly many more that remain to be discovered. These include the bounty of plants and animals that we harvest from the environment for food, building materials and other natural resources. Water and air purification processes are carried out by natural ecosystems as excess

nutrients, toxic chemicals, and waste products are taken up, stored, modified or broken down. Erosion is prevented, flooding ameliorated, and coastal environments protected by lush corridors of plants. Essential new biologically active compounds, medicines, and natural pesticides and herbicides are discovered annually. Many naturally-occurring animals provide critical biological control of pest organisms, while others provide the depth, variety and wonder of the natural world in which so many people find joy. It is an essential part of sustainability that we find ways to inhabit our planet and its many ecosystems without degrading or destroying that upon which we so critically depend.

Cornell has extraordinary strength and breadth in environmental science. Significant areas of expertise include ecosystem functioning and the “goods and services” that natural ecosystems provide to humans, the effects that human activities have on natural ecosystems (e.g., resource management and harvesting, physical modifications, pollution, species introductions and transgenic crops), resource and pollution equity between humans and natural environments, engineering natural ecosystems to provide enhanced goods and services, sustainable, “green” design for goods, services and the built environment, and human perceptions, governmental regulations, and social structures. Faculty members with one or more of these interests reside in 22 departments distributed among 8 colleges on the Ithaca campus including: Animal Science, Applied Economics and Management, Business, Biological and Environmental Engineering, Biomedical Sciences, Chemistry and Chemical Biology, City and Regional Planning, Civil and Environmental Engineering, Collective Bargaining, Crop and Soil Science, Earth and Atmospheric Sciences, Ecology and Evolutionary Biology, Entomology, Hotel Administration, Horticulture, Landscape Architecture, Design & Environmental Analysis, Law, Mechanical and Aerospace Engineering, Microbiology, Natural Resources, Plant Biology, and Policy Analysis and Management. Examples of the kinds of cross-disciplinary interactions that could productively be pursued include studies of (i) the political and social forces that relegate the Earth’s poor to living in economically marginal environments and the impacts they

have in turn on what are often ecosystems particularly sensitive to degradation, (ii) the imposition of polluting industries and waste disposal sites on the economically disadvantaged, (iii) the political, economic and environmental considerations underlying the distribution of freshwater and food resources between industry, agriculture, domestic needs, and natural environments, (iv) the design of sustainable goods, services and structures (e.g. “green” products, services, dwellings, commercial and industrial buildings), and communities integral to the development of sustainable villages, towns and cities and their economic infrastructures, and (v) the scientific, technological, political, economic, social and moral dimensions of global climate change.

Development, Power and Institutions:

Through work on governance and power, Cornell faculty shed light on the political and economic processes, domestic and transnational, that shape the life prospects of people in developing countries. They also clarify the active role that the stronger developing countries play in world affairs. Work on power and politics is needed to investigate sources of war, a dramatic challenge to sustainability. Finally, the study of aspirations to autonomy, the constraints these aspirations face and dangers they pose takes seriously the deep need and interest of people in developing countries in promoting and guiding the distinctive culture, nationality or way of life they share. Cornell resources for studying the political, social and economic dynamics of development are already extremely rich - present, for example, in all the social science departments, in Philosophy, English, Law, and the Johnson School. Resource scarcities, health crises and environmental pressures on traditional agriculture often guide the interaction of development needs and political events, bringing Cornell's expertise in environmental and material sciences into play. Along with this disciplinary diversity, the study of the dynamics of development would benefit from the diversity of perspectives at Cornell. On such contentious issues as the role of international financial institutions, the impact of global trade, finance and property rights, and the effects of U.S. power, there is a broad range of informed perspectives.

People with diverse perspectives often do not discuss their differences because their energies are devoted to work in different departments or projects. Yet they are quite open to friendly and contentious interaction. Diversity in the study of the dynamics of development is a benefit of Cornell's decentralization. But more facilities for university wide collaboration are needed to make use of this diversity. Humanists concerned with global justice and vulnerable cultures might then learn from scholars investigating the economic processes shaping the lives of vulnerable peoples and societies and both groups could profit from subjecting those processes to moral scrutiny.

The Need for an Institute for Sustainability and Development

The rich resources dispersed throughout Cornell create a potential for transformative, interdisciplinary work making Cornell a global leader in the four areas of vital human interest we have sketched. The potential is unlikely to be fully realized, however, without a coordinated effort and serious commitment by the university and its central administration. It will require mutual learning and joint endeavors that will not occur spontaneously. Linking people in different departments, programs, centers and colleges, expert in different fields, working in different traditions and advancing different perspectives will require effort. Our inventory of resources has convinced us of the value of work already underway on our themes, but have also shown how dispersed the diverse efforts in sustainability are at Cornell. Our University has not capitalized effectively on our strengths, either internally in building interdisciplinary synergistic interactions, or externally in advertising to the nation and world the depth and breadth of our contributions. Discussions within the Task Force of how to build on Cornell's strengths have convinced us of the need for additional means of facilitating transformative interactions. These new interactive projects would best be combined in a new Cornell Institute for Sustainability and Development.

Other universities have announced or have instituted programs in sustainable development. Most of these programs have been formed at institutions that do not have Cornell's unusual breadth. None have identified the kind of genuine interactive and global focus – the bringing together of ideas and information over the wide spectrum that sustainable development requires – that we see as a distinguishing hallmark of Cornell's contributions and great potential.

Of course, no institution can productively address all issues linking sustainability and development, and we see the four topical areas identified earlier as ones feasible and sensible for Cornell concentration. Most scholars having interests in these issues will appreciate the benefits of synergy that can be realized from work across the divides we have identified, but need programmatic structures, facilities, course relief and other support to join in fruitful collaboration.

Mission, Hallmarks and Distinguishing Features of Cornell Institute for Sustainability and Development

Tackling problems that are global in scope, the Institute could draw on global resources, for example, by bringing together resident fellows from many countries, including developing countries and holding major international conferences. Through new courses and an undergraduate concentration, the Institute could create new kinds of students.

An interactive focus

Activities will deliberately engage the interplay and linkages between the major themes identified above. Strategies will be developed that promote synergies and collaborations between academics who up until now have studied themes in varying degrees of isolation.

A global focus.

With exceptional strengths in agriculture, environment, government, philosophy, law,

business and engineering, Cornell is positioned to transcend national boundaries to tackle the defining challenge of the 21st Century: to bring the world's citizens to a standard of living that encourages sustainable development and turns the tide of growing inequality between "haves" and "have-nots". Many components of this grand challenge clearly must be considered in terms of global reach, yet substantive solutions will require local action.

Production of a new kind of student.

We envision the education of students with expertise in multiple fields, who are comfortable talking across boundaries, and whose impacts on the world we can only imagine. These would be students who are, for example, versed in both technology and its social and environmental impacts, or in the challenges of alleviating poverty while maintaining viable economic and environmental structures. Cornell must train the people who will work effectively to solve the looming energy crisis, avoid catastrophic environmental degradation, and prevent social chaos due to inequality.

Our goals are, thus, breathtaking in scope and the problems we seek to address are complex, difficult and heterogeneous in nature. This is a grand challenge for a great university. In the following sections, we will describe specific projects that the Institute could implement in the next five years to make Cornell a leader in meeting this challenge, resources that would have to be allocated, and a structure of governance for the Institute. We will also describe the direction of faculty hiring and junior faculty nurturance that would help make Cornell a global leader in addressing the challenge of sustainability in the age of development. Finally, we point to some possible large academic structures, beyond the five-year horizon, that have excited both interest and controversy in our deliberations.

Functions of the Institute

We envision an institute that attracts faculty by giving them the time and resources to accomplish projects related to sustainability and development that they would not

otherwise be able to realize. The Institute will be a space where distinctive and original interdisciplinary work is facilitated by providing opportunities for focused study, for collaborators to meet, for workshops and colloquia to be planned and brought to reality, and for students (undergraduate and graduate) to learn and experience the challenges and rewards of working across traditional disciplinary boundaries.

The Institute will be the means the University establishes to carry out functions to support:

- A. Ongoing initiatives addressing sustainability issues
- B. Emergent initiatives
- C. Revolutionary, disruptive, high-return/high-risk initiatives.

Ongoing initiatives addressing sustainability issues

The Institute will facilitate coordination and communication between activities in the four focal areas (above), and between relevant units (currently existing, or subsequently created centers, programs, working groups, etc.). Units can elect to take advantage of the support offered or not – they will not be subordinated. Many of the items described in the next section could also be useful in sustaining ongoing initiatives.

Emergent initiatives

The institute will promote new research and insights, on a competitive basis, relevant to sustainability and development by promoting, awarding, etc. the following

- i Small-to-medium-sized grants of seed money designed to encourage faculty to take research in new directions, or to foster collaborations among faculty who would not otherwise have the opportunity to work together.
- ii) Released time for Cornell faculty to participate in: a) focused independent or cross-disciplinary study, or b) to organize and participate in workshops or the proposed

annual Forum (below)

- iii) Funds for the organization, hosting, and support of national and international workshops, and seminars on specific topics in the focal areas; the Institute may adopt one or more focal areas for the year or perhaps up to three years – these would be replaced by different focal areas after their term expires. Newly arising, or preexisting faculty groups would propose themes for the coming year. This permits new and emerging foci to garner attention.
- iv) Cornell [named] Forum on Sustainability in the Age of Development: Cornell faculty envision a critical topic for discussion and debate; external experts invited (and given honoraria) to interact with key Cornell faculty. We also envision participation by postdoctoral fellows, and select graduate and undergraduate students. One possible structure for this forum includes:

- Opening public forum with a 15-minute position statement by each participant.
- Closed discussions with the objective of producing a critical evaluative peer-reviewed publication. Postdoctoral fellows, graduate and undergraduate students participate by taking meeting notes, helping to retrieve information, working up data tables, etc. Cornell and visiting faculty co-write publication with postdoctoral fellows, graduate and undergraduate student participants. Postdoctoral fellows and the student participants assure that the publication is produced.
- Closing public forum at which the findings and conclusions of participants are reported.

Such a forum has the potential to generate considerable national and international attention to Cornell's contributions to sustainability.

- v) Graduate and Postdoctoral fellowships with research in the focal areas of the initiative. Funds for undergraduate summer and academic-year part-time salaries would also be desirable. A subset of the most relevant of these people would participate in the Forums.
- Postdoctoral Fellows would be chosen on a competitive basis to facilitate research interactions among faculty sponsors who would not otherwise work together.
 - We envision a program of prestigious (well-paid) 2 to 5-year postdocs.
 - Graduate Fellowships would be awarded on a competitive basis to existing fields recruiting individuals whose research interests are in line with the goals of the institute.
 - Undergraduate research support would be provided on a competitive basis to students who would work with faculty whose projects are related to the goals of the institute
- vi) Resident Scholars: short- and long-term visits by faculty and other distinguished scholars. We particularly include scholars from underdeveloped countries. These would enter into collaborations with Cornell faculty (research and/or workshop or forum planning) or would teach courses in topics for which expertise at Cornell does not exist.
- vii) New Faculty hires in key areas where current expertise at Cornell is lacking. One area that is critical but for which faculty expertise is all but missing from Cornell is in Global Climate Change. Expertise in this area touches many disciplines within sustainability and development: (a) energy use, technologies and efficiencies, (b) modeling of atmospheric and oceanic patterns, carbon sequestration/release by the

world's biota, (c) impacts on existing biomes and peoples, and (d) intimate understanding of the politics of engaging people, industry and governments in creating meaningful policies. To make Cornell intellectually competitive in this area will require six or more new faculty hires.

The mechanism for faculty hires might be modeled on the mechanisms used by the New Life Sciences Initiative: Faculty Focus Groups envision areas, solicit buy-in by relevant departments with incentives of start-up funding and bridging salaries. The NLSI also permits the possibility for departments with faculty searches seemingly disconnected from the initiative, to recognize potential linkages once candidates are identified and to garner funding at this point. Effective means of stimulating a faculty hire in a desired area may range from providing start-up funds or bridging salary to providing new faculty lines or half-lines, depending upon the needs of the department, college and university.

Revolutionary, disruptive, high-return/high-risk initiatives

Sustainability and Development are inherently trans- and multi-disciplinary subjects; administrative creativity is required. Faculty engaging in disruptive research may find it difficult to publish and to secure financial support from funding agencies. Furthermore, colleagues may find it difficult to evaluate the originality, creativity, and importance of the work. For untenured faculty, this makes it highly dangerous to devote time to high-risk research. Tenured faculty working in multi-disciplinary area do not have to worry about tenure, but the academic reward system may well fail to recognize the value of their work. The Task Force discussed a number of different approaches to address these concerns, but came up with no proposal that pleased a majority. One possibility is to have faculty, who believe their research is sufficiently unconventional that academic departments, journals and funding agencies are unable to recognize the value of their work, request consideration

by the Provost, in the process supplying suitable documentation supporting the claim. The Provost can then investigate, requesting opinions of faculty in other departments, Colleges, or experts outside Cornell. Junior faculty could have the option of declaring by their 4th year that their research/professional practice is “disruptively innovative” and that they wish their promotion and tenure to be considered by this separate procedure.

It is implicit in all these initiatives that projects funded by the Institute will facilitate an interaction that could not, or would not, occur without its support. The expectation would be that these interactions will involve more than one discipline, and priority for funding will be given to projects addressing an important theme and bringing to it disparate but essential disciplines. Research funding will focus on novel investigations that bring together faculty who would not normally interact intellectually to undertake a project of interest to the Institute. One goal of this funding is to assist faculty in obtaining substantial external funding in due course. This funding is likely to take one of two forms

1. Seed funding. This will typically fund 2-3 faculty on a 1-2 year project that, if successful could find longer-term Institute support in a Focused Research Group.
2. Focused Research Groups. These will typically involve 5-7 faculty working on a common project. Funding will typically be for a term of 4-5 years.

Funding will support post-docs, graduate students, undergraduate research, international collaboration and travel, etc.

Educational Programs in Sustainability and Development

Given existing barriers to the creation of University-wide educational programs, we divide the educational programs that we believe should be instituted into two groups, those that can be started immediately and those likely to depend on future developments:

1. *Initiatives that can be started right away.*
 - a. Develop an undergraduate concentration in Sustainable Development
 - b. As part of the curriculum development for this concentration
 - i) provide funds to encourage one or more large multi-disciplinary courses in sustainability and development that reach across two or more colleges, including resources for teaching assistants and, if needed, compensation for diversion of faculty from customary departmental tasks.
 - ii) provide funds to facilitate faculty and graduate student involvement in proposing and offering Freshman Writing Seminars in Sustainability
 - iii) encourage choice of key book(s) in sustainability for the Freshman Reading Project
 - c. Create a graduate minor in Sustainable Development
 - d. Foster the creation of undergraduate minors in Sustainable Development. (A Sustainable Development concentration in CALS already exists as part of their Science of Natural and Environmental Systems major).
 - e. Encourage the engagement of undergraduates in service projects. Some already exist, such as Engineers for a Sustainable World, Solar Decathlon, Sustainable Ithaca, US Green Building Council.
2. *Initiatives that depend on future developments*
 - a. Create a graduate major in Sustainable Development.
 - b. Create an undergraduate major in Sustainable Development.

Communication and External Relations

We must communicate the activities of our initiative to the academic, corporate, policy-making bodies, and to the general public. We foresee:

- Creating publications to draw attention to our activities in research, education and outreach
- Maintaining an Institute web site with the major purpose of showing both internal and external viewers an organized view of Cornell's activities in sustainable development. The "CALS portal" which has a comprehensive catalog of CALS activities in sustainable development is a good model to adopt.
- Developing corporate, governmental, non-profit and academic relations for fundraising and collaborative activities.
- Funding and organizing topical conferences at Cornell (and affiliated organizations).
- Funding and organizing workshops at Cornell to explore a given topic in a more active hands-on way than a conference.
- Organizing an annual showcase of Institute activities.
- Creating and sustaining co-operation and collaboration with local, regional and national like-minded entities.
- Creating a set of university partners at key worldwide locations who share our mission and vision of global linkages is clearly of vital importance to an Institute with a global mission. Connections should be made to a diverse set of institutions such as Cornell in Qatar, China and India where recent discussions between President Rawlings and Tsinghua and IIT Schools are already underway.

These three countries each enjoy relative political and economic stability. In addition, we believe Cornell should make concerted efforts to forge connections to African countries. The difficulties of such an endeavor are clear and we recommend that Cornell start with regional endeavors in some of the more well developed African countries, e.g., Kenya and South Africa, where we already have some collaborations and gradually increase our reach to more fragile countries.

- Facilitating international travel by Institute members. The Einaudi Center for International Studies funds some categories of international travel relevant to the proposed Institute functions. If the mandate of the Einaudi Center is broad enough, or broadened enough, to cover all functions of the Institute, supplementing its travel budget is one possible way to cover this requirement.
- Foster interchanges and internships between undergraduate and graduate students in the spirit of our multiple-themed approach. For instance, a summer exchange might be arranged with Cornell engineers and biologists going to George Washington University to study how advances in energy technology become energy policy; and GW International Relations students visiting Cornell to explore the complex relationship between primary sources of energy, economics, and technology.

Operation and Governance of the Institute

The operation and governance of the Institute will require the establishment of the following constituents:

- a) A Director will be essential. This person must have immediate external stature (and may possibly be an external hire). This position would be a renewable term appointment (possibly five years and would have a tenured faculty appointment

in an existing department.

- b) An internal Executive or Steering Committee should be established. The Internal Committee will advise the Director and serve as liaison to the University faculty and to existing Cornell Centers with a mission to promote sustainable development. We recommend that members of this group be selected from Cornell faculty actively engaged in teaching, research, and outreach directly relevant to the mission of the Institute and who are committed to its purposes.
- c) An external advisory committee should be created. This group will provide advice and assessment of activities. It should be made up of representatives of academia, industry, government, and NGOs or other advocacy groups.
- d) Physical space will be needed. We feel it is essential for the Institute to have physical space set aside as the visible home of Sustainable Development on campus. The equivalent of one floor of a building is probably sufficient at this point. One goal should be to have the space be as “green” as possible. We anticipate that the Institute will need space for 10-20 faculty, post-docs and staff, access to extensive computing resources, top quality video-conferencing, space for visitors, and conference rooms.

Future Possible Growth

We believe that the above proposals have the potential to lead to further, bolder and broader initiatives addressing humanity's need for sustainable development. The scope of any entity centered around Sustainable Development is, by its very nature, far broader than any current Center or Department presently on the Cornell campus. This presents intriguing challenges for predicting future growth. While discussions of these future possibilities within the Task Force were characterized by vigorous debate and ended without a clear consensus, it is clear to us as a group that Cornell must strive to balance the

desirability of opportunities for faculty to depart from traditional paradigms and career paths against the need to avoid narrowness and superficiality that, without careful planning, particular structures might impose. In this spirit, we make suggestions concerning key design criteria that we believe are essential for any future entity in Sustainable Development and which we anticipate will characterize the *Cornell Institute of Sustainability and Development* described in the body of this report. (1) The organization in its steady-state form must remain open to embracing new ideas, new foci, and new people. It must not define the boundaries of Sustainable Development so rigidly or so soon that this openness and vigor are lost. (2) The non-traditional aspects of Sustainable Development that we can already envision should encourage faculty with cross-disciplinary interests and help them to find a tenurable home at Cornell. Both of these criteria imply some groundbreaking, culture-changing ideas for Cornell to consider.

The desire to keep a major academic entity for Sustainable Development whose foci, depth and breadth remain in a stimulating state of flux is no easy balancing act. The entity must steer between the fairly well defined boundaries characteristic of traditional departments, and the instability of too much change of personnel and focus. For this reason, we find it hard to imagine that creating a new department of Sustainable Development in one or more Colleges would be an appropriate route. The field of Sustainable Development is inherently multidisciplinary and inter-disciplinary and we seek a solution that has these traits at its core. The structure of the Institute we propose above provides for stimulating interaction and discussion among the Cornell faculty and students, and with colleagues from outside the University. It is our intention that the strength of these interactions will increase through time, while the details of their structure evolve based on experience. After several years of operation, it will be important for the University and its faculty to evaluate the Institute and its trajectory. One direction toward which further development might lead is the establishment of a school focused on the topic of sustainable development. Successful examples of multi-disciplinary schools exist at other

universities, including the School of Advanced International Studies (Johns Hopkins University), the Kennedy School of Government (Harvard University), the Ford School of Public Policy (University of Michigan), the Woodrow Wilson School of Public and International Affairs (Princeton University), the Nicholas School of the Environment and Earth Sciences (Duke University), the School of Forestry and Environmental Studies (Yale University). Nothing like these academic structures has yet found a home at Cornell, and none of these examples encompasses the comprehensive scope of the sustainability effort we envision.

A possible future: A Cornell School of Sustainable Development .

The mission of the School would be a combination of scholarship, outreach and teaching, promoting multi-disciplinary collaborations that focus on emerging and compelling scientific, technological, and related public policy challenges, of the types articulated in this report. We would stress innovative provision of incentives for research and teaching that go beyond narrow disciplinary pursuits, as well as opportunities for faculty to expand their domain of activities to put them at the nexus of scientific, engineering, and policy challenges that may require different types of rewards and pose different risks than are found in traditional departments and colleges. Thus, it would be necessary to develop a core faculty in the School, as well as fellows (or other such designation) drawn from departments campus-wide to participate in the intellectual life of the School. One approach to the creation of a faculty core is to establish five-year appointments (or any other reasonable but substantive time commitment) in the School, whereby faculty members at Cornell can temporarily devote their teaching and research efforts to areas of interest to the School's mission before returning to their home departments. There might be a center consisting of about 100 faculty with only a fraction appointed to the core in the School at any one time. The School might begin by offering a masters degree program.

We cannot emphasize too strongly the problems of recognition and especially the award of tenure for junior faculty with strong interests in crosscutting research. We have made a

modest suggestion in our discussion on “Revolutionary, disruptive, high-return/high risk initiatives.” These problems are not peculiar to sustainability, but have been starkly revealed by our thinking about the subject and our sketch of a new School for Sustainable Development does not address this critical issue. Untenured faculty members with these multidisciplinary interests run the distinct risk of being unappreciated by their home departments and may jeopardize their tenurability by pursuing such. To solve this problem, Cornell would have to create a new paradigm for tenuring faculty within the School, one in which evidence of scholarship from a broader range of experts in currently disparate fields can be appropriately evaluated. The tenure process is the major way in which an academic unit currently defines itself. It says where it is going, what talents it values, which research and educational efforts it rewards. New thinking about this process is required in response to the special needs of Sustainable Development.

We envision a School of Sustainable Development that would have the virtues of independence while avoiding dangers of narrowness. We offer this as a future means of raising Cornell's strengths to a higher level of global leadership. We expect these and other aspirations to become definite, informed and fruitful as faculty interact in the Institute that we have described.