



Global Colloquium of University Presidents
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POSITION PAPERS FROM COLLOQUIUM PARTICIPANTS

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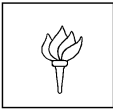
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John Sexton

President

Global Climate Change and the Role of Universities

Prepared by
President John Sexton

for discussion at the
2007 Secretary-General's Global Colloquium of University Presidents

There is strong and growing evidence that greenhouse gas emissions from human activity have been a cause of significant long-term atmospheric warming and other climactic changes. As emissions continue to increase, these effects will intensify, posing a significant challenge for future generations. It is also clear that universities have a central role to play in meeting that challenge.

Among the possible dimensions along which universities might have a role to play include:

- As operating entities that consume energy and have an ecological impact on their surroundings. Universities comprise physical plants and infrastructure; they purchase and consume various forms of energy; and they operate within fiscal and other constraints that can have an impact on their “carbon footprint”.
- As centers of research and discovery that can marshal scientific knowledge in confronting serious global challenges, including climate change. From the physical and social scientists, to the humanists and artists, to the legal and business and international experts, universities can supply and help support the range of expertise needed to grapple with such a complex, multivariate issue.
- As disseminators of knowledge than can help inform the public debate about climate change and its effects. Universities provide platforms by which their scholars can share what they know with broader audiences and can often assume a leadership role in informing government leaders and policy makers in options and trade-offs.
- As places of teaching and learning where students can be informed about the impact of individual behavior on reducing environmental impacts and galvanized to change that behavior in thoughtful and sustainable ways.

- As institutions with missions and founding principles by which they measure themselves. Along with the broad academic norms and specific missions which animate most universities, they may seek to expand their foundational principles to include sustainability as a lens through which they define themselves.

This list is by no means complete, and some may fault it for including items beyond the pale of academic institutions. It is meant to stimulate your thinking about the ways in which universities may contribute to the challenge of global climate change.

The questions that I hope we will explore are:

- What are the appropriate ways in which universities can address the issue of climate change? Which of these ways are most in keeping with how universities currently envision themselves and operate? Which ones might call for a rethinking of those roles and operations?
- Given the scope and time pressures of the climate change, what should universities be doing now? Should they be realigning research priorities, providing incentives for further research and/or forming research consortia to expand the reach of science into certain areas? What areas?
- What mechanisms might universities put in place for collaboration among themselves – in basic research; in the dissemination of knowledge to broader audiences, including governmental and international bodies; and in business practices and operations – that might contribute to meeting the challenge of climate change?

Global Climate Change and the role of IITs

Presented by

Prof. D. Acharya
Director, IIT, Kharagpur, INDIA

For Discussion at the 2007 Secretary- General's Global Colloquium of University Presidents.

The seven premiere institutes named Indian Institute of Technology of our country are offering wide spectrum of technological and scientific training to most brilliant Indian students selected on the basis of joint entrance examination (IIT-JEE) conducted by IITs to ensure quality intake of students. The faculty and students are engaged in high quality research both in basic and applied sciences. Climate science and policy issues are multidisciplinary in nature and IITs and Universities are capable and may contribute to the challenge of Global Climate Change. Government of India has already taken steps to initiate/strengthen climate related research in various government Institutions and Laboratories. In view of the urgency of the problem, there is a need to involve more institutions in the task.

The following additional dimensions should be considered;

- 1) The IITs/Universities can introduce suitable courses at appropriate levels in their educational curriculum for information and awareness.
- 2) Need to encourage Intra- /Inter- IITs/ Universities network projects related to basic or applied climate change issues.
- 3) Enhance international collaboration to benefit from each other's expertise.
- 4) Educate policy makers by way of short term courses high-lighting the issues of climate change.
- 5) Convince Govt. /Corporate houses to invest in developing clean technology by funding to reputed IITs/Universities. NGO's can also play an important role in this process.
- 6) Convince the Govt. to achieve universal primary education with special emphasis to educate the new generation about the environment issues and climate change.
- 7) The IITs can help and convince the Govt. to encourage the private sector to prepare documentary films on the consequences of environmental issues and climate change in order to educate and bring awareness among the common people by telecasting.

The challenges of Global Climate Change

The post-Kyoto Policy Agenda

(For Discussion of Faculty of experts at Secretary-General's Global Colloquium of University President)

Prof. D. Acharya
Director, IIT Kharagpur
India

The memorandum designed by Richard Stewart is thought provoking. It is true that global warming has been created by human activities on the planet earth as evidenced by IPCC report; this has to be solved by cooperative efforts of all nations. The developing nations have the right to continue their progress the way developed nations have achieved this stage. India has developed institutional mechanism to deal with disasters called National Disaster Management Authority and trying to integrate environment in their future development strategy.

In the light of present climate change scenario, the following issues need to be discussed:

- In view of International Polar Year, the data collected should be analyzed to improve the processes in the climate models, to have better representation of poles in models. The aim should be to provide more precise projection of global warming, which is 1-6°C in the 21st Century.
- In case the warming goes in the higher end, geo-engineering solutions like geological sequestration or iron fertilization of oceans needs to be seriously considered for global warming mitigation.
- Arctic should be used only as a Global Heritage of mankind and its Governance should be developed on the pattern of Antarctica / Antarctic Treaty System
- Standardization of emission measurements of Green House Gases (GHG) should be documented
- Government should adopt reward / punishment measures to private sectors to be responsible towards the emission of GHG. If necessary, NGO's help can be taken to educate them about the consequences of global warming.
- Developed nations should transfer the clean technology to developing countries and provide expertise in developing innovative carbon-free technologies to reduce emission in future
- In addition to technological solution to reduce emission, other solutions should also be explored
- Scientific knowledge should be translated into "easy to understand" language to ensure the reach of global warming message to masses



SCIENCES PO

Global Climate Change and the Role of Universities

Prepared by

President Richard Descoings,

for discussion at the 2007 Secretary-General's Global Colloquium of University Presidents

The specificity of Sciences Po as a university specializing on the social sciences explains why Sciences Po awareness about Sustainable Development issues is quite recent. Several domains covered by Sciences Po research and teaching activities are now concerned by global changes; these new issues impact on studies on international relations, government, public policies, public and private law, international economics. It is only since 2004 that Sciences Po has chosen to address the issue of climate change through four dimensions.

1 Creation of a dedicated Department on Sustainable Development, risks and environment:

Sciences Po is developing and expanding a solid expertise on Sustainable Development.

As global change and particularly climate change gives a new perspective to traditional domains of social sciences, Sciences Po decided to create a Chair on Sustainable Development based on the assumption that social studies will need contributions from earth and life sciences as well as engineering to capture the new questions and understand the necessary adaptation of human societies to face the global challenges. Next research programs in Sciences-Po will include this pluridisciplinary approach recognizing the need of different conceptual perspectives: scientific humanities being a new paradigm to revisit relations between nature and society.

On climate change the Chair seeks to nurture the Academic Debate through the organization of several colloquia, publications and a wide range of conferences addressing the legal aspect of future climate regimes, the new economics of climate change and the intertwined dynamic between international policies and local policies as well as private strategies. Research on global challenges requires new networks and new institutional arrangements

A new Research Center will open at Sciences Po this year, through the partnership with the IDDRI (Institut sur le Développement Durable et les Relations Internationales), a research and policy foundation on sustainable development and international relations. This new configuration will allow Sciences Po to participate much more to the research activities in that field.

2 Launching new Curricula:

Sciences Po had three objectives when creating new curricula on Sustainable Development. First, give an opportunity to each student, whatever his or her specialization, to be familiarized with new issues and new problematics.

Second, rethink fully the traditional approaches about growth and development.

Third, create a relationship between the range of the social sciences and sciences. The divorce between these two set of disciplines being very strong in France, mainly because of the traditional organization of disciplines.

Four sets of Programs are being created or under consideration:

- At the undergraduate level: Sciences Po has developed new courses to introduce the basic notions on global environment risks, and various courses on governance problems linked with these risks.
- At the Master level: Sciences Po has created a program integrated within the Master of International Affairs with a concentration on environment and sustainable development. In this program
- A new multidisciplinary program is created at the Master level: This new Master program will be developed with the idea of articulating Social Sciences with Earth and life sciences. This Program is being developed with University Pierre et Marie Curie, a university of Paris specialized in the sciences.
- Currently Sciences-Po is working with University Pierre et Marie Curie on a potential PHD program

3 Playing a role in sustaining a policy dialogue on climate change issues and their policy implications (The Stern report discussion at Sciences Po, but also the publication of a new yearly edition of “Regards sur la Terre”, an annual book on sustainable development at world level with specific contributions on climate change and development)

Sciences Po has also been very active in opening Policy dialogue with majors French companies like VEOLIA, TOTAL, AREVA and many others who are engaged in the international discussion on climate change and the major technological options.

Laurence Tubiana, Director of the Sciences Po Sustainable Development at Sciences Po, and Director of IDDRI, has developed a very active role in the public debate in France. She managed to be part of the “Grenelle de l’ Environnement” the recent innovative public approach of environmental issues in France and she is currently advising the government on Post Kyoto climate negotiations

4 Measuring the carbon footprint of Sciences-Po.

It is obvious that no institution can bring expertise on such issues as climate change and environment without being involved institutionally in the self analysis of these questions. That is why Sciences-Po at the initiative of groups of students has initiated the assessment of the carbon foot print of the school. This project is now being developed in partnership with Sciences Po students and the National Agency for Environment and Energy Efficiency. The students together with the administration conducts the evaluation with methodological support and control of the agency. The final output will be to introduce in Science-Po policies and strategies evaluation of impact on CO2 emissions and the ways to mitigate them.

Global Climate Change and the Role of Universities

Prepared by Vice-Chancellor S.M.A. Faiz
University of Dhaka, Bangladesh

For discussion at the 2007 Secretary-General's Global Colloquium of University Presidents,
New York University; November 28-29, 2007.

Universities throughout the world are increasingly striving to connect knowledge with the problems and needs, nationwide and globally. Global climate change, emanating from greenhouse gas emissions, has created challenges and opportunities for the universities to find out ways and means to abate. Indeed, the universities have a central role to play and may act as follows:

1. Projecting as role model

One of appropriate ways in which universities can address the issue of climate change is by projecting themselves as role model for others to look up to, by reducing the consumption of non-renewable resources and through other measures of energy efficiency.

Many universities, individually or collectively, are devising and applying measures for conserving energy, developing efficiency codes and using non-renewable energy to cut their emission of green house gases. However, in less developed countries like Bangladesh, adopting those measures are sometimes difficult given their poor resource and infrastructure, near absolute dependence on public money, lack of awareness and so on. Linking universities of North and South could be geared to addressing these issues.

2. Designing academic curricula

The commitment of universities to address the climate issue is perhaps most universally demonstrated through the redesigning of academic curricula and courses, providing target specific training and conducting a variety of campaign activities.

The universities can also introduce a compulsory course on environment at the freshman or sophomore level of undergraduate curriculum. This will help disseminate the knowledge and create awareness in the society.

3. Stimulating Youth forces

The educators can stimulate the students with the need to preserve the climate and the need to balance natural resources consume and equity; inspire this hugely potential youth forces to be in the forefront of combating climate change, and together, they can adopt the concepts and behaviour to build a sustainable future.

The universities can create environmental teams for designing and developing action plans.

Universities have years of experience in teaching and training the leaders of tomorrow.

4. Research and collaboration

Top universities, in addition to their research initiatives, sometime form an alliance to take the lead on climate change research. They build consortium to share relevant expertise, innovations and strategies and they cooperate in expanding carbon sequesters, green architecture and engineering and on other issues.

Universities may intensify research to harness pollution free energy sources for future global energy requirements.

Universities with expertise in all fields of research, in science and technology, in the natural, human and social sciences and in all other areas may provide help and support needed to address the issue.

5. Shaping public opinion and national policies

By virtue of the respect they command, universities can promote awareness on environmental protection globally and help shape public opinion and national policies on the subject.

Along with the preponderant attributes combating climate changes, the universities may describe itself as institutions dedicated to education, research, development and policy formulation to the global climate change. There may be greater needs for extending coordinated support to less resourceful universities of third world countries in terms of technology transfer, building centres of excellence, providing scholarships and grants and high level of training and through exchange of climate change expertise and information.

Looking ahead

Universities are indeed hugely effective platforms to connect and link scholars and broader audience for developing and sharing expertise, knowledge and views and for dissemination of information. More integrated global and regional networking and collaboration among universities with specified targets and modalities could beef up our efforts for a greater, safer and healthier world for us and our next generations.

I propose that the colloquium participants prepare a multi-university research protocol. The location of Bangladesh and the immensely large population under serious threat of climate change consequences provide the opportunity for the University of Dhaka to be at the centre of inter-university international research efforts.

We need to remain open to all ideas so that our efforts on the issue converge and keep on progressing.

The Role of a Social Science and Humanities Institution in Addressing Global Climate Change

Dr. Javier Garciadiego
President
El Colegio de México

El Colegio de México is a leading university institution. It recognizes the various environmental problems Mexico faces and the link between them and those of a global nature. In particular, it acknowledges the scientific validity of systematized findings, evaluated and analyzed by the Intergovernmental Panel on Climate Change (IPCC) through which the world community has become aware of the risks faced by countries and the life system in general due to the increase in the earth's temperature resulting from massive human intervention in the natural order in over two centuries of modern industrialization. In this respect, and in keeping with the reflections of President of New York University, John Sexton, I would like to express my views on the role of our and other university institutions in contributing to the search for solutions to this problem that affects rich and poor nations and social groups alike, as well as all the ecosystems that make both human and non-human life possible.

- 1) El Colegio de Mexico, like most of the institutions comprising the Association of Universities and Higher Education Institutes (ANUIES) in Mexico, is undertaking a diagnosis to draw up its own Environmental Plan to reduce the impact of our activities on the environment. This will achieve lower energy consumption, rational, sustainable water use, and proper recycling of paper and other materials used in the institution's everyday activities as well as making it possible to advance towards a system of green purchases that comply with the environmental regulations in force in Mexico. We believe that all universities should have internal environmental management systems in place in the near future.
- 2) In most of its seven Research Centers, El Colegio de México has researchers analyzing environmental problems from historic, economic, sociological, urban and

demographic perspectives, as well as the point of view of international relations. The Center for Demographic, Urban and Environmental Studies (CEDUA) undertakes the most systematic and comprehensive studies on the environmental problems of Mexico and other countries, using a social and public policy perspective to analyze water, air and soil problems as well as those involving transport, local climate change management, compliance with environmental law, the urbanization of nature reserves, environmental risks and energy and their link with transport, environmental policies and institutional aspects of environmental management. CEDUA offers a Master's Degree Program in Urban Studies, with a specialization in Urban Environment and a Doctoral Program in Urban and Environmental Studies, that emphasize the need to study the social nature of environmental problem objectively and with scientific rigor and to propose solutions to the problems analyzed. CEDUA also runs the Leadership in Environment Program (LEAD), the Mexican branch of an international training program in environmental programs based in the United Kingdom and financed by The Rockefeller Foundation.

- 3) El Colegio de México regards it as extremely important to disseminate knowledge and encourage communication between those that produce knowledge and those that make decisions in the government sphere. In this respect, it is carrying out two types of specific actions. A) The organization of an Interdisciplinary Seminar on Environment and Sustainable Development that invites the academic and government sector, NGOS and the general public on a monthly basis to discuss the main problems affecting the environment in Mexico and the rest of the world and possible policy options and other actions for dealing with them. B) The president's office of El Colegio de México has organized two major seminars to encourage dialogue between academia and government authorities on the main problems affecting the country, including the national and global aspects of environmental problems. In 2006, at the time of the Mexican presidential elections, the Election Year-A Year of Reflections Seminar was held, which permitted one of the most

productive dialogues between specialists, which in turn made it possible to raise the level of national debate on national problems and the political platforms of the parties and presidential candidates. Another Seminar, already underway, is entitled: 2007, The Year of Proposals and Actions, which has not only enabled the main problems of Mexico and the world context to be discussed but also allowed recommendations to be submitted to transform them into government actions. Government policies and programs have been enriched by the discussions and contributions of this seminar. In May of this year, as part of this seminar, another seminar was held, entitled: The Environmental Policy of the Mexican state: The Path of Sustainability, attended, among others, by 1995 Chemistry Nobel Laureate, Dr. Mario J. Molina, who discussed the link between the environmental problems of Mexico and those of a global nature.

From our point of view, in addition to the research, teaching and dissemination of environmental problems that university institutions should undertake, it is essential to deal with problems such as climate change, the search for a more effective relationship between the institutions and researchers that produce knowledge and government institutions and officials that make the most important decisions regarding environmental issues. Knowledge must have a real application in order to attempt to solve social problems. It is therefore essential not only to help students design research problems that are also national or social problems in general but also to encourage research studies and project that will become policy and action proposals for solving the specific problems of the community, the country and the world. The discussion seminars, such as those currently held at El Colegio de México, are congruous with the search for dialogue between all interested parties and those in various spheres that are involved as researchers, citizens, decision-makers, workers and producers in national and global problems, such as those related to global warming. University institutions must facilitate and encourage this orientation of academic work; at El Colegio de México, we have been working in this direction and will continue to do so.



Scaling Up the Environmental Commitment and Contribution of Universities

Prepared by
President Amy Gutmann

For the 2007 United Nations Secretary-General's Global Colloquium of University Presidents

What role should universities play in addressing and redressing climate change? The first UN Global Colloquium of University Presidents issued a now widely-signed collective statement on academic freedom, which contained this very relevant understanding of the role of universities today:

Modern societies now entrust universities with greater responsibilities than ever before. Universities are charged with preserving the knowledge of the past and transmitting it to the next generation; educating tomorrow's citizens, professionals, and leaders; and fostering the discovery of new knowledge that may either strengthen or challenge established ideas and norms -- all with the aim of deepening human understanding and bettering the human condition. They also function as engines of economic development, foster technological and scientific innovation, stimulate creativity in the arts and literature, and address urgent global problems such as poverty, disease, ethno-political conflict, and environmental degradation.

The scientific evidence of global warming is compelling; the risks to future generations are profound; and the urgency of amelioration is great. Many universities are therefore already making environmental sustainability an increasingly important part of our research and teaching, public engagements, operations of our physical plants and infrastructure, and—to a lesser extent—overall institutional mission statement.

But not only are the data so compelling, the risks so profound, and the urgency so great. The challenge of redressing the problem is also so clearly a collective one—where externalities abound and the most basic common good (that of long-term survival) will be *irreversibly undermined* by the “business as usual” individual and institutional pursuit of short-term, unenlightened self-interest.

This context, in which all universities are acting today, suggests that—rather than spend our time together recounting and justifying what we are already doing to improve the odds of global sustainability—we would do well (and also better determine how to do far more good as institutions) to focus on how much more universities can do in collaborative activities and alliances, not only on our own campuses, but with other universities, and also with other important societal institutions and individuals; all the while in keeping with our widely-shared collective understanding of the overall mission of universities in society today.

The greatest challenge posed by the problem of global warming (and related environmental problems) is that of *scaling up*. How can universities scale up different modes of appropriate activities—many of which we are already undertaking—by better collaborating and creating alliances? (An example of scaling up that is already underway is the American College and University Presidents Climate Commitment, but as its very name suggests, this collective commitment is limited to U.S.

colleges and universities. There are many other examples of cross-national collaborations underway as well. But together these fall far short of where we can and should be in addressing such a profound global problem.)

What more can and should universities do to scale up? At least three dimensions of how universities can scale up—intellectually, physically, and internationally—are simultaneously moral and practical: the collective actions we can take in each of these dimensions are consonant with our core missions and will constitute important contributions to the dire needs of sustainability on our planet.

The first and foremost dimension for universities is intellectual—the dimension that subsumes our core missions of research and teaching. For universities to scale up intellectually, we must actually integrate—that is, bring together in research projects, courses, and curricula—all the relevant disciplinary knowledge and understanding needed to address the concrete issues of how our world realistically can achieve carbon neutrality and climate sustainability. Pieces of relevant knowledge and understanding are typically segregated in separate disciplines, rather than integrated. Yet if we are to stand a chance of truly understanding how best to move forward in addressing and redressing global warming, we really cannot afford to choose among understanding the scientific and engineering inventions, the economic incentives, and the political institutions, not to mention the linguistic, cultural, and class divides that create barriers to cooperation within and among nations. Essential parts of the large-scale environmental problems that need to be addressed reside in separate university departments and schools. The intellectual challenge, therefore, is for universities to be more integrated, rather than segregated, in the way we do our academic work, both our research and teaching, so as to better address the real problems that need to be resolved to achieve global sustainability. Intellectual scaling up will call for greater integration and collaborations, not only within individual universities but also across universities, because few if any universities have all of the essential and relevant disciplinary expertise on site.

The second dimension that calls upon universities to determine how best we can scale up our collective efforts concerns our physical plants and operations. We each run significant physical plants and infrastructures, where our building, transportation, energy, water, landscaping, (in some cases) agricultural, and other operations and policies either contribute to, or detract from, what is needed to mount a successful global sustainability effort. While individually, even the biggest of us can make a relatively small difference, together—were we to scale up through the alliances and compacts we make with many other universities, all of our neighborhoods and cities, and possibly even our corporate and non-profit partners—our scaled-up efforts would amount to an increasingly significant contribution, and increase the incentives for others to join in our efforts. Expanding alliances increasingly demonstrate the possibility of social contracts for sustainability across institutional divides. As important, as universities demonstrate our ability to scale up across the divides of our campuses, and communities, we also demonstrate our willingness and ability to put into actual practice some of the integrated knowledge that we have dedicated ourselves to producing. As essentially educational institutions, universities have an especially important responsibility (and indeed incentive in keeping with our enlightened interest) to “walk the walk,” as well as “talk the talk,” in order to demonstrate to our societies and the world the social importance—and benefits—of integrating knowledge and putting such knowledge into use for the betterment of humankind.

The third dimension and challenge of scaling up is international collaboration. This may be the greatest challenge to universities, given our present global political environment, which has increasingly threatened to erect additional barriers to our collaborations, and it may also be the most

important for us to undertake as a group. The challenge of scaling up internationally most comprehensively captures what brings us here together as the *Global* Colloquium of University Presidents. We have every reason to think that an effective response to global warming and sustainability will require a sustained global commitment by developed and developing nations, by regional and international organizations of nations, by individuals (especially in their role as engaged citizens in supporting such collaboration), by corporations and NGOs, and by all major institutions of civil society, universities foremost among these.

The core commitment of universities to integrating knowledge with the aim of bettering the human condition can fuel our increasing efforts at global collaborations to meet the challenges of scaling up, intellectually, physically, and internationally. International alliances among universities—which include greater research and teaching collaborations, and shared institutional commitments to environmental sustainability via compacts that take into account the various kinds of contributions that are feasible within different societal contexts—these and other practical means of scaling up can demonstrate that institutional collaborations across national borders are possible and productive. Universities from different parts of the world, for example, could create an international environmental analogue of FactCheck.Org, which would provide scientifically reliable reviews of major environmental reports and initiatives. A highly reputable reporting mechanism would itself increase the intellectual contribution of universities, while providing another incentive for institutions to contribute to global sustainability.

Universities are among the foremost “anchor institutions” of contemporary civil society, and we are among the few sectors of society whose basic mission—the preservation, creation, and transmission of knowledge and understanding—is essentially long-term in outlook. We cannot substitute for the role that powerful political and economic institutions must play, but we can do far more than simply supplement their roles by acting as individual institutional actors. We also can join together as an increasingly important sector of the global landscape to inform and educate, to contribute our fair share in our non-academic physical and infrastructural operations, and to demonstrate the potential of international collaboration among institutions.

Doing all of this, as comprehensively, energetically, and persistently as possible, in no way detracts from the core missions of our institutions. Indeed, committing our institutions collectively to environmental sustainability may well turn out to be a defining example of the societal contribution that universities can make in this century.

Global Climate Change and the University of Oxford

Memorandum from Dr John Hood

The statement from President John Sexton sets out a range of ways in which universities can play a role in placing global climate change at the heart of national and international policy development, and also operate, as large and complex entities that are themselves responsible for significant use of physical resource, as exemplars of good practice

In terms of research, teaching, and policy development, a number of universities now have centres or institutes that focus on environmental or global climate change. The University of Oxford has a good track record in this area. For their work in authoring reports that assess the impact of climate change, ten Oxford scientists were honoured last month when the Intergovernmental Panel on Climate Change and Al Gore were announced as Nobel Prize Winners. The University created its Environmental Change Institute in 1991. This is located administratively within the School of Geography's Centre for the Environment, but operates as an interdisciplinary centre undertaking research on environmental issues, teaching a graduate course in environmental change and management, and fostering university-wide networks and outreach on the environment. Its research and teaching is characterised by a focus on global and regional environmental change, projects that bring together the natural and social sciences, and by an orientation to applied and public policy. Its main research themes are centred on climate, energy, and ecosystems. The ECI hosts or co-hosts national and international projects that include the UK Climate Impacts Programme, the Oxford node of the Tyndall Centre for Climate Change Research, the UK Energy Research Centre, and the ICSU Global Environmental Change and Food Systems (GECAFS) international project office. It is directed by Professor Diana Liverman.

The Environmental Change Institute is also part of a wider network of Oxford-based centres and institutes, that form the James Martin 21st Century School. The School was founded in 2005, and contains ten institutes, researching into some of the most intractable problems of the current century, including ageing, international migration, the future of humanity, science and civilization, and emergent infections in human beings. The School enables researchers in these disparate but interconnected areas to further influence and advance creative policy solutions to these problems facing humanity. The School is directed by Dr Ian Goldin, a former vice-president of the World Bank.

The University is currently establishing a new entity within its Social Sciences Division, the School for Enterprise and the Environment. The vision behind the School is the establishment of an interdisciplinary venture that will generate academic research, public policy, and practical solutions of the highest quality. It is the intention that the School will serve as a global hub for academics, policy-makers and business leaders to generate knowledge, challenge one another and develop practical, collaborative solutions to the environmental issues which currently threaten our way of life. Its focus will be, in particular, on finding and facilitating private solutions to environmental problems. Just some of the issues that the School will seek to address are how business and government can work together to reduce greenhouse gas emissions in high-polluting countries; how incentives can be provided to the private sector to invest in low-carbon technologies; how consumers can be induced to change their environmental attitudes and behaviour; and the range of policy instruments that would best facilitate the transition to an efficient and intelligent economy that makes the best use of scarce natural resources.

Practical steps as an operating entity

The Council of the University of Oxford some years ago approved the adoption of a policy on energy consumption that has as a key target by 2010 the reduction by 20% of total carbon emissions from 1990 levels. It is the intention that the reduction will be in the order of 60% by 2050, in line with the UK Government's target. A key element of this target is the continuing policy of purchasing 100% of its electricity from off-site renewable energy resources. Its current electricity contract from renewable resources runs until 2012, and the intention is to continue with the policy thereafter. As a result, between 2002 and 2007, the University was directly responsible for 140,000t fewer of carbon dioxide emissions, and the current contract will continue to "save" some 34,000t CO² per year, by investing in off-site renewable energy. The University's Estates Directorate is currently developing further policies on transport, water usage, building and development, and waste generation and management, which will be brought to the Council for approval by Spring 2008.

The Estates Directorate has launched a number of new initiatives, including a University Energy Investment Fund that will resource individual departmental projects such as new controls for ventilation and heating systems, lighting controls, and building and plant insulation. Energy surveys will be carried out on individual buildings with tailored energy saving strategies.

A number of departments have implemented successful water saving schemes. For example one of the Physics Laboratories has cut water consumption by 57% over four years, saving 28,000m³ per year (a cost saving of £34,000 per year). Improvements in the ventilation controls at the University's swimming pool is responsible for around 25% lower usage of gas and electricity, and a saving of £19,500 per year. The introduction of new controls and boilers in the University's Science Area boiler houses has yielded a 14% drop in gas consumption, saving £55,000 per year.

In addition, new buildings are designed to use less energy in their building, running, and maintenance. Examples of features include rainwater harvesting; photovoltaic roof panels; energy efficient heating, cooling and ventilation; energy efficient lighting; and low or zero ozone-depleting materials. New buildings currently being designed for the University's next phase of intensive capital development will have low or zero carbon energy solutions such as passive heating, cooling and ventilation; highly insulated walls, glazing and floors; external solar shading; and energy metering.

Two other initiatives by the Estates Directorate bear mention. The first of these is a policy of encouraging staff to reduce their reliance on motorcars for travelling to and from work. The percentage of staff regularly using cars has fallen from 46% in 1997 to 28% in 2002, and 23% in 2007. The University has implemented schemes that effectively provide a 10% discount for bus passes, and 5% discount for train season tickets. A salary sacrifice scheme for the purchase of heavily discounted bicycles was introduced last year. Recycling schemes across the University range from the reclamation and re-use of shelving in the library system, to the use in the University Parks maintenance vehicles of biofuels made from used cooking oil from the University's kitchens!

Oxford
November 2007

**Secretary-General's Global Colloquium of University Presidents
New York University – November 28-29, 2007**

**The University and the environmental question.
A Memorandum of the
Pontifical Catholic University of Rio de Janeiro (PUC-Rio)**

Although the expressions ecology or ecological do not appear wordily in the document that defines the institutional mission of PUC-Rio – the “Marco Referencial”, or “Reference Milestone” – , however it can be said that, since many years, the environmental questions have been a continuous and main concern for our University. As a matter of fact, we offer to our students many opportunities of understanding those questions, with courses focusing the ecological problematic in many fields, such as Geography, Education, Engineering, Social Communication, Social Work, Law and International Relations. The environmental concern pervades practically all our Centers and Departments. Therefore, in order to coordinate our efforts, in year 2000 we created a specific unit: the NIMA or Interdisciplinary Nucleus for Environment, presently directed by our professor Fernando Walcácer, which in this colloquium will act as my advisor.

Since Rio de Janeiro is a big town on the Atlantic shore, we are specially concerned with the climate changes and their possible devastating consequences in our area. It must be stressed that not only our town, but also its whole metropolitan area, during many years, have conducted a wild and uncontrolled model of land occupation, that awakes general and deep concerns. Because of that, we have conducted innovative and intense research, mapping the geological risk areas of our town. We can proudly say that such research has revealed itself a valuable instrument for public policies in controlling the soil occupation and lessening the effects of provoked erosion and natural catastrophes, like floods. We have worked, for example, in projects of reforestation or in constructing security barriers in the hills slopes of the town.

Of course, we think that our main contribution to environmental consciousness and climate changes discussion must dwell inside our main field of action, that is, teaching and research. But we can't neglect the interaction with our neighbors and with the whole society. In this sense, we may mention actions developed together with local ONGs, in the “Favela da Maré”, an extremely poor community in Rio de Janeiro. We promoted there, for example, community farming, engaging in the project, not only our teachers and students, but also the pupils of local schools, their families and related people.

We conduct too academic research for clean energy, such as solar, even envisaging its use in our campus. We are also studying the use of biomass and other alternative materials. We have also promoted studies about greater efficiency of motor vehicles, in order to diminish air pollution.

With the purpose of promoting a greater ecological conscience, every year, we reward projects elaborated by our students, about environmental impacts inside the University. This year, for example, the focus laid on climate changes and the award was given to a project of reforestation in the slopes of Rainha river, which runs through our campus, but which receives the detritus of some slums without sanitary facilities. Other projects elaborated by our students were directed to reutilization of trash produced inside the campus or the use of alternative materials, as bamboo, for building.

I would like to stress, that the research related with climate change, conducted at PUC-Rio, or at other Universities and research centers in developing countries can't be some isolated action and that it could take a greater impulse, if it be financed and qualified as some integrant, complementary and essential part of the research performed at international and global level, by scientific institutions in developed countries. We envisage a fruitful interchange of experiences among research institutions in various countries. This colloquium, I am sure, will give very good results of cooperation between our Universities

A handwritten signature in black ink, appearing to be 'J. Hortal', with a long horizontal flourish extending to the right.

Fr. Dr. Jesús Hortal Sánchez, S.J.
President of the Pontifical Catholic University
of Rio de Janeiro (PUC-Rio)

The Role of Universities in the Era of Climate Change

Prepared by Shin-Bok Kim
Seoul National University

For discussion at
Secretary General's Global Colloquium of University Presidents
New York University -- November 28-29, 2007

Now, nobody can deny the importance of climate change in face of its on-going and prospected serious impacts. In the Fourth assessment Report, IPCC addressed with very high confidence that current climate change is the global average net effect of human activities since 1750. In this circumstance, universities not only as institutes for education and research but also as energy-consuming entities should play a role in the era of climate change.

1. Appropriate ways for universities to respond to climate change

First of all, universities can start reducing their own CO₂ emissions with specific reduction targets. In Korea, energy consumption and CO₂ emissions of universities have been increasing due to expansion of their physical scale and increased use of energy-dependant equipments. In the case of Seoul National University (SNU), the average per capita CO₂ emission of its members including students, faculties and other employees was approximately 2.2 CO₂ ton in 2006. This is almost 4 times higher than its 0.6 ton average of 1990. Through reduction actions, universities can contribute to climate change mitigation by shrinking their carbon footprint and stand as a good model for other social entities to follow. Such actions also have an educational effect, externally as well as internally.

For instance, universities can initiate CO₂ emission reduction in connection via eco-campus movements. Universities can install renewable facilities in their own sites and buildings. Through this performance, students and faculties will learn and feel the relationship between energy use and climate change in their everyday life. In addition, facilities installed by universities can act as firsthand educational tools not only for campus members but also for general citizens.

Furthermore, universities can help local communities transform into low-carbon and energy-independent societies. The Göttingen university is a good example. It

reached out to a local community, discussed local environmental conditions with its residents, and thus formulated strategies to create a climate friendly community based on research results and technologies developed by itself.

2. Realigning research priorities and rearranging research fields

Climate change is an immediate risk necessary to respond. Currently, climate change-related courses are provided in undergraduate, graduate programs and special programs in the SNU. School of public health of SNU is designated as a Specialized Graduate School for Climate Change and financed by the Ministry of Environment in order to develop inventory methodologies and raise climate change specialists. However, there is a long way to go in the SNU. Current approaches are still segmental and sector-specific.

Given the time pressure and seriousness of the issue, universities need to prioritize climate change field among others and encourage interdisciplinary and multi-sectoral approach providing incentives. In case of SNU, graduate school of environmental studies are initiating establishment of Center for Sustainable Studies (CSS) in which every theme is supposed to be studied in connection with issues of climate change and sustainability. Faculties across the campus and outside experts will join in and carry out projects in interdisciplinary manners. The administrative support will be given to the CSS.

3. Possible mechanisms for universities' collaboration

It is important to build a network among universities for collaboration and information sharing. Especially, region-based network building is important for close collaboration. On the other hand, long range collaboration between universities, which also holds great significance, can be accomplished through exchange programs focusing on climate change. For instance, climate change leadership programs hosted by universities of developed countries could educate students and officials from developing countries, and thus contribute to capacity building in developing countries.

Universities, especially universities in the same region, can hold periodical shuttle conference to share study results concerning possible impact of climate change on that region, mitigation and adaptation policies and actions, and educational experience. GHG reduction actions and consequences can be comparatively studied through research networks.

Climate Change and the Challenge for Universities

Hiroshi Komiyama¹ and Keisuke Hanaki²
The University of Tokyo

1. Characteristics of the climate change issue

Characteristics of the climate change issue from the standpoint of academic contributions are cited below.

a) Interaction among global, social and human systems

The occurrence, impact and mitigation of climate change are deeply dependent on these systems, which are mutually interactive. Therefore, analysis and resolution of the problems of climate change require approaching these three systems in an integrated manner.

b) Input of science to politics

IPCC has created a new example of how science can contribute to global policy decisions. This is an epochal development in the history of science. In turn it means that the ethics of scientists, who are now in a position to influence the future of the Earth, are all the more important.

c) Importance of social dissemination

Overcoming climate change requires a social consensus, in the achievement of which academia plays a vital role. Society needs to understand the science and facts of climate change. Academia needs to fulfill its duty to contribute to society in a scientific manner.

d) Decision-making under uncertainty

Action in response to climate change must be taken with a recognition of scientific uncertainty, which should be minimized to the extent possible but remains inevitable. Application of the precautionary principle from the viewpoint of the global, social and human systems in a balanced manner is essential.

2. The role of universities

a) Providing intelligence as well as the concept of sustainability science

Contributing to scientific knowledge and analysis has been and will continue to be an important role of the university, but this input is generated by individual researchers. In addition to such input, universities also need to lead academia toward more integrated disciplines such as sustainability science, which will be explained in the following section.

b) Bridging scholars, public and policymakers

As a neutral body with great internal diversity, the university is the player in the best position to bridge a variety of stakeholders in the search for solutions to the climate change issue. Collaboration among scholars in different fields within academia is also essential for addressing the climate change issue. The university can provide human resources and opportunities for such bridging functions.

c) Educating the next generation

The climate change issue is an intergenerational issue, with a time span of anywhere from fifty to several hundred years. Educating the next generation to pursue a sustainable society is a privilege as well as a duty of the university.

d) Demonstrating a sustainable future society

The university, consisting as it does of various members, is a community, and as such should fulfill its

¹ President, The University of Tokyo

² Professor and Managing Director, Integrated Research System of Sustainability Science (IR3S)

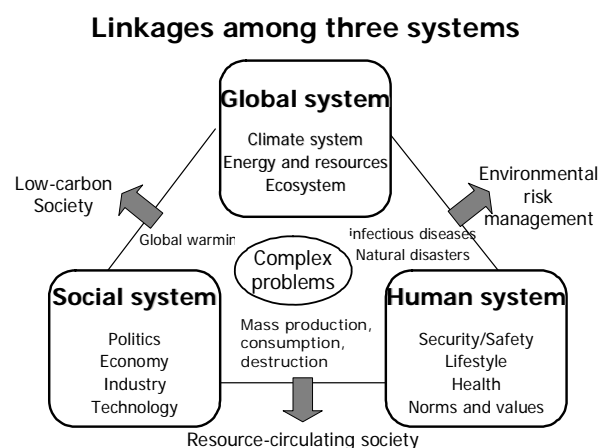
social responsibilities by serving as a model for a future sustainable society. Sustainable campus initiatives should be promoted to demonstrate the feasibility of such a society.

3. The necessity of sustainability science

No single discipline of science can resolve the climate change issue, but sustainability science has the potential to do so.

a) Definition of sustainability science

Sustainability science is an academic discipline that seeks to understand the interactions within and among **global, social, and human systems**, the complex mechanisms that lead to degradation of these systems and concomitant risks to human well-being and security, and then to propose visions and methods for protecting and/or restoring these systems and linkages. Sustainability science must therefore adopt a comprehensive, holistic approach to the identification of problems and perspectives involving the sustainability of these global, social, and human systems.



b) Structuring knowledge

Two obstacles that impede efforts to deal with the issues associated with sustainability are the complexity of the problems and the specialization of the scholarship that seeks to address them. Hence the structuring of knowledge is an essential first step in the effort to acquire a comprehensive view of sustainability issues. The problems that sustainability science confronts are not only complex but also interconnected. Knowledge structuring is of critical value in identifying problems and responding to the needs of academia and industry.

c) Transdisciplinary approach

It is necessary to construct a framework within which individual disciplines can provide quantifiable criteria and indicators related to sustainability. Sustainability science joins the natural and social sciences together through such indicators.

4. Activities of The University of Tokyo as an example

a) Formation of the Integrated Research System for Sustainability Science (IR3S)

The University of Tokyo established a new organization, IR3S, in 2005. IR3S is a research network founded with the aim of serving as a global research and educational platform for sustainability scientists. It consists of The University of Tokyo and four other Japanese participating universities and six cooperating institutions in the field of sustainability science. Scholars from various fields work together in collaboration with these universities and institutions to ensure an integrated and transdisciplinary approach to sustainability.

b) Journal of Sustainability Science

IR3S began publishing an academic journal, *Sustainability Science*, in 2006 to provide a platform for discussion among scholars engaged in research on sustainability science.

(<http://www.springer.com/west/home?SGWID=4-102-70-144940151-0>)

1 Creating Sustainable Campuses

Richard C. Levin
YIBS Symposium
October 18, 2007

2 Sustainability at Yale

- Yale University has a comprehensive strategy that involves protection of natural ecosystems, conservation of water resources, recycling of materials, and the use of natural, locally-grown products in our dining halls
- Yale has teaching and research programs covering the widest range of issues relating to sustainability
- I will focus on one critical dimension of sustainability: the threat of global warming

3 The Threat of Global Warming

- Intergovernmental Panel on Climate Change (2007)
 - Evidence of global warming conclusive
 - Caused by human activity
- Stern Review (2006)
 - Global warming will impose substantial economic cost and reduce quality of life
 - To prevent global warming in excess of 2°C, carbon emissions must be reduced by 45-55%

4 The Role of the United States

- Today, the US is the largest source of greenhouse gas (GHG) emissions
- *Global warming cannot be stopped unless the US reduces GHG emissions*
- *The same conclusion holds with respect to China and India*

5 A global solution requires international cooperation

- Neither the US nor China is committed to the Kyoto protocols
- Most European countries will fall short of their 2012 goals
- A new round of commitments is needed if global warming is to be arrested

6 Is a global solution feasible?

- A 45-55% reduction in GHG emissions will require:
 - Behavioral change
 - More efficient transportation systems
 - More efficient power generation
 - More efficient buildings
 - “Smart” cities
- Probable cost: 1-2% of Global GDP

7 Is a global solution likely?

- Legislation in US unlikely to be sufficiently ambitious
- Pressures for continued economic growth in China and India will constrain GHG reduction

- Thus, both national reform in key countries and international agreement is unlikely *without a demonstration of the feasibility and practicality of substantial GHG reduction*

8 The role of universities

- Continue to advance the science of climate change
- Develop alternative energy and transport technologies that reduce or eliminate GHG emissions
- Educate future citizens and leaders
- Demonstrate that GHG reduction is possible and relatively inexpensive

9 Advancing Science and Energy Technology

- University of Tokyo developing major initiative in Sustainability Science
- MIT has made alternative energy technology its #1 research priority
- BP has committed \$500 million to alternative energy research at Lawrence Berkeley Laboratory

10 Demonstrating the Feasibility of GHG reduction

- By modeling responsible environmental practice, universities (and other organizations) can demonstrate to political leaders that GHG reduction is feasible and affordable
- Such practice will influence students and graduates, the next generation of leaders

11 Yale's GHG policy

- In 2005, Yale announced its intention to reduce its GHG emissions to 10% below the 1990 level
 - A 43% reduction from 2005 level
 - A 58% reduction from projected 2020 level
- A target commensurate with the reduction needed globally to keep temperatures from rising more than 2° C

12 Yale's GHG reduction goal

- 2005 emissions = 262,000 metric tons of carbon emissions (MTCE)
- Projected 2020 emissions = 350,000 MTCE
- 1990 level minus 10% = 147,000 MTCE
- Required reduction = 203,000 MTCE

13 Progress since 2005

- Since 2005, reduction of 43,242 MTCE
- 17% reduction from 2005 level
- 21% of reduction needed by 2020
- Projects currently planned will achieve an additional 17% reduction

14 Examples of GHG reduction

- More efficient HVAC in 90 buildings

- Automated controls on HVAC and lighting
- Window replacement
- New and modified power plant equipment
- Renewable fuel in turbines and buses
- All new buildings and major renovations LEED silver or better
- Use of ground water for cooling
- 10% yearly reduction in residential colleges

15 GHG Reductions in Progress

- 5% reduction in residential colleges
- Adoption of sustainable building design and construction standards
- Installation of 14MW cogeneration plant at the medical center
- Hybrid vehicles, clean fuel and reduced MPG standards
- Thin film photovoltaic cells on buildings
- Micro-wind demonstration projects

16 Cost implications

- Most GHG-reducing investments to date have a positive economic return
- Most future investments will incur an economic cost
 - Green building premium: 2-10%
 - Renewables more costly than fossil fuels
- Estimated cost of reaching goal: less than 1% of operating budget

17 The West Campus: A New Opportunity for Leadership

- We will incorporate Bayer's 2005 GHG emissions into our baseline data, and aim for the same 43% reduction by 2020
- As on main campus, opportunity to upgrade HVAC, lighting controls, insulation
- Electricity needs could be partially supplied by photovoltaics, wind turbines, and fuel cells
- Key goal: minimize the carbon footprint of transportation between the two campuses

18 Strategies at other universities

- Cornell using lake water for cooling
- U Pennsylvania using wind power for 30% of its electricity
- Ivy Plus universities (Brown, Chicago, Columbia, Cornell, Dartmouth, Duke, Harvard, Johns Hopkins, MIT, Pennsylvania, Princeton, Stanford, Yale) all committed to establishing GHG goals by end of 2007-08 academic year
- Most have established an office to coordinate sustainability efforts

19 Building a Global Network

- Ivy Plus sustainability directors now meeting twice yearly to share practices and work toward establishing a common GHG reduction goal
- International Alliance of Research Universities (ANU, Cambridge, Copenhagen, ETH-Zurich, NUS, Oxford, PKU, Tokyo, UC Berkeley, Yale) sustainability officials met this fall for the same purposes

20 Recognizing International Differences

- Universities in rapidly developing economies cannot be expected to reduce GHG emissions to below 1990 levels
- But reductions from projected future levels are feasible
- For example, reducing GHG emissions per square meter 20-50% from current levels might be a feasible target

21 **Next Steps?**

- Continue GHG efforts on our own campuses, raising the bar if feasible and cost-effective
- Educate students at Yale and elsewhere about the feasibility of GHG reduction
- Lead other globally prominent universities toward the adoption of specific, measurable goals
- Encourage meaningful US and global policy solutions.

Global Colloquium of University Presidents

Memorandum by Professor L. S. Luboobi; Makerere University, Kampala-Uganda

Introduction

Makerere University started in 1922 as a technical college and became a college of university of East Africa in 1963 serving Uganda, Kenya and Tanzania and awarding degrees of the University of London. In 1970 it became an independent national University; Makerere University. Currently the University has thirty five thousand students. The vision of the University is to be a leading institution for academic excellence and innovations in Africa while its mission is to provide world class innovative teaching, learning, research and services responsive to national and global needs.

Uganda is also experiencing impacts of climate change. Water levels in Lake Victoria fell by 1.5 m during last two years and this is mainly attributed to drought. Weather patterns have changed and this has affected farmers as they do not easily predict when to plant their crops. Incidences of diseases like malaria are prevalent in areas where they never used to occur. These places include Kabale, located in the south western part of Uganda which is currently warmer that it used to be in the 1960's. The impacts of climate change are also reflected by the occurrence floods in different parts of Uganda. During September-October this year, most of the eastern part of Uganda was flooded.

How Makerere can contribute to addressing concerns of Global Climate

Makerere University can contribute to concerns of climate change through training, research and outreach. Through training, students are introduced to the causes and impacts of climate change. This is currently done by different departments in the university. However, to make training effective there is need to have a cross cutting course(s) on climate change, climate variability and adaptive measures to climate change. The university has also started research in climate change and its impacts on agriculture, water resources and biodiversity. Efforts are being made to expand these research areas. Another way that Makerere University can address the challenge of climate change is raising awareness through training and dissemination of information to policy makers and the general public. In this regard the University is looking forward to building capacity in these areas (physical and human). Information communication technology (access to internet and other related facilities) is envisaged to play an important role.

How we might move our Institutions along the paths of sustainability

To move along the paths of sustainability there need to conserve energy resources and minimise the use of technologies that emit green house gases. There is also need to raise awareness of people that use these energies and technologies. These efforts should be streamlined into our university activities. We need to raise awareness among our Staff members and Students on how to conserve energy and select appropriate technologies and to advocate for renewable energy sources.

The major energy source of energy in Uganda is biomass energy (96% of total energy used) and more so in rural areas. In urban areas, even where there is electricity, people still use biomass energy for cooking as it is cheaper. Here we need to sensitize people to use biomass energy efficiently and also advocate for planting more trees. Use of alternative energy sources like biogas could be encouraged.

In Uganda, fossil fuels are the major contributors to green house gases and most of this energy is used in the road transport sector. In this case we need to sensitise our people to move by public transport wherever possible and also to buy cars that are energy efficient. Cycling, though not well planned for in Uganda, could be encouraged. During the last two years, use of thermal generators in Uganda has increased because of low hydropower generation at Owen Falls Dam, due low water levels in Lake Victoria. Furthermore we need to sensitise our people to avoid or minimise the use of technologies that emit chlorofluorocarbons. The University could work hand in with the Government and provide advice on how to improve on the infrastructure like roads. This could include advocating for public transport and less polluting transport means like cycling. Here there is need to renovate and expand roads to include lanes for buses and cyclists. Another technology that could be considered is the use of electric trains and trams. There is also need to generate information through research that can feed into policy.

Lastly, there is need to establish collaboration between Universities both in the north and the south and share experiences and carry joint research. Exchange of staff and students could also be explored.

The Role of Universities in Dealing with Global Climate Change

Professor Menachem Magidor

President of the Hebrew University of Jerusalem

On the scale of global issues, the problem of Global Climate Change is enormous. A huge number of resources are needed in order to deal with this problem, as it is an unusually complex situation and there are many different dimensions involved in a rational analysis of the issue. In addition, political, commercial and ideological interests are distorting global dialogue about Global Climate Change, even at the relatively neutral stages of fact-finding.

The major research universities around the world have the potential of becoming major players in facing this international challenge. The relative detachment of these institutions, being "ivory towers", can to some extent help create neutral ground for discussions of some of the major issues involved.

The wide spectrum of expertise that a major research university represents, if properly clustered into a critical mass, can be an extremely valuable resource for decision makers.

I am particularly referring to a combination of:

1) Fact-finding and modeling the complex systems relevant to the issues: A list of four critical fact-finding challenges as presented in the enclosed Memorandum: "Post Kyoto Climate Research Agenda".

- a) Better understanding of the relationship between climate change and the G.H.G. released into the atmosphere.
- b) What is the point of no return of Global Warming?
- c) Evaluating different geo-engineering options.
- d) The impact of climate change on water resources.

2) Technological innovation: Directions for technological innovation as listed in the enclosed memorandum.

- a) CO₂ sequestering techniques
- b) Massive scale use of solar energy
- c) Massive use of high level winds
- d) Production of fuels from excess power
- e) Efficient storage and transportation of fuel

3) Understanding the political and economic constrains for implementing any particular policy: Here, Game theoretical models could play a major role in analyzing different suggested policies. The Hebrew University, with its very strong groups in Game Theory and Mathematical Economics and its Center for the Study of Rationality and Interactive Decision-making can be a major player in this analysis.

In order to effectively contribute to the international effort in dealing with Global Climate Change, the universities will have to overcome internal constraints, such as creating a timely interdisciplinary discourse across academic disciplines and departments and between institutions, and facilitating technological transfer for the innovative ideas coming out of scientific laboratories. Of course, the role of the university as educator is also a significant factor in facing this critical issue.

University Sustainability Initiative

Kazuo Oike
President, Kyoto University

for discussion at the
2007 UN Secretary-General's Global Colloquium of University Presidents

The 21st century is pronounced as *Century of Environment*. This has the following two implications. First, the global environmental problems will become more serious. Second, challenging the global environmental problems will motive technological innovation, and consequently sustainable economic development and growth. Thus, sustainability will be the most important key-word during the 21st century. Based on the above perception, I now propose the role of universities.

Despite tremendous effort by scientists focusing on sustainability during the last decade of the 20th century and the first several years of the 21st century, only incremental progress has been made. In particular, research activities in Asia have not been sufficient to propose operational policy measures that will help achieve the sustainable development in this region. In order to create a breakthrough, we need an innovative and transdisciplinary approach. I, therefore, propose *the university sustainability initiative*.

The university sustainability initiative aims at creating a novel discipline called *sustainability science* by integrating cutting edge knowledge that is accumulating in various existing fields of sciences. This initiative is best described as a fabric that is woven from the disciplines of natural and social sciences. *Sustainability science* intends to pursue the followings: (1) scientific diagnosis of the earth system, (2) developing technological innovation to achieve sustainable development, (3) evaluating technologies based on cost-effectiveness, and (4) proposing policy measures that will motivate technological innovation and change of production and consumption patterns , leading the existing societies towards the sustainable societies.

On the basis of the above transdisciplinary research and development, the initiative aims to propose the most effective strategy to attain sustainable development around the world, especially in Asia. Specifically, such a strategy will include the following: (1) create a recycling-based society, especially in Asia, (2) determine the types of technological transfer that are beneficial for the Asian countries to reduce green-house gas (GHG) emissions, and the type of international framework that is acceptable and effective to prevent climate change after the Kyoto Protocol, (3) from an ethical point of view, determine the preferable types of international collaboration and technology, and (4) design the most appropriate environmental governance and risk management, especially in Asia.

In order to achieve the ultimate purpose of the initiative, the scope of the research and education must be interdisciplinary and international. The initiative will be

interdisciplinary. For example, the Kyoto Sustainability Initiative, that has been in operation since 2006 in Kyoto University, Japan, includes chemistry, advanced energy science, sustainable humanosphere, and disaster prevention science on the natural science side, while on the social science side, it includes environmental and resource economics, policy-studies, and environmental ethics. Furthermore, the initiative should be international. For example, Kyoto University has its own on-site offices in Shanghai, China; Bangkok, Thailand; and Jakarta, Indonesia. Through these three offices, the Kyoto Sustainability Initiative will establish meaningful collaborations in research and education with our partners in Asia.

The mission of the university sustainability initiative is dedicated both to research in sustainability science and to the education of young students. An interdisciplinary educational program in sustainability science will be implemented in English so that students in Asia and other parts of the world will be able to take courses through distant learning systems. The educational program will allow exchange of course credits across universities joining in the university sustainability initiative throughout the world.

In summary, the university sustainability initiative will play an essential role in meeting the challenge of global environmental problems including global climate change. The university sustainability initiative's contribution to the global environmental problems will be significant particularly in the field of sustainability science where the collaboration of natural, social, and humanity sciences is indispensable. Furthermore, the universities' foreign offices will play a very important role as bases for international activities. The worldwide network of the university sustainability initiatives for both research and education will certainly evolve into a firmly established influential entity by maintaining the collaboration framework across institutions in the university sustainability initiatives around the world.

*Secretary-General's Global Colloquium of University Presidents
New York University, November, 28-29th 2007*



**THE ROLE OF THE UNIVERSITY OF BOTSWANA IN MEETING
THE GLOBAL CLIMATE CHANGE CHALLENGE IN BOTSWANA**

B.K. Otlhogile
Vice Chancellor (President)
University of Botswana

1. Introduction

We agree with President John Sexton of New York University that universities have a central role to play in meeting the challenge posed by climate change. We appreciate the invitation to the 2007 Secretary-General's Global Colloquium of University Presidents because it has forced us to seriously ponder and reflect over the role of our own University in meeting the challenge in our country. This reflection has indicated that the University of Botswana has done some good climate change related work but also that there is a lot that we could have done and could do in a coordinated manner. This short presentation therefore reports the results of our collective reflection on the subject matter. The presentation is in essence a prescriptive agenda for the University to play a more exemplary, significant and focused role in climate change adaptation and mitigation in Botswana.

2. Adopting and Implementing "Charity-begins-at-home" actions

As the only institution of highest learning in the country, the people of Botswana expect the University of Botswana to be a source of not only information with which to design solutions to various national problems but also to provide practical solutions to some of these problems. For the University of Botswana to be a credible source of climate change information and solutions, it must demonstrably be seen to be leading in the adoption of some of the adaptive and mitigation measures that it may recommend to the Botswana Government and other institutions in and outside the country. These charity-begins-at-home measures that the University of Botswana (UB) should take include:

- i) Managing electricity/energy consumption through:*
 - a. Promoting a culture of switching off lights, computers, air conditioners and other electrical appliances when not in use.
 - b. Continuous energy-saving campaigns and place reminders on doors and near light switches.
 - c. Where possible, switching to alternative energy-saving technologies.
 - d. Implementing innovative building designs to take advantage of the abundant natural light and solar energy.

Rationale:

An overwhelming proportion of Botswana's electricity is generated by coal-powered thermal plants locally and in South Africa. By reducing energy consumption UB will have contributed to a reduction in the amount of coal burnt and in the amount of associated carbon dioxide released to the atmosphere.

- ii) *Reduction of the carbon 'foot-print' by:*
- a. Buying only printers and photocopiers that offer the back to back and/or multiple page printing or photocopying options.
 - b. Setting printing paper quotas for staff members
 - c. Sensitising and encouraging staff and students to use WebCT (UB has to ensure that the system is always up and running and reliable and that students have easy access to the internet).
 - d. Invigorating and reorganizing the waste paper collection-for-recycling system on campus
 - e. Adopting a policy of using only or mostly recycled paper.
 - f. Holding frequent resource conservation campaigns for students and staff to sustain awareness at high levels.

Rationale:

Paper is produced from pulp which is largely from vegetation (especially woody vegetation). Green vegetation sequesters carbon dioxide. Therefore by reducing the amount of paper consumed, UB would contribute to the conservation of important land surface carbon sinks.

- iii) *Adopting landscaping and water use that adhere to principles of sustainability*
- a. Develop and implement waste water recycling technology in UB for watering lawns and ornamental plants on campus
 - b. Harvest rainwater for watering lawns and ornamental plants on campus
 - c. Continue with the policy of desert landscaping because it saves on water

Rationale:

Water is already a scarce resource in Botswana. Climate change is likely to adversely affect the limited water sources. By adopting water saving strategies, the University would have contributed to the culture of conservation of this precious resource which will be essential for adaptation to climate change.

- iv) *Perform periodic environmental audits in order to:*
- a. To gauge the institution's performance in terms of conserving energy, paper and water
 - b. To enhance successful strategies and find remedies to less successful ones.

3. Building a database to influence adaptive and mitigation policy

Staff of UB have in the past been commissioned by the Government to undertake climate change vulnerability and adaptation studies for various sectors. Staff in various academic units (notably the Department of Environmental Science, the Department of Physics and the Harry Openheimer Okavango Research Centre) have also in the past secured funding for climate change related research work. While these efforts have produced useful data, they have largely been uncoordinated and have not fed into a common climate change data base. UB's vision, mission and values statement does not make explicit reference to environmental sustainability in general nor to climate change adaptation and mitigation in particular. This unsatisfactory situation has to change if UB is to play a more significant role in meeting the challenge posed by climate change. There is therefore need for the University to:

- a. Seriously consider the establishment of a center for environmental change studies in which climate change research would be one of the major activities. Data from the centre could then be used to inform policies and strategies on climate change mitigation and adaptation, as well as those that deal with other environmental

sustainability concerns. Establishment of such a centre would receive the support of the Ministry of Communications Science Technology whose research plan priority areas include environmental sustainability. The Department of Meteorological Services in the Ministry of Environment, Wildlife and Tourism would also be a very strong partner in the centre's climate change research.

- b. Promote climate change research at or outside the centre which is should be multi-disciplinary, because climate change adaptation and mitigation are multivariate issues. Both natural science and the various non-natural science disciplines have a role to play. For example, the costs and benefits of the exploitation of Botswana's vast reserves of coal for power generation have economic, health, social and environmental dimensions.
- c. Initiate climate change research at or outside the centre that is contextual or relevant to the local setting. We, for instance, expect our scientists to interrogate the assumptions behind the various climate change models with a view to ascertaining their relevance to local environmental conditions. The outcome of such evaluation might necessitate adapting the models or designing more locally relevant ones. The Department of Meteorological Services is upgrading its computing facilities to increase capacity to handle climate change modeling. UB experts should collaboratively take advantage of this facility.

4. Promoting climate change mitigation innovations and designs

Most of the actions listed under section 2 above are quick-to-adopt adaptive and mitigation measures. There is also need for UB to promote long-term research on mitigation for instance on the production of more fuel efficient engines for generators and even vehicles that could contribute to a reduction in greenhouse gas emissions. The Faculty of Engineering and Technology in collaboration with associated technical colleges, cognate external partners and the private sector could be empowered to take the lead. Similarly, UB should promote research into appropriate building designs that would take advantage of Botswana's climate (see also 2id above). This would contribute to energy conservation and a reduction in emissions from coal which is the principal source of electricity in the country at the moment. The Department of Architecture and Urban Planning in the Faculty of Engineering and Technology should be empowered to take the lead in this effort.

5. Growing a climate change aware and sensitive future generation

UB has very active student environmental clubs. Apart from engaging in environmental awareness campaigns on campus (e.g. through panel discussions, debates, tree planting, litter picking etc), these clubs also organize outreach activities across the country and across Botswana's borders. One of the student organizations (UB Wildlife Conservation Society) is engaged in discussions with the Department of Water Affairs to start a waste-water recycling scheme on campus for green landscaping purposes.

These organizations need to be equipped with relevant climate change information and provided with increased financial support so that they could be used as vehicles for raising climate change awareness not only among the public but also among primary and secondary school children, i.e. among the future generation.

Most members of the student environmental organizations in question are formed by Environmental Science combined or single majors. On the average, the Department of Environmental Science at UB produces between 300 and 400 graduates annually, all of whom would have been exposed to climate change as one of the leading environmental issues of our time. Some of these graduates join the teaching profession as secondary school teachers. Others

join various natural resource management departments in government. Therefore UB has a large pool of ‘disciples’ in the public sector with climate change information. Some of these have risen to key decision-making positions in important natural and environmental management departments of government (e.g. the Director of the Department of Environmental Affairs and the Director of the Department of Sanitation and Waste Management) or in environmental NGOs (e.g. the Kalahari Conservation Society and IUCN). Thus, increasingly young, more environmentally aware and sensitive citizens are moving into strategic positions with regard to tackling climate change and other pressing environmental issues.

6. Promoting awareness among the public, policy makers and policy implementers

UB should take the lead in the campaign to raise informed awareness in the nation of Botswana. Indeed, some of this awareness will be raised through the independent efforts of its graduates in their various capacities in public and other sectors of working life. However, UB should take more deliberate and planned efforts, such as:

- a. Mounting short courses on climate change adaptation and mitigation for policy makers (including parliamentarians) and policy implementers. The Department of Environmental Science has already developed one such course under its short course programme.
- b. Encouraging staff to publish in local outlets (such as Pula, Botswana Notes and Records, Botswana Journal of Technology etc) so that policy makers could have easy access to the information relevant to environmental decision-making. This means that UB has to give local journals more recognition in its staff Performance Management System (PMS) and reviews for promotion and contract renewals.
- c. Creating a forum for regular panel discussions, public debates and engagement on climate change to raise and sustain public awareness. Gladly one such forum already exists, created collaboratively by the UB Department of Environmental Science, the Department of Environmental Affairs in the Ministry of Environment Wildlife and Tourism and IUCN. It is entitled the Environment and Development Dialogue. Indeed, its last panel discussion was on the implications of climate change on biodiversity conservation, and
- d. Facilitating continued participation of UB experts in the work of the IPCC. UB staff have participated in the 3rd and 4th IPCC review process. In this regard, UB should lobby Government to include its experts in delegations to Conference of Parties meetings on climate change.

7. Conclusion

This short presentation has highlighted the need for the University of Botswana to take the leadership in dealing with the challenge posed by climate change in Botswana. As indicated in the introduction, the presentation is based on collective reflection, involving not only UB experts but also key stakeholders from government, the private sector and the media. It is evident from the presentation that UB needs to:

- Lead by example – i.e. adopt climate friendly practices with respect to the use of energy, paper and water for landscaping within the institution
- Engage in significant and coordinated climate change research that would produce:
 - i. data relevant to the formulation of effective, locally relevant climate change adaptation and mitigation policies
 - ii. climate friendly technologies and building designs for itself and the nation

- Enhance its support to student environmental organizations and undergraduate programmes that contribute to building climate change awareness and leadership among the future generation.
- Engage the public, policy makers and implementers in a more concerted and planned manner to raise and sustain climate change awareness in the nation of Botswana.

MEMORANDUM

Date: November 1, 2007

To: President John Sexton and Professor Richard Stewart

From: Neil L. Rudenstine

Subject: Secretary-General's Global Colloquium of University Presidents

My initial responses to the questions concerning climate-change and its "place" in universities are the following:

1. I think that there should be a concerted, thoughtful effort to introduce, expand, and make more visible our teaching and scholarship in the field of climate-change. The subject is sufficiently deep and complex to sustain continued exploration in basic and applied research. In addition, students—at all levels—need to be far more aware and informed about this entire subject.
2. I can imagine at least three ways to introduce the topic of climate-change into the curriculum. First, if a university has broad "general education" requirements, an introductory course (or part of a course) on climate-change—designed for a "general" undergraduate audience—would be well worth considering. Second, some specific courses (for advanced undergraduates, or graduate students) could address particular aspects of climate-change in a more complex way. Finally, I would be inclined to lodge such courses in already established departments—such as Earth and Planetary Sciences, Environmental Sciences, and Atmospheric Sciences.
3. If some students wished to "concentrate" in the field of climate-change, I believe this could best be done through the vehicle of an interdisciplinary "program" (rather than a single department). The topic is intrinsically interdisciplinary, and it is difficult to know how it could be seriously addressed without studying, not only certain sciences, but also some aspects of economics, law, ethics, politics, and game-theory.
4. The curricula in certain professional schools should be reviewed in order to see how topics concerning climate-change could be introduced. It is hard to imagine that this subject would not be highly relevant to work in (at least) Business Schools, Law Schools, Public Health, Public Policy, and Architecture and Landscaping.
5. In research, there are obviously many paths that can be followed. To the extent possible, however, it would be important to undertake some significant collaborative international and interdisciplinary projects, involving faculty from two or more countries. Scientific research continues, of course, to be

crucial to this field, but it is also the case that studies in economics, policy formulation, negotiation, and analogous subjects are equally critical. In some fields related to climate-change, we obviously know already what should be done, but very little progress has been made in gaining broad agreement concerning how to do it.

6. Each university should undertake major efforts to make its own campus as energy efficient and “green” as possible. It should try to heighten awareness—among administrators, faculty, staff, and students—concerning the need (for example) to recycle, to conserve electricity and water, and to preserve “green space” on campuses.
7. If our discussions prove to be fruitful, and if there is broad agreement on at least some steps to be undertaken, then the Presidents should consider writing—and then publishing—a brief but significant statement about our conclusions and proposed actions related to the subject of climate-change.

**Sharing Thailand's Actions on Global Climate Change:
Global Responsibility Initiative**

By

Mathana Santiwat, Ph.D.

President, Bangkok University

After a dozen years of talks, Thailand recognized the significance of global warming and climate change and therefore ratified the UNFCCC on 28th December 1994 with enforcement taking place on 28th March 1995, and the Kyoto Protocol in August 2002. The Office of Natural Resources and Environmental Policy and Planning (ONEP), under Ministry of Natural Resources and Environment has been active on climate change issues and energy shortage's prevention in Thailand. This includes promoting mitigation of greenhouse gas emissions, research and development activities on climate change and adaptation to impacts of climate change, promoting education, training and public awareness, capacity building among various agencies, and the implementation of Clean Development Mechanism (CDM) under the Kyoto Protocol [1].

However, Post-Kyoto Protocol talks, on the various grounds, are likely to be characterized by difficulties in establishing and maintaining a balance between developed and developing countries' interests. Therefore, one of the most challenging aspects of solving the global warming problem today concerns the tension between our "universal responsibilities," given the global situation faced by all peoples in all nations, and the "differentiated responsibilities" that stem from each nation's unique history, culture and economic circumstances. What needs to be addressed is "a new international understanding" that encourages the international community to take serious commitment on the ethical implications of our "common but differentiated responsibilities" [2].

At the time when the world is facing challenge on developing "a new international understanding," Thailand considers education and public awareness as important parts of the overall policy response to the climate change issue. On the common ground, responses to climate change problem require effective contributions and integrative collaborations from individuals, communities, government agencies, NGOs, businesses, and professional groups. To achieve these, **an application of knowledge** with due consideration and prudence is essential. In particular, great care is needed in **the utilization of theories and methodologies for planning and implementation in every step**. At the same time, it is essential to **strengthen the moral strand of the nation**, so that everyone adheres first and foremost to **the principles of honesty and integrity**.

At a time when the world is facing new challenge of global climate change, the **sufficiency economy** philosophy by H.M. King Bhumibol Adulyadej of Thailand is of great relevance, not only to Thailand, but to countries and communities across the globe. The philosophy of **sufficiency economy** emphasizes **moderation, responsible consumption, and the need for self-immunity for sufficient protection** from impact arising from internal and external changes, and requires two conditions for philosophy to work--**knowledge and virtues**.

The application of **sufficiency economy philosophy** is not limited to the national level. The philosophy is applicable to people from all over the globe. In addition, applying the philosophy to address the climate change is not only a technical issue but also **a perception and involvement issue**. Where the UNFCCC calls for change of behavior and practices, command and control will not work, other sectors also need **dialogue and cooperation**. Responses to climate change problems require **effective contributions from individuals, communities, businesses, and professional groups**. A prerequisite for such contributions is the availability of adequate and up-to-date information on the possible course of action to be taken as well as a clear understanding of the issues involved.

Since Thailand considers education and public awareness as important parts of the overall policy response to the climate change issue, **universities**, which are major public institutions, will play a great role in dedicating to public service as well as to research and education. Many universities around the globe have to be aware that over the next few decades, they will be challenged -- on operational, research and academic levels--to address impacts of global climate change. The longer they wait to devise a strategy, the more difficult this challenge will become.

Realizing the seriousness of climate change issues as a global threat, the Cabinet of Royal Thai Government approved the proposed laws regarding climate change [3] and the National Committee on Climate Change Policy that the Prime Minister is a chairperson to the committee was established in June 2007. The ONEP under the Ministry of National Resources and Environment had proposed in October 2007 the new Thailand's Strategy on Climate Change (2007 – 2011). The strategy outlines mechanisms and measures that would need to be undertaken by various agencies. The fast move with strong determination of all concerns in the Thai society on this important issue will help enhance the vision of the global community toward Thailand as the nation with full of global responsibility.

Reference

- [1] United Nations Development Programme, "Thailand human development report 2007: sufficiency economy and human development," report of the United Nations Development Programme, 2007.
- [2] National Economic and Social Development Board, "An introductory note: sufficiency economy," 2006. Available at <http://www.sufficiencyeconomy.org/en/files/4.pdf>
- [3] Office of National Resources and Environmental Policy and Planning, "Thailand's implementation on climate change," report of Ministry of Natural Resources and Environment, September 2007.

LEADERSHIP BY UNIVERSITIES IN CLIMATE SUSTAINABILITY

Response submitted by Professor Richard Stewart on behalf of New York University

What can universities contribute to climate policy? Their core functions, of course, are to engage in research and teaching in order to expand and transmit the knowledge base. Universities have engaged in significant research on climate issues in the natural sciences and, to a lesser extent, in the social sciences including economics, political science, and international relations. Faculties of law, business, medicine and public health are beginning to examine climate related issues. In general, climate policy issues have received less attention and resources than climate science. A similar disparity may exist in educational offerings, although the growing numbers of environmental studies programs increasingly engage questions of climate policy.

Climate policy research and education involves special challenges. Because of the broad scope and complexly interrelated character of climate policy issues, they must be addressed through multidisciplinary approaches that engage the both the natural and social sciences as well as the professional disciplines. In principle, universities by their very nature should be well equipped to carry out integrated interdisciplinary climate policy research and training. In practice, however, disciplinary and departmental boundaries often present significant obstacles. Because climate policy is a new subject that is just being constructed, it must also be developed collaboratively at both theoretical and applied levels, a task which again challenges many entrenched academic habits.

There is rich potential for global collaboration on global policy research and training involving universities in different countries and regions. The IPCC demonstrates the advantages of global collaboration in climate research and assessment. Participation in the IPCC by scientists from many different regions and countries has ensured a broad range of perspectives that enhances the quality and credibility of IPCC reports. The work of the IPCC on climate policy has, however, been less successful than that on climate science. A potential explanation for this difference is that governments, whose representatives must review draft IPCC reports, are more sensitive to the political implications of policy questions or feel freer to contest them than in the case of scientific questions.

The need for more robust global collaboration on climate policy issues could be filled by an international network of universities. The network should include universities in both developed and developing countries that are located in different regions, are in different stages of development, are impacted in different ways by climate change, and have different interests regarding climate policy. The universities participating in this network would engage in joint or coordinated research on climate policy issues. They would constitute a global climate policy think tank to develop and assess new approaches to international and domestic climate policy. The heterogeneous nature of the universities participating would help ensure that the different perspectives and concerns that must be addressed in any successful global climate policy regime are represented and addressed. On the other hand, universities share a devotion to learning and their faculty and researchers are part of a common and universal profession. As result, they would be much freer than governments would be to think outside the box of current policy positions and engage in open-minded inquiry and deliberation.

A related initiative would be North-South university partnerships for climate policy research on issues such as the architecture of international climate cooperation and methods for promoting climate sustainable development. Universities in developed countries can generally contribute

more in the way of resources to such ventures. But joint research projects on such topics must be based on a relation of firm equality. Equality is necessary to ensure that research is based on a full understanding of developing country needs, conditions, interests and concerns; such an understanding is essential to the success of such research. Both sets of partners have indispensable contributions to make.

Finally, universities can exert leadership by ensuring, to the extent that their resources permit, that their own physical plants and other operations meet high standards of energy efficiency and climate sustainability. Universities that commit to and implement such standards teach by power of example their students (which will include future leaders in government and the private sectors), their local communities, and their nations. University initiatives in sustainability, which could be supported by funding from governments and private donors, could provide a laboratory for testing climate-friendly technologies and practices. A worldwide coalition of universities might jointly adopt climate sustainability standards for their operations; the standards would take appropriate account of regional differences and differences in countries' stages of development. Those institutions that adopted and implemented the standards would be certified as Green Global Universities.

**U.N. Secretary-General's Global Colloquium of University Presidents on
Global Climate Change and the Role of Universities**

**Shirley M. Tilghman
Princeton University**

Universities have multiple roles to play in addressing global climate change. Indeed, as suggested by John Sexton, universities, by their very nature as incubators of discovery, engines of social change, educators of leaders, and institutions that maintain large landholdings and employ thousands of people, have an *obligation* to address one of the greatest environmental, economic, and social challenges of our time.

We have special obligations because of the significance of our institutions as centers of research and teaching and as stewards of enormous financial, structural, and natural resources. When framing our response to climate change, it is important to take into account the areas in which universities can make unique contributions to solving the energy problem; for example, by directing the tremendous scientific talent that is represented on our faculties and in our student bodies to studying all aspects of the issue. A discovery that leads to commercial zero-emissions power plants (for example, the technology embodied by the BP plant under construction in California, which is based on a Princeton concept) has the potential to have an enormous impact on the carbon emissions balance worldwide. With one of the world's most knowledgeable groups of faculty and researchers working on areas such as fusion energy, climate modeling, carbon mitigation, and water management, Princeton believes that our greatest contributions are likely to grow out of our core mission of research. The other unique contribution that universities can make is to educate the next generation about the urgency and importance of finding solutions to the deterioration in the environment and climate. Our students will become the scientists, engineers, policy makers, tax payers, and voters of the future. This is an issue in which they have significant interest already, and it will be their task to develop new technologies that will replace our diminishing supply of fossil fuels, and to hold the next generation of government and business leaders responsible for stewarding the planet in a more responsible way.

In addition, universities also need to be good models for environmentally responsible and sustainable development to our neighbors and the nation. A university campus – through its buildings, landscape, and stewardship – can exacerbate the emissions problem or provide vibrant opportunities for study to help solve it. A campus that openly reflects a vision for sustainability in its physical facilities will complement classroom learning and inspire solutions that will reach far beyond campus boundaries. Given the diverse nature of a university community – students, faculty and staff – opportunities exist to take advantage of each group's strengths and talents in order to develop a campus-wide response to the challenges of sustainability. This collaboration between faculty, staff, and students has the potential to integrate classroom learning with stewardship of the university campus, and will enable students to observe the impact of the university's

environmental practices on the local community and surrounding region. Such a cross-disciplinary combination of theory, research, and application has been underemphasized in many operations-focused sustainability efforts in higher education, despite the fact that universities are uniquely positioned to model this approach.

With a distinguished faculty in the Princeton Environmental Institute, the School of Engineering and Applied Science, the School of Architecture, and the Woodrow Wilson School of Public and International Affairs serving as wellsprings of discovery, analysis, and policy prescriptions, Princeton needs to be testing and adopting their ideas and recommendations in the context of its own operations. Setting ambitious university-wide emissions goals and building standards and clear sustainability objectives is the path by which campuses can hold themselves accountable and serve as exceptional environments for fostering exemplary citizenship.

Universities also have an opportunity to influence the course of events beyond their own walls. There are many examples, including on the Princeton campus, where policy decisions have affected the market place and the surrounding communities. Increased demands on the part of institutions for products that are sustainably produced have helped lower prices and create new supplies. Collaborations with local communities on sustainable management have resulted in a regulatory environment that is more results-oriented and better informed by the experience and successes of academia.

Resource conservation is also vitally important. A university, with its large land base, can address storm water runoff rates and quality more efficiently than individuals. Policies that require the use of sustainably-produced materials – and subsequently their return to the supply chain in a meaningful manner – are important as a practice but also as an educational opportunity. The presence of sustainably-produced foods in campus dining facilities not only serves to preserve scarce resources, but also educates students as to the value and importance of their daily lifestyle choices.

A university can best address global climate change and its effects by ensuring that its faculty are supported and strengthened in their efforts to conduct research on these issues; its students are offered a solid educational foundation in environmental science and policy, as well as opportunities to apply this knowledge to real world problems; and by providing leadership and vision for a sustainable campus environment.



University of British Columbia (UBC)

Submission to: **Secretary-General's Global Colloquium of University Presidents** New York University, Nov 28-29, 2007

What is the role of universities in relation to climate policy? As “consumers” of energy but perhaps more importantly, as centres of research and discovery, how can universities contribute to greater awareness and behavioural change (individual and governmental) surrounding environmental issues? This question will be the focus of the university presidents who attend.

Universities are usually seen as having two roles in climate policy education:

- (i) educating the citizens and leaders of the future, and
- (ii) (ii) undertaking research in sustainability and climate change, and making available its results.

These are important functions that universities can and must perform. Here, however, I propose that successful engagement with the climate change crisis will require universities to add to the agenda in a fundamental way, expanding both their conceptualization of the research agenda and their interactions with the world outside the academy.

The research agenda:

- Addressing the societal issues raised by climate change and sustainability requires a shift from discipline driven priorities to a more issues based approach, one that calls for interdisciplinary collaboration explicitly geared to engaging with societal problems. This has already begun to happen, but we must make a much more concerted effort to bring different branches of research together, and to establish active partnerships as the norm.
- This change of emphasis is not only a matter of redirecting or applying our existing knowledge, but also requires us to rethink our theoretical approaches. Our most deeply held views of the relations and interactions between human and natural systems are in flux. We are perhaps only now beginning to understand that our scientific and cultural understandings of reality are deeply interwoven. The border between the natural and the human is not a fixed boundary but a shifting borderland, in which both culture and nature are increasingly seen as overlapping social constructions, governed as much by technological forces as by natural systems.
- Given this new understanding, we need to move from academically driven to problem driven modes of research if we hope to find any solutions to the complex of problems collectively labeled as “environmental issues.” We must give up, at least in part, the academic pretense of purely objective and disinterested research in favour of explicitly value laden conceptions of knowledge – that is, we must be prepared to take our ideas beyond the academy into the non-academic world of policy and decision making. We must move from the exclusionary approaches of academic specialization to participatory concepts of knowledge and discovery.

The university in the community:

- This new approach has significant implications for the relationship between the university and larger society. We must connect with the outside world to develop interactive processes that will involve a variety of user communities in research design and the research itself. A “transfer of knowledge” model may not be the best way to conceive of the relationship between research and decision making, especially if the application of new knowledge is seen as a kind of end-of-pipe addition to the research process. Instead, a serious consideration of the science/policy relationship should be built into the research design itself, whereby multiple methods of building that relationship are considered and evaluated as part of the research agenda.
- Moreover, it is important to think carefully about the role of non-academic partners in the research process. It is increasingly evident that in policy relevant research, the dual concepts of research “subject” and research “user” create an undesirable dichotomy and an assumed divergence of interests. To overcome this problem, greater attention is being paid to more interactive modes of research and a form of coproduction of knowledge between researchers and “users.” So, for example, there is growing recognition that when the problems being researched raise normative and ethical issues related to policy decisions, the solutions may lie beyond the expertise of the primary researchers. Instead, the researchers need input from representatives of civil society who can supply the normative and ethical content necessary to make any subsequent policy decision effective.
- These considerations suggest the need to rethink some of the ways in which researchers interact with their various audiences. New forms of partnership between the private, public and NGO sectors should be a critical component of the entire climate change to sustainability continuum. New forms of partnership may call into question the ways in which we have institutionalized practices in the university. For example, in many universities, the offices that deal with research services, industry liaison, public affairs and fundraising have traditionally been quite separate. New initiatives that serve to bring these different functions together are needed to provide support for the new kinds of research proposed here. A critical early goal would be to identify and flesh out new, more integrated models of interaction, and to explore how the implementation of such models would transform the institutional rules and processes that govern the universities’ relationships with the outside world.
- This is not to say that we should eliminate important checks and balances and permit unlimited or unregulated partnerships. Experience has shown that maintenance of the core academic value or freedom of inquiry and careful attention to intellectual property are both essential. But time is pressing, and the world beyond the campus would welcome an invitation to join us in new relationships: a step that would not only move us more swiftly along the path to ecological health, but also provide exciting new opportunities for learning and research critical to our future.

Given the global scale of the growing social and environmental crises, universities have an obligation to engage with some of the most challenging issues of our time, and to do so in a new spirit of participation and partnership with their external communities.

Global climate change is a complex issue. A large-scale, truly multidisciplinary approach is required to understand its causes and to identify means of combating its effects. Not surprisingly, the world is calling upon leading research universities to help confront this challenge. The University of Amsterdam is excited to contribute to ongoing scientific innovation in this area, as long as research does not become an excuse for governments to further stall much-needed policies to combat climate change.

Science plays a crucial role in finding solutions to the issue of global climate change. However, science's role is actually less important than that of national and international political and economic organizations, whose contributions or lack thereof effectively set the pace for the climate debate. Though our scientific knowledge of climate change is far from complete, it is more than adequate to serve as the basis for policy measures far beyond those that have been taken so far. So why are we all so reluctant to face the reality of climate change? Specialists, from the University of Amsterdam as well as from other places, in Political Science, Economics, Public Administration, Sociology and Philosophy can make important contributions in terms of explaining the reasons for the lack of political action even though science has proven that the situation is so dire.

Funding

The agendas for the research that needs to take place in this area are set at a European, and in our case also a Dutch national level. Current major research projects include the €4 billion European 7th Research Framework Program (2007-2013), and the national €0.8 billion BSIK program (2004-2010). In the Netherlands direct governmental funding of universities has diminished in recent years, and research is increasingly funded through third-party agencies such as the Netherlands Organisation for Scientific Research (NWO), various ministerial funding programs (EC, Sentem, BSIK), and the European Union.

Organization

Ultimately, high-quality, innovative research depends on the abilities and dedication of individual researchers and research groups. This is why at the University of Amsterdam faculties set their own research agendas, with the central administration acting in support of the faculties' assessment of their own priorities for research. In line with this policy, only limited research funds are available for priorities of the University as a whole (5% of university funds). Presently none of these programs focus on sustainability, and the University of Amsterdam is exploring the measures we can take to make sustainability a bigger part of our global research plan. An example of recent action is the appointment of Professor Louise Fresco to the position of University Professor. Fresco, former vice Director General of the UN Food and Agricultural Organisation FAO, studies the foundations of sustainable development in an international perspective.

Education

Sustainability and global change are already important topics in the various MSc and BSc curricula of our faculties. The need for a multidisciplinary approach has recently

been translated into a new BSc program in Future Planet Studies, which will be accompanied by related courses offered in other programs at the Master level. Future Planet Studies combines sciences such as Physical Geography and Biology with Economics and Management, and will begin accepting students for Fall 2008.

Research

Recent contributions to research on global climate change by the various faculties and research groups of the University of Amsterdam are impressive in both quantity and range of topics. Projects vary from the development of highly innovative alternative bio-fuels based on non-food products, to leading studies on the impact of global change on ecosystem biodiversity, to adaptation strategies of agricultural societies in developing countries, to explorations of how economics, law and ethics can support sustainability. As such, researchers from the University of Amsterdam make up an integral part of global change research networks in the Netherlands and in the European community.

Cooperation

Sharing of the scientific expertise and innovative knowledge gained through research is facilitated through the University of Amsterdam's participation in local and regional networks in which several major industries (e.g. Shell, AKZO-Nobel) participate. Applications are also put forward by the University of Amsterdam's own consultancy firm, operating at regional, national and international level.

Inside the University of Amsterdam

Though there is certainly room for improvement, the University of Amsterdam has made a priority of putting in place rules regarding energy consumption and developing policies to improve the University's sustainability. Examples of such measures include the following:

- Our building policy which focuses on sustainable construction whenever buildings are constructed or renovated (the University owns over 50 historical buildings in the city of Amsterdam);
- Our commuter policy, which encourages both students and staff to ride their bikes or use public transport.

Dr. Karel van der Toorn

President of the Board of the University of Amsterdam

University of São Paulo Statement

Dr. Suely Vilela - Rector

Global climate change represents one of the most significant challenges for humanity. Research on Global Climate Change help to understand causes and trends in climate evolution. Such research endeavor needs advancement of knowledge at global, regional and local levels. Complementarity's among those three levels are essential to induce local, national and international public policies.

The main human-related causes of change are the injection of greenhouse and aerosol gases and land cover change at a global scale. A critical issue regarding global climate change is the assessment on mitigation, by reducing Greenhouse Gases (GHG) emissions today, at a certain cost, to gain the benefit of some reduction in socio-economical damages in the future. Another approach has been a reactive response through adaptation to global climate change.

Land use and land cover change has been historically the most important local, regional and possibly global change occurring over Brazil. The natural biomes of the Atlantic rainforest and subtropical interior forests were almost completely altered over the course of a century. More recently over the last 40 years, the tropical forests of Amazonia and the Cerrado vegetation have been also increasingly replaced by agriculture and pasture land. Additionally, the economy of the State is heavily dependent on renewable natural resources all linked directly or indirectly to environmental conditions, especially climate: hydropower generation is the most important energy source, the State is the leader in biofuel production, and rainfed agriculture is highly developed. Lastly, water supply is already stressed for some regions, particularly for the Greater São Paulo Metropolitan area and if the climate variability increases as a result of climate change, water scarcity will become a even more serious problem.

Taken as a whole, studies carried out in the University of São Paulo covered research issues linked to local or regional environmental changes. A number of studies dealt with climate variability and change at various space and temporal scales, ranging from the paleoclimate to projections of future climate change. The various facets of the biogeochemical carbon cycle received considerable attention, especially over Amazonia given the impact of deforestation on the global carbon cycle. A smaller number of studies focused on the physics and

biogeochemical cycles of the South Atlantic. Atmospheric chemistry and composition received increased attention for the last two decades with focus on tropospheric and stratospheric ozone and on aerosols from biomass burning and urban sources. Last but not least, the relationship between biological diversity of species and climate has been a focus of research.

More recently, the universities and research institutes of the State of São Paulo under the auspices of State of Sao Paulo Research Support Foundation, surveyed ongoing research activities on the theme and proposed several research topics that should be specifically targeted in a Research Program on Climate Change. USP is now engaged in the organization of a research from with the following characteristics: (a) This program is expected to have a minimum duration of 5 and a maximum 10 years in its first stage; (b) Projects must achieve synergy and multi-disciplinarity among several research areas and induce synergy, both at national and international levels; (c) The expected outcomes of the research program should be applied in related research fields in the public and private sector, for national public policies and in the preparation of international negotiation strategies; (d) It would be desirable that the Program could generate easily assimilated knowledge for classrooms at universities and high schools; (e) The Program shall have a permanent communication channel with society, either by means of technical publications, general publications, Internet, periodic workshops, among others. The training of journalists could help in the dissemination of Program's outcomes. (f) Program funding could be expanded to establish partnerships with private sector and with other financing institutions, for instance World Bank, besides the traditional science funding agencies.

Notwithstanding that the scientific components of this Program will produce new and relevant scientific knowledge, it must be emphasized that the Program must help spur national technological developments for mitigation of emissions of GHG and additional support for development of advanced earth observation systems, that is, an active program to support public policies for the industrial sector to participate in.



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Facing the Grand Challenge of Climate Change: the Role of Universities

Prepared by
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for discussion at the
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Climate change has an increasingly significant and far-reaching impact on all nations in the world. It has therefore become a focus of attention of the international communities. China, as a developing country vulnerable to the impacts of climate change, attaches great importance to the issue of climate change, and has adopted a number of active measures to address it. The Outline for National Medium- and Long-term Plans for Science & Technology Development (MLPSTD, 2006-2020) has listed energy and environment as priority areas, in which the global environmental change monitoring and response measures are identified as one of the priority themes. The Shanghai's MLPSTD also claims to build a resource conservative and environmentally friendly society — “An Ecological Shanghai”.

As the education and research centers of our societies, universities should play a central role in meeting the grand challenge of global climate change. We believe that in the following three areas which universities can have a role to play.

Education. Universities are committed to nurturing the next generation of leaders in government, academia, business and various professions. These future leaders should be well informed of the knowledge of climate change, the influence of individual behavior on reducing environmental impacts and sustainable life style. Last year in Fudan University we integrated “Human and Environment” as a core course into the curriculum of the freshmen. The course covers most of the hot topics in environmental science focusing on energy and environment. It has been the most

popular course ever since. Besides teaching, Fudan University encourages the students to be volunteers or organizers of the environmental programs both inside and outside the campus. In July 2007, the Student Association of School of International Relations and Public Affairs successfully organized a Youth Innovative Competition on Global Governance. 23 teams, altogether 80 college students, from 14 countries presented their proposals on how to control the greenhouse gas emission. These projects and activities have attracted diverse audiences and raised the public awareness of climate change.

Research. Responses to and solutions of the climate change issue, after all, depend on the advances in science and technology. Strong science and technology support in connection with climate change are required to better understand the behavior of climate change, to identify its impacts, to develop its adaptation and mitigation technologies, and to formulate climate change response policies and measures. Department of Environmental Science & Engineering in Fudan has developed many comprehensive and interdisciplinary researches to approach the global climate change issue including atmospheric chemistry, greenhouse gas emission control and ecology planning. Another unique research area in the department related to climate change is environmental management focusing on environmental economics and public policy. In the past 5 years, the Department has published more than 300 papers in authoritative journals, including Environ. Sci. Technol., Atoms. Environ., J. Geophys. Res.. The department is trying to set up more new research areas including renewable energy and sustainable development by recruiting new faculties and will expand to a school with four departments in next two years. Fudan also encourages faculties from other schools or departments to work on the environment related projects.

Role Model. As operating entities, universities should be role models for the society in energy consumption and their ecological impact on the surroundings. For example, universities can achieve greenhouse gas reductions via implementing initiatives on their campuses. One ongoing research project in Fudan University (collaborating with University of East Anglia) is to reduce the carbon emission of the campus by optimizing the operation modes of all the teaching buildings. Fudan is also planning to build an energy saving ecological building for the future Environment School. The new eco-building will introduce state-of-the-art energy saving and low carbon emission technologies to the public and work as an education base for the whole society.