

The UCSD Institute for Climate and Sustainability Solutions

Summary

Climate and Sustainability Institute Working Group (CSIWG)

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Background

In her September 4, 2007 message to the campus, <http://research.ucsd.edu/documents/ESIupdateAEllissept07.pdf>, the Chancellor discussed the creation of an Institute that would “facilitate the development of solutions-oriented collaborations across disciplinary, geographic, and cultural boundaries.” In response to this announcement, and with the support of the Senior Vice Chancellor-Academic Affairs (SVC-AA), the Climate and Sustainability Institute Working Group (CSIWG) held a series of meetings to develop a vision and plan for the Institute. There was consensus that a climate and sustainability institute has the potential to be a defining feature of UC San Diego and should be a campus priority for investment. There was also agreement that the long-standing tradition of climate research at UCSD could naturally serve as the key over-arching theme of this Institute. The institute concept must provide engagement and flexibility so as to appeal to prospective donors while providing latitude for the study of a variety of topics over time.

Vision

The development of solutions to the dual climate change and sustainable development challenges facing humanity in the early 21st century requires insight and knowledge from across the broad spectrum of scholarship. The interdisciplinary thinking that will be required to create solutions to these challenges will demand new scholarly approaches. UCSD possesses the strengths across domains to support world-class interdisciplinary scholarship and has a rich tradition of successfully addressing problems that span traditional fields of study. In addition to scholarly interfaces, we have important geographic and cultural interfaces reflected in our coastal environment, our border with Mexico, and our proximity to Asia. We therefore propose that the campus commit to the creation of an Institute for Climate and Sustainability Solutions. We anticipate that solutions developed through the Institute will be of interest across the nation and the world. Such an institute thus has the potential to become one of the defining features of UC San Diego in the next half century of our campus’s existence.

Uniqueness

In order to capture the required resources to make this initiative a success, it is critical to use the unique capabilities and characteristics of this campus, including its strengths in climate, biological and physical sciences, health sciences, engineering and technology, cyber-infrastructure, international studies, social and political sciences, economics, and creative arts in

order to clearly distinguish this nascent effort. We believe that the unique element of this effort lies in the combination of the breadth and depth of the research that would occur within the Institute and in the development of solutions that can be tested and implemented on a local, regional, and global level.

Focus

The Institute needs to encompass a theme that is broad enough to be compelling and worthy of decades-long investment, while at the same time supporting focused efforts leading to tangible outcomes in shorter periods of months to not more than a few years. We believe that the development of climate and sustainability solutions provides the necessary broad, long-term objective for the Institute. Because of our existing campus strengths and interests, the CSIWG endorses a broad theme for the Institute of water and air/climate solutions, an area in which UCSD and SIO are already acknowledged as providing world leadership. A title for the Institute that provides considerable latitude in scope is desirable and might draw upon Greek or Native American words, for example, or ultimately the name of a major donor.

The selection of topical foci for the Institute should be based on the following criteria: 1) established strengths within the UCSD community; 2) societal relevance and importance; 3) bridge-building within UCSD; and 4) potential for the involvement of graduate and undergraduate students. A variety of potential topics were mentioned, including global air and water resources; coastal issues related to air and water quality; impact of climate change on fires; strategies for more sustainable designs and practices after natural disasters, such as the rebuilding after the recent San Diego wildfires; carbon sequestration; green cyber-infrastructure; development of sustainable energy technologies; bioreactors to monitor surface water bioremediation; development of algae biofuel large-scale demonstration projects; petrochemical synthesis by algae; human impacts on coastal ecosystems in a climate change regime that build on existing international partnerships (i.e., Mexico, China); and environmental sensor networks to support “smart building” design and operation. A working group should implement a pilot project during this ‘07-‘08 academic year to exemplify the type of collaboration that could be pursued on a broader scale once the Institute is fully established.

Operations, Structure, and Governance

The Institute would bring together UCSD’s intellectual resources to contribute to policy guidance, decision making, and solutions development driven by research in high impact science and technology, economic development, education and outreach, and global discourse. Interdisciplinary working groups would collaborate on specific research questions for periods of several months to several years under the auspices of the Institute. These groups would be led by UCSD faculty or researchers, would fully engage with UCSD academic units, and would also involve experts from other universities and from the private and public sectors, including San Diego community representatives.

Through aggressive fund-raising from state, federal, and private philanthropic sources, the Institute would provide “enabling resources,” including administrative staff support; office and research space for UCSD working group participants and visiting experts to co-locate; technologies such as sensors, laboratories with advanced instrumentation, and cyber-infrastructure; and funds to enable participating faculty to temporarily reduce their teaching commitments so as to contribute to the topical focus area(s). It is likely that some of these short-

term collaborations would lead to the development of research proposals and awards that would enable the working groups to operate for longer periods of time, using the Institute as an umbrella for the work.

An important signal to potential donors is tangible evidence of the university's commitment to the Institute. The campus's decision to hire 6 faculty FTEs who will work in areas related to the environment, along with other faculty hires planned across campus in areas related to climate and sustainability, has been favorably received by current and prospective donors. The CSIWG stands ready to assist the SVC-AA in the strategic recruitment of individuals who can raise the campus's visibility in areas related to the Institute. Faculty could be jointly appointed between a home department and the Institute. There was a consensus in the CSIWG that environmental policy is a major gap at UCSD, particularly social scientists who are knowledgeable about policy and can communicate readily with scientists and engineers. A concern that was identified is that some of our traditional strength in climate science will be lost through retirement and should also be a priority for future hiring. It was strongly advocated that we hire and use resources to fill critical gaps and seize opportunities identified by the scholarly directions chosen by the campus. Given the interdisciplinary nature of these planned appointments, the campus may want to consider the use of interdisciplinary search committees to conduct "cluster hires." Hiring *professors of the practice* should also be considered as a mechanism to build capacity: These individuals have considerable real-world expertise and experience that would augment the campus's ability to develop solutions to climate and sustainability problems.

The Institute would organize interdisciplinary education programs at undergraduate and graduate levels as well as outreach to the broader community, building on the research conducted by the working groups. The role of co-mentored graduate students was recognized as particularly critical in providing the "glue" for advancing the research agendas of these interdisciplinary research topics. The establishment of an internal IGERT-like program in partnership with the OGS was suggested as a mechanism for facilitating graduate student participation in topics chosen for study; and an internal REU-like program could be considered for undergraduate involvement.

The Institute would be led by a distinguished faculty Director, who would report to the Vice Chancellor for Research (VCR). An interim Director would be chosen from the UCSD faculty and would be tasked with helping to formally launch the Institute. A permanent Director would then be chosen following an international search. The Director would be supported by appropriate staff to oversee the Institute's operations. The Institute would also recruit an Advisory Board, comprising internationally distinguished individuals, to provide guidance and increase visibility. Working group proposals would be solicited through a campus-wide call, and a broadly constituted steering committee would provide recommendations to the Director and VCR on proposal selection, allocation of resources, and implementation of education programs. The Director would serve as the focal point for fund-raising and campus-wide coordination of the Institute's research and education efforts, and would represent the work of the Institute to internal and external audiences.

Donor Opportunities

Although current campus space will be used to launch the Institute, a major Development objective should be to secure funds for a pair of buildings to serve as a permanent home for the Institute on the environmental mesa. These buildings will be carbon-neutral, feature state-of-the-art sustainability solutions, and house the latest in green technologies. This will greatly enhance

the visibility of the Institute and allow for co-location of staff, students, distinguished visitors and researchers, and infrastructure that will help ensure the Institute's success. Endowed chairs that support the recruitment and retention of outstanding faculty represent another important objective for fundraising. Graduate fellowships, undergraduate scholarships, and funds for Institute programs would also be sought.

First Steps (next 12 months)

Presuming that the Chancellor and SVC-AA endorse these recommendations, the CSIWG would work with them to publicize the creation of the Institute. This includes the appointment of an interim Director from the UCSD faculty who will be tasked with:

- (a) helping to launch the Institute and communicate its value to various internal and external audiences
- (b) developing a business plan for the Institute, including working with the Development office to raise funds,
- (c) identifying appropriate staff to help oversee the Institute's operations,
- (d) convening discussions related to the organization and educational activities of the Institute, and
- (e) assisting with the establishment of the Advisory Board.

The CSIWG stands ready to assist the SVC-AA in any way desired with the recruitment of faculty FTEs that are intended to bolster the campus's strengths related to climate and sustainability solutions.

The CSIWG should assist with the identification of at least one exemplary topical focus area in the current '07-'08 academic year through a campus-wide request for proposals related to the broad water/air/climate theme of the Institute. Participants should be provided with space to co-locate and funds to temporarily reduce their teaching commitments through, e.g., hiring of replacements so as to contribute to the topical focus area(s). Discussions with OGS should be initiated on the possible support of graduate students for this effort. An internal REU-like program for undergraduate participation should also be explored.

Longer View (1 year or more)

The institute concept must be developed in a manner that ensures engagement and flexibility so as to appeal to prospective donors while providing latitude for the study of a variety of topics over time. An internationally renowned academic leader should be recruited for the position of Institute Director. The Director would be tasked with working with Institute participants to develop the scholarly direction of the Institute; and with formulating a sustainable business plan. This will involve raising funds for the Institute from state, federal and philanthropic sources, the latter in collaboration with Development. The Director is expected to assist the campus in building an international reputation for the Institute within a decade.