



COLUMBIA UNIVERSITY'S
Earth Institute
Five Year Strategic Plan
JULY 2019 - JUNE 2024

THE EARTH INSTITUTE
COLUMBIA UNIVERSITY

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INTRODUCTION



The Earth Institute's last strategic plan was developed in 2016 and sought to further enhance our existing strengths, focused on two substantive directions: promoting basic and applied sciences as centrally related to sustainability; and transcending the traditional segmentations between academic disciplines. **With the arrival of Director Alex Halliday in May 2018, the Earth Institute is releasing a new strategic plan that presents a vision for the Institute, that largely expands on the goals set forth in 2016.** This planning document differs however in also building upon the work of the Earth Institute Task Groups – a strategic planning process that unfolded over nine months. It is an opportunistic appraisal of the future possibilities and responsibilities that the Earth Institute should both embrace and build upon.

The Earth Institute (EI) is known globally as the premier organization that has defined the discipline of sustainable development. Grounded in the scientific powerhouse of the Lamont-Doherty Earth Observatory (LDEO), other centers, and research across many departments, EI is an integral part of Columbia University and contributes markedly to the overall reputation of the broader institution, acting as a magnet for expertise in tackling some of the leading problems of the day. The relevance of the mission, to bring together multiple disciplines to generate new knowledge about the planet, and to develop and deliver solutions to critical sustainability problems, has never been more important. In considering its future strategy, it is essential that the next five years of work at EI serve to further academic excellence in innovative and pioneering sustainability research, practice, public

engagement and education. Because of Columbia's leadership position it has the single best opportunity to innovate in the way it bridges disciplines to advance our knowledge of this planet and to deliver solutions to many of humanity's most urgent and truly difficult problems. It is therefore a top priority to maintain and expand our leadership in this critical and expanding field. While universities are saddled with conventions, past decisions, and governance complexities, EI is relatively free of such things because it is less than 25 years old and because it is set up differently from other organizations across Columbia. As such, EI has a great opportunity to pursue a leadership path that is distinct, because it already is expected to do so.

The Earth Institute is known globally as the premier organization that has defined the discipline of sustainable development.



Why it Matters

The Earth Institute exists to address the urgent and growing problems of sustainability. Its role is to provide:

- independent innovative research;
- modern and relevant education programs;
- real-world engagement and application in society;
- communication to the public about the future of the planet.



Humans are making unprecedented changes to nature, the physical environment, and our developing climate. The surface temperature of the Earth has risen by one degree Celsius since the late 19th century and is certain to increase with dramatic climatic consequences over the 21st century and beyond. The expected and consequent changes in sea level, food security, storm and fire damage, vector borne diseases, and habitability more generally, present significant challenges to society.

Climate change is one major environmental issue but there are others. Earth's natural ecosystems have experienced widespread destruction and species extinction on a scale not seen in the past million years. Humans have polluted to an extent that has reached many of the most remote parts

of the planet. Unpolluted natural systems, whether on land or sea are becoming rare. Humans have urbanized on an unprecedented scale. Supporting increasing urban populations in terms of water, food, life styles, air temperature, clean air and transportation will be a challenge.

The Earth Institute was created two decades ago to address these very problems. The medium-term planning framework described herein intends to position EI to move the dial on these issues to make a significant difference. It charts, in outline terms, the five year aspirations. It delves into the practical issues of organization and planning. These organizational details underpin an overarching commitment to tackle the urgent and important issues of sustainability.



The Earth Institute

The Earth Institute was established in 1996 as a vehicle for building upon the research, education, and practice programs of LDEO and its (then) newly formed spinoff, the International Research Institute for Climate and Society (IRI). From the beginning, the focus was on interdisciplinary and transdisciplinary activities. Over the years, additional centers were created or acquired.

Today, EI has the following:

- More than 700 faculty, researchers, and staff;
- More than 20 centers, units, and programs;
- Eleven education programs with 700 enrolled students and over 2,000 alumni;
- The affiliation and support of more than 20 departments and 12 schools;
- A budget of >\$100M.

The scale and breadth of EI is significantly larger than other university networked activity in interdisciplinary sustainability research, as demonstrated by a recent review conducted by the University of Michigan.¹ The reason for the scale is threefold:

1. The Earth Institute is built upon the Lamont-Doherty Earth Observatory (LDEO), the top ranked and one of the largest geoscience research organizations in any university worldwide.
2. The Earth Institute is established as a network that facilitates and supports activities across the spectrum of Columbia University.
3. The Earth Institute is not a school competing for resources so much as a powerful federation of units, supported by, and providing support to, the various schools and departments of the University.

In considering what EI should seek to achieve in the future, it is this ability to provide added value that should remain a principle advantage that is fostered and leveraged. The opportunity is immense and the societal and academic need is important. There are three facets to this.

- What can EI achieve that is harder for schools and departments to achieve alone?

- Similarly, what can Columbia achieve through EI given the power of LDEO, but also the excellence of SEAS, The Mailman School of Public Health, SIPA, the Business School, the Journalism School, the Law School, and the arts and humanities?
- Lastly, what can we achieve by being based in New York City with the United Nations and a focus on global business, the arts, and entrepreneurship, but also serious consideration of how to build future sustainable cities with deep resilience to climate change?

In responding to this, the heart of what we seek to do and facilitate must include:

1. interdisciplinary “convergence” around applied and urgent problems or interlinked sets of issues;
2. a different funding model – strongly linked to soft money positions and to more diverse funding sources;
3. the opportunity to provide education for future leaders in an interdisciplinary fashion that is becoming increasingly important and relevant;
4. a strong focus on real-world application and relevance;
5. emphasis and expertise on communication and public engagement around the world’s greatest problems.

¹ Hoffman, Andrew John and Axson, Jessica. Examining Interdisciplinary Sustainability Institutes at Major Research Universities: Innovations in Cross-Campus and Cross-Disciplinary Models (June 2017). Ross School of Business Paper No. 1366. Available at: <https://ssrn.com/abstract=2961860>



Task Group Process

To facilitate the development of a new strategy, in Fall 2018 through Spring 2019, EI reviewed its processes and programs by engaging in a community-wide discussion and planning process to gather feedback from a wide range of EI stakeholders on key priority areas for the Institute.

The process was grounded in the idea that the issues vital to EI's future require a strategic review by the entire community, including administrative staff, students, researchers, and faculty. The purpose of the horizon-scanning exercise was to define and address EI's most important issues and put forward goals for the next 5-10 years. Task Groups were formed around 10 key areas:



The goal was to outline, in horizon-scanning fashion, what EI should aim to do over the next decade. The Task Groups were designed to be bold and visionary. The Task Groups were instructed not to consider cost or feasibility, which is the purview of the implementation strategy. Further, the subjects of diversity, harassment and work culture were excluded from discussion, not because they are unimportant, but rather because it was deemed more effective to tackle these subjects with a different kind of process, developed in parallel.

Many areas covered by the above 10 subjects overlap and/or have implications for how the recommendations of other Task Groups are implemented. As such, the Task Group recommendations are no longer organized under these 10 headings and, rather, have been strategically intertwined and organized under the broader, holistic goals outlined in this strategic plan. This plan makes proposals for implementation including:

(1) changes to accommodate greater and more effective involvement of faculty and researchers; (2) a different relationship with the centers, departments, schools and other interdisciplinary institutes of the university; and (3) a more sustainable, incentivizing, and transparent financial model. The recommendations from each group were diverse in content, scope and reach. Yet, across all of the recommendations, a number of common themes emerged. Those common themes have formed the three broad goals set forth in this plan.



THE NEW PLAN

The new EI strategic plan lays out the proposed path for the next 5 years to bring together multiple disciplines to generate new knowledge about the planet and to develop and deliver solutions to critical sustainability problems. First, this document lays out the academic footprint of EI's work in six major themes. Next, we lay out EI's future, grounded in three overarching strategic goals.





Academic Footprint

The following six themes capture EI's activities and underlie the broader strategic goals in the rest of the plan. These themes represent highly important areas for the future that build on EI's strengths and leverage the unique breadth and depth of its research. Each theme is overarching and discipline-scanning, e.g. decarbonization, which connects aspects of energy, geoengineering, pollution, transportation, land use, food security, health, and more.

Each thematic area includes elements of basic, fundamental knowledge in Earth, human, and environmental sciences, as well as solutions-oriented research and practice. Some themes are more oriented in one or the other, but each theme incorporates both basic and applied work. Educational programming is also encompassed in each, in some cases full degree programs, while others included classes, non-credit programming, or other types of training. The strategic themes are, in outline terms, below (but by no means exhaustive):



In each thematic area, EI leadership will work closely with its members as well as related school deans and department chairs to identify the future needs of the specific fields. The Institute and its partners around the University will collectively identify strategic areas for growth, targeted disciplinary or interdisciplinary hires needed, major project opportunities, and infrastructure requirements to support new cutting-edge research, and will partner in fundraising to generate the resources needed to meet these needs.



Strategic Goals

In redefining the academic footprint into six overarching themes, the EI has articulated a series of top research **priorities**. Next, we lay out three overarching strategic goals.

First, **to extend its impact and excellence into the world**, ensuring connection to policymakers, corporate stakeholders, K-12 educators, and the general public – and finding innovative, practical applications of its scientific expertise to real world problems. Second, to **enhance the university’s capacity for interdisciplinary research**, continuing to develop path-breaking methods that foster networked activity across the whole of Columbia. Third, to **build structural, organizational, and financial sustainability**, to create a culture of support, inclusiveness, and transparency among its broad and varied network. These three goals are elaborated upon below and discussed in terms of their capacity to enhance the overall ability of the Institute to thrive.

The Earth Institute is committed to managing its activities and achieving success in the goals set out below. The stated goals and objectives will be measured against specific metrics, identified as implementation for these goals is developed. Data on progress will be collected annually, including updates from Earth Institute’s constituent units and departments, allowing them to assess their own progress, and disseminate the results.

Goal 1: Extend the Earth Institute's Impact in the World

The Earth Institute's mission is not simply to understand complex problems but to consider them as grand challenges, bringing its talent to bear on problems that need solutions that may be implemented on the ground. The Earth Institute aims to affect how such solutions are achieved – leading to a positive impact on the world beyond Columbia. It is this work, both in generating fundamental knowledge of the planet and in protecting it, that helps the EI to attract and retain top faculty and scientists undertaking innovative research, and to attract top students interested in studying in its education programs.

Over the next five years, EI will use its vast academic resources, expertise, and innovation and leverage it across multiple platforms – from practice work, to its website and events, to STEM teacher training, to partnerships with a wide number of organizations – all in the service of making the planet more sustainable and ensuring a more livable future.

The Earth Institute will prioritize efforts to build cutting edge research designed to address key sustainability problems, seeding, recruiting, and facilitating solutions-oriented work. New relationships with government will be pursued at all levels, seeking to inform and advise them and bringing research into the hands of those best able to use it. The Institute will enhance engagement with private businesses and industry organizations, particularly those that are serious about implementing sustainable solutions and supporting sustainability science. Communication will be enhanced, both by building up an academic enterprise in science communications, particularly around climate change, as well as by enhancing messaging and connectivity with new audiences via new modes, methods and venues.

OBJECTIVE A:

The Earth Institute will seek to address 21st-century sustainability challenges through solutions-oriented research and education.

The sustainability challenges facing the planet seem to grow with each passing day. The urgency to address these challenges similarly is increasing. The Earth Institute's long history of innovative basic earth and environmental research, practice-oriented work, commitment to educating the next generation of scholars and practitioners, and communication to the general public about sustainability, affords it a strong position to engage the world further in order to address the fundamental challenges of sustainability. Over the next five years, the Institute will prioritize, seed, facilitate and otherwise support, solutions-focused, interdisciplinary and transdisciplinary projects specifically designed to have measurable impact in the short to medium term on issues of critical importance to the planet including climate change, food security, biodiversity loss, pollution and resource depletion. This work includes the basic research about the planet needed to underpin solutions. Education programs, from undergraduate, through professional masters and doctoral, need constant revision and updating to prepare students to understand and address the most critical current challenges.

- By July 2020, launch at least one "Solutions for Sustainability (S4S)" project with significant, sustained funding for a multi-year period, while continuing to fundraise for additional projects.
- By June 2020, work with Columbia World Projects to develop new collaborative projects,

while continuing to enhance operational coordination with CWP on the current collaborative (ACToday) project.

- By June 2020, develop multiple new approaches to use both New York City and Columbia's campus as a "living lab" for research, education, practice, & outreach. (e.g. a new 4000-level course analyzing campus operations, student internships with Columbia's Environmental Stewardship Office, partnerships with community organizations)
- By June 2021, partner with the Office of Environmental Stewardship, to enhance the role that the Institute plays in campus sustainability, such as engaging with them on the long term Sustainability Plan to be released in 2021.
- By June 2022, establish, by fundraising, a "rapid response function" whereby the Institute can utilize dedicated funding set aside to mobilize faculty/scientist expertise quickly following major events such as hurricanes, wildfires, etc. Such activity would be closely linked with the relevant implementing stakeholders or agencies.

OBJECTIVE B:

The Earth Institute will engage locally, nationally and globally to scale-up its research's broader impacts.

The Institute is well known in many regards, but it needs to be better connected with the policy community domestically and globally in ways in which it can better shape outcomes related to sustainability. Over the next five years, EI will seek to serve as a **key** convener of senior decision-makers, providing scientific information and guidance to inform policy discussion and decision. The Earth Institute will aim to enhance its impact on sustain-

ability problem-solving both within academia and through stakeholders with the capacity and authority to implement sustainability solutions. It will engage in partnerships with industry, NGOs, governments, local communities, and many others to co-develop research projects seeking to address specific problems. The Earth Institute will (a) work to make sure that its research informs policy and management decisions at all levels and sectors, as well as (b) support efforts to ensure that the US Congress maintains and increases support for funding basic and applied science. The Institute will also work to engaged New York State and City in funded research and partnerships. The Earth Institute will support efforts by its scientists and centers to continue or expand their leadership roles in key scientific and policy initiatives, networks, and organizations at local, national, and international levels that are actively addressing 21st century sustainability challenges.

- By June 2020, organize at least one scientific briefing on Capitol Hill, to occur annually, to help inform Congress and staff on key research areas at EI that are relevant to policymakers and budget appropriators.
- By June 2020, increase the Earth Institute's engagement with local and regional policy by developing new senior-level relationships with public agencies in New York City and the surrounding region.
- By June 2020, encourage and facilitate policy-relevant research including white papers, policy briefs, and scientific analysis to support policy development (e.g. provide SIPA/Law intern support for scientists to translate research findings into short policy relevant briefs).
- By June 2020, strategically increase EI's role and visibility in key scientific and policy organizations and network, both at the organizational level and in participation of individuals and centers, where

stronger EI leadership is likely to have the greatest organizational and policy impacts.

- By June 2020, create a network to amplify and coordinate existing EI programs in public outreach (e.g. K-12 programming, teacher trainings, exhibits with museums/galleries) and to develop new proposals/concept notes to raise funds for new education & outreach initiatives. By June 2023, raise dedicated funding to support Earth Institute-wide activities in this area.
- By June 2021, develop concrete activities with each of the Columbia Global Centers, including possible hybrid executive training programs, and coordinated convening events.
- By June 2022, create a Corporate Sustainability Industry Affiliates Program to bring in unrestricted revenue to the EI core budget, build relationships with alumni, and enhance engagement with corporations dedicated to sustainability.
- By June 2022, develop new executive education and non-traditional education (e.g. sustainable finance curriculum for portfolio managers).

OBJECTIVE C:

The Earth Institute will refine external communications to reinforce role as “the go-to” resource and thought-leader on sustainability issues.

The Earth Institute houses some of the most innovative and comprehensive research and education programs on sustainability in the world. However, the organizational structure can make it difficult to explain and penetrate. Over the next several years, a critical goal will be to develop and

disseminate a clear, compelling vision and narrative for the Earth Institute. The Institute will focus on clarifying external messaging and branding to most effectively communicate its unique expertise and mission. A clearly articulated messaging strategy will also enhance translation of research for the broader public, reaching a greater audience, and increasing impact. A comprehensive external relations and communications plan will be developed, designed to cultivate supporters of critical scientific and solutions-oriented work being carried out at the Institute. The efforts made to promote EI work will serve to clarify its identity and branding, provide valuable data and informed opinion, recruit top faculty, and attract new donors.

- By June 2020, refine the Institute’s narrative and external message in order to expand our reach to the general public and enhance the Institute’s profile locally, nationally, and globally.
- By June 2020, develop regular (semi-annual) training for faculty and scientists in media best practices.
- By June 2020, develop a comprehensive convening strategy to host regular events with key decision-makers in public and private sectors, including event series outside the Columbia campus.
- By June 2020, launch a major annual convening event to attract high-level private sector executives and policy-makers, along with academics. Such an event would focus on a major issue relative to our academic themes.
- By June 2020, set up a network on sustainability communications (e.g. communicating climate). By June 2023, leverage the network into a center with external funding and external faculty/scientist recruitment.



Goal 2: Enhance Capacity for Inter- and Transdisciplinary Research

Addressing the world's most pressing sustainability challenges calls for expertise in a great diversity of disciplines that range from earth and environmental science and engineering, to the social sciences, economics, politics, to art and the humanities. The Earth Institute must think on far broader interdisciplinary scales than ever before to catalyze transformative research. As a University-wide organization, EI is uniquely positioned to drive novel and forward-thinking interdisciplinary research and education on these issues. As an established leader in sustainability and environmental research the EI has created a multidisciplinary community at Columbia University that spans 3 campuses, 12 schools, and 22 academic departments, as well as world-class research and data management capabilities and facilities. In the next five years, EI must continue to scale up operations by broadening its existing capacity for inter- and trans-disciplinary research. This will be achieved by promoting, convening and facilitating more interdis-

ciplinary, collaborative research, and investments in research infrastructure, across the University community, and more broadly with academic and non-academic partners.

To foster more collaborative work, EI will seek to enhance its role as the central convener around major environmental and sustainability issues. The focus will be on expanding the reach of EI across Columbia bringing together new areas of expertise to undertake coordinated research, and apply that knowledge towards a more sustainable future. The Earth Institute will draw on the ingenuity, passion, and creativity of faculty and researchers across of all the University's schools, and bring in new members in underrepresented areas. Building a diverse, equitable, and inclusive community is instrumental to the University's core values, as well as serving as a guiding principle for all of the Earth Institute's interdisciplinary efforts.

OBJECTIVE A:**The Earth Institute will provide more opportunities for interdisciplinary research and collaboration.**

To further promote interdisciplinary collaboration, EI will seek to provide more opportunities for faculty, researchers, and scientists to interact and engage with each other. More targeted opportunities will be created for networking, such as town halls, reading seminars, regular seminars, happy hours, and research showcases, to facilitate the exchange of knowledge, forge relationships, and formulate collaborative research projects. More common space will be provided, together with targeted funding, student internships, and staff support to convene researchers with shared interests, for example in building interdisciplinary databases or developing new instruments, and to conduct other related activities. A primary goal is to build capacity and stimulate collaboration in areas of societal importance that may or may not already exist within the current footprint. The Earth Institute will also seek to better support and involve its postdocs and PhD students in these collaborations, as they are often a prime mechanism for interdisciplinary working. While ideas and connections are great, it is students and postdocs who will be one of the primary means of actually pursuing the scholarship connected to those ideas. These students will go on to be leading interdisciplinary scholars, further amplifying the impact and outreach of EI.

One of the most important functions of EI is to facilitate interdisciplinary working across Columbia. The Earth Institute should be seen by all of Columbia as a useful source of funding, services, and expertise. Similarly, the EI can help facilitate collaborations with other parts of the University that can provide critical expertise, e.g., the Data Science Institute, the Columbia Libraries, and the Institutional Review Boards. Relationships with

University senior leadership need to be strong and symbiotic, with increased involvement and communication with deans and department chairs of partner schools. New partnerships and interdisciplinary connections will be established with non-partner schools across the University. Lastly, the Institute will work to better integrate curricula across our education programs (7 degree granting and 3 certifications) to further a sense of community and purpose among our students and faculty and provide more opportunities for cross-fertilization of ideas, projects, and collaborations.

- By December 2019, organize a regular seminar series for networking and interdisciplinary interaction (e.g. lightning talks with happy hours).
- By December 2019, create a searchable, online research database of funded projects to enable anyone to easily discover and view the breadth of our research activity and tap into expertise in areas outside their own knowledge base.
- By June 2020, develop an established interdisciplinary networks program to bring people together to explore research in specified areas across the Earth Institute's academic footprint. Launch 2-3 networks annually up to a steady state of about a dozen networks at any given time.
- By June 2020, fundraise for a new, expanded seed-funding program to support interdisciplinary research projects. These projects will emphasize interdisciplinary collaboration, participation of students and postdocs, tangible outcomes, and leveraging of funds to attract external funding and resources.
- By June 2020, establish a strategy to plan for larger proposals and provide significant assistance in their preparation, such as defined peer-review process for large multi-disciplinary proposals, with the goal to improve the quality of proposals and chances for success.



OBJECTIVE B:

The Earth Institute will build capacity in strategic and under-represented academic areas.

The Earth Institute will expand its interdisciplinary activities by growing in specific and critical disciplines. The Institute is very strong in the physical and natural sciences, but in order to fully address the sustainability challenges facing our globe, it needs to build capacity in the areas that are not well represented in current activities, such as the humanities, the arts, and the social sciences. To achieve this, researchers and faculty from these areas will be encouraged to participate in EI activities, raising funds for professorships in schools for joint appointment with the Institute, and raising project or endowment funds for EI units to hire them within their centers. The Institute will also recruit scientists and faculty external to Columbia to work in new and emerging fields of importance.

- By June 2021, create a signature EI co-curricular (non-credit) seminar that brings together students from across EI programs to work together on defined project(s) (e.g. to work on a campus sustainability initiative or a case competition).
- By June 2021, increase EI involvement in the Sustainable Development PhD program by increasing the number of regular faculty who serve as thesis advisors and providing more opportunities for peer mentorship and cross-fertilization with EI research activity (e.g. “Earth Solutions” impact-oriented projects and seed funding projects).
- By June 2021, increase the number of EI faculty who teach courses in the undergraduate program on Sustainable Development to enhance student exposure to interdisciplinary scholarship.
- By June 2022, identify options and raise funds for renovation or leasing of existing space on the Morningside campus, for a central, multi-purpose and physical space for interdisciplinary activity.
- By June 2022, expand the EI post-doc program by generating additional resources.
- By June 2020, specifically and purposefully engage faculty in synergistic schools and departments at Columbia that have not previously partnered with the Institute (social work, humanities, philosophy, classics, history, ethics, religion, etc.) in networks, events and seed funding activity and other interdisciplinary efforts.
- By June 2021, partner with Schools with which the Institute has not traditionally engaged (e.g. Arts, Business, Humanities, Journalism) on a joint outreach program, “Earth Solutions” project, or event/workshop series, in order to set the foundation for a longer-term relationship.
- By June 2022, recruit new faculty in in the areas where we are underrepresented in partnership with departments, or scientists and researchers hired directly in to Earth Institute.

OBJECTIVE C:

The Earth Institute will enhance diversity, equity and inclusion across our community.

The Earth Institute is committed to creating and fostering a community that is inclusive, dynamic and diverse. This is strategically important for the Institute, as it is to any modern and forward-thinking, academic and science organization. The cultivation of diversity in academia, particularly in science, is instrumental to the core values of the EI, and future work will be strengthened by a more diverse and vibrant community of faculty, researchers, staff, and students. Over the next five years, these commitments will be incorporated as central elements of the Earth Institute's daily operations and standard practices, procedures, and initiatives. Promoting a culture of inclusivity requires active involvement from members of the community and will include all EI centers and research units. The Earth Institute activities will build upon the important work being done at Lamont-Doherty Earth Observatory, which has developed and implemented a wide range of diversity, inclusion, and work environment initiatives focused on the advancement of women and underrepresented minorities.

- By December 2019, create a new section of our website with information on the diversity initiatives and resources across EI.
- By June 2020, complete an EI Diversity, Equity and Inclusion Plan that publicly articulates our goals.
- By June 2021, institutionalize opportunities for career progression for scientists and staff, including mentoring plans and professional development.
- By June 2021, develop specific programming for minority and underrepresented groups of EI with the goal to enhance inclusion and community (e.g. "women in science" events and activities).
- By June 2022, work with University leadership to consider Columbia's possible application for AAAS SEA Change certification. Following University certification, work to receive department certification for EI.





Goal 3: Secure Structural and Organizational Sustainability

While EI has been an intellectual success, and it continues to raise an enormous amount of project funding, it has not raised sufficient capital for endowment or facilities. Research does not generate the revenue needed for administration, and the Institute does not have the tuition revenue of a school. It is clear that a university-wide research institute dependent on soft-money research support requires a substantial endowment to provide the flexibility needed to deal with unexpected financial challenges, and give our scientists the ability to innovate, write proposals, and engage in leadership and networking activities that cannot be charged to grants. Furthermore, the costs of operating the Lamont campus are growing while our sources of overhead are declining.

The Institute needs to stabilize its financial base, which is overly dependent on federal grant resources. Units that get most of their funding from the federal government are facing financial constraints, as they are generally over-reliant on a single source that is tied to the unpredictability and long-term trends of the federal government's budget process. LDEO is the prime example of this. The financial constraints faced by LDEO, and therefore by the Institute, are worsened by the anticipated loss of the *R/V Marcus Langseth*. Centers that operate on other sources – private grants and gifts – have other challenges, including insufficient overhead to support their administration costs. A strategic priority therefore must be the generation of capital for long-term financial sustainability.

Beyond financial stability, an organizational structure and governance model are needed that support the community's needs and goals. The Earth Institute's unique mission has resulted in an organizational structure that is complex when compared with the University's typical academic departments, schools, and research centers. The university-wide design presents challenges, but is a necessity for this field of study. The Earth Institute has developed a set of path-breaking approaches to developing a university-wide organization, but the position needs further strengthening as an instrument of central administration and a source of resources and services for schools and departments. More can be done to ensure the most effective and efficient structural capacity and to align incentives and metrics with goals and outcomes. Operations and administrative staffing and organizational responsibilities need to support the intellectual agenda and priorities. It is crucial to ensure the financial stability to allow our scientists and educators to innovate and remain at the top of their fields. Enhancing structural, organizational and financial sustainability is necessary in order to be a model for interdisciplinary activity.

OBJECTIVE A:

The Earth Institute will secure new revenue to help ensure long-term financial sustainability.

Over the next five years, priority will be given to institution-building endowment and *unrestricted* current-use operating support. It is necessary to diversify funding sources and expand the pipeline of individual giving significantly. Opportunities will be sought for external support for EI students, post-docs, and education programs that would free up central EI operating funds for other uses,

including center support, bridge funding, proposal-writing, seed funding, cost shares, recruitment, networking activities, etc. It also will be an aim to fund facilities and new research infrastructure – first for urgent state-of-good-repair needs on the Lamont campus, and second for new space both at Lamont and Manhattanville. In conjunction with this, EI needs to look for opportunities to attract existing external research programs or centers with established funding streams and complementary expertise, to help strengthen and diversify its academics and its funding base. Finally, new modes of revenue will be explored, such as through renegotiating education deals with schools, developing new executive education programs, and securing other kinds of industry/corporate support.

- By June 2020, develop a new external board of directors. The primary mandate of this board will be to secure financial sustainability. It will build upon LDEO's board, Earth Institute's advisory board, and the Climate Task Force.
- By June 2020, review financial underpinning of educational agreements with partner schools, now that many programs are no longer in start-up mode and are established parts of the University.
- By June 2022, partner with relevant schools to propose new education programs, which can serve as new sources of revenue.
- By June 2022, secure funding for institutional support to research track employees on 12-month appointments.
- By June 2022, advocate internally for additional funds from Columbia, as well as identify new sources, to address urgently needed repairs on the Lamont campus.

- By June 2023, set up a space planning committee and have raised some dedicated funds, or identified specific interested donors, to begin a campaign for construction of (or part of) a building in Manhattanville.
- By June 2023, secure dedicated funding stream for proposal support time for PIs.
- By June 2024, achieve fiscal soundness by securing a significant endowment for the Institute and Lamont and other unrestricted funds for the Institute (e.g. significantly increase the two annual funds).

OBJECTIVE B:

The Earth Institute will modify its governance and organizational structure to better support long-term goals.

The Earth Institute will seek to revise its faculty governance and organization model to be more open, inclusive, dynamic, and equitable. The governance and organizational model needs to be adaptive and agile, to enable contributions at the frontiers of the rapidly-changing field of sustainability science and practice. The Earth Institute Faculty has become an important and lively center of academic dialogue and interaction, but it is necessary to dissolve any reputation of EI as an exclusive club and open up more avenues for collaboration and networking across and beyond the University.

The Institute will seek to change the governance model in order to: (1) open up the community to foster more diverse participation in EI activities; (2) ensure broad representation of strategic intellectual areas; and (3) connect compensation to role/responsibility. It will seek to clarify and

simplify its center structure, consolidating smaller centers around certain themes and aligning incentives and metrics for larger centers to facilitate sustainable growth. The Earth Institute will strengthen existing relationships and develop new strategic partnerships with schools and departments across Columbia. These steps will enhance the reputation of EI at Columbia as a *resource* and not as a competitor.

- By June 2020, implement a formal review process for all centers and units that EI administers directly, including development of a clear statement of expectations and incentives. Centers and units will undergo review every five years, in accordance with Columbia University's guidelines on Centers and Institutes.
- By June 2020, with senior University leadership, explore 9-month appointments for research scientists and scholars across the Earth Institute.
- By June 2020, finalize new plan and by laws, with approvals from Deans, Provost, etc. for updated EI faculty membership and compensation model, such that:
 - Earth Institute "faculty" will be compensated according to a specific role or responsibility (e.g. chairing a Committee) and will be open to all officers of instruction and officers of research.
 - Earth Institute "faculty" will serve five-year renewable terms.
 - Self-identifying "Members/Affiliates" will allow for broader participation from colleagues across the University.
- By June 2021, begin transition to new model, and by June 2024, complete transition from current model to new model.

- By June 2024, have raised at least two endowed professorships, in partnership with departments, for dual-appointments in EI and a school (e.g. in the model of the Lenfest chairs). Chairs would be raised in alignment with priority academic themes.

OBJECTIVE C:

The Earth Institute will enhance operational support and transparency.

The Earth Institute needs an efficient and seamless administrative support function that enables the research, education, practice, and communication pillars that make up its core activity. The Earth Institute will undertake an analytic review of current organizational staffing and structure, processes and workflow, and determine the optimal staffing for administrative support services. The Institute will evaluate business models at other similar units and Institutes, both within Columbia and externally, to see how its own business model and revenue stream compares. This will include more centralized management for smaller centers to improve efficiency and effectiveness.

The Earth Institute's vast reach across the University makes it difficult to build internal communication networks, which are key to efficient operations. It is important that every community member receives important notifications and news, and that there is a sense of connection across the Institute despite the physical separation of the units. Therefore, the Institute will seek to build more effective internal communications tools and processes, increase transparency, and define standard operating procedures. There also is a need for greater help translating university policies into meaningful action for EI administrators and researchers.



- By June 2020, implement a twice-yearly, town-hall style meeting for important news and updates. The implementation of this town hall will be an iterative process, as over time a greater understanding will be acquired of what information the community needs.
- By June 2020, develop a website for staff resources that is accessible to all (including an organization chart, administrative FAQs, templates, etc.)
- By June 2020, offer at least two trainings per year for staff and scientists.
- By June 2020, implement a new hire orientation session and/or materials for all staff, scientists and affiliates, which introduces staff to EI and how to talk about the organization.



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