PhD In Sustainable Development

COLUMBIA | SIPA
School of International and Public Affairs

PhD in Sustainable Development Handbook

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About the Program

The sustainability of development presents some of the most important policy challenges concerning the future of our planet. None of these central issues can be understood from the sole perspective of a traditional discipline, whether in the social, natural, engineering or health sciences. The PhD in Sustainable Development (SDEV) combines a traditional graduate education in the social sciences, particularly economics, with study in the natural sciences and engineering, to prepare scholars who are uniquely situated to undertake serious research and policy assessments in furthering the goal of sustainable development. The program includes a set of rigorous core requirements in the social and natural sciences designed to provide a deep understanding of the interaction between natural and social systems, and provides students with the flexibility to pursue in-depth research in a broad variety of critical policy areas. No other doctoral program produces graduates with the unique combination of diverse skills and deep insight into the most challenging problems of future human welfare. Together with experts and faculty at Columbia, students in the program conduct research in a wide variety of areas including climate change and its social consequences, causes and solutions to extreme poverty, energy systems, agricultural transitions, water resources, infectious diseases, global demographic change, ecosystems, disasters and conflict. Students also benefit from being part of the Earth Institute's research and field programs that focus on sustainable development.

Many graduates will pursue academic careers in interdisciplinary graduate and undergraduate programs with a focus on policy and the environment as well as in the more traditional social science disciplines. Others will choose non-academic positions, taking leadership roles in government ministries in the United States and throughout the world, working on environmental and sustainable development policy for NGOs; in international institutions such as the IMF and the World Bank; or in private firms engaged in environmental and development projects. You can see a list of job placements here.

Housed at the School of International and Public Affairs (SIPA), the PhD program continues Columbia's initiatives in multidisciplinary doctoral education and also reflects
SIPA’s longstanding commitment to interdisciplinary graduate social science education for policymakers and analysts.

Our PhD program, with its unique emphasis on rigorous scholarship and research at the boundary between social and natural sciences, has become the most sought after advanced degree of its kind in the world. All of our graduates have accepted positions as tenure-track professors, post-doctoral fellowships, or in the private sector. Please see our student profiles for more information.
Applying to the Program

Rigorous work in the natural and social sciences at a graduate level requires that students have experience in mathematics and the natural sciences, as well as in the social sciences and economics, before embarking on the PhD program. For this reason (and in order to fulfill prerequisites for the required natural science course sequences), applicants should have outstanding undergraduate records. Generally, requirements include four semesters of college-level social science, including two semesters of economics, and six semesters of college-level math and science. Specifically, all applicants must have successfully completed two semesters of college-level calculus and demonstrate competence in multivariate calculus and linear algebra. Applicants must also have high scores on the GRE with particular emphasis on the quantitative score.

Students accepted into the program must attend Math Camp, which begins in mid-August and runs through the start of the academic year. Math Camp provides an overview of the mathematical concepts needed in the first-year graduate sequence in economics. SDEV students participate, with the first year Econ PhD students, as preparation for taking the Economics core courses during the first year. Following Math Camp, all students take the Math Camp exam which determines their eligibility for placement in the required core Econ courses: Microeconomic Analysis I&II, Econometrics I&II, and Macroeconomic Analysis I.

Given that a large part of the program’s curriculum is dedicated to a unique set of required core courses, credit for previous work is very rarely granted. However, credit for previous graduate work done elsewhere, at a GPA of 3.5 or higher, may be granted on a case-by-case basis, at the discretion of the program directors, after a student has already been admitted to the program, and cannot exceed a total of 30 credits.

Should an admitted student receive credit for previous course work, he/she will be granted “Advanced Standing.” Given that Advanced Standing puts a student ahead of those in his/her cohort, it is expected that he/she will complete the program in less time and will forgo the equivalent funding. For example, should a student receive credit equivalent to one semester, funding will be provided for 4.5 years or nine semesters, rather than the full five years or ten semesters. Should one be granted Advanced
Standing, an Application for Advance Standing and Transfer Credit form must be completed and submitted to the Director of Graduate Studies.

Application Deadline: Complete applications must be received by December 15th, at the latest, for admission for the following fall term. The program does not accept applications for the spring semester.
Find further information on applying to the program here.
Program of Study

A. Curriculum

The distinctive and innovative nature of this program requires a core set of courses that provide an interdisciplinary grounding. Each of these courses is taught on the level expected of first- or second-year PhD students in the affiliated departments. The course structure is designed to provide students with PhD-level training in economics and a natural science field, complemented by integrative courses in sustainable development designed specifically for this program and courses in social sciences. The course structure is designed to combine flexibility to pursue an individual field of study, with the development of broad-based skills and knowledge. The core curriculum consists of around 10 core courses, listed below. Students must also complete two social science electives, and a coherent sequence of four natural science courses for a minimum total of 60 credits and should maintain an overall B+ average with no lower than a B- in any of the core classes. In addition to course work, students participate in integrative seminars (U9200/01) throughout the first three years of the program, and complete the MA thesis and take an Orals Exam (leading to the MPhil Degree), in addition to presenting and defending a PhD dissertation.

Due to the unique interdisciplinary content of the program, students entering with a master’s degree earned at Columbia or elsewhere are still required to complete all MA and MPhil course requirements and examinations.

Advanced Standing for previously held degrees, while rare, may be accorded at the discretion of the Director of Graduate Studies (DGS) after successful completion of the first year.

1. Advising

Students must establish an advisor, who generally serves as the first reader of the MA thesis, before the end of the fourth semester, ideally earlier. The DGS and Program Faculty will assist in helping select an advisor and an advisory committee. The committee ideally comprises of 2-3 members, one of whom is the academic advisor and must be a member of the SIPA faculty. The remaining research advisors can be from other Columbia schools and departments and/or from a different university. An advisor from a different university cannot be the academic advisor. The advisory committee should include faculty whose expertise covers the social and natural sciences. These advisors will generally make up both your Orals and Dissertation Committees.
For the first one or (at most) two academic years the DGS will have the role of academic advisor. The role of the advisor is to guide and monitor research progress including reporting to GSAS on the progress of the student, sitting in on Orals and Defense committees, selecting an appropriate advisor/s, and other associated duties. All first and second years are required to attend two advising sessions per semester, once at the start of the semester and again toward the end of the semester prior to registration, with the DGS, Program Coordinator, and Econ Advisor. Upper year students will be required to meet once per semester. These meetings will be arranged by the Program Coordinator. Once an advisor has been chosen, students are expected to meet with him/her on a regular basis.

2. Service Requirements

In addition to the completion of the requirements for the MA and the MPhil, students have to fulfill a teaching and research requirement. This entails six semesters of work as a teaching assistant (TA) or a research assistant (RA), as assigned by the Program Coordinator. Students typically serve as TAs in SIPA master-level courses as well as a few undergraduate courses. Students who secure external fellowship funding may reduce this requirement with the approval of the Director of Graduate Studies, but in all cases every student must TA at least two semesters. TA/RA assignments for the following academic year are generally released in late May or early June. Please note that given the program’s large teaching commitments, and limited Research Assistantship opportunities, it is preferable that students only act as Research Assistants for one academic year.

3. Sixth Year

The PhD in sustainable development is designed and supported as a five-year program. It is recognized that some students may need to extend their studies for all or part of a sixth year. While this can be accommodated administratively, students cannot assume that funds will be available to support a sixth year of study, and they are urged to make efforts to secure fellowship support or obtain funds through their advisors or from outside sources. A list of awards and fellowships pertinent to the program can be requested from the Program Coordinator.

Sixth year extensions may be granted as exceptions and must not be assumed.
B. Required Core Course Work

You must fulfill a total of 60 credits from the following: Sustainable Development (22 credits), Economics (20 credits), one course is Qualitative Analysis (3 credits), Natural Sciences (9 credits), and Social Science (6 credits). This coursework (with the exception of 2 of the 6 semesters of SDEV U9200/01, which are completed in the 3rd year) is ideally completed within the first four semesters of the Program.

A Program Worksheet to track program progress toward the degree can be found here.

Sustainable Development: 22 credits

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SDEV U9200/01 (*)</td>
<td>Sustainable Development Seminar (6 semesters)</td>
</tr>
<tr>
<td>2</td>
<td>SDEV U9240</td>
<td>Human Ecology and Sustainable Development</td>
</tr>
<tr>
<td>3</td>
<td>SDEV U9245</td>
<td>Environment and Resource Economics</td>
</tr>
<tr>
<td>4</td>
<td>SDEV U6240</td>
<td>Environmental Science for Sustainable Development</td>
</tr>
<tr>
<td>5</td>
<td>SDEV U9250 or DGS Approved Alternative</td>
<td>Politics of Sustainable Development (or) a DGS Approved Alternative</td>
</tr>
</tbody>
</table>

SDEV course descriptions can be found here.

Please note that as the program grows, those courses, with the exception of the seminar, that count toward the 22 SDEV credits required may change. Please consult with the DGS or Program Coordinator should you have questions regarding coursework to fulfill the SDEV requirement.

(*)Two of three required sections are completed in the third year.
**Economics: 20 credits**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Semester Fulfilled</th>
<th>Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ECON G6211 Microeconomic Analysis I</td>
<td>1st</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>ECON G6210 Microeconomic Analysis II</td>
<td>2nd</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>ECON G6411 Intro to Econometrics I</td>
<td>1st</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>ECON G6412 Intro to Econometrics II</td>
<td>2nd</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>ECON G6215 Macroeconomic Analysis I</td>
<td>1st</td>
<td>4</td>
</tr>
</tbody>
</table>

**Quantitative Analysis: 3 credits**

**Natural Sciences: 9 credits**

A total of 4 (*) natural sciences from any of the following departments: Ecology, Evolution, and Environmental Biology (EEEB); Earth and Environmental Sciences (DEES); Environmental Health Sciences (EHS); Earth and Environmental Engineering (SEAS).

(*) SDEV U6240 counts as the 4th Natural Science course and is recorded under the SDEV section.

Social Sciences: 6 credits (can be completed in the 3rd year)

**Colloquium:** All SDEV students are also required to attend the weekly SDEV Colloquium during their first year, and are encouraged to attend during the duration of the program. Colloquium is an opportunity for SDEV students to informally present their research projects and ideas, and receive feedback from members of the program.
C. Completion of the MA

Ideally, the MA would be completed before the start of the fifth semester, however, given the heavy required course load in the 1st and 2nd years, this deadline can be extended up to, but not beyond, except in extreme circumstances, the start of the sixth semester.

The Master’s thesis should address a problem in sustainable development using data and methodologies from the core courses completed in the first two years of the program. The thesis consists of an article (around 30 pages long), which would be publishable in an appropriately refereed academic journal reflecting the disciplinary orientation of the project.

1. In concert with the DGS, a thesis advisor should be chosen and approved. You should be working with the advisor throughout the writing of the thesis.

2. Once an advisor has been selected, please complete the Thesis Advisor Approval Form, obtaining signatures from both the advisor and the DGS, and submit it to the Program Coordinator.

3. A draft of the Masters paper should be submitted to the research advisor(s) for comments and feedback. Once all revisions have been completed, the thesis should be resubmitted for final approval by the advisor.

4. A copy of the thesis should then be submitted to the Director of Graduate Studies (DGS). The advisor later meets with the student and submits a pass/fail grade to the Program Coordinator for processing. Please note that on occasion an additional reader may be assigned by the DGS for a "second read." This is not unusual, and generally occurs when the DGS is seeking comment from a reader more familiar with the research and/or subject matter.

5. Once the thesis has been approved by the DGS, you must complete the Application of Degree or Certificate form and return it to the Diploma Division, 210 Kent Hall.
D. Completion of the MPhil Degree

Ideally, the MPhil should be completed by the end of the sixth semester, and must be completed before beginning full-time work on the dissertation.

Students can begin examinations for the MPhil in Sustainable Development only after they have completed all core courses described above, the natural science course sequence and the social science elective sequence, as well as the MA thesis. In order to take the oral examinations for the M. Phil., students must also submit a dissertation prospectus. Examination of the prospectus and fields of scholarship are completed ideally by the end of the third year.

1. **Completion of the MA requirements** described above with a minimum of 60 credits and a B+ average

2. **Completion of all third-year required courses.**
   a. Social Sciences: Two social science electives.
   b. *Elective Courses:* Students can register for as many additional courses as they need after completion of their requirements. Continued participation in the Sustainable Development seminar is also required (students are required to register for the seminar in their first three years and are encouraged to attend throughout their tenure).

3. Completed at least 4 out of 6 semesters of service requirements (Teaching Assistant, TA or Research Assistant, RA appointments). Students with outside funding need to complete a minimum of 2 TA appointments.

4. Fulfillment of requirements to prove competency in *two research tools.* Students should possess at least two research tools before starting the dissertation portion of this program.
a. The first demonstrates an advanced understanding of quantitative methods, to be gained through the mandatory core courses in quantitative methods (Introduction to Econometrics I and II, and a third Quantitative Analysis course).

b. The other research tool should be appropriate to the student’s dissertation work. In consultation with the student’s academic advisers, this second tool could be fulfilled through a two-course sequence in GIS or other analytic modeling systems, or through a proficiency examination in a language that may be particularly important for understanding the literature of the student’s chosen specialty, and selected with the approval of the academic adviser. English is not accepted as a foreign language in fulfillment of this requirement.

5. Successful completion of the MPhil Qualifying Exams (Orals):

Students are eligible to take the qualifying examinations (Orals) for the MPhil at the end of their third year or early in their fourth year, and must take the exam before the end of the fourth academic year at the latest, after satisfactory completion of all required coursework, and having obtained a GPA not less than B+.

The qualifying examinations are made up of a two-hour long oral exam designed to examine the candidates’ formal learning and their capability to do independent research, including the presentation of a dissertation prospectus/proposal. The examination committee will consist of three faculty members, normally from the Sustainable Development core faculty, and will be chaired by the Director of Graduate Studies (DGS), who will lead the discussion of the prospectus. Students who fail to sit for their Orals by the end of the summer of their fourth year are at risk of being removed from the program.

Below you will find a detailed, step-by-step, explanation of the orals process. Please note that parts I and III of the process are strict, however, the format of the examination itself (part II), including timing and, to a lesser extent, content, can be altered in consultation with your advisor. It is, however, recommended that you adhere to the format as closely as possible.
Part I: Pre-Oral Exam

- **Choose an examination committee** of 3-4 individuals in consultation with the Director of Graduate Studies (DGS), and your advisor. Please note that you are not permitted to choose your committee without consulting the DGS:
  
  o One will be the DGS

  o One will be your major advisor

  o One faculty member must represent each of the following, which can be fulfilled by one of the above: social science, natural science, sustainable development, and (optional) your particular area of study.

- **Contact examination committee members, at least 5 weeks prior**, to your tentative examination date/s, to request participation. Once you have selected and confirmed your committee, please submit their names and covering fields to the Program Coordinator, who will send the Request to be on Orals Committee form to each member for a signature.

- **Arrange a date/time** for the exam. You should set aside 2.5 hours for the exam. Once a date and time has been set, contact the Program Coordinator to **schedule a room** and create the *Evaluation of Orals* form.

- **Submit dissertation prospectus** to the DGS for approval:
  
  o The dissertation prospectus can be in the form of a regular size document or in the form of 3 separate but connected papers.

  o It needs to be distinct from the Master’s thesis, though it can build on the research done for it.

  o The prospectus should be approximately 10 pages long and cover the methods and objective of the research project. For those writing 3 papers, the prospectus should
describe all three.

- Once approved, **distribute dissertation prospectus** to your examination committee **no less than three weeks** prior to the Oral exam.

**Part II: Oral Examination**

- Approximately 30 minute formal presentation of the dissertation prospectus/proposal.
- Approximately 30 minute questioning by committee.
- Examination of proficiency in fields most relevant to the proposed research, from within the following three subjects. Approximately 30 minutes is dedicated to each of the following:
  - Economics (e.g. development economics, environmental economics)
  - Natural science (e.g. hydrology, climatology)
  - Sustainable development (the general, integrative field in which the relevant coursework and proposed research resides)
- Evaluation: Evaluation of the Orals is conducted immediately following the examination once the student is no longer present in the room. Each of the four components of the Orals, examination in the three chosen fields and presentation of the dissertation prospectus, will be given a separate grade on a scale of 1 to 5, with one being the lowest and five the highest. If the average grade given by the examining committee is 3.5 or above the student receives a clear pass. If the average grade is below 3.0 the student will be considered to have failed and will be required to leave the program by the end of the current semester. If the average grade is between 3.0 and 3.5 or if any individual grade is below 3.0 the committee will discuss options that may include requiring the student to take further courses, revise their prospectus, or provide a revised research paper, among other options.
Part III: Post-Examination: Complete and submit the Application for MPhil form to the Program Coordinator for processing.

The Core faculty and the DGS will exercise their judgment in determining, on the basis of the student’s full record, whether he or she should be awarded an MPhil and advance to the PhD candidacy.

E. Completion of the PhD Degree

1. PhD dissertation

The PhD dissertation will be on a social science topic in sustainable development. The social science research will be informed by an understanding of physical and natural science constraints and opportunities influencing economic development.

Students with a regional area of interest to their dissertation may wish to do research abroad, to conduct field studies, use archives, improve language skills, or confer with local experts. It is preferred that students make use of summers to conduct such research. Given this preference, requests for approval of summer courses and internships are generally denied.

Students who feel they require a longer period of field research or language training need the approval of their advisor and the director of graduate studies. Students may not receive extended residence credit for study or research away from Columbia before the completion of all course work requirements and comprehensive examinations.

2. PhD Defense

The dissertation defense is in some ways like "Orals on steroids" with the critical exception that the candidate for the degree has the upper hand.

Unlike Orals, this is not a test of your breadth and depth of knowledge, but a defense of what has resulted from your research. Since it is your research you are the person most familiar with it, and that is what gives you the upper hand. The emphasis is on what new contributions you have made to your field of study, so you need not elaborate on the methods you have used unless your work has resulted in the advancement of a method. You might get questions about methods or data etc, but you should focus on what you have achieved in your research that is genuinely new.
The defense begins with a presentation, typically with a PowerPoint or equivalent presentation that can take as much as 45 minutes. Questions usually come at the end of each chapter (like Orals) or logical divisions of the work. Unlike Orals, the examining committee is not as discipline-based. The external committee member is chosen to ensure that someone on the committee is completely neutral, having not been involved with your progress as a student in any way, but who is familiar with your field of study. It is common for that person to be present by Skype. Please note that no more than two members of the defense committee can participate via Skype.

The defense takes no more than 2 hours with the candidate present. An additional 30 minutes is included for the committee to deliberate without the candidate present to determine the outcome (pass/minor revisions, incomplete/major revisions, or fail). The candidate is made aware of the outcome after that deliberation.

The following steps must be taken to complete the defense:

a. Candidates must consult with their advisor and the Director of Graduate Studies and Program Coordinator about scheduling the defense.

b. The final examination will not be scheduled until the Director of Graduate Studies has recommended the dissertation for defense. A five-person examining committee will be appointed by the department and must be approved by GSAS. At least three of the members of the final defense committee must be inside examiners (holding a formal appointment or approved as a dissertation sponsor in the doctoral candidate's home department or program), and at least one of the five must be an outside examiner. See definition of an “outside examiner” here.

In addition, at least three of the five examiners must be approved dissertation sponsors for the program.

c. The DGS will then officially invite the examiners.

(Please note that students should not ask particular faculty members to serve on their defense committees, nor should they make final arrangements for the defense. These tasks should be completed by the DGS and/or Program Coordinator.)

d. The Application for Defense must be completed by the Candidate and the Director of Graduate Studies and submitted by the Program Coordinator to the GSAS Dissertation office.
e. Members of the PhD examining committee must be given a minimum of three weeks each to read the thesis, so the defense may comfortably be scheduled after submission of the thesis to the Advisory Committee. Before being recommended for defense, the candidate must submit to his/her Advisory Committee draft copies of the thesis, including figures, plates and tables and obtain the Advisory Committee’s written approval of the draft. (Written approval by the Advisory Committee indicates only that the thesis as it stands or with revisions suggested by them is in good enough form to justify scheduling the defense.)

f. Once the thesis has been distributed, the Program Coordinator should be notified and will begin the process of setting a date and reserving a room.

g. The candidate must see that outstanding fees or loans to the University are paid and make sure that he/she has fulfilled all other Departmental requirements.

h. After passing the final examination, the candidate must see to any minor revisions and their approval by the examining committee before final deposit. If major revisions were called for (a defense-vote of “incomplete”), these must be made and submitted within a stated period (usually no fewer than three months and no longer than one year from the date of the defense) to the committee members, whose approval will have to be certified in writing before the candidate can be recorded as having passed the final examination. From the time of the “pass” vote, the student has a maximum of six months to deposit the thesis.

i. **Obtain approval to deposit your dissertation.** This is done using the Approval Card, given to you upon passing your defense. After your revisions are approved, the card must be signed by your sponsor, as well as your department Chair or program Director. These signatures allow you to deposit your dissertation.

j. **Deposit your dissertation with GSAS.** This is the final step to earning the Ph.D. or D.M.A. degree. Complete information regarding the deposit is
available through the Deposit Gateway. You should also review the FAQ about the electronic deposit system.

Please note that open defenses are no longer permitted by GSAS.

You can find further information on the GSAS process and policy for distribution, defense and deposit of the defense here.

**F. Assessment of Progress toward the Degree**

1. **Time to Completion**

The ideal time to degree for the sustainable development PhD is five years. Students are guaranteed funding through their fifth year, however, extensions beyond a fifth can be granted annually, but funding is not guaranteed. Once a student extends beyond the sixth year, his/her progress is no longer satisfactory. A student who fails to maintain satisfactory progress will be advised of corrective steps to take, and be apprised of the consequences of failing to take those steps. A student who fails to maintain satisfactory progress after such a probationary period will have his/her candidacy terminated.

SIPA and GSAS consider progress to be *minimally* satisfactory when a student completes each of the requirements as follows:

- a. M.A. degree within five semesters of full-time study
- b. M.Phil. degree within eight semesters of full-time study
- c. Dissertation prospectus or proposal must be successfully defended within eight semesters of first enrolling in the program
- d. M.A./M.Phil./Ph.D. within 18 semesters or nine years of full-time study

Students who do not complete all requirements for the doctoral degree by the end of the ninth year (*Nine Year Policy for Time to the PhD Degree*) will no longer be considered Ph.D. degree candidates and will be notified accordingly in writing. These time-to-degree requirements are the maximum registration for the M.A./M.Phil./Ph.D. in the Graduate School. Failure to comply with these requirements will indicate a lack of satisfactory academic progress toward the degree.

Further information on the GSAS time to degree policies can be found here.
2. GPA and Incompletes

a. Students must also maintain a minimum cumulative grade point average (GPA) of 3.0 within the program. The MA will not be granted if the GPA is below a 3.0. The cumulative GPA is derived from all courses in which a student has registered and received a letter grade (not P/F).

b. Students must not hold more than one mark of Incomplete at a time.

Governance and Faculty

The PhD in Sustainable Development is housed in the School of International and Public Affairs (SIPA) and the degree, as all graduate degrees at Columbia, is awarded by the Graduate School of Arts and Sciences (GSAS). The program is co-directed by Professor Jeffrey Sachs and Professor John Mutter.

Faculty who participate in the program by advising students, teaching in required courses or serving on committees, etc. are drawn from a wide variety of schools and departments in addition to SIPA. A student’s primary advisor need not be a SIPA faculty member but should be a member of the Columbia faculty.

Program Committee

The PhD Program Committee is the primary governing body of the program and is chaired by the Director of Graduate Studies, Professor John Mutter, and includes Merit Janow, the Dean of SIPA, and a number of other members, including Professor Douglas Almond (SIPA and Econ), Professor Mark Cane (DEES and APAM), Professor Geoffrey Heal (Business School and SIPA), Professor Upmanu Lall (Engineering), Professor Jeff Sachs (Earth Institute), Professor Wolfram Schlenker (SIPA and Econ), and Tomara Aldrich the Sustainable Development Program Coordinator. This committee is responsible for all program oversight and management decisions including procedures for orals, defenses and curriculum issues.

Program Faculty

In addition to the above committee the following listed faculty has indicated their interest in the program including their willingness to advise students and teach in the program. These faculty members are drawn from SIPA and other departments and
schools of Columbia University in order to fulfill the interdisciplinary needs of the program.

**Non-Program Research Liaisons**

Given the variety of interests and eventual research areas pursued by SDEV students, the program has established a set of “Research Liaison” faculty who represent those areas most commonly of interest to the SDEV students. The role of these faculty is to act as advisors or “points of contact” once a student has expressed an inclination toward a specific field of research. These discipline areas include: Political Science, Economics, Climate, Water and Engineering, Public Health, Law, Urbanization, Architecture and Transportation, Development Economics and Policy, Data Science and Engineering, Ecology and Energy. Research Liaisons have been noted with an (*) in the faculty list below.

**Sustainable Development PhD Program Faculty and Affiliated Faculty:**

**Dean Merit Janow**, Dean, School of International and Public Affairs; Professor of Practice at Columbia University’s School of International and Public Affairs (SIPA) and affiliated faculty at Columbia Law School

*Research Interests: International Trade and Investment, Asia, Competition Law and Economic Globalization*

**Jeffrey Sachs**, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management at Columbia University; Director, The Earth Institute; Co-Director, PhD in Sustainable Development; Economics

*Research Interests: Development Economics, Agriculture/Agricultural Economics, Education, Health, Environment, Welfare, Development*

**John C. Mutter**, Professor of International and Public Affairs; Director of Graduate Studies, PhD in Sustainable Development; Professor, Earth & Environmental Sciences

*Research Interests: Science-based Issues in Sustainable Development, Natural Disasters*

(*) **Douglas Almond**, Assistant Professor of International and Public Affairs and Economics, Economics Advisor, PhD in Sustainable Development

*Research Interests: China, Health Economics, Education, Environment*

**Lisa Anderson**, James T. Shotwell Professor of International Relations

*Research Interests: Africa, State Formation, Comparative Politics, Middle East*
Scott Barrett, Lenfest Professor of Natural Resource Economics at SIPA and the Earth Institute
Research Interests: Global Institutions

Guillermo Calvo, Professor of International and Public Affairs
Research Interests: Capital Markets, Monetary Theory

(*) Mark Cane, G.Unger Vetlesen Professor of Earth and Climate Sciences and Professor of Applied Physics and Applied Mathematics; Deputy Director, Lamont-Doherty, Dept Chair Earth Environmental Science
Research Interests: Climate Change

(*) Alessandra Casella, Professor of Economics; Columbia Experimental Laboratory for Social Sciences
Research Interests: International Trade, Political Economy, Public Economics

Pierre André Chiappori, E. Rowan and Barbara Steinschneider Professor of Economics
Research Interests: Risk

Steve Cohen, Professor of Practice International and Public Affairs, Executive Director, Earth Institute

(*) Patricia Culligan, Professor, Civil Engineering and Mechanics Engineering and Associate Director, Institute for Data Science and Engineering
Research Interests: Geoenvironmental Engineering, Urban Sustainability

(*) Ruth S. DeFries, Denning Family Professor of Sustainable Development
Research Interests: Land Use, Remote Sensing, Climate Change, Conservation, Global Change, Tropical Forests

Geoff Heal, Paul Garret Professor of Public Policy and Business Responsibility, Donald C. Waite III Professor of Social Enterprise
Research Interests: Risk, Environmental Economics, Decision Making

Macaratan Humphreys, Associate Professor of Political Science; Research Scholar, The Earth Institute; Research Scholar, Center on Globalization and Sustainable Development
Research Interests: Political Economy of Development, African Politics, Ethnic Politics, Democratic Developments, Methodology
Supreet Kaur, Assistant Professor of International and Public Affairs and Economics  
*Research Interests: Behavioral Economics, Development Economics and Program Evaluation*

(*) Upmanu Lall, Alan and Carol Silberstein Professor of Earth and Environmental Engineering (DEES) and of Civil Engineering and Engineering Mechanics; Department Chair - DEES  
*Research Interests: Water, Climate Change, Environment, Natural Resource Management*

(*) W. Bentley MacLeod, Professor of International and Public Affairs and Sami Mnaymneh Professor of Economics  
*Research Interests: Contract Theory*

(*) Vijay Modi, Professor of Mechanical Engineering  
*Research Interests: Environment, Energy Policy*

Suresh Naidu, Assistant Professor of Economics and International and Public Affairs  
*Research Interests: Development Economics, Labor Economics, Political Economy*

Jose Ocampo, Professor in the Professional Practice of International and Public Affairs  
*Research Interests: Trade, Economic History, Development Economics, Latin America*

(*) Dan Osgood, Research Scientist in the International Research Institute for Climate and Society  

(*) Christian (Kiki) Pop-Eleches, Assistant Professor of International and Public Affairs  
*Research Interests: Applied Microeconomics, Labor/Development, Demography*

Bernard Salanié, Professor of Economics  
*Research Interests: Contract Theory, Insurance Economics, Labor Economics, Theoretical and Applied Econometrics*

Wolfram Schlenker, Assistant Professor of International and Public Affairs and Economics  
*Research Interests: Agricultural Economics, Natural Resource Economics, Applied Microeconomics, Water, Environmental Economics, Climate Change*
(*) **Elliot Sclar**, Professor Architecture, Planning and Preservation
*Research Interests: Sustainable Urban Development, Transportation*

(*) **Jeff Shaman**, Associate Professor of Environmental Health Sciences
*Research Interests: Environmental Determinants of Infectious Disease Transmission, Climate, Atmospheric Science and Hydrology, Biology*

**Adam H. Sobel**, Professor of Applied Physics and Applied Mathematics and Environmental Sciences
*Research Interests: Atmospheric Science, Cyclones, Geophysical Fluid Dynamics, Tropical Meteorology, Climate Dynamics*

**Joseph Stiglitz**, University Professor, International Affairs, Business, and Economics
*Research Interests: Economics of Information, Adverse Selection and Moral Hazard, Monetary Theory, Industrial Organization*

(*) **Johannes Urpelainen**, Associate Professor of Political Science
*Research Interests: International Relations, Methodology, Political Economy*

**Miguel Urquiola**, Assistant Professor of International and Public Affairs and Economics
*Research Interests: Applied Micro, Education, Development, Latin America*

**Eric Verhoogen**, Assistant Professor of International and Public Affairs; Assistant Professor, Economics
*Research Interests: Trade, Development and Labor Economics, Latin America*

**Paige West**, Tow Associate Professor of Anthropology at Barnard College and Columbia
*Research Interests: Environmental Conservation and International Development*
Students and Alumni

The Sustainable Development student is unique. Students come from a variety of backgrounds, both academically, ranging from Literature to Chemistry and Philosophy to Economics, and career-wise. They are culturally and ethnically diverse, and each brings with him/her a unique background that informs the shape and focus of the program.

A. Current Students

1. Sixth Year:

Kayleigh Campbell
Education Background: Economics
Contact: krc2104@columbia.edu

Jan von der Goltz
Education Background: Literature, International and Public Affairs
Contact: jcv2104@columbia.edu

2. Fifth Year:

Aaron Baum
Educational Background: Mathematics, Medicine
Contact: aib2118@columbia.edu

Anthony D’Agostino
Educational Background: Philosophy, Public Affairs
Contact: ald2187@columbia.edu

Pablo Egaña del Sol
Education Background: Economics
Contact: pae2110@columbia.edu

Habtamu Fuje
Education Background: International Economics
Contact: hnf2107@columbia.edu

Stephanie Lackner
Education Background: Mathematics, Environmental Conservation
Contact: sl3382@columbia.edu
**Kimberly Lai Oremus**  
Education Background: Engineering, Public Affairs  
Contact: kl2537@columbia.edu

**Xiaojie Zhang**  
Education Background: Economics, Agriculture  
Contact: xz2273@columbia.edu

### 3. Fourth Year

**Francis Annan**  
Education Background: Agriculture  
Contact: fa2316@columbia.edu

**Eugenie Dugoua**  
Education Background: Chemistry, Economics  
Contact: ed2571@columbia.edu

**Eyal Frank**  
Education Background: Economics and Environmental Sciences  
Contact: egf2117@columbia.edu

**Jaehyun Jung**  
Education Background: Business, Public Affairs  
Contact: jj2521@columbia.edu

**Ruinan Liu**  
Education Background: Urban Studies, Public Affairs  
Contact: rl2596@columbia.edu

**Steffen Merte**  
Education Background: Earth and Environmental Science, Policy  
Contact: sm3624@columbia.edu

### 4. Third Year

**Mehdi Benatiya Andaloussi**  
Education Background: Economics and Energy, Engineering, Mathematics and Physics  
Contact: mehd.benatiya@columbia.edu
**Tim Foreman**
Education Background: Applied Mathematics, Engineering
Contact: taf2109@columbia.edu

**Ruiwen Lee**
Education Background: Mathematics, Economics, Environmental Policy, Computer Engineering
Contact: rl2691@columbia.edu

**Ana Varela**
Education Background: Environmental Planning, Environmental Technology, Civil Engineering
Contact: av2570@columbia.edu

**Jason Wong**
Education Background: Environmental Science and Policy
Contact: jw3144@columbia.edu

**Tianbo (Alice) Zhang**
Education Background: Economics, Statistics
Contact: tz2218@columbia.edu

5. Second Year

**Carolyn Hayek**
Education Background: Environmental Planning, Chemistry, Engineering, Water Quality
Contact: ch3062@columbia.edu

**Justin Ho**
Education Background: Management Science and Engineering, Materials Science, Chemistry
Contact: jsh2200@columbia.edu

**Anouch Missirian**
Education Background: Biology, Ecology, Environment Economics
Contact: am4215@columbia.edu

**Xueting (Sherry) Wang**
Education Background: Public Policy, Chemistry and Political Science
Contact: xw2362@columbia.edu
6. First Year

Raimundo Atal
Education Background: Energy and Environment, Economics, Business
Contact: ra2683@columbia.edu

Sandra Baquié
Education Background: Economics, Engineering, Math and Physics
Contact: sb3759@columbia.edu

Zhihan Cui
Education Background: Chemistry, Economics, Mathematical Economics
Contact: zc2322@columbia.edu

Joséphine Gantois
Education Background: International Development, Engineering, Math and Physics
Contact: jg3479@columbia.edu

B. Program Alumni

For a complete list of alumni placements, please visit the SIPA Job Placement page.

Saifedean Ammous: (2011) Saifedean’s research interests include political and economic development, international development assistance, economic growth, Middle East politics, and alternative energy. His doctoral dissertation was a multi-disciplinary study of the new biofuels program in Senegal. Saifedean is focused on the Senegal program’s prospects, political and economic dimensions, and how it relates to the global drive towards using biofuels.

Born and raised in occupied Palestine, Saifedean graduated from the Ramallah Friends School in 1998. In 2003, he completed his Bachelor’s degree in Mechanical Engineering from the American University of Beirut in Lebanon; he obtained a Master’s degree in Development Management from the London School of Economics and Political Science in 2004.

Saifedean is now an Assistant Professor in the Economics Department at the Lebanese American University in Beirut.
**Jesse Antilla-Hughes:** (2012) Jesse was an NSF IGERT-IDG Fellow. His areas of interest include climate change, disasters and rare events, finance, corruption and crime, and environmental economics. After graduating from Harvard University in 2002 with an A.B. in physics, Jesse spent time studying at Peking University, followed by several years doing statistical analysis and corporate finance in Citigroup's investment bank, where he learned to appreciate applied statistics as well as the joys of working on too many projects at once. Outside of academic work, Jesse enjoys a variety of pursuits, most notably cooking, traveling, exploring cities, and martial arts. He speaks varying degrees of French, Mandarin, Japanese, and Spanish, as well as very poor Russian.

Jesse is now an Assistant Professor at University of San Francisco in the Department of Economics.

**Belinda Archibong:** (2015) Belinda is from Nigeria and graduated from Columbia University with a B.A. in Economics/Philosophy in 2010. She has done previous work with the Earth Institute examining the macroeconomic impacts of natural disasters. She has also done investment research at Goldman Sachs working with the GS Sustain team to bring together environmental, social and governance criteria, broad industry analysis and return on capital to identify long-term investment opportunities for the business sector.

Belinda is an Assistant Professor in the Economics Department at Barnard College.

**Xiaojia Bao:** (2013) Xiaojia's research interests focus on the interaction of environment and economic development, especially the relationship between environment pollution and economic growth. Xiaojia also has a deep interest in water pollution issues in China.

Xiaojia obtained her B.A. in Public Affairs Management in 2006 and MA in Resource and Environmental Economics in 2008 from Renmin University of China, with a master thesis on economic growth model with environment pollution consideration. She has worked as research assistant on Yellow River Pollution Water Pollution Control Project, and Sanjiang Plain Wetland Restoration Project. In 2007, she worked part-time in World Bank Beijing Office on air pollution and economic development in China. In 2008, she worked as program assistant in CAI-Asia on urban air pollution, especially PM10 pollution.

Xiaojia is now an Assistant Professor at Xiamen University, Wang Yanan Institute for Studies in Economics.
Jessica Barnes: (2010) The focus of Jessica's research includes water management in Egypt's agricultural sector. Drawing on a year of ethnographic fieldwork in Egypt, her research traced the linkages between farmers' everyday practices of water use and regional, national, and international policy-making on water resources management.

Jessica holds a B.A. in Geography from Oxford University and a Master's in Environmental Management from Yale's School of Forestry and Environmental Studies. Jessica is an Assistant Professor at the University of South Carolina in the Department of Geography.

Prabhat Barnwal: (2015) Prabhat is interested in the issues related to natural resources, poverty, agriculture and the economics of climate change.

Prabhat graduated from International University of Japan in 2010 with an M.A. in International Development. He obtained his B.E. in Electrical Engineering from National Institute of Technology, Surat (India) in 2006. Before enrolling in the Ph.D. program, he has contributed to policy reports on Sustainability assessment and Payments for ecosystem services at United Nations, Bangkok. He has also worked as an energy analyst for a green building consulting firm at New Delhi.

Prabhat is now an Assistant Professor in the Economics Department at Michigan State.

Marion Dumas: (2015) Marion graduated from the Massachusetts Institute of Technology with a B.S. degree in Earth and Atmospheric Sciences and from the Swiss Federal Institute of Technology with an M.Sc in Ecology and Evolution. She also worked as a consultant in sustainability strategies of companies in France. Her current research focuses on phosphorus scarcity and its impact on agriculture: she is building a dynamic modeling of the phosphorus cycle on a global scale and the use of such a model to evaluate the impacts on agro-ecosystems of various management strategies. Other research interests include restoration of ecosystem functions and the theory and practice of decision-making applied to sustainability.

Marion is now a Research Fellow at the Santa Fe Institute.

Ram Mukul Fishman: (2011) Ram grew up in Israel, and for a long time his academic
interests were focused on the beauty of theoretical physics. But he always had strong feelings about the environment, and during years of travel in developing countries, mostly in Asia, and involvement in humanitarian activities, he became aware of the broader issues of poverty and development. The program in sustainable development seemed to offer the vehicle to apply quantitative skills in tune with these concerns.

Ram holds a B.Sc. in Mathematics from Tel-Aviv University, and a M.Sc. in Physics from the Weizmann Institute of Science. He focused on groundwater depletion in India and the theory of hyperbolic and heterogeneous time discounting. He graduated from the PhD program in Sustainable Development in 2011.

Ram is now an Assistant Professor at The George Washington University in the Department of Economics.

**Solomon Hsiang:** (2011) Sol attended the Massachusetts Institute of Technology where he obtained degrees in Earth, Atmospheric and Planetary Science and Urban Studies and Planning. His research interests include the impacts of climate change and climate variability; as well as environmental, development and public economics. Solomon also obtained the NSF-IGERT fellow and an EPA-STAR fellowship. His dissertation examined how different types of atmospheric phenomena (eg. temperatures, hurricanes and El Nino) impact societies around the world.

Solomon is now an Assistant Professor at UC Berkeley, Goldman School of Public Policy.

**Amir Jina:** (2014) Amir’s main research interests lie in community-based climate change adaptation and community development. Prior to joining the program, Amir completed an MA in Climate and Society from Columbia University during which, among other things, he had the opportunity to travel to India and Bangladesh to aid the International Federation of the Red Cross and Red Crescent Societies in South Asia in implementing climate change adaptation projects. He hopes to continue this relationship with the Red Cross as his studies progress.

Amir is now a Post-doctoral scholar at the Department of Economics at the University of Chicago.

**Geoffrey Chi-Johnston:** (2012) Geoff’s goal while in the program was to explore and develop methodologies for helping people lift themselves out of poverty, especially in
developing countries. He is interested in building spatiotemporal mathematical models of malaria transmission that can be utilized to develop optimal sets of interventions. He is also interested in market failures and agent modeling in economics.

After graduating from the University of Notre Dame with a BS in pure mathematics and a BA in philosophy, summa cum laude, Geoffrey Johnston was a corps member in Teach for America, teaching high school in Mississippi for two years and grade school in Cleveland for an additional year. He was a 2001 U.S. Presidential Scholar, has co-authored a paper on modeling magnetoplasmadynamic thrusters for NASA, worked at the White House Office of Science and Technology Policy, and studied law, physics, and math for a year at New College, Oxford. He was an NSF Graduate Research Fellow as well as an IGERT International Development and Globalization Fellow. He encourages you to visit unicef.org and give whatever you can.

Geoffrey is now working as a data scientist at Oscar Health Insurance.

**Booyuel Kim:** (2014) Booyuel's research interests lie primarily in development economics, particularly as it applies to microfinance and social business enterprise.

Prior to Columbia, Booyuel was a negotiation officer of Republic of Korea Air Force HQ for three years. He was involved in major defense acquisition programs such as F-35 JSF program, F-15K program, Airborne Warning and Control System (AWACS) program, Patriot Advanced Capability-3 (PAC-3) program, etc negotiating with USAF, Boeing, Lockheed Martin, and other defense industries.

Booyuel received his Bachelor of Economics at Handong Global University, South Korea in 2003 and master of international affairs at SIPA, Columbia University in 2009.

He is currently a father of two daughters, Hannah and Sarah, and wants to be a father of three before he finishes the SD program.

Booyuel is now a Post-doctoral scholar at the Earth Institute, Columbia University.

**Chandra Kiran Krishnamurthy:** (2011) Chandra has varied research interests, including measuring climate change-impact, valuing complex ecosystems, and modeling the dynamics of economic and environmental issues.
Chandra received a Bachelor’s degree in Mechanical Engineering from Bangalore University (India), and an MPhil in Economics from the IGIDR (a Development Research Institute in Mumbai, India). His prior work, in his MPhil dissertation, focused on modeling the impact of emission restrictions on the Indian economy and evaluating the beneficial effects, economic and environmental, of the introduction of biological fuels in India.

His research at Columbia focused on distinct issues, such as evaluating changes in extreme rainfall events for India and developing statistical models for monsoon rainfall prediction (for agricultural use), addressing the issue of groundwater management using a dynamic programming model, and estimating the impact of predicted changes in climate on agriculture in India. Chandra played a key role in developing the Columbia Water Center’s PepsiCo Foundation funded Punjab groundwater project, which seeks to test and implement inexpensive water saving measures for farmers.

Chandra is currently a Lecturer at Umeå University in Sweden.

**Margaret MacLeod:** (2009) Margaret’s research focuses on human capital formation and transfer in developing economies, specifically, education as well as maternal and infant health. Drawing from the field of Labor Economics, her methodological focus has been on randomized and quasi-experiments.

Margaret holds a B.S. from Georgetown University’s School of Foreign Service and has studied at Nanzan University and the Delhi School of Economics. She speaks French, Japanese, Hindi, and Gujarati.

Margaret is currently a foreign services officer at the US Department of State in Fukuoka, Japan.

**Gordon McCord:** (2011) Gordon has varied interests, including economic growth and poverty reduction, the role of geography in economic dynamics, and the interaction of epidemiology and poverty (particularly in the case of malaria). Before beginning the program, he worked as a special assistant to Jeffrey Sachs at the Columbia Earth Institute and at the UN Millennium Project. During those years, Gordon had the opportunity to travel all over the world supporting Prof. Sachs both in research and in working with country governments and international organizations. Gordon grew up in Latin America and received his B.A. in Economics from Harvard University, where he focused on economic development and Latin American studies, and wrote an
undergraduate thesis on the effects of rural road improvement on family incomes in rural Peru.

Gordon is an assistant professorship at the University of California, San Diego in International Relations and Pacific Studies.

**Kyle Meng:** (2013) Kyle's research interests lie primarily in the economics of climate change drawing on tools from applied microeconomics, public economics, and industrial organization. In particular, Kyle's research focuses on the design and efficiency of climate policy, the economic impacts of climate change, and the treatment of climate uncertainty in economic modeling. Kyle also has complementary interests in carbon mitigation in China.

Prior to Columbia, Kyle was a research fellow at Environmental Defense Fund where, as a member of EDF’s China team, his research and advocacy focused on issues relating to China and the international climate negotiations. Kyle also led EDF’s efforts to reform the Clean Development Mechanism.

Kyle received his B.S.E. in environmental engineering at Princeton University where his undergraduate thesis examined opportunities for carbon capture and storage demonstration projects in China. The 2005 recipient of Princeton’s post-graduate Martin Dale Fellowship, Kyle conducted studies on Chinese environmental perceptions as a researcher at Tsinghua University in Beijing. He is currently a recipient of the Paul and Daisy Soros Fellowship for New Americans.

Kyle is now an Assistant Professor at the UC Santa Barbara, Bren School of Environmental Science and Management Department of Economics.

**Daiju Narita:** (2008) Daiju's research interest is the interrelationship of technology and policy with regard to the global climate change problem. He completed his dissertation about potential economic impacts of the carbon dioxide capture and storage (CCS) technology to reduce global greenhouse gas emissions. In his dissertation research, he also analyzes the policy making mechanism on CCS, particularly the process of scientific assessment by the Intergovernmental Panel on Climate Change (IPCC).

He has a M.Sc. and a B.A. in Chemistry from the University of Tokyo, where he studied long-range chemical transport of air pollutants (ozone in particular) over East Asia. After his Master’s study in Japan, he worked in the Japanese Ministry of Education, Culture,
Sport, Science and Technology, where he was involved in national research funding and nuclear safety regulation.

Daiju is now a Research Fellow at the JICA Research Institute.

**Nicole Ngo:** (2013) Nicole received her undergraduate degree from the University of California, Irvine with a B.A. in Economics and a B.S. in Earth and Environmental Science. Her focus is in urban air pollution, both indoor and outdoor, and understanding the cost behind strategies for mitigating pollutants.

For four summers she participated in the Significant Opportunities in Atmospheric Research and Science (SOARS) internship, where she worked at the National Center for Atmospheric Research (NCAR). Research at NCAR included examining marine policy and improving understanding of convective clouds through modeling. She is also interested in urban issues in growing cities in Sub-Saharan Africa and working with local communities to help resolve these problems. Through research and conversations at NCAR and Columbia University, she has a better understanding of the gaps in interdisciplinary work between economics and atmospheric science. Ultimately she wants to improve collaboration, as well as her understanding of the balance between these two disciplines in motivating policy, with emphasis on problems of urban air pollution.

Nicole is now an Assistant Professor at University of Oregon in the Planning, Public Policy, and Management program.

**Anisa Khadem Nwachuku:** (2011) Nicole’s focus while in the program was on public health. She received a National Science Foundation IGERT fellow in International Development and Globalization. Her research examined the relationship between vulnerability and sustainability particularly as it relates to health equity, resource management and materialism.

She previously conducted policy research for the World Health Organization, Results for Development, UNICEF, the Center for Strategic and International Studies, The Carter Center, the State Department, and the Program of African Studies at Northwestern University. She holds a B.A. from Northwestern University in International Development Policy.
At present, Anisa is an Associate at the Social Sector Office at the consultant firm, McKinsey & Company.

**José Carlos Orihuela:** (2010) A recipient of the CICR Empedocle Maffia Fellowship, José's doctoral dissertation examined the rise of the green state in Latin America by asking why green policy convergence takes place within institutional divergence in mineral-rich Chile and Peru. His research gives close attention to the critical role of policy-entrepreneurs at windows of opportunity and the evolving interplay of agency and structure. He is also involved in a research project with a group of scholars from the University of Oxford whose goal is to revisit the resource-curse hypothesis by comparing six cases of institutional development across Latin America and Africa.

José Carlos holds a B.A. in Economics from the Pontificia Universidad Catolica del Peru and an MPA in International Development from Harvard University. His research interests include the political economy of environmental conflict, green governance and resource-based development.

Currently, José Carlos is a Visiting Fellow in International Studies at Brown University’s Watson Institute and an Associate Professor of Economics at Pontifical Catholic University of Peru.

**Mark Orrs:** (2014) Mark's primary interest is African economic growth and development, with approaches from the perspectives of tropical agriculture and arid/semi-arid lands, gender and education, and child mortality.

He is co-author of two articles on HIV/AIDS stigma, which were published in major public health journals. The focus of Mark's dissertation was is on the effects of a sanitary towel distribution campaign on girls' attendance, for which he traveled to Coast Province in Kenya to collect primary data.

In 2003, Mark earned a BS in Sociology from Saint Joseph's University in Philadelphia. After a year of teaching fifth grade in Camden, New Jersey, he studied at the London School of Economics and Political Science, from which he received a Diploma in Economics with Distinction before being accepted into the Sustainable Development program. Mark has traveled to East Africa multiple times, including in 2006 to film a documentary on street children in Nairobi. He has also worked at a home for HIV-positive AIDS orphans, socio-medical outreach projects into Nairobi’s slums, income
generating activities for slum dwellers, and the Millennium Villages Project on multiple, varied initiatives.

Mark is now the Director and a Professor of Practice at Lehigh University in the Sustainable Development Program.

**Lily Parshall Watcher:** (2010) Lily was a recipient of an NSF IGERT Fellowship in International Development and Globalization. She studied energy systems and policy, with a focus on the urban scale. She is interested in how cities use energy, why some cities are more efficient than others, and what cities can do to reduce fossil fuel consumption and address climate change. While at Columbia she worked on two projects. The first used spatial analysis to estimate urban energy consumption in U.S. cities, with policy implications for energy-efficient urban development and local energy governance. In the second, she developed a spatially explicit model of demand for heat and power in New York City buildings and determined the technical feasibility and relevant scales of distribution for several alternative technology options.

Additionally, she previously studied modeling national electricity grid expansion in Senegal and Kenya. She has conducted research for the International Energy Agency, the World Bank, and the New York State Energy Research and Development Authority. She holds a B.A. in Earth and Environmental Science from Columbia University.

Currently, Lily works in Strategy & Finance at EdeniQ, Inc.

**James Rising:** (2015) James' research interests revolve around a search for frameworks for grasping and modeling coupled environmental and human systems. He hopes to use new technologies to help communities act on those insights to mitigate climate change and promote social justice.

James previously taught assorted seminars at MIT's Experimental Study Group and electrical engineering at Franklin W. Olin College of Engineering. Until recently, he worked as a software developer, working with over a dozen companies on signal processing, social networks, and artificial intelligence projects.

James is now a Post-doctoral Scholar at UC Berkeley, Energy and Resources Group.

**Aly Sanoh:** (2012) Aly has worked on cost and access modeling of electrification in
Senegal. His research interests include African economic development, community-based rural development, energy resources and technologies, and rural infrastructures. He has done research on infrastructure provision and decentralization process in Mali.

Aly is from Guinea where he completed his Bachelor’s degree in Applied Energy Studies from the University of Conakry in 1999. He obtained a Masters’ degree in Energy and Environmental Policy from the University of Delaware in 2006.

Aly is now working as a Data Analyst at the World Bank.

**Tse-Ling Teh:** (2015) Ling’s research interests are in public policy for the management of natural disasters. Tse-Ling received a Bachelor of Actuarial Studies (First class honours) and a Bachelor of Laws (First class honours) from the Australian National University (2006). An avid traveler, she has lived in many countries, most recently the Lao PDR working with the UNDP. Prior to resuming her studies, Tse-Ling was an actuarial analyst in the private sector.

Ling is now a Research Officer at London School of Economics.

**Anna Tompsett:** (2014) Anna graduated with a first class M.Eng. in Civil and Environmental Engineering from Imperial College London and the Universidad Politecnica de Madrid in 2004, and completed an MPhil in Engineering for Sustainable Development at the University of Cambridge in 2007.

Anna has consultancy experience in the UK in both water and structural engineering. Her overseas experience includes a year teaching high school Math and Physics in Uganda, and a year as an Engineers Without Borders UK volunteer, working on rural infrastructure projects in the Dadiya tribal lands of Gombe State, Nigeria, as well as involvement in improved-earthquake resistance adobe construction projects in El Salvador.

She has worked on research projects in Mali (using Landsat images to understand flood and agriculture patterns around Toya Millennium Village in the Niger Inland Delta) and in Bangladesh (as research assistant on a randomized field test of the impact of decentralization of decision-making in the provision of arsenic-safe water sources). Her research is broadly focused on understanding the interactions between different types of capital (physical, human, social, natural and financial).
Anna is now an Assistant Professor at Stockholm University in the Department of Economics.

**Marta Vicarelli:** (2011) Marta worked as a research assistant at the Center for Climate Systems Research at Columbia University. Since 2004, she has been a research fellow at the National Aeronautic and Space Administration (NASA) Goddard Institute for Space Studies.

Her principal field of research is climate change and natural catastrophes risk management and financing. Her research interests focus on, the balance between the public and the private sector (e.g. insurance, re-insurance) in risk sharing and cost sharing for different risk reducing measures; possible partnerships between international organizations (such as, OECD, UN, World Bank, and UNDP), governments and the private sector; impacts of public policies on insurance (and re-insurance) decision making and market behavior; and the potential role that insurance can play in encouraging mitigation for actions that reduce the impacts of climate change.

She was also a contributing author to the Intergovernmental Panel for Climate Change (IPCC) Fourth Assessment Report, Working Group II, investigating observed changes and responses in natural and managed systems and sectors.

Thanks to a fellowship offered by the French Ministry of Education, Marta spent three years in France where she received a B.S. in Earth and Atmospheric Sciences from the École Normale Supérieure in Paris, and a Master’s of Environmental Economics from École Polytechnique.

Marta is now an Assistant Professor at University of MA, Amherst in the Department of Economics.

**Semee Yoon:** (2015) Semee’s research interests lie primarily in environmental and development economics on natural resource management and poverty alleviation in developing countries. She is also interested in climate change adaptation policies in developing countries. She served as a consultant for the Ethiopia division of Vision Care Service, an ophthalmic service providing NGO, and a project manager of the Project Malawi, a public health project on HIV/AIDS prevention program and maternal and child health program.

Semee obtained her B.A. in Economics with a special concentration in Sustainable Development in 2010 at Columbia University with a honors thesis on the impact of a
new environmental regulation on the top Korean companies. Semee worked at Columbia as a research assistant on the similarities and differences between violent conflicts and natural disasters. In 2008, she worked on the development of evaluation indexes for Korean firms to prepare for risks presented by climate change at the Korea Environment Institute, and she was the only undergraduate representative of the Korea Energy Management Corporation at UNFCCC COP 14 in Poznan, Poland. She hopes to incorporate both environmental science and economics of sustainable development to provide practical policy implications, especially in developing countries.

**Nan Zhong:** (2015) Nan focuses on combined research on economic development and environmental policy.

Nan obtained her B.E. in Environmental Engineering and B.S. in Economics in 2009 from Tsinghua University of China. In 2008, she joined the on-going research project “An Analysis of Gasoline Tax Reform and its Implications in China” as a research assistant.

Nan is now an Assistant Professor at Xiamen University, Wang Yanan Institute for Studies in Economics.