Environmental Sciences Graduate Program (ESGP)

The Ohio State University

External Evaluation

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This report provides a summary of the external evaluation of the Environmental Sciences Graduate Program (ESGP) at The Ohio State University. Evaluators conducted a site visit on March 18-20, 2018. During the visit, evaluators met with ESGP Co-Directors, participating faculty, leadership of affiliated programs, students, alumni, staff, and administration. Prior to the site visit, evaluators were provided background information on the program, including: the Interdisciplinary Graduate Programs – Overview; the ESGP Self-Study Report (June, 2017); the Report of the Task Force on the Environmental Sciences (September, 2009); and, the FY18 ESGP Budget. As part of the review, evaluators were asked to assess the current strengths of the program; current issues/challenges being faced by the program as it moves forward; and recommendations for ways to address those issues/challenges.

1. Program Strengths

The Ohio State University recognizes that interdisciplinary graduate programs (IGPs) create synergistic strengths that arise from uniting strong disciplinary bases. These are strengths that would not otherwise exist; they create new opportunities for faculty and students that are required for solving today's complex interdisciplinary real-world problems. The depth and breadth of research programs and disciplinary curricula at Ohio State University provide a strong foundation for such interdisciplinary graduate education. The ESGP provides a unique interdisciplinary curriculum for training across physical sciences and engineering, biological sciences, and social sciences with disciplinary depth in established specializations or self-designed by the graduate student and their committee.

The ESGP brings in high quality, diverse and unique students. They are drawn to these programs by the interdisciplinary opportunity, and most would not have come to Ohio State were it not for this program. The graduate students strongly value their educational experience, and the alumni are launching into important and meaningful careers. About one-third of the students are international students, who benefit both the domestic student experiences and the impact of the research.

The ESGP attracts high quality faculty, including many of the new strategic faculty hired through the Discovery themes. The faculty value the connections to co-mentor students across colleges and develop new collaborations across the university. This network of interdisciplinary interactions facilitates innovative research that addresses university, state and national priorities for major research funding, high profile scholarship, and societal impact.

There is strong complementarity to several of the Discovery Themes. New faculty hires in the themes of Sustainable and Resilient Economy (SRE), Initiative for Food and Agricultural Transformation (INFACT), Infectious Disease, and Translational Data Analytics all see the ESGP as a natural home for their faculty's graduate students. INFACT and SRE are already viewing ESGP as their graduate education wing.

The new Environmental Health Science track holds promise to revolutionize both the environmental health faculty and the faculty in other colleges, from engineering, biochemistry and pharmacy to agricultural science, city and regional planning, and earth sciences.

2. Program Challenges

Along with the other IGPs, the ESGP has had several different oversight and funding models over the recent past. As a result, there has been limited institutional attention paid to the program through either the Environmental Science Research Network prior to its demise, or through its current administrative home in the Graduate School. The colleges provide the funding, but without any regular interaction or knowledge of student quality or outcomes to support their investment.

The lack of clear and consistent reporting on the program, as well as uncertainty among administrators about the budget implications of interdisciplinary graduate students, has left program co-directors, department heads and college deans with differing views of who should be supporting these students, and how much support is appropriate.

There is a wide spectrum of ways in the ways the ESGP students and faculty engage with their departmental colleagues across the span of 27 different departments. In some cases the culture of the departments is completely encouraging and supportive, but in other cases it is not. Consistent and constructive communication is needed between the ESGP and participating departments in order to build a culture where the Program is viewed as synergistic, and not competitive with departmental degrees.

Program staff in the interdisciplinary graduate programs play multiple roles, including scheduling seminars, assisting students with navigating courses and advisors, and managing recruiting, admissions, and awards. These programs lack the context of a larger cluster of support staff and mutual assistance that commonly exists in a departmental setting.

The high degree of flexibility in the curriculum and breadth of requirements across biological sciences, physical sciences and engineering, and social science and policy requires careful individualized advising. Not all faculty are sufficiently engaged with their students on course selection, leading to uncertainty for the student. Efforts should be made to ensure consistent mentorship across all students.

There are some faculty who are no longer participating in the program in a meaningful way. Some have not advised a student or served on a committee in over 5 years. The program has a single graduate studies committee with massive workload year round, which is a barrier to faculty participation.

The existing governance structure results in approximately 50% of high quality student applicants conditionally accepted into the program because of insufficient financial support from supervisors. The model of ESGP providing 1-year support also results in uncertainty of continued funding, with several students having to self-fund a portion of their education. Access to departmental assistantship resources is inconsistent across all units.

3. Recommendations

Consistent with the University mission, the primary goal should be to strive for excellence as evidenced in specific student outcomes assessment. The administration and reporting structure of the Environmental Science Graduate Program should foremost be designed to

achieve this excellence. The budget model should then be adjusted to support that excellence for the university.

It is important to institute a structure for consistent administrative oversight of the ESGP, and there is widespread consensus that this administration be within the Graduate School. Because the Program extends across multiple colleges, alternative structures would lead to a lack of "ownership" by units other than the administrative lead. It is important that the program administration be efficient, transparent, accountable, and endorsed by faculty and leadership.

The ESGP has to improve awareness and communication within colleges and departmental units. To this end, biannual meetings of Program Directors with College Deans should be instituted to discuss the overall state of program, program outcomes assessment, recruitment updates, and other relevant topics. Similarly, Program Directors should meet annually with Department Chairs within each College or School, along with appropriate College/School administration.

Periodic review of Program Directors by Graduate College administration should be instituted. This would ensure constructive feedback on program administration and allow Directors to discuss any ESGP related issues. It is suggested that ESGP consider amending their governance to institute terms for Program Directors and allow participating faculty to vote on program administration.

The large number of participating ESGP faculty should be reviewed to reduce the number of non-participating faculty. This could be accomplished by instituting a 5-year review wherein faculty submit an updated vita, summary of ESGP activity, and statement of interest, and their participation be submitted to a vote of ESGP faculty.

The ESGP Graduate Studies Committee is made up of hard-working, mainly junior faculty. They represent the future of the program. Consideration should be given to separating out program committee responsibilities into independent committees (e.g. admissions, curriculum, awards) to create more opportunities for faculty interaction without overburdening faculty.

Clarity on the budget model as it pertains to IGP students should be increased. Clearly the IGP students provide benefits to their home department through the generation of student research and other credit hours, but there is uncertainty as to how this happens or how it may benefit home departments.

It is important that measures be taken to assure that all IGP students are valued consistently compared to the disciplinary students within their advisor's departments. Participating departments should consider both disciplinary students and IGP students as "theirs", only with different majors. Access to departmental resources should be equal and consistent within all units.

Support for program coordination for all IGPs should be established within the Graduate College. IGP coordinators lack the context of support staff that exists in a departmental setting, and consistent support within the Graduate College would allow for cross-training, back-up support, and increased efficiency across all IGPs.

ESGP should continue to pursue partnerships and synergies with the Discovery Themes. New faculty hires in several of the complementary Themes see the ESGP as a natural home for their graduate students. Similarly, the ESGP should continue collaborations with the Ohio Water Resources Center, Boyd Polar and Climate Research Center, Global Water Institute, Carbon Management and Sequestration Center, and the Subsurface Energy Research Center. These are signature programs for The Ohio State University, and all benefit from the interdisciplinary engagement with ESGP students and faculty.

There are ongoing discussions to modify ESGP curricula to develop additional Tracks in energy and sustainability. It is recommended that development of these tracks be a priority as they will attract additional students and resources to the program.

Students entering ESGP come from a variety of STEM or non-STEM fields. ESGP should consider the development of foundational courses to provide consistent underpinning in the breadth of the biological, physical, and social science aspects of environmental science.

The ESGP participated in a pilot program to define and develop an assessment plan for the program's learning goals. The IGPs should continue to take the lead on learning outcomes assessment. Documented learning outcomes will only increase the awareness of the value of the IGPs to departments and colleges. Stronger administrative support from the Graduate College can help the IGPs pilot and model this and other best practices, providing benefits to graduate programs across the university.

Interdisciplinary graduate programs create tremendous opportunities for graduate student training grants. The ESGP has potential targets in NIH, NSF, and USDA. However, substantial data collection is required to apply for training grants. At this point this is done at the department level, but is inconsistent and often not available when needed. We think the Graduate School is the logical place to coordinate that data collection, with support from departments, colleges, and the Office for Research. As with learning outcomes assessment, developing better data collection systems for the IGPs could create a model that facilitates training grants for disciplinary programs as well.

The Council of Graduate students serves to work towards continued improvement of the graduate student experience and represents a valuable professional development opportunity. Representation by IGP students on the Council should be allowed and encouraged.

The Environmental Sciences Graduate Program has a talented and productive faculty, attracts dynamic and creative graduate students, and generates a network of positive synergies that provide multiple benefits to the university. Strengthening the administrative support structure and implementing these recommendations will accelerate this program on a trajectory for even greater excellence and innovation.