

Ohio State Sustainability Fund

FY 2022 Annual Report



**THE OHIO STATE
UNIVERSITY**

SUSTAINABILITY INSTITUTE

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Overview

The Ohio State Sustainability Fund was established to support improvement of the sustainability profile of the university — through efforts that improve campus operations and lead to increased learning and innovation or more sustainable behaviors in the university community. The Sustainability Institute (SI) manages the Ohio State Sustainability Fund (OSSF). Since 2010, the OSSF has invested over \$10 million in a variety of project types. In FY 2022, the OSSF provided over \$365,000 in project and new research support, which included projects that extended beyond the fiscal year calendar.

Highlights from this year included two campus living lab projects and three research grant programs, including a proposal development grant to support interdisciplinary teams in the development of external funding proposals and a seed bank project to rebuild native ecosystems and restore campus lands.

As in the past, some of the OSSF investments are expected to result in quantifiable operational cost savings for the university or leverage new sustainability funding investments to the university. To date, investments of the OSSF have generated a cumulative annual cost savings exceeding \$1.7 million. This is well above the annual OSSF funding amount and returns a financial net positive result to Ohio State.

Special thanks to Reily Jacobs Bell, SI student communications intern, and Isabel Nixon, SI design student, for the writing and development of this Annual Report.



Project Funding Guidelines

Guidelines for the eligibility and selection of projects the OSSF supports are summarized below. Proposals are reviewed and considered individually and in light of all other funded projects and pending proposals. Proposed projects must address the eligibility criteria below. The individual projects that best meet the eligibility criteria are then evaluated for funding support in consideration and comparison to all previously funded projects and pending proposals.

Eligibility Guidelines

Individually, does the proposed project meet the following criteria:

Contribute to sustainability – Projects improve the sustainability of campus operations and/or improve the sustainability awareness of campus populations.

Campus impact – Projects are restricted to Ohio State campuses and must be led by a staff or faculty member.

Existing university operating budget – Projects that are covered by an existing university operating budget are not eligible. Projects and project funding are not intended to be an alternative path to the normal annual budgeting process.

Partial funding support – The Sustainability Fund should be used to seed, catalyze, or gap-fill funding on projects rather than be the sole funding source. The fund may be used to support the launch of a program but not for regular year-over-year programmatic funding.

Selection Evaluation Guidelines

Relative to previous projects and all other pending project proposals:

Feasibility – Is the project likely to succeed? Has the project accounted for contingencies and major obstacles?

Sustainability Impact – Does the project measurably improve or accelerate the sustainability of Ohio State's campuses or the realization of Ohio State's Sustainability Goals and priorities?

University Population Impact – Does the project lead to increased understanding, greater engagement, or sustainable behavior change in the university community?

Economic Impact – What are the financial benefits? What are the cost savings, return on investment, or payback over time? Positive return on investment is strongly encouraged.

Innovation – Does the project exhibit innovative technology, processes, or application of knowledge?

Institutionalization/Scalability – Can the project become embedded in the University's routine operation? Does it need only startup funding to then sustain itself over time? Can it be expanded to other campus locations if successful?

Project Selection

SI receives and seeks project proposals from across the university including colleges, student groups, regional campuses, research centers, Student Life, Facilities Operations and Development, Wexner Medical Center, and Athletics. SI continually reviews projects throughout each fiscal year. Following a review by SI, recommended projects are presented to the President and Provost's Council on Sustainability (PPCS) for further review and consideration. Projects receiving a concurrence from the PPCS are then awarded funding.

Featured FY22 Funded Projects

Sustainability Research Seed Grant Program: \$99,908

The Sustainability Research Seed Grant Program lays a foundation for convergence research, a means of solving vexing problems through interdisciplinary collaboration — particularly complex problems facing society. The seed grant, which enables advances in not only sustainability, but also resilience, targets new teams that focus on interdisciplinary work. This year, SI selected three projects to allocate almost \$100,000 in funding from the Sustainability Research Seed Grant Program.

Battery load management for a fleet of electric school buses:

This project aims to examine the heating and cooling loads of both the road and the body of school buses to advance bus electrification. Buses serve as a perfect target for saving transportation emissions. They also primarily run on diesel engines, which have higher greenhouse gas emissions than equivalent electric buses. The team constructed a five-task proposal to meet its goals: loads analysis, concept exploration and definition, energy management scheme, fleet composition, and fleet management. Research from this project has the potential for application across the country, given local school district reliance on diesel fueled school bus transportation vehicles.

Sustainable adoption of climate-smart agroforestry: The second project focuses on the Sahel, an area of immense biodiversity and transition within Africa. The research team will investigate Forest Gardens, a type of climate-smart technology that can increase adaptability and durability of rural and agricultural communities in areas of poverty or climactic disadvantage. The researchers will expand this into irrigation optimization, capacity for carbon sequestration and potential for profit.

Air quality and building ventilation: Humans spend most of their time inside buildings, whether it's their homes, schools, or work. This project's focus is to develop a first-of-its-kind mobile app to gauge simultaneous occupant comfort/satisfaction via a survey with an airborne pollutant sensing dataset.

Sustainability Goals Advanced by Project:

- Encourage new sustainability knowledge and solutions
- Foster sustainability culture on and off campus
- Encourage local and global sustainability partnerships

Sustainable Materials and Zero Waste (Medical Equipment): \$75,000

The Ohio State University Wexner Medical Center has made considerable investments in recent years into purchasing equipment produced with more sustainable materials. Wexner Medical Center flooring finishes, wall coverings, and furniture purchases, among other items, have all been made with consideration of the environmental attributes of those materials.

Unfortunately, these materials are experiencing product failures before their expected life cycle replacement due to necessary repeated hospital grade cleaning and disinfection processes. This creates numerous negative consequences, including an increase in the amount of hard trash that cannot be recycled and additional expenses to replace products that should have lasted much longer.

To better understand the impacts of hospital grade cleaning and disinfecting processes on these product materials, an interdisciplinary research team is conducting an intensive material testing project, intended to develop appropriate management processes and inform future product material purchases. Further, the research team intends to explore the development and commercialization of new materials that better protect against degradation, extending the life of products used in medical settings.

Sustainability Goals Advanced by Project:

- Encourage new sustainability knowledge and solutions
- Encourage local and global sustainability partnerships
- Achieve zero waste

Midwest Landscape Lab Seed Bank: \$40,500

The Knowlton School is a regional leader in native landscape design and restoration education and living lab development. The School's Landscape Architecture Section has approved a new two-course seminar sequence that will enable students to design and plant native landscape parcels on Ohio State's campus, beginning with identified sites on Waterman Lab. The new courses will be associated with the School's new Midwest Landscape Lab, which is in the process of building a specimen collection and seed bank of regionally critical plant species threatened by environmental degradation for use in restoration and maintenance of university properties.

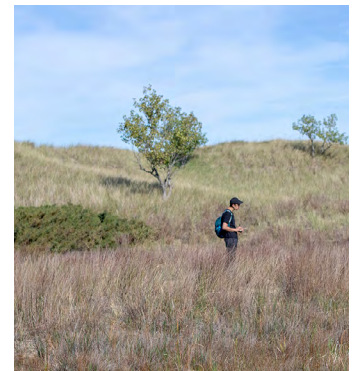
Each seminar will take advantage of its distinct position within the calendar year to undertake ecological sampling and planting activities that expand the specimen collection and seed bank and promote sustainability on campus. During the fall seminar, students will complete a series of site visits to safely collect seeds from rare and endangered plants in Ohio and surrounding states. The spring seminar will ask students to utilize the seed bank stocked in the autumn, to design and plant parcels on campus.

This project utilized the Ohio State Sustainability Fund grant to establish the lab through support for an initial graduate research assistant to curate and establish the Midwest Landscape Lab's specimen collection and seed bank archive and purchase of relevant lab materials for the collection, storage, and study of seeds and plant specimens.

These materials included a compound microscope and a stereomicroscope to ensure that students have immediate access to this research and visualization tool and to encourage creative experimentation across two-dimensional and three-dimensional media.

Sustainability Goals Advanced by Project:

- Teach sustainability in innovative ways in and out of the classroom
- Foster sustainability culture on and off campus
- Increase campus ecosystem services



Graduate landscape architecture students learn through direct engagement in the field.

Sustainability Proposal Development Grant Program: \$47,635

Principal Investigators Douglas Jackson-Smith, Katrina Cornish, Judit Puskas and Yael Vodovotz were all awarded Sustainability Proposal Development Grants to support interdisciplinary teams in the development of external funding proposals. The proposal development grant assists with writing proposals for external funding in SI's designated research areas while also crossing two or more fields of study.

Jackson-Smith's target external funding opportunity is the U.S. Department of Agriculture Natural Resources Conservation Service. On behalf of an interdisciplinary research team, he will submit a proposal for a host of potential pilots that could create and promote markets for agricultural products that keep greenhouse gas emissions low and promote carbon sequestration.

Cornish's target external funding opportunity is through the U.S. Department of Agriculture. Her team will explore the potential for sustainable domestic rubber production from the Buckeye Golden dandelion and the Guayule.

Puskas' target is an external funding opportunity with the National Science Foundation. The proposal development grant will go towards developing SHIELD: Specialty High Impact Elastomeric Latex Crops for Devices & Personal Protective Equipment.

Vodovotz's target is also a National Science Foundation funding opportunity. This proposal development grant will help develop SHAPE: Solutions Hub for an Alternative Packaging Ecosystem.

Sustainability Goals Advanced by Project:

- Encourage new sustainability knowledge and solutions
- Foster sustainability culture on and off campus
- Encourage local and global sustainability partnerships

Sustainability Fund Projects

Fiscal Years 2010 - 2022 Summary	Total Investment	Annual Cost Savings*
136 funded projects	\$10.8 million	\$1.7 million

2018	Funding	Savings / Year
Alternative Fuel Vehicle Incentive	\$500,000	TBD
Fleet EV Charging Infrastructure	\$375,000	TBD
Ultra-Cold Freezer Pilot	\$263,728	TBD
BioSciences Greenhouse Energy Curtains	\$190,000	TBD
Student Farm: Sustainable Food & Farming Systems	\$94,741	TBD
Once Through Water Usage	\$73,203	\$131,123
Climate Action Plan	\$71,153	N/A
Food & Organic Waste Inventory & Demonstration Project	\$64,596	TBD
Lower Olentangy Sustainability Plan	\$60,000	N/A
Grounds For All	\$43,000	\$8,500
Campus Sustainability Signage	\$25,000	N/A
EvoBin Research	\$21,000	TBD
Artificial Floating Island Test Garden	\$15,000	N/A
FY2018 Totals	\$1,769,421	TBD

2019	Funding	Savings / Year
Stormwater Management Plan	\$20,950	N/A
Grounds for All Supplemental	\$12,000	N/A
Sustainability Online Map	\$8,500	N/A
Mansfield Campus Exterior LED Light Conversion	\$81,464	\$8,900
Sustainability in Anesthesia Clinical Practice	\$30,000	TBD
WMC Data Center Battery Bank	\$80,000	\$10,700
Behavioral Energy Conservation Living Lab	\$308,117	TBD
Innovating Organic Waste Solutions	\$169,280	TBD
Columbus Campus Urban Heat Island	\$149,905	N/A
Zero Waste Hand Dryer Phase II (first installment)	\$200,000	\$145,000
FY2019 Totals	\$1,060,216	TBD

2020	Funding	Savings / Year
Cannon Preserve Supplemental Tree Planting	\$129,351	N/A
ARTrees	\$29,200	N/A
Classroom of Tomorrow	\$90,000	N/A
Sustainability Research Seed Grants	\$125,000	N/A
Water Reclamation Study	\$43,600	TBD
Energy Storage as a Service	\$89,814	N/A
Multidisciplinary Capstone Projects: Active Window & PV Building Integration	\$30,000	N/A
Enhancing Campus Soil-Ecosystem Services	\$66,131	N/A
Zero Waste Hand Dryer Installations-Phase II (2nd Installment)	\$200,000	\$145,000
Waterman Walks	\$15,000	N/A
FY2020 Totals	\$818,096	TBD

2021	Funding	Savings / Year
Innovation Plaza Stormwater Management	\$43,862.50	TBD
Sustainability Research Seed Grants	\$125,000	N/A
Targeted Research Investments	\$15,000	N/A
Sustainability Research Focus-Area Investments	\$39,635	N/A
Faculty Research Leads	\$90,000	N/A
ESS Lab Manager Support	\$14,000	N/A
FY2021 Totals	\$327,497.50	TBD

2022	Funding	Savings / Year
Sustainable Materials and Zero Waste	\$75,000	TBD
Midwest Landscape Lab Seed Bank	\$40,500	TBD
Sustainability Research Seed Grant Program	\$99,908	N/A
Faculty Research Lead Support	\$49,826.48	N/A
Sustainability Proposal Development Grant Program	\$47,635.86	N/A
Environmental & Social Sustainability Lab Manager Support	\$20,000	N/A
Exploratory Research Group Professional Development Training	\$17,500	N/A
Climate & Sustainability Interdisciplinary Research Scaling Grant Program	\$15,000	N/A
Exploratory Research Group Funding	\$500	N/A
FY2022 Totals	\$366,370.34	TBD

***NOTE:** Efforts to quantify the cost savings for 2016-2022 projects are ongoing and will be reported as it becomes available.

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