

# VILLANOVA INSTITUTE FOR CLIMATE, JUSTICE, AND SUSTAINABILITY [ICJS]



## PROJECT DESCRIPTION

An interdisciplinary university institute will be the academic home for research, curricula, and community outreach with focus on climate, environmental justice, health, and sustainability. The work of the institute will be performed by faculty fellows, undergraduate and graduate student assistantships, and by visiting scholars. The institute will oversee academic and project work. The institute will empower new leaders and develop innovative strategies to address the highly complex interdisciplinary challenges of climate, justice, and sustainability. The institute will launch as an initiative in the first two years of operation.

## PROJECT UPDATES

Pursuing the formation of the Institute has been approved by the President. A steering committee has been formed, comprised of 10 faculty members representing all of the schools and colleges. The steering committee has completed the drafting of the Institute prospectus and a draft of the Institute bylaws.

## PROJECT OUTCOMES

- Academics: Interdisciplinary research and education
- Operations & Policy: Campus as a 'Living Laboratory'
- Advocacy and Engagement: Engage surrounding communities for Local Action for Global Impact

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.1	Percentage of courses that include sustainability learning outcomes encompassed by the SDGs.	All Villanova department and program offer sustainability learning opportunities.
0.2	Incentives for faculty across all disciplines to incorporate sustainability into existing courses or develop new sustainability courses.	Establish a fund for faculty incentives to incorporate sustainability in their courses.
0.4	Percentage of students who graduate from programs that have adopted at least one sustainability learning outcome.	
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.
9.4	Percentage of students and faculty actively engaged in research.	
17.1	University philanthropic contributions (hours) associated with advancing the UN SDGs.	

# INVENTORY OF COURSES ON CLIMATE, SUSTAINABILITY, ENVIRONMENTAL JUSTICE (ICJS)



## PROJECT DESCRIPTION

Perform a comprehensive inventory of classes that are currently being taught that have significant content in climate, sustainability, and environmental justice. This inventory will form the baseline for future work on curriculum development. Create an inventory of sustainability research in all colleges, departments, and programs. The inventory will highlight the existing scholastic efforts towards sustainability and develop a comprehensive approach to sustainability education on campus.

## PROJECT UPDATES

N/A

## PROJECT OUTCOMES

- Understand how many students are being exposed to sustainability concepts
- Identify programs and departments with strong sustainability focus as well as those that should bolster their sustainability offerings
- Map the sustainability research effort of the University

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## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.1	Percentage of courses that include sustainability learning outcomes encompassed by the SDGs.	All Villanova department and program offer sustainability learning opportunities.
0.4	Percentage of students who graduate from programs that have adopted at least one sustainability learning outcome	

# INTEGRATION OF SUSTAINABILITY INTO COURSES (ICJS)



## PROJECT DESCRIPTION

Encourage the creation of more sustainability courses and integrate sustainability concepts in courses across all colleges. Develop a plan to integrate options for sustainability classes in every department by 2021 to achieve 100% departmental coverage by 2030. Project Kaleidoscope and the AAC&U have developed a program that demonstrates how to incorporate sustainability into course curricula. Education about sustainability will empower students to change the way they think and work towards a sustainable future.

## PROJECT UPDATES

This project is dependent on the formation of the Villanova Institute for Climate, Justice and Sustainability Institute (ICJS), but efforts have begun in creating a database of all courses.

## PROJECT OUTCOMES

- Introduce sustainability from cross disciplinary perspectives
- Increase the exposure of students to sustainability concepts
- Improve the ability of students to discuss important topics with others
- Influence the lifelong habits of students and their families

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.1	Percentage of courses that include sustainability learning outcomes encompassed by the SDGs.	All Villanova department and program offer sustainability learning opportunities.
0.2	Incentives for faculty across all disciplines to incorporate sustainability into existing courses or develop new sustainability courses.	Establish a fund for faculty incentives to incorporate sustainability in their courses.
0.4	Percentage of students who graduate from programs that have adopted at least one sustainability learning outcome.	
6.1	Total potable water used per year.	Sub-meter the potable water consumption of the ten highest consumption buildings on campus.
7.2	Campus's energy intensity (site energy).	Develop a plan to reduce energy intensity.
12.1	Proportion of total waste disposed of in a non-circular manner.	Conduct a waste audit and develop an action plan.
13.2	Scope 3 net greenhouse gas emissions.	Conduct a comprehensive scope 3 emissions inventory.

# SUSTAINABILITY UNDERGRADUATE RESEARCH FELLOWS (ICJS)



## PROJECT DESCRIPTION

Create a summer undergraduate and graduate research fellowship program to fund summer research in relevant areas including environment, climate, climate justice, health, policy, and energy. These will be additional VURF and graduate grants, not part of the pre-existing group. The fellowship program will strength our scholastic efforts toward sustainability and develop innovative solutions to sustainability issues.

## PROJECT UPDATES

Placeholder text for project updates.

## PROJECT OUTCOMES

- Empower undergraduates and graduates to grow their research capabilities while working toward important world issues
- Encourage faculty to undertake sustainability research that require student research assistance

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.
4.2	Average starting salary of undergraduates going into the workforce and full-time graduate students in their field of study.	
9.4	Percentage of students and faculty actively engaged in research.	
17.1	University philanthropic contributions (hours) associated with advancing the UN SDGs.	

# CLIMATE ADAPTATION OF COMMUNITY-BASED ORGANIZATIONS THAT SERVE OLDER ADULTS IN PHILADELPHIA (ICJS)



## PROJECT DESCRIPTION

Literature is being reviewed to develop a survey of community-based organizations that serve older adults. The survey will address specific issues related to climate adaptation for older adults. Older adults are at risk of added morbidity and early mortality related to the health impacts of climate change (heat, climate-related disasters, and vector, food, and water-related illnesses). By determining the adaptation capacity of the organizations that serve older adults, we can identify strengths and gaps in services throughout the city. From these findings, intervention programs can be developed that could lead to state and federal funding.

## PROJECT UPDATES

N/A

## PROJECT OUTCOMES

- Improve our understanding of the impacts of environmental health on human health
- Increase awareness of interconnections between all types of health

## AFFECTED METRICS



Metric	Metric Description	2021 Key Results
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.
3.3	Percentage of University insurance provided physical and mental health care that is an out of pocket expense for a student, faculty, or staff member.	
9.2	Scope 1 and 2 net greenhouse gas emissions.	
9.4	Percentage of students and faculty actively engaged in research.	
11.2	Indoor and outdoor air quality based on EPA and OSHA regulations	Establish appropriate network of air quality monitoring and weather stations on campus.
13.1	Scope 1 and 2 net greenhouse gas emissions.	Develop a plan to reduce scope 1 and 2 emissions to meet the 1.5 IPCC report by 2030. Buy at least 10% of electricity from renewable sources.

# CASE DEFINITION OF CLIMATE-RELATED MORTALITY AND MEASUREMENT OF CLIMATE MORTALITY 2009-2019 IN PENNSYLVANIA (ICJS)

## PROJECT DESCRIPTION

A scoping review is being conducted of the peer-reviewed and gray literature to systematically identify the climate-related conditions (heat, floods, wildfires, vector-borne diseases, food & water-borne illnesses) that have been responsible for human death in the past ten years. Our findings will be reviewed by a panel of climate and health experts

The case definition will be used to review the deaths in Pennsylvania from 2009-2019 to quantify climate-related mortality in the Commonwealth.

## PROJECT UPDATES

Received grant to pursue this work.

## PROJECT OUTCOMES

- Improve our understanding of the impacts of environmental health on human health
- Increase awareness of interconnections between all types of health

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.
3.3	Percentage of University insurance provided physical and mental health care that is an out of pocket expense for a student, faculty, or staff member.	
9.2	Scope 1 and 2 net greenhouse gas emissions.	
9.4	Percentage of students and faculty actively engaged in research.	
11.2	Indoor and outdoor air quality based on EPA and OSHA regulations	
13.1	Scope 1 and 2 net greenhouse gas emissions.	Establish appropriate network of air quality monitoring and weather stations on campus.
		Develop a plan to reduce scope 1 and 2 emissions to meet the 1.5 IPCC report by 2030. Buy at least 10% of electricity from renewable sources.

# AUGUSTINIAN LOCAL AND GLOBAL OUTREACH (ICJS)



## PROJECT DESCRIPTION

This project will integrate outreach, advocacy, education and research with our shared Augustinian values and will utilize our vast Augustinian and Catholic network to provide education and advocacy as well as perform collaborative research on climate, justice and sustainability with local and global partners.

It will have two objectives:

**Local Outreach for Global Impact:** Outreach to local parishes, starting with St. Thomas of Villanova, through a series of workshops, wherein participants reflect upon their environmental footprints through a “See, Discern, Act” framework.

**Global Outreach for Local Impact:** Integrated collaboration with global partners, starting with Augustinian community and University partner in Peru, with potential service learning, technical assistance research, innovation, and capacity strengthening components.

## PROJECT UPDATES

**Local outreach:** A workshop was initiated on sustainability and personal responsibility with the St. Thomas of Villanova Parish. The workshop was interrupted by the COVID-19 crisis in the spring 2020 but restarted in the fall of 2020.

**Global outreach:** A number of initiatives have been established with inaugural global partners in Trujillo, Peru. This includes training faculty of the Catholic University of Trujillo (UCT) in sustainability and sustainable engineering, as well as developing engineering service-learning projects with NGOs, such as WINDAID.

## PROJECT OUTCOMES

- Spread Catholic social teaching as it relates to sustainability
- Improve the lives of those in the developing world through sustainability outreach

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
4.4	Proportion of student population made up of underrepresented groups: Black, Hispanic, Asian, Native American.	Develop a plan and commitment to meet 100% of need by 2030 while remaining need blind.
17.1	University philanthropic contributions (hours) associated with advancing the UN SDGs.	
17.2	Proportion of active partnerships from tier 1 suppliers, research grants, and service learning partnerships that are contributing to a sustainable world (e.g. report to GRI, CDP, have a Science-Based Target, or contribute to UN SDGs).	
17.3	Annual student, faculty, and staff hours spent on off-campus service learning projects.	Maintain position as a leader in philanthropic service hours from faculty, staff, and students.

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## DFC>97H'89G7F4DHCB

Villanova is surrounded by local governments that are making new and serious commitments to sustainability. Most notably, 21 local PA municipalities – including Radnor, Haverford, and Tredyffrin -- have signed on to the Sierra Club's Ready for 100% Renewable Energy Campaign and pledged to transition to renewable electricity by 2035. Villanova can engage with and learn from these communities as they develop and execute their sustainability projects. By fostering communication and collaboration between community organizations and faculty, students, and staff, Villanova can offer expertise, consultation, and project support, while also serving as a regional convener of communities, municipalities, industry, and policy makers. The University might also offer, upon request, one-on-one or initiative-wide consulting, seed grants, and ways to measure sustainable project outcomes. Undergraduate and graduate students can be a source of support for community-based projects by participating in data gathering, data analysis, and program evaluation.

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Plans are being made for Villanova's participation in several community partnerships. This includes the solarize DELCO campaign in Delaware County as well as a campaign for the adoption of 100% renewable energy in local municipalities and townships surrounding Philadelphia.

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- Provide Villanova expertise to surrounding communities
- Share and learn best practices. Avoid common mistakes



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**%&** Scope 1 and 2 net greenhouse gas emissions.

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**%+ '%** University philanthropic contributions (hours) associated with advancing the UN SDGs.

**%+ "&** Proportion of active partnerships from tier 1 suppliers, research grants, and service learning partnerships that are contributing to a sustainable world (e.g. report to GRI, CDP, have a Science-Based Target, or contribute to UN SDGs).

**%+ "** Annual student, faculty, and staff hours spent on off-campus service learning projects.

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Develop a plan to reduce scope 1 and 2 emissions to meet the 1.5 IPCC report by 2030. Buy at least 10% of electricity from renewable sources

Maintain position as a leader in philanthropic service hours from faculty, staff, and students.



# CAMPUS LIVING LABORATORY INITIATIVE (ICJS)



## PROJECT DESCRIPTION

Use the campus as a laboratory to perform projects related to sustainable living and operations such as stormwater, composting, gardening, biodiversity, and energy efficiency. Take existing operations and incorporate them into academics. This project will foster a sustainable community by involving students and faculty in a hands-on approach to sustainable practices on campus.

## PROJECT UPDATES

Projects involving stormwater infrastructure and other green infrastructure are ongoing. Projects related to campus biodiversity will be initiated in 2021.

## PROJECT OUTCOMES

- Provide reminders of sustainability in the campus landscape

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
6.2	Average efficiency of green and best management practice (BMP) infrastructure in terms of reducing peak flow. This includes raingardens, constructed wetlands, and green roofs.	Measure the peak stormwater discharge from campus.
11.1	Proportion of non-utility and non-maintenance projects that have stakeholder input from students, faculty, and staff.	Develop a goal to plant a certain number of native plants.
11.4	Percentage of campus managed under sustainable landscape management practices.	Assess the load of pollutants in Villanova's waste water and storm water runoff.
14.1	Annual mass of nitrogen and phosphorus used in fertilizer on campus.	Assess the load of pollutants in Villanova's runoff.

# CAMPUS LIVING LABORATORY INITIATIVE (ICJS)

## AFFECTED METRICS *(CONTINUED)*



Metric	Metric Description	2021 Key Result
14.4	Average efficiency of green and best management practice (BMP) infrastructure in terms of reducing pollutant loads. This includes raingardens, constructed wetlands, and green roofs.	
15.1	Carbon sequestered per year by Villanova's campus ecosystem.	Measure the total mass of carbon captured by biomass on campus.
15.2	Portion of campus considered Green space and/or covered by trees. Includes green roofs.	Develop a comprehensive report of Villanova's campus biodiversity.
15.3	Proportion of campus biosphere considered to be an alien or invasive species.	Develop a comprehensive report of Villanova's campus biodiversity.
15.4	Percentage of campus managed under sustainable landscape management practices or an equivalent third party certification.	

# SUSTAINABILITY RESEARCH FUND (ICJS)



## PROJECT DESCRIPTION

Create fund specifically for sustainability research. This fund contributes to visiting scholars and faculty fellows as well as research initiation grants in sustainability. Can be used for research costs for all sustainability related faculty research. Use campus as a laboratory for sustainability projects.

Potential research projects include:

- Climate-related Mortality in Pennsylvania
- Climate Resiliency and Storm Impact in the Delaware Estuary
- Cross-Sector Collaboration as a Vehicle for Corporate Sustainability:
- Evidence from Climate Change Projects
- Campus Steam Plant Energy Assessment

The fund will ensure the growth of sustainability education and research and encourage students and faculty to develop innovative and sustainable solutions.

## PROJECT UPDATES

Dependent on the launch of the Villanova Institute for Climate, Justice and Sustainability Institute (VICJS)

## PROJECT OUTCOMES

- Empower faculty to pursue sustainability research
- Improve Villanova’s standing as a sustainability research producer

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.
9.4	Percentage of students and faculty actively engaged in research.	
17.1	University philanthropic contributions (hours) associated with advancing the UN SDGs.	

# VILLANOVA FOOD SUSTAINABILITY INITIATIVE

## PROJECT DESCRIPTION

An interdisciplinary university institute will be the academic home for research, curricula, and community outreach with focus on climate, environmental justice, health, and sustainability. The work of the institute will be performed by faculty fellows, undergraduate and graduate student assistantships, and by visiting scholars. The institute will oversee academic and project work. The institute will empower new leaders and develop innovative strategies to address the highly complex interdisciplinary challenges of climate, justice, and sustainability.

The institute will launch as an initiative in the first two years of operation.

## PROJECT UPDATES

Dependent on the launch of the Villanova Institute for Climate, Justice and Sustainability (VICJS).

## PROJECT OUTCOMES

- Reduce Villanova’s environmental footprint associated with food systems

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
2.2	Proportion of students, faculty, and staff that are meeting their caloric and nutritional needs without consuming in excess.	Measure the nutritional health of Villanova's population and assess the needs of those with restricted diets due to allergies, religious restrictions, or other dietary restrictions.
2.3	Percentage of food disposed of in a non circular manner.	Divert 100% of pre-consumer food waste from landfill or incineration.
12.2	Percentage of food disposed of in a non circular manner.	Divert 100% of pre-consumer food waste from landfill or incineration.
12.4	Proportion of campus products sourced sustainably as verified by third party certifications.	Evaluate options for sustainable procurement.
14.3	Proportion of seafood consumed on campus that is sustainably caught or raised and certified sustainable by third party standards.	Assess third party sustainable seafood standards for adoption.

# SUSTAINABILITY COLLOQUIUM



## PROJECT DESCRIPTION

Establish a colloquium of professors that meet regularly to communicate their sustainability efforts on campus. This colloquium will also strive to create a centralized network where professors and students across campus can share their sustainability research efforts. The colloquium will allow the campus community to join together for sustainability and strengthen the integration of sustainability in academics.

## PROJECT UPDATES

The campus-wide sustainability colloquium co-hosted by the VICJS will initiate spring semester 2021.

## PROJECT OUTCOMES

- Create a community that fosters and reinforces sustainable innovation in academics and research
- Exchange multidisciplinary ideas and facilitate cross-department collaboration
- Empower faculty to incorporate more sustainability into all types of courses

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.1	Percentage of courses that include sustainability learning outcomes encompassed by the SDGs.	All Villanova department and program offer sustainability learning opportunities.
0.2	Incentives for faculty across all disciplines to incorporate sustainability into existing courses or develop new sustainability courses.	Establish a fund for faculty incentives to incorporate sustainability in their courses.
0.4	Percentage of students who graduate from programs that have adopted at least one sustainability learning outcome.	
0.5	Percentage of research-producing departments that are engaged in sustainability research.	Develop plan to implement a sustainability research network.

# EARTH DAY AND CLIMATE AWARENESS PROGRAM



## PROJECT DESCRIPTION

Host a series of campus-wide events and programs. Earth week will bring the campus together to educate and raise awareness about sustainability issues, encourage individual action, and embrace the value of nature.

## PROJECT UPDATES

Annual event that once again was observed at Villanova in spring 2020. This event will be co-hosted by the VICJS in the future.

## PROJECT OUTCOMES

- Raise increased awareness of the landmark Earth-Day event
- Bring sustainability awareness to every student on campus

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
0.3	Existence of and performance on a sustainability literacy assessment for students.	Develop a sustainability literacy assessment.
6.1	Total potable water used per year.	Sub-
7.2	Campus's energy intensity (site energy).	consumption buildings on campus.
9.2	Scope 1 and 2 net greenhouse gas emissions.	Develop a plan to reduce energy intensity.
11.5	Proportion of commuter miles traveled using low carbon transportation (public transit, carpooling, walking, biking, and electric vehicles).	Develop a plan to reduce commuting miles by car.
12.1	Proportion of total waste disposed of in a non-circular manner.	Conduct a waste audit and develop an action plan.
12.3	Campus recycling rate.	Conduct a waste audit and develop an action plan.
13.1	Scope 1 and 2 net greenhouse gas emissions.	Develop a plan to reduce scope 1 and 2 emissions to meet the 1.5 IPCC report by 2030. Buy at least 10% of electricity from renewable sources

# BIODIVERSITY ASSESSMENT AND ACTION PLAN



## PROJECT DESCRIPTION

Evaluate the biodiversity of plants on campus and draft a plan to increase existing biodiversity. Biological diversity plays a critical role in maintaining ecosystems that provide essential services, which are critical foundations for sustainable development and human well-being. Documenting and improving biodiversity on campus will foster ecosystem health and create a beautiful, safe outside space for all.

## PROJECT UPDATES

One MS student in Sustainable Engineering has completed their Master's thesis on this topic and a current student will continue this research.

## PROJECT OUTCOMES

- Increase proportion of native plant species
- Decrease the proportion of alien or invasive plant species
- Create synergies with the biosphere to reduce pollutant concentrations

## AFFECTED METRICS



Metric	Metric Description	2021 Key Result
14.4	Average efficiency of green and best management practice (BMP) infrastructure in terms of reducing pollutant loads. This includes raingardens, constructed wetlands, and green roofs.	Assess the load of pollutants in Villanova's runoff.
15.1	Carbon sequestered per year by Villanova's campus ecosystem.	Measure the total mass of carbon captured by biomass on campus.
15.2	Portion of campus considered Green space and/or covered by trees. Includes green roofs.	Develop a comprehensive report of Villanova's campus biodiversity.
15.3	Proportion of campus biosphere considered to be an alien or invasive species.	
15.4	Percentage of campus managed under sustainable landscape management practices or an equivalent third party certification.	