



## 2020 Sustainability Research Projects

In Holland, we believe that in order to become a vibrant, world-class community we must look at all aspects of our community. This includes the economic, social and environmental impacts we all have. Our City of Holland Sustainability Committee has created a seven-pillar framework with “lenses” to help us evaluate and make more sustainable choices.

### Framework Categories

SMART ENERGY | ECONOMIC DEVELOPMENT | TRANSPORTATION | COMMUNITY & NEIGHBORHOOD  
QUALITY OF LIFE | COMMUNITY KNOWLEDGE | ENVIRONMENTAL ACTION & AWARENESS

For more information about the framework visit: [www.hollandsustainabilityreport.org](http://www.hollandsustainabilityreport.org)

This framework incorporates a triple bottom line evaluation approach and we have used this model as a way to identify the 2020 Sustainability Research Projects at this year’s [Hope College Celebration of Undergraduate Research and Creative Activity \(CURCA\)](#). The Holland-Hope College Sustainability Institute would like to formally recognize the following projects.

**SMART ENERGY** | Our way of living requires a stream of energy to operate personal and infrastructure devices. We know that energy is produced with scarce resources and the byproducts impact our environment. We need to use both conservation and efficiency measures to manage the resources we have to provide access to reliable and cost effective energy.

Kameron Wilcox	Dr. Jennifer Hampton, Physics	Aqueous and Non-Aqueous Characterization of the Charge Storage of Prussian Blue Analogues with Varying Modification Procedures
Cédric Porter	Dr. Jeffrey Christians, Engineering	Improved Surface Passivation of Halide Perovskite Quantum Dots Using 5-AVA
Zach Wylie	Dr. Jeffrey Christians, Engineering	Vapor Initiated Crystal Phase Transition of Cesium Halide Perovskites
Elizabeth Cutlip	Dr. Jeffrey Christians, Engineering	Interactions between 2D Halide Perovskite Materials and Methylamine

**ECONOMIC DEVELOPMENT** | The business community is the driving engine within the area. While it is dependent on community resources and structure for support, it generates capital essential to growth and development.

Conor Burns	Dr. Virginia Beard, Political Science	Blood, Sweat, and Tears: Impacts of the Resource Curse across Africa
Natalie Harten	Dr. Virginia Beard, Political Science	The Resource Curse in Africa
Ruth Holloway	Dr. Virginia Beard, Political Science	Foreign Aid in Africa: An Analysis of Soviet Influence on the Subcontinent



## 2020 Sustainability Research Projects

Madison Smith	Dr. Virginia Beard, Political Science	The Resource Curse in Africa
Sungmin Suh	Dr. Virginia Beard, Political Science	Setback of Foreign Aid in Sub-Saharan Africa
Michelle Abraham	Dr. Virginia Beard, Political Science	Democratic Development of Africa

**COMMUNITY & NEIGHBORHOOD** | The fiber of our lives can be traced to the places we live and the individuals we interact with on a daily basis. The places we live support the development of our personalities and perspectives on life. Communities at all scales have a vital role to play. Encouraging vital and effective communities is an important element.

Emily Dodge, Jessica Dani Bernal, Kara Mosher	Dr. Carrie Bredow, Psychology	Like Father, Like Partner? The Influence of Opposite-Sex Parents on Implicit and Explicit Mate Preferences
Emily Zolman, Johan Buurma, Nathaniel Hentschel	Dr. Benjamin Meagher, Psychology	Observing Intellectual Humility within Small Group Synergy
Anna Hagner, Emily Dodge, Taylor Dolan, Carley Laird, Max Stremmer, Johan Buurma, Miranda Byl, Alex Thompson	Dr. Lindsey Root Luna, Psychology and Dr. Charlotte Witvliet, Psychology	Accountability and Heart Rate Variability: An Experimental Investigation of States
Ashley Hayden	Dr. Charlotte Witvliet, Psychology and Dr. Lindsey Root-Luna, Psychology	Different Mindsets Impact the Willingness to be Accountable to a Real-life Supervisor
Ashley Hayden	Dr. Charlotte Witvliet, Psychology and Dr. Gerald Griffin, Psychology	Why is Accountability a Struggle for Some and Not Others? Empathy is Key
Carley Laird, Anna Hagner, Alex Thompson, Miranda Byl, Johan Buurma, Taylor Dolan, Emily Dodge, Max Stremmer	Dr. Charlotte Witvliet, Psychology and Dr. Root Luna, Psychology	Predictors of Trait Accountability: Heart Rate Variability and Self-Regulation
Natalie Trout, Maya Newell	Dr. Mary Inman, Psychology	The Role of Group Pride, Sympathy, & Guilt in Changing Privileged Groups' Views of Racism
Lauren Balder, Lesly Silva	Dr. Benjamin R. Meagher, Psychology	Is Your Side the Only Side? Influence of Myside Bias on Intellectual Humility
Rachel Netz, Matthew Werkman	Dr. Benjamin R. Meagher, Psychology	Is Hindsight 20/20? Evaluating Hindsight Bias in Relation to Intellectual Humility
Isabel Cunningham, Mia Wiley	Dr. Benjamin R. Meagher, Psychology	Are You Right or Just Overconfident? The Relationship between Overconfidence and Intellectual Humility



## 2020 Sustainability Research Projects

Sean Porath	Dr. Benjamin R. Meagher, Psychology	Humble Success: Does collective intellectual humility lead to more effective group work?
Bradley Dixon, Lauren Thorne	Dr. Lindsey Root Luna, Psychology	Using Daily Diary Methods to Evaluate the Effect of Emotion Regulation Interventions on Affect, Rumination, and Forgiveness
Cameron Smith	Amy Otis, Phelps Scholars Program	LGBTQ+ People in the Church: An Introduction, Identity Formation, and Next Steps
Emily Wolfe	Rev. Dr. Lynn Japinga, Religion; Dr. Marsley Kehoe, Art History; Dr. Kristen Gray, CAPS	Collective History of the LGBTQ Experience at Hope College

**QUALITY OF LIFE** | Ultimately, it is the feelings and state of mind of individuals in the collective that make up a community's quality of life. The community through governmental, religious, business and social organization, makes decisions and supports actions that contribute to the community's well being.

Amelia Schroeder	Dr. Aaron B. Franzen, Sociology and Dr. Barbara Vincensi RN FNP, Nursing	Protective Factors for Healthcare Burnout
Kelly Gryniwicz	Dr. Aaron B. Franzen, Sociology	The Effect of Pre-Health Students' Mental Health on Empathy
Melissa Korte	Dr. Aaron B. Franzen, Sociology	The Relationship between Perceived Cultural Fit and Overall Health
Aubrey Brolsma	Dr. Charles Green, Psychology	Oppression and Resistance: The Story of Native Hawaiians and Their Fight for Legal and Cultural Freedom
Carolyn Cooper	Dr. Pauline Remy, Modern and Classical Languages	Sociopolitical factors contributing to the Ebola epidemic in Guinea, West Africa
Kianna Novak, Paige Rosenbrook	Dr. Brooke Odle, Engineering	Effects of Neural Stimulation on Performance of Independent Transfers across Surfaces of Different Heights
Victoria Gardner, Nina Cuthrell	Dr. Alyssa Cheadle, Psychology	How do Resilience Resources Change in Response to Acute Stress?
Amy Osterbaan	Dr. Alyssa Cheadle, Psychology and Dr. Daryl Van Tongeren, Psychology	Religious Residue Effect in Health Behaviors of Adults
Kimberly Paquette	Dr. Alyssa Cheadle, Psychology and Dr. Jared Ortiz, Religion	Disability, Religiousness, & Spirituality
Hannah Bugg, Victoria Gardner	Dr. Lindsey Root Luna, Psychology	Trust Thy Neighbor: Examining Trust In Religious Outgroups
Taylor Richmond, Carolyn Priebe, Matthew Severino, Kelly Teahan	Dr. Daryl Van Tongeren, Psychology	How Religious Priming Affects Attitudes about Immigration



## 2020 Sustainability Research Projects

Matthew Severino, Carolyn Priebe, Kelly Teahan and Taylor Richmond	Dr. Daryl Van Tongeren, Psychology	Intellectual Humility and Political Disagreement
Kelly Teahan	Dr. Daryl Van Tongerne, Psychology	Does Humility Compensate for Incompetence? An Empirical Investigation of Leader Perceptions
Reed Hanson	Rev. Dr. Trygve Johnson, Campus Ministries and Dr. Jeanne Petit, History	The Faith History of Hope College
Emma DesLauriers-Knop	Dr. Virginia Beard, Political Science	Distinctions between Democratic Developments in Africa: Different Journeys for Similar Outcomes?
Isabella Musherure	Dr. Virginia Beard, Political Science	Democratic Development in Africa
Marvellous Ogudoro	Dr. Charles Green, Psychology	Population, Politics and Power: An Investigation into the Tribal Systems Governing Nigeria's Democracy after the 1967 Civil War
Kayla Lang	Dr. Marissa Doshi, Communication	Selling Body Positivity
Eliese Moelker, Paulina Kozan, Mikaela Stephen, Nathan Koorndyk	Dr. Phillip Rivera, Biology	Optimizing Protein Precipitation Methods in Human Hair and Nail Samples
Kworweinski Lafontant, Emma Cole, Anna Cole, Josiah Thompson	Dr. Kirk Brumels, Kinesiology and Dr. Maureen Dunn, Kinesiology	Hope4Balance: The Effects of a 6-Week Balance Intervention on an Assisted Living Facility Population
Hannah Santiago	Dr. Pablo Peschiera, English	Unaccompanied Alien Children and Foster Care
Anna Koenig	Kasey Stevens, Phelps Scholars Program	Struggles with Identity as it Pertains to the Future of a DACA Participant

**COMMUNITY KNOWLEDGE |** The collective knowledge of the community is an incredible resource. The ability to tap into this wisdom is essential for continued growth. In both formal and informal channels, the community's knowledge and energy must be channeled to where it is needed.

Fara Ling	Dr Kristen Gray, Phelps Scholars Program	Primary and Secondary Education for Refugee Children in Malaysia: Facing Barriers with Resilience
Isadora Baughman	Dr. Benjamin Meagher, Psychology and Dr. Christiana Salah, English	Can Reading Help Us Be Better People? The Effect of Reading on Wise Reasoning
Stephen Hommowun	Dr. Virginia Beard, Political Science	Global Technologies: A Discussion Regarding the Digital Divide
Taylor Spanbauer	Dr. Virginia Beard, Political Science	The Digital Divide in Sub-Saharan Africa



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Samantha Mattingly	Dr. Sarah Southard, Music	"Freedom's Comin' and It Won't Be Long": The Impact of the Oral Tradition on the Civil Rights Movement
Hailey Schumann	Dr. Pablo Peschiera, Phelps Scholars	The Loss of Native Tongues: An Examination of the ongoing Extinction of Indigenous Languages throughout the United States
Jenna Savage	Dr. Joanne Stewart, Chemistry	Inorganic Chemistry Faculty Value Student-Centered Learning, but Time Constraints and Student Evaluations Discourage Change

**ENVIRONMENTAL ACTION & AWARENESS** | The natural and built environments interact with one another over time with intended and unintended consequences. Educating the public on environmental protection and integrating these ideas into our city planning can change negative outcomes of the past and improve our future state.

Haley Balkema, Lauren Quillan, Josie VanderKolk	Dr. Andrew Gall, Psychology; Dr. Stephen Scogin, Education; Dr. Sophia D'Agostino, Education; and Dr. Sonja Trent-Brown, Psychology	Psychological Impacts of Nature-Based Education
Baylee Kurzynski	Susan Ipri Brown, Engineering	Local Air Quality Data Categorization to Improve Environmental Science Education
Brittany Henkin, Thomas Diaz, Sunnie(Yutong) Zou	Dr. Jianhua Li, Biology and Dr. Kenneth Brown	Paclitaxol in Hazelnuts: Secondary Compound for Cancer Treatment
Sunnie (Yutong) Zou, Brittany Henkin, Thomas Diaz	Dr. Jianhua Li, Biology	Beaked Hazelnuts in North America: One or two species?
Daniel Clyde	Ronald Reimink, Campus Ministries	Intermediate Lake Swimmer's Itch Assessment and Evaluation of a Novel Schistosome Species Found in Helisoma sp. Snails
Morgan Sherrard, Madisyn Miller	Dr. Kelly Ronald, Biology and Dr. Megan Gall, Vassar College	The Effect of Deer Browsing on Chromatic Contrast of Brown-Headed Cowbirds in Different Forest Types
Madeleine Rabitoy	Dr. Brent Krueger, Chemistry and Dr. Aaron Best, Biology	Understanding Water Quality in the Lake Macatawa Watershed Using Machine Learning
Eric Leu	Dr. Brian Yurk, Mathematics	Identifying Cloud Forest Landslides in Satellite Imagery: A Machine Learning Approach

*We believe the Christian faith calls us to care for all of God's creation and ensure preservation for generations to come. We realize it is through our daily actions that we can make a big impact and create a better world for every individual, as one created and loved by God.*

*Called to be global citizens, we will engage the world constructively through our teaching, research, and community service in order to shape Hope College into a model of sustainability and be a force for good in the world.*

*Congratulations and thank you to all of the students and faculty for their hard work this year!*

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