

## Lauren Withycombe Keeler, Ph.D.

Assistant Professor, School for the Future of Innovation in Society,  
College of Global Futures, Arizona State University,  
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### Education

#### **Doctor of Philosophy, Sustainability, May 14, 2014**

School of Sustainability, Arizona State University, Tempe, Arizona

Dissertation: *Quenching our thirst for future knowledge: Participatory scenario construction and sustainable water governance in a desert city*

#### **Master of Arts, Sustainability, August 7, 2010**

School of Sustainability, Arizona State University, Tempe, Arizona

Thesis: *Anticipatory competence as a key competence in sustainability education*

#### **Bachelor of Arts with University Honors, Spanish, August 6, 2007**

College of Liberal Arts and Sciences, Arizona State University, Tempe, Arizona, Cum Laude

### Current Positions

**Assistant Professor**, School for the Future of Innovation in Society, Arizona State University (ASU), August 2019 to Present.

**Program Chair**, Innovation in Society Undergraduate Program, School for the Future of Innovation in Society, Arizona State University

**Senior Global Futures Scholar**, Julie Ann Wrigley Global Futures Laboratory, ASU

**Associate Editor**, *Frontiers in Sustainable Cities: Governance and Innovation*

**Member**, ASU – Salt River Project Strategic Partnership Steering Committee

### Professional Experience

**Assistant Research Professor**, School for the Future of Innovation in Society, ASU, 9/2018 – 9/2019

**Visiting Assistant Professor**, School for the Future of Innovation in Society, ASU, 8/2016 – 8/2017

**Postdoctoral Fellow**, Center for Nanotechnology in Society, ASU, 8/2015 – 8/2016

**Postdoctoral Scientist and Lecturer**, Faculty of Sustainability, Leuphana University, Lüneburg, Germany, 7/2014 – 7/2015

**Graduate Research Associate**, Decision Center for a Desert City, Global Institute of Sustainability, ASU, 8/2010 – 5/2014

# RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITIES

## Publications

Notes:

- **Legend:** \*Graduate student or postdoc; ^Community collaborator, 2022-2023, 2020-2021
- **Authorship and ordering:** My research is highly collaborative, as I seek to conduct research that is applied and that contributes to addressing challenges at the intersection of sustainability and innovation. I co-author papers with colleagues and graduate students who actively participate in the work and contribute ideas and input to the papers. In papers where I appear as first author, I have taken the lead in study design and writing results. I assume second or third author on works led by students, where they have generated the research ideas and I have served as mentor and guide in research and writing. In all other cases authorship follows standard social science author ordering practices.

- **Citations:** A summary of yearly growth in citations from google scholar is provided to the left Key citation appears in the figure and is summarized below:

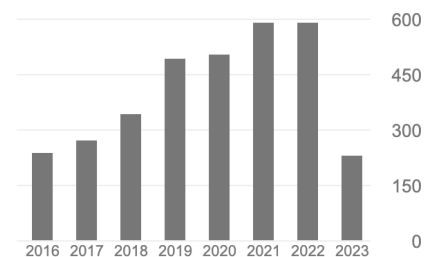
- Total citations as of 06/5/2023: 3782
- h-index: 16 (all) and 15 (since 2018)
- i10-index: 18 (all) and 17 (since 2018)

Citations for each article appear in brackets at the end of each citation.

- **Journals:** My research is problem-oriented and therefore draws on and speaks to many scholarly communities including sustainability and environmental science, climate change, business, policy and futures. My work appears in journals, books and popular publications, and includes policy documents. Below is an alphabetical list of journals in which my articles appear:

- *Agricultural Water Management*
- *Ambio*
- *Cities*
- *Environmental Practice*
- *Environmental Science and Policy*
- *Futures*
- *Frontiers in Sustainable Cities*
- *Frontiers in Sustainable Food Systems*
- *International Journal of Foresight and Innovation Policy*
- *Journal of Cleaner Production*
- *Journal of Environmental Management*
- *Journal of International Education in Business*
- *Sustainability*
- *Sustainability and Climate Change*
- *Sustainability Science*
- *Urban Transformations*
- *Urban Geography*

	All	Since 2018
Citations	3782	2747
h-index	16	15
i10-index	18	17



## Refereed Articles and Book Chapters by Date

25. Caughman L\*, Keeler LW, Beaudoin F (accepted). Optimizing city-university partnerships for knowledge co-production, capacity-building, and urban transformation. *Urban Transformations*.
24. Boyle L\*, Harlow J, Keeler LW, et al. (2023). (De)volving Smartness: Exploring the changing modalities of smart city making in Africa. *Urban Geography*.  
<https://doi.org/10.1080/02723638.2023.2213035>
23. Forrest, N.\*, Wiek, A., & Keeler, L. W. Accelerating the Transformation to a Sustainable Food Economy by Strengthening the Sustainable Entrepreneurial Ecosystem. *Frontiers in Sustainable Food Systems*, 6, 678.

*This article outlines our approach to sustainable food system transformation, applied in the Belmont Forum Funded project GLOCULL: Global to Local Urban Living Labs. I led the project and co-led the development of the framework. Here we demonstrate how transformation of the food economy requires an ecosystem approach that builds capacity and connections across all parts of the food economy.*

22. Keeler, L.W., Beaudoin, F., Cid, A\*. et al. Building transformative city-university sustainability partnerships: the Audacious Partnerships Process. *Urban Transform* 5, 1 (2023).  
<https://doi.org/10.1186/s42854-022-00045-5>

*This article is the culmination of several years of studying partnerships in the CapaCities network. In the article, we propose a process for developing transformative partnerships between cities and universities in order to advance urban sustainability transformations. I led the development of the process, which was tested at four city-university partnerships in four countries, as well as the writing of the results.*

21. Keeler W, Bernstein M, Kay B^, Nelson JP\* (2022). AudaCITY: A capacity building research method for urban sustainability transformation. *Frontiers in Sustainable Cities*.  
**DOI: 10.3389/frsc.2022.837578 [Citations: 1]**

*This article summarizes a game which I created, in collaboration with a research colleague, a graduate student, and the sustainability director of the City of Tempe. The game is a collaborative backcasting game that helps city staff envision long-term sustainability transformations in their city and to connect those transformations with catalytic actions they can take as part of their professional responsibilities. I led the development of the game and the writing of the results. The game was played with City of Tempe and the City of Portland. The work was part of the CapaCities project which I co-led for 5 years. The game directly contributed to efforts within the City of Tempe to craft their first Climate Action Plan.*

20. Randles, S., Dewick, P., Hannan, E., Nicholson, D. T., Rietbergen, M., Taylor, C., ... & Keeler, L. W. (2022). Applying enquiry and problem based learning to mission-oriented innovation policy: from policy to pedagogy to teaching and learning practice. *Journal of International Education in Business*.
19. Keeler LW, Bernstein M (2021). The Future of Aging in Smart Environments: Scenarios of the United States in 2050. *Futures*, 13, October 2021. [Citations 9]

*This article summarizes the results of a participatory scenario development process and the process itself, which I have refined through many years of scenario work. I led the research and writing for this article with significant collaboration from Michael Bernstein. In July 2022, I was invited to share the results of this work with the Centers for Disease Control and Prevention as part of their ongoing efforts to improve their foresight capabilities.*

18. **Caughman L\*, Withycombe Keeler L, & Beaudoin F. (2020). Real-Time Evaluation of City–University Partnerships for Sustainability and Resilience. *Sustainability*, 12(21), 8796. [Citations: 8]**

*Liliana Caughman was a graduate student from Portland State who did her dissertation research as part of the CapaCities project. I helped Liliana design and implement the research and write up the results.*

17. **Nazemi N\*, Foley R W, Louis G, & Keeler LW. (2020). Divergent agricultural water governance scenarios: The case of Zayanderud basin, Iran. *Agricultural Water Management*, 229, 105921. [Citations: 17]**

*This was Neda Nazemi’s master’s thesis. She came to Tempe for a week and we worked on the formative scenario analysis method for her research. I worked on the method portion of the manuscript and the response to reviewers about the approach.*

16. **Keeler LW, Beaudoin F, Wiek A et al. (2019). Building actor-centric transformative capacity through city-university partnerships. *Ambio* 48(5), 529-538. [Citations: 29]**

*This paper is a central output of the CapaCities project. In it, we define the objective of capacity-building efforts in our city university partnerships. This paper lays out the concept of actor-centric transformative capacity. It has been used in the design of city university partnerships between Kings College London and Westminster, Dublin City University and the City of Dublin, Arizona State University and the City of Tempe, and Portland State University and the City of Portland. I led the research and writing for this article as part of the CapaCities grant.*

15. **Keeler LW, Bernstein M, Selin C (2019) Intervening through Futures for Sustainable Presents: Scenarios, sustainability, and responsible research and innovation. In Losch A and Grunwald A (Eds.) *Socio-technical Futures Shaping the Present. Empirical Examples and Analytical Challenges in STS and Technology Assessment*. Springer, New York. [Citations: 18]**

*This chapter outlines the scenario approach used at the Center for Nanotechnology in Society, at Arizona State University and links the key steps of the participatory process to sustainability competencies. The article argues for the integration of sustainability and responsible innovation concepts. I led the research and writing for this chapter. It was based on scenario studies conducted with scientists and engineers at ASU during my post doc in 2015-2016. The chapter was written in 2017, revised in 2018, and published in 2019.*

14. **Keeler LW, Beaudoin F, Lerner A, John B\* et al. (2018). Transferring sustainability solutions across contexts through city-university partnerships. *Sustainability* 10(9), DOI: 10.3390/su10092966. [Citations: 33]**

*This article argues that city-university knowledge networks are central to sustainability transformation and are an underutilized resource for both sustainability science and practice. I led the research and writing for this article as part of the CapaCities grant.*

13. **Caniglia G, Luederitz C\*, Groß M\*, Muhr M\*, John B\*, Keeler LW, von Wehrden H, Laubichler MD, Wiek A, Lang DJ. (2017) Transnational Collaboration for Sustainability in Higher Education: Lessons from a Systematic Review. *Journal of Cleaner Production* 168c, p764-779. [Citations: 75]**

*I reviewed the outline for the article and contributed edits to the manuscript. It draws on my previous research on international networks in sustainability science.*

12. **Keeler LW**, Gabriele A\*, Wiek A, Kay B^ (2017) Future shocks and city resilience: Building organizational capacity for resilience and sustainability through game play and ways of thinking. *Sustainability and Climate Change* 10(5), p282-292. [Citations: 13]

*This article summarizes the Future Shocks and City Resilience game I created in 2016 as part of partnership with the City of Tempe sponsored by the National League of Cities. The game helps city staff consider how they respond to acute social and environmental shocks, including water contamination events and pandemic flus. It was played in the City of Tempe, AZ, the City of Bozeman, MT, and translated to Spanish and played with Mexico City, and translated to German played with the City of Leuneburg. For this game, I was awarded the 2019 Joseph Jaworski Next Generation Foresight Practitioners Special Award for North America.*

11. **Keeler LW**, Wiek A, Lang D, et al. (2016) Utilizing international networks for accelerating research and learning in transformational sustainability science. *Sustainability Science*. DOI 10.1007/s11625-016-0364-6 [Citations: 48]
10. Wiek A, Kuzdas C, Foley R, **Keeler LW**, Forrest N, Kay B. (2016) Sustainability assessments designed for multiple functions. In: R Gibson (ed) *Sustainability Assessment: Applications and Opportunities*. Routledge, New York. [Citations: 0]
9. John B\*, **Keeler LW**, Lang D, Wiek A. (2015) How much sustainability substance is in urban visions? *Cities* 48, pp. 86-98. [Citations: 70]
8. **Keeler LW**, Wiek A, White D, Sampson D. (2015) Linking stakeholder survey, scenario analysis, and simulation modeling to explore the long-term impacts of regional water governance regimes. *Environmental Science and Policy* 48, pp. 237-249. [Citations: 46]
7. White DD, **Keeler LW**, Wiek A, Larson KL. (2015) Envisioning the future of water governance: A survey of central Arizona water decision makers. *Environmental Practice*, 17(01), 25-35. [Citations: 22]
6. Wiek A, Bernstein M, Foley R, Cohen M, Forrest N, Kuzdas C, Kay B, **Keeler LW**. Operationalising Competencies in Higher Education for Sustainable Development. (2015) In: Barth M, Michelson G, Rieckmann M, Thomas I (Eds.) *Handbook of Higher Education for Sustainable Development*. Routledge, London. [Citations: 397]
5. Wiek A, Kuzdas C, Foley R, **Keeler LW**, Forrest N, Kay B. (2014) Sustainability of water resources, nanotechnologies, and communities – Designing sustainability assessments for impactful outcomes. In: Gibson, R. (Ed.) *Sustainability Assessment – Applications and Opportunities*. Earthscan, London. [Citations: 0]
4. Wiek A, **Keeler LW**, Schweizer V, Lang D (2013) Plausibility indications in future scenarios. *International Journal of Foresight and Innovation Policy* 9(2/3/4), 133-147. [Citations: 55]
3. Larson L, Wiek A, **Keeler LW** (2012) A comprehensive sustainability appraisal of water in Phoenix, AZ. *Journal of Environmental Management* 116, 58-71. [Citations: 66]
2. Wiek A, **Withycombe L**, Redman C (2011) Key competencies in sustainability – A reference framework for academic program development, *Sustainability Science* 6(2), 203-218. [Citations: 2603]
1. Wiek A, **Withycombe L**, Redman C (2011) Moving forward on competence in sustainability research and problem solving. *Environment* 53(2), 3-13. [Citations: 180]

## Major Reports and Policy Documents

6. Keeler, LW, Harlow JC, Boyle L. (2023). Four Scenarios and their Implications for Clean Energy Transitions. Tempe, Arizona: Arizona State University School for the Future of Innovation in Society, Global Futures Laboratory, and The Global KAITEKI Center. Workshop Report.
5. Miller C, Keeler LW, Loughman J, Davis B. 2022. Pathways to a Low Carbon Future for the Arizona Economy. Tempe, Arizona: Arizona State University, School for the Future of Innovation in Society, College of Global Futures. Report. DOI 10.17605/OSF.IO/DRT7X

*I co-led the research design, facilitated the stakeholder workshops and co-led the writing of research results.*

4. Keeler LW, Kay B<sup>^</sup>, et. al (2019). City of Tempe Climate Action Plan. Approved by Tempe City Council November 7, 2019. <https://www.tempe.gov/home/showdocument?id=78674>

*I led the community engagement for the climate action plan which included public and stakeholder engagement. From these conversations came the 12 actions in the climate action plan. Passing the plan included several public testimonies in front of City Council. I continue to engage with the city of Tempe on these and other actions to address climate change in the city.*

3. Keeler LW (2018). Structuring Sustainability at the City of Tempe. Report prepared for the Deputy City Manager of Tempe, Steven Methvin, May 2018.

*I conducted interviews with 41 city administrators, analyzed the results and prepared the report.*

2. Keeler LW, Halden, R. and C. Selin (2016). The Future of Wastewater Sensing Guide. Center for Nanotechnology and Society, Arizona State University. Handle: <http://hdl.handle.net/2286/R.1.49794>
1. Keeler LW, Dengi A, Selin C (2016). The Internet of Things: A Primer. *Center for Nanotechnology and Society Report*. CNS – ASU Report #R16-0001.

## Non-refereed and Popular Publications

5. Keeler LW (2021). Freetails, Freedom, and Community in a Solar-Powered Future. In J Eschrich and R Wiley (Eds). *Cities of Light*.
4. Beaudoin F, Keeler LW, Caughman L\*, Bernert P\* (2019). Building strategic city-university partnerships to support progress on urban resilience implementation. Conference publication. International Forum on Urbanism.
3. Keeler LW (2019) All Politics is Glocal. In J Eschrich and R Wiley (Eds). *The Weight of Light: A Collection of Solar Futures*.
2. Keeler LW, Foley R. (2015) The Monster and the polar bears: Constructing the future knowledge landscape of synthetic biology to inform responsible innovation. *Journal of Responsible Innovation* 2(1), pp. 81-84. [Citations: 2]
1. Keeler LW (2015). What options does Phoenix, Arizona, USA have for averting a California-like water crisis? *Global Water Forum, September 7, 2015*. Retrieved from: <https://globalwaterforum.org/2015/09/07/what-options-does-phoenix-arizona-usa-have-for-averting-a-california-like-water-crisis/>

## Grants

### Summary of Awards with Share of Funded Awards Attributed to LW Keeler

Title	Role	Award Amount	Share of Total Award
Social Value of Innovation and Business for a KAITEKI Future	PI	209,000	104,500
JRP (SRP) Integrating Equity into SRP Operations and Planning	Co-PI	250,000	50,000
JRP (SRP) Strategic Pathways to a Just and Low Carbon Future for Arizona	Co-PI	50,000	25,000
Visualizing and Quantifying the Social Value of Future Business	PI	600,000	240,000
CapaCities: Building Capacity for sustainability and resilience through city-university partnerships	Co-PI	98,250	19,000
JRP (SRP) Planning for a Low-Carbon Future at the Salt River Project	PI	50,000	25,000
Storytelling Robots to Assist Older Adults with Dementia and Their Caregivers	Co-PI	124,144	24,828.80
GLOCULL – Global to Local Collaboration on Urban Living Laboratories	PI	€1,846,686	255,816.80
CapaCity: Building CapaCity for Climate Resilience and Sustainability in Cities.	Co-PI	100,000	22,500
United States Ambassador Training Program	Co-PI	75,000	36,500
CapaCity – Building Sustainability Implementation Capacity in City Staff and Leadership	Co-PI	125,000	19,000
The Sustainability Review: Sharing Sustainability Science with the World.	PI	30,000	30,000
<b>Total share of award dollars</b>			<b>\$827,145.60</b>

13. JRP (SRP) Integrating Equity into SRP Operations and Planning. SRP-Salt River Project. Role: Co-PI. Clark Miller, PI. \$250,000. 7/1/2022 – 6/30/2023

*As CO-PI I am responsible for co-leading the working group of SRP leadership through an process to define equity for the organization and engagement communities in establishing equity processes and goals for the organization.*

12. Social Value of Innovation and Business for a KAITEKI Future. The Global KAITEKI Center. Role: PI. \$150,000 +\$50,000 supplement. Rec./RID/IIA 70%. 4/1/2022 – 3/31/2023

11. Visualizing and Quantifying the Social Value of Future Business. The KAITEKI Institute. Role: PI. \$600,000. Rec./RID/IIA 40%. 4/1/2019-3/31/2022

*As PI, my role is to develop the concept of social value with the project team, develop and implement the social value visualization and quantification tool kit, and design the organizational infrastructure that will become the social value observatory.*

10. CapaCities: Building Capacity for sustainability and resilience through city university partnerships. Global Consortium for Sustainability Outcomes. Role: Co-PI. \$98,250. ASU Award \$19,000. Rec. 100%. 9/1/2019 – 12/31/2021 (received no cost extension from 12/31/2020 to 12/31/2021)

*Since 2017, I have co-led the CapaCities project with Fletcher Beaudoin of PSU. In collaboration with Fletcher, I wrote the grant proposal and conducted the research that led to the focus on city-university partnerships and game-based approaches for improving these collaborations.*



9. JRP (SRP) Planning for a Low-Carbon Future at the Salt River Project. SRP-Salt River Project. Role: PI. Clark Miller, Co-PI. \$50,000. 7/22/2020 – 7/21/2021.

*I co-lead the Low-Carbon Future project with Clark Miller. My role is to design and lead participatory workshops to develop the pathways, oversee student work, and write up results.*

8. Storytelling Robots to Assist Older Adults with Dementia and Their Caregivers. The Zimin Institute. Role: Co-PI. \$124,144. Rec/RID/IIA 20%.

*I co-advise Jordan Miller, a PhD student, on the societal aspects of this project.*

7. GLOCULL – Global to Local Collaboration on Urban Living Laboratories. Belmont Forum. Role: Co-PI. €1,846,686. ASU Award: \$319,771. Rec./RID/IIA 80%, \$255,816.80. 9/2018 – 3/2021.

*Since 2018 I have co-led this project with Arnim Wiek in the School of Sustainability. This year, with our colleagues at Local First Arizona Foundation, City of Phoenix, and City of Tempe, we've successfully stood up a sustainable food business accelerator and have two pilot projects underway.*

6. NSF CNS – A SenSIP REU Site on Devices and Algorithms, PI: A. Spanias, Co-PI J. Blain-Christen, Role: Senior Personnel. \$330,000. 2017-Jan. 2020.
5. CapaCity: Building CapaCity for Climate Resilience and Sustainability in Cities. Project PI and ASU PI: Lauren Withycombe Keeler. Global Consortium for Sustainability Outcomes. \$100,000. Rec/RID/IIA 100% of ASU Award, \$22,500. 2/2018 – 3/2019.
4. United States Ambassador Training Program. Co-Investigator: Lauren Withycombe Keeler, with Erik Johnston, Kenneth Eklund, Michael Bennett, et al. American Academy of Diplomacy. \$150,000. January – November, 2018. Rec. 50%, \$75,000.00.
3. Risk Innovation Accelerator. Co-Investigator: Lauren Withycombe Keeler. PI: Andrew Maynard. ASU Knowledge Enterprise Development seed funding. \$250,000, 2017 – 2019.
2. CapaCity – Building Sustainability Implementation Capacity in City Staff and Leadership. Co-PI: Lauren Withycombe Keeler, PI Fletcher Beaudoin. Global Consortium for Sustainability Outcomes. Total award: \$125,000. Rec. 100% of ASU Award, \$19,000. 2/2017-1/2018.
1. Woman and Philanthropy Grant. *The Sustainability Review: Sharing Sustainability Science with the World*. \$30,200. May 2013 – May 2014

#### Submitted

1. Wastewater-based Epidemiology for Public Health Monitoring Toward Pandemic Resilience. National Science Foundation: Smart and Connected Communities, February 2021. PI: Keeler. Total Sponsor Budget: \$750,000. Rec/RID/IIA: 40%.

#### Other Creative Products

**AudaCITY for Partnerships** – This game was created based on research in the CapaCities network on how to create better city university partnerships. The game provides a framework to build transformative partnerships and was created in collaboration with Fletcher Beaudoin from Portland State University. There are digital and physical versions of the game. The game was played by ASU and the City of Tempe, National Autonomous University of Mexico and Mexico City (UNAM) (translated into Spanish), Kings College London and the city of Westminster, and Dublin City University and the City of Dublin.



**Future Shocks and City Resilience** – This game was created to build futures thinking and sustainability capacity in city administrations. The goal was to create a lightweight tool that any city government can use to understand the assets it has at its disposal to prepare for and respond to social and environmental disturbances. It was in the US by the City of Tempe, the City of Bozeman, MT, and chapter leaders on the Navajo Nation. Through the CapaCities network, the game was translated into German and Spanish and played by the City of Lüneburg (DE), the City of Karlsruhe (DE) and Mexico City. In 2019, I was awarded the Joseph Jarowski Next Generation Foresight Practitioner’s Special Award for North America for this game.

**AudaCITY** – This game was created in collaboration with Michael Bernstein, JP Nelson\* and Dr. Braden Kay^ at the City of Tempe. The purpose of the game is to build transformative capacity in city administrators by helping them set audacious sustainability goals and find pathways to sustainable futures through actions they can take in their current professional roles. The game was played with the City of Tempe and the City of Portland.

**American Dream Tarot** – This game was created with Michael Bennett and students in the HSD 598: Future of the American Dream course. The game guides players through conversations on alternative futures for the American dream. It has been played with students and members of the public at Emerge; A Festival of Futures, at First Friday in downtown Phoenix, and in Farragut Square in Washington DC two weeks before the 2016 Presidential election. The game is still regularly used in teaching and outreach settings. It builds futures thinking capacity and facilitates novel, hopeful, and civil dialogue about the American Dream.

## Workshops, Conferences, and Presentations

### Invited Talks

11. **Scenarios and storytelling to support strategic and policy planning: A case study of the future of ageing in smart environments.** Invited Talk (virtual) to the Centers for Disease Control and Prevention, July 21, 2022.
10. **Decarbonization Dividends: Opportunities and Challenges for a Just Transition.** Invited Talk (virtual) as part of Problems and Solutions for Decarbonisation and Energy Transition: a Cross-National Dialogue. Held Virtually: December 7-9, 2021.
9. **Tempe Chamber of Commerce Sustainability Summit.** Panelist in the Emerging Issues Forum. Held virtually April 9, 2021.
8. [Gaming the Future: Creativity and Foresight in Professional Practice](#). New Tools for Science Policy Talk, April 26, 2019. Washington, DC, USA.
7. The Opportunity of the Future. Occasional Talk at ASU School for the Future of Innovation in Society, Tempe, AZ. November 27, 2018.
6. Building Future Resilient and Sustainable Cities. Keynote Presentation. Sonoran Institute. February 28, 2018.
5. Capacity Building for Transformation. Withycombe Keeler L. Presentation. Navajo Resilience Conference, Flagstaff, Arizona, August 30, 2017.
4. Future Shocks and City Resilience. “Designated Disruptor” Withycombe Keeler L. Oxford Futures Forum. Oxford, UK, June 2-3, 2017.

3. Future Shocks and Community Resilience. Withycombe Keeler L and Kay B. Keynote Presentation. Navajo Governance Conference 2017. Albuquerque, NM, USA, February 17-18, 2017.
2. Incorporating sustainability competencies into undergraduate education programs. Wiek A, Withycombe Keeler L. Invited Workshop. Tec de Monterrey, Mexico City, Mexico, January 9-10, 2013.
1. Pragmatic criteria for assessing the plausibility of future scenarios: A case study of value-based future scenarios of water in central Arizona. Withycombe Keeler L. Presentation. Ethics, Plausibility, and Innovation Workshop, European Union Joint Research Centre, Ispra, Italy, May 12-13, 2012.

#### Conference Presentations

17. *AI, Human Wellbeing, and Future Social Value in the Smart Environments of 2050*, December 7<sup>th</sup>, 2022 presentation at the Society for the Social Studies of Science and ESOCITE conference, Cholula, Mexico.
16. *Analyzing Future Social Value from Scenarios: An Experiment and Invitation*, November 18, 2022, workshop conducted at Anticipation 2022 Conference, Tempe, AZ, USA.
15. *The Future of Aging in Smart Environments: Scenarios of the US in 2050*. Presentation. Governance of Emerging Technologies Conference. Held May 4-5, 2022 at Arizona State University.
14. *What is meant by social value? A systematic literature review*. Presentation. Society for the Social Studies of Science (4S) Conference. Held virtually October 6-8, 2021.
13. Resilience as Learning: Social Infrastructure for Transformative Capacity. Presentation at the International Forum on Urbanism. Barcelona, Spain. December 10 – 12, 2018.
12. The Future is Already Here: Transferring global sustainability solutions to transform the local food economy in Tempe, AZ, USA. Poster Presentation to the International Forum on Solar Technologies for Small-Scale Agriculture and Water Management, United Nations Food and Agriculture Organization, Rome, Italy, April 12-13, 2018.
11. Navigating Futures: An EPBL Approach to Integrating RRI and Sustainability Science through Scenario Planning. Presentation to Pedagogies for Sustainability, Responsible Enterprise and Innovation Programme, Manchester Metropolitan University, July 11, 2018.
10. Science, Technology and Tarot. Withycombe Keeler L, Selin C, Nelson JP, Millea P. Presentation and demonstration. Society for New and Emerging Technologies conference, Tempe, Arizona, October 9-11, 2017.
9. Capacity Building for Resilient Cities. Withycombe Keeler L, Kay b, Bernstein M. Tools Café Presentation. National Adaptation Forum, Minneapolis, MN, May 8-10, 2017.
8. Anticipatory Governance of Autonomous Vehicles. Harlow J.C. and Withycombe Keeler. Presentation given by Harlow. Society for the Study of Nano and Emerging Technologies Conference, Montreal, Quebec, Canada, October 18 – 22, 2015.
7. Cities, innovation, and the future of health. Withycombe Keeler L and Foley R.W. Presentation. Assembling Cities Conference, Zürich, Switzerland. January 21-22, 2015.

6. Anticipation, Analogies, and Responsible Innovation. Withycombe Keeler L. Presentation. Society for the Study of Nano and Emerging Technologies Conference, Karlsruhe, Germany, September 21– 23, 2014.
5. Operationalizing urban sustainability transitions with transformative governance: Results from participatory sustainability transition planning and proposed research agenda for implementation. Withycombe L, Wiek A, Kay B. Paper Presentation, International Conference on Sustainability Science, Lund University, Lund, Sweden, June 13-15, 2011.
4. A framework for building key determinants of adaptive capacity through anticipatory learning and anticipatory governance. Withycombe L, Mercer C. Paper Presentation, Resilience 2011 Conference, Tempe, Arizona, USA, March 11-16, 2011.
3. Key competencies in sustainability science. Wiek A, Withycombe L, Banas-Mills S. Special Session, AAAS Conference, San Diego, CA, USA, February 18-21, 2010.
2. Anticipatory governance in the City of Phoenix. Withycombe L, Wiek A, Kay B, Gomes T. Presentation, Phoenix, Arizona, USA, Sustainable Cities Network Conference, October 20, 2010.
1. Core competence in sustainability science: What does the literature say? Wiek A, Withycombe L. Workshop, The 8th Ball State University/AASHE Greening of the Campus Conference, Indianapolis, IN, USA, September 21, 2009.

#### Workshops and Panels Organized and Lead

28. The Future of St. Johns, AZ: Visioning and Strategy for a Just Energy Transition. Community workshop, held for community members in St. Johns, Arizona to plan for a future without coal. October 22 and November 3, 2021.
27. The Future of Joseph City, AZ: Visioning and Strategy for a Just Energy Transition. Community workshop, held for community members in Joseph City, Arizona to plan for a future without coal. October 21 and November 4, 2021.
26. Pathways to a Low Carbon Future for the Arizona Economy. Digital, distributed workshop. Held November 3 – 23, 2020.
25. Audacious Partnerships Workshop: Arizona State University and City of Tempe. Held online November 16, 2020.
24. Arizona State University – Salt River Project Strategic Visioning Workshop. Held February 22, 2020. Tempe, Arizona, USA.
23. Future of Aging in Smart Environments. Scenario Workshop. Held January 9 – 10, 2020. Tempe, Arizona, USA.
22. Future Scenarios of Coffee Alto Mayo in 2035. Scenario Development Workshop in Collaboration with Conservation International. Moyobamba, San Martin, Peru. May 28-29, 2019.
21. Future Shocks and City Resilience: Bozeman. Withycombe Keeler L. Design and facilitation. Capacity building workshop with the City of Bozeman, Bozeman, Montana, February 12-13, 2018.
20. Gender Equality and Diversity. Withycombe Keeler L, Doezema T and Guston D. Facilitator. Biodesign Institute, Arizona State University, Tempe, Arizona, February 2, 2018.

19. Ethics and Data. Withycombe Keeler L, Doezema T and Guston D. Facilitator. Biodesign Institute, Arizona State University, Tempe, Arizona, January 31, 2018.
18. CapaCity Integration Workshop. Withycombe Keeler L. Design and lead. National Autonomous University of Mexico, Mexico City, MX, December 4-5, 2017.
17. Feed-A-City Grow Tempe Workshop. Global Sustainability Science students. Withycombe Keeler L, mentorship and oversight. Tempe Meadows, Tempe, Arizona, November 15, 2017.
16. MOA Stakeholder Meeting, Navajo Nation, ASU, and NAU organized by Mayes, K, Mahoney M, and Becker B. Withycombe Keeler L, Facilitator. Flagstaff, AZ, November 14, 2017.
15. Bridging the Great Divide Synthesis Workshop 1. Withycombe Keeler L. Facilitator. Arizona State University, November 2, 2017.
14. AudaCity: Building capacity for transformational change. Withycombe Keeler L. Workshop design and facilitation. City of Tempe, Tempe, Arizona, August 31, 2017.
13. CapaCity Integration Workshop. Withycombe Keeler L. Design and lead. Karlsruhe Institute of Technology, Karlsruhe, Germany, June 9-10, 2017.
12. The Future of AI. Brundage M and Withycombe Keeler L. Facilitation Support. Oxford University. Oxford, UK, June 5, 2017.
11. The Future of Clean Tax Cuts. Withycombe Keeler L. Workshop design and facilitation. Lightworks. Tempe, Arizona, April 4, 2017.
10. The Future of GlobalResolve. Withycombe Keeler L. Workshop design and facilitation. Tempe, AZ, USA, January 18, 2017.
9. Future Shocks and City Resilience. Withycombe Keeler L, Wiek A, Kay B. Workshop with the City of Tempe Administration. Tempe, AZ, USA, November 10, 2016.
8. Sensors and Humans in Networking Environments: A people first approach to the internet of things. Withycombe Keeler L (2016). *SenSIP: Signal Processing and Machine Learning conference*, Scottsdale, AZ, USA, November 9.
7. Anticipatory Governance of Autonomous Vehicles. Withycombe Keeler L, Foley R (2016). Society for the Social Studies of Science (4S) Annual Conference, Barcelona, Spain, August 30 – September 4.
6. The Future of Veterans Engagement in Universities. Withycombe Keeler L (2016). Workshop with Naval Enterprise Partnership Teaming with Universities for National Excellence, Arizona State University, Tempe, AZ, May 25.
5. Reading the Future of the American Dream. Withycombe Keeler L and Bennett M (2016). SFIS/ASU Fundraising Event. Tempe, AZ, USA, October 19, 2016.
4. Sensors and Humans in Networking Environments. Withycombe Keeler L, Selin C, Dengi A. Workshop coordination and lead. Arizona State University, Tempe, AZ, August 15 – 16, 2016. The Future of Air Capture Technology. Withycombe Keeler L. Workshop Coordination and Lead. Arizona State University, Tempe, AZ, April 26 – 28, 2016.
3. The Future of Wastewater Sensing. Withycombe Keeler L and Selin C. Workshop Coordination and Lead. Arizona State University, Tempe, AZ, November 2 – 3, 2015.

2. The Future of Health Monitoring and Pre-symptomatic Medicine. Withycombe Keeler L and Selin C. Workshop Coordination and Lead. Arizona State University, Tempe, AZ, October 26 – 27, 2015.
1. City-Region Sustainability Transition Labs. Workshop of the International Network of Programs in Sustainability. Withycombe Keeler L. *Workshop Coordination and Lead*. Leuphana University Lüneburg, Lüneburg, Germany, March 24 – 25, 2015.

### Public Engagement

8. Climate Action Plan Public Testimony: City Council Work Study Session, April 15, 2021.
7. Climate Action Plan Listening Sessions. Eight online sessions held in January – February 2021 (in collaboration with students in HSD 598: Equity and Climate Action) and July – August 2020.
6. Tempe Climate Action Plan Public Testimony: City Council Work Study Session, September 5<sup>th</sup> 2019.
5. Tempe Climate Action Plan Engagements: October 30<sup>th</sup> and November 11<sup>th</sup> 2018; February 22<sup>nd</sup>, March 18<sup>th</sup>, April 4<sup>th</sup>, September 10<sup>th</sup> 2019.
4. City of Tempe Renewable Energy Targets Public Meeting. Withycombe Keeler L. Public engagement design. Tempe, Arizona, January 17, 2018.
3. Climate Action Planning workshop. Crim M, Beaudoin F, Kay B, Withycombe Keeler L. Design and facilitation. City of Tempe, Tempe, AZ, January 16 – 17, 2018.
2. The Future of X. Withycombe Keeler L (with student support). Public engagement at First Friday. Phoenix, Arizona, September 1, 2017.
1. Reading the Future of the American Dream. Withycombe Keeler L and Bennett M (2016). Public Engagement. Washington DC, USA, October 24, 2016.

## TEACHING, MENTORING, AND STUDENT SUPPORT

### Courses Taught

#### Arizona State University

**FIS 307: Navigating Futures.** Required, core methods course on scenario development taught to third year undergraduate majors in Innovation in Society. Taught in: Spring 2023, Fall 2020, Fall 2019, Spring 2018, Spring 2017.

**FIS 394: The Future of Coffee.** Elective undergraduate course exploring trends in the coffee value chain and the potential for sustainable and ethical coffee production in a climate changed future. Taught in Spring 2023.

**FIS 101: Welcome to ASU.** Required course for first time, first year students in the Innovation in Society major, offers an introduction to the major, university resources, and tools for success in college. Taught in: Fall 2021; Fall 2020; Fall 2019, Fall 2018.

**HSD 598: Equity and Climate Action** Graduate workshop course teaching equity-centered climate action planning. Workshop format in which graduate students design and implement equity-centered engagements for the City of Tempe’s climate action plan update. Co-taught with Marta Berbes. Spring 2021.

**FIS 394: Future of Invention.** 1 credit elective in innovation in society. Explored the social construction of invention through the lens of the Star Trek universe. Spring 2019.

**SOS 598: Global Sustainability Science Research.** Core course in the Global Sustainability Science Master's program between ASU and Leuphana, uses a project-based approach to teach students about transdisciplinary research and practice in sustainability science. Fall 2018. Fall 2017.

**SOS 394: The Future of Space Food.** 1-credit elective in innovation in society. Used a design-based approach to speculate on food technologies, cultures and practices during future space habitation. Spring 2018.

**SOS 394: The Future of Food.** 1-credit elective in innovation in society. Explored the future of food technology, production, consumption and culture. Spring 2017.

**HSD 598: The Future of the American Dream.** 3-credit elective in the Human and Social Dimensions of Science and Technology PhD program. Futures methods, including scenario construction, tarot, and counterfactuals, were used to explore the history of the American Dream with a focus on novel insights that help reimagine the American Dream for the future. Co-taught with Michael Bennett. Spring 2016, Spring 2017.

**SOS 394: The Future of the American Dream.** 3-credit elective in the innovation in society major. Futures methods, including scenario construction, tarot, and counterfactuals, were used to explore the history of the American Dream with a focus on novel insights that help reimagine the American Dream for the future. Co-taught with Michael Bennett. Fall 2017.

**SCN 401: Science, Technology and Sustainability.** 3-credit online course for online students in the bachelors of education studies degree program in ASU's teachers' college. Teachers concepts of sustainability and socio-technical systems with a focus on how future teachers can integrate these concepts into their classrooms. Spring 2017.

**SCN 400: Sustainability Science for Teachers.** 3-credit elected in ASU's teachers' college. Teachers future k-12 teachers concepts and ways of thinking in sustainability science with a focus on application of these concepts in their future classrooms. Fall 2017, Fall, 2016, Spring 2013, Fall 2012.

## Leuphana University Lüneburg

Scenario Planning for Sustainability, Summer 2017 (Graduate course)

Seminar: Local Living Economies, Spring 2015 (Undergraduate capstone)

Constructing the Future with Scenario Techniques, Fall 2014 (Undergraduate course)

Inter- and Transdisciplinary Methods, Fall 2014 (Undergraduate course)

## Mentoring

Current PhD Committees

### *Committee Chair:*

- Luke Boyle, Innovation and Global Development Ph.D. program.

### *Committee Co-Chair:*

- Martin Perez Comisso, Human and Social Dimensions of Science and Technology PhD program.

#### *Committee member:*

- Florian Arwed Schneider, Sustainability PhD program.
- David Morrison, Human and Social Dimensions of Science and Technology PhD program.
- Yasmin Afshar, Human and Social Dimensions of Science and Technology PhD program.

#### Successfully Completed Committees

##### *Masters' Committee chair:*

- Ashley Mack, Masters in Global Sustainability Science, School of Sustainability, Arizona State University and Leuphana University Lüneburg, Graduated Spring 2019.
- Robin Bruck, Masters in Global Sustainability Science, School of Sustainability, Arizona State University and Leuphana University Lüneburg, Graduated Spring 2019.
- Lars Geest, Masters in Global Sustainability Science, School of Sustainability, Arizona State University and Leuphana University Lüneburg, Graduated Spring 2019.
- Frieda Schwarz, Masters in Global Sustainability Science, School of Sustainability, Arizona State University and Leuphana University Lüneburg, Graduated Spring 2019.
- Leo Rutter, Masters in Global Sustainability Science, School of Sustainability, Arizona State University and Leuphana University Lüneburg, Graduated August 2018

##### *Undergraduate Honors' Thesis Oversight:*

- Jessica Sherman, Barrett the Honors College, Graduated Spring 2021
- Joey Tamm, Barrett the Honors College, Graduated Spring 2021
- Daniel Weekes, Barrett the Honors College, Graduated Spring 2021
- Paul Millea, Honors BS, Innovation in Society, Arizona State University, Barrett Honors' College, Graduated Spring 2019.
- (co-Chair) John P Nelson, Honors BS, Innovation in Society, Arizona State University, Barrett Honors' College, Graduated May 2018

##### *Committee member:*

- Miles Brundage, PhD, Human and Social Dimensions of Science and Technology, Graduated Fall 2019. Currently Policy Lead at OpenAI.
- Second-year project committee member: Kaethe Selkirk, PhD, Human and Social Dimensions of Science and Technology
- Ana Marie Lopez, MA, Science and Technology Policy, Graduated August 2017

#### Postdoctoral Supervision

Nigel Forest, May 2018 – December 2020. Currently Co-convenor of Business and Environment Master's Program at Imperial College London

Justin Shapiro, December 2022 – Present

Jorge Morales Guerrero, February 2023 – Present

#### Research Assistant Supervision

##### *Graduate*

Luke Boyle, January 2021 - present



Yasmin Afshar, January 2023 - present  
Prashamsa Thapa, August 2022 – present  
BrieAnne Davis, June 2020 – present  
Jeishu Wang, Fall 2019 – Summer 2020  
Adam Gabriele, Fall 2016 – Spring 2017

#### *Undergraduate*

Zuzana Skarkova, Spring - Summer 2021  
Gwen Cameron, Spring 2020  
Colton Lish, Fall 2019  
Ellen Dries, Spring 2019  
Jason George, Spring 2019  
Jaideen Cobb, Fall 2018  
Jordan Kari, Fall 2018  
Brooke Nelson, Fall 2018  
Kaylin Ayotte, Spring 2017 and Spring 2018  
Kelly Green, Spring 2018  
Ally Slott, Spring 2018  
Annie Johnson, Spring 2018  
John P Nelson, Summer 2017

#### *Student Trainings Provided*

Student Facilitation Training Workshop, August 2017, November 2016  
Student Tarot Training Workshop, February 2017

## Service to Public and Profession

### *University and Department Service*

SFIS Undergraduate Program Chair: Fall 2022 - Present  
Interim Director, Center for the Study of Futures, January 2021 – 2022.  
SFIS Undergraduate Committee: Fall 2017 – present.  
Human and Social Dimensions of Science and Technology PhD Admissions Committee, 2017 – present.  
ASU Limited Submission Review Committee 2016 – present.  
Interim Faculty Annual Review Committee, 2018.  
Search Committee: *Assistant Professor, Space and Society*, School for the Future of Innovation in Society, 2018.

## Service to Profession and Community

Member, Organizing Committee, Anticipation 2022 Conference, August 2021 – Present.

Chair, Scientific Committee, Anticipation 2022 Conference, August 2021 – Present.

Associate Editor, *Frontiers in Sustainable Cities: Governance in Cities*. 2019 – present.

Salt River Project – Arizona State University Strategic Partnership Steering Committee, March 2020 – present.

Guest Editor, *Sustainability*. Special Issue March 2019: *The Future of Sustainable Communities: Visions, Planning and Implementation*.

## Awards and Honors

### 2021 Knowledge Exchange for Resilience Fellow

**Joseph Jarowski Next Generation Foresight Practitioners' Award:** Special Award for North America. Awarded in October 2019 by the School of International Futures to foresight practitioners under 35 making an impact in the field.

**ASU President's Award for Sustainability.** *Sustainability Science Education Project*. 2015.

**ASU President's Award for Sustainability.** *The Future of Phoenix: Crafting Sustainable Development Strategies*. 2011.

## Press and Social Media

Lloyd, Sophie. (2022, August 13) Easy Tips for an EcoFriendly Life According to Sustainability Experts. Newsweek <https://www.newsweek.com/easy-tips-eco-friendly-life-sustainability-experts-1709431>

Leander, Sandra (2022, January 27) How to create a carbon neutral Arizona. ASU News <https://news.asu.edu/20220127-arizona-impact-how-create-carbon-neutral-arizona>

Staff (2022, January 29) 4 Ways to Create a Carbon Neutral Arizona. 6Park.News <https://6park.news/arizona/4-ways-to-create-a-carbon-neutral-arizona.html>

Staff. (2021, April 1). Tempe's Earth Month sustainability initiatives designed to engage youth. Wrangler News. <https://www.wranglernews.com/2021/04/02/tempes-earth-month-sustainability-initiatives-designed-to-engage-youth/>

Priest, R. (2021, March 1). Graduate students team up with city of Tempe on Climate Action Plan. The State Press. Retrieved from <https://www.statepress.com/>

Lam, N. (2021, April 22). Climate stories invite feedback to update the Tempe Climate Action Plan. The State Press. Retrieved from <https://www.statepress.com/>

Geeneen, J. (2020, November 8). Tempe partners with ASU course to discuss equity, sustainability. The State Press. Retrieved from <https://www.statepress.com/>

Richards, A. (2020, April 13). Examining our relationship with technology as we age. ASU News. <https://news.asu.edu/20200413-examining-our-relationship-technology-we-age>

Forslund, G (2020, April 27) New report by ASU faculty explores what aging might look like in the future. The State Press. <https://www.statepress.com/article/2020/04/spcommunity-future-of-aging-in-smart-environments>

Kass, Mikala (2020, February 17). 'Choose your own adventure' approach trains new ambassadors for tricky decisions. Retrieved from: <https://news.asu.edu/saf/solutions?page=34&page%5Cu003d37=>

Playing Audacity with the City of Portland. Youtube. May 30, 2019. Retrieved from: [https://www.youtube.com/watch?v=E6PQxLdaZ10&ab\\_channel=LaurenWithycombeKeeler](https://www.youtube.com/watch?v=E6PQxLdaZ10&ab_channel=LaurenWithycombeKeeler)

Rodriguez, S (2019, December 5). Tempe Sustainability Commission Expands on Climate Plan for 2021 Update. The State Press. <https://www.statepress.com/article/2019/12/spcommunity-after-climate-action-plan-approval-tempe-sustainability-commission-looks-to-2021>

Lane, T (2019, April 16). City of Tempe continues work with ASU to craft Climate Action Plan. The State Press. <https://www.statepress.com/article/2019/04/spcommunity-city-of-tempe-works-with-asu-to-craft-climate-action-plan>

Global Institute of Sustainability. (2018, April 17). Prepping Tempe Leaders for the Future. Sustainability@ASU. Retrieved from: [https://issuu.com/asusustainability/docs/2017\\_sustainability\\_at\\_asu\\_highligh](https://issuu.com/asusustainability/docs/2017_sustainability_at_asu_highligh)

Global Consortium for Sustainability Outcomes. (2018, April 13) CapaCities Project Overview. [https://www.youtube.com/watch?v=wJfJP-LFQoU&ab\\_channel=GlobalConsortiumforSustainabilityOutcomes](https://www.youtube.com/watch?v=wJfJP-LFQoU&ab_channel=GlobalConsortiumforSustainabilityOutcomes)

Lacasse, B (2018, March 28). Luna city exhibit showcases student research and future possibilities. The State Press. <https://www.statepress.com/article/2018/03/spscience-students-research-future-possibilities-with-luna-city>

Scragg, Chris (2018, March 16). ASU helps Tempe commit to ambitious new energy goals. The State Press. <https://www.statepress.com/article/2018/03/spscience-asu-helped-tempe-commit-to-ambitious-new-energy-goals>

Staff. (2017, September 15). Tempe leaders, ASU engage again with resilience scenario game. ASU News. Retrieved from: <https://news.asu.edu/20170915-tempe-leaders-asu-engage-again-resilience-scenario-game>

Ethics@ASU – Monitoring and Managing Population Health: Ethical Considerations. Retrieved from: <https://vimeo.com/287156886>

Global Institute of Sustainability. (2017, May 5). What's in a Game? Sustainability@ASU. Retrieved from: [https://issuu.com/asusustainability/docs/2016\\_sustainability\\_at\\_asu\\_highligh](https://issuu.com/asusustainability/docs/2016_sustainability_at_asu_highligh)

Staff. Sustainability News (2016, November 19). What's in a Game? A creative approach to complicated issues. Retrieved from: <https://sustainability-innovation.asu.edu/news/archive/game-shows-sustainability-goes-far-beyond-recycling/>

Faller, Mary Beth. (2016, November 10). Game shows sustainability goes far beyond recycling. Retrieved from: <https://news.asu.edu/20161110-solutions-game-shows-sustainability-goes-far-beyond-recycling>