

ANNUAL REPORT



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TABLE OF CONTENTS

Highlights from the Year » 1

Innovative Projects » 2

RISN Incubator » 8

RISN Staff » 12

ASU Sustainability Experts » 13

The Year at a Glance » 16



“The most meaningful engines of change may not be so much environmental quality as the economic development and growth associated with the effort to improve it.”

Dr. Barry Commoner
Father of Modern Ecology



HIGHLIGHTS *from the* YEAR



2018 has been an exciting year of vigorous growth for RISN – the Resource Innovation and Solutions Network – built on the strength of our research, responsible innovation that turned ideas into action and proof that sustainability is and will continue to be an economic driver for the Phoenix region and beyond.

This year, RISN, propelled by its powerful partnership between the City of Phoenix and Arizona State University, nurtured ten brilliant new ventures to become impactful drivers of a new circular economy right here in Arizona. Companies in the RISN Incubator created 26 full-time jobs, four part-time jobs and 19 internships, raised \$1.3 million in capital, generated \$3.1 million in revenues and launched ten products, two of which have patents pending.



2018 was a year in which RISN continued to apply the rigorous research of previous years – on recycled pavement materials, compost on parks turf, Greenhouse Gas emissions – and used that knowledge to create solutions that move the goal of a better life forward for all citizens of the greater Phoenix region socially, environmentally and economically.

And finally, RISN's continued work on the Economic Impact Report identified development strategies, opportunities and solutions through a regional circular economy directly tied to municipal resources that not only will improve the environmental quality of life in the region, but has the potential to bring a \$124 million additional contribution to the Gross State Product over the next six years.



2018 has been the year that RISN has demonstrated the incredible power that the development of a circular economy has not only in positioning Phoenix as a global leader in both sustainability and economic development, but as a resilient and ambitious municipality for its residents and businesses in the future. Combining the research and training provided through RISN with the international recognition Phoenix received as a C40 Bloomberg City for Zero Waste enables both Phoenix and ASU to attract innovation and success.

INNOVATIVE PROJECTS



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Reclaimed Asphalt Pavement Project: Phase I



OVERVIEW: The purpose of the reclaimed asphalt pavement (RAP) project is to conduct research and testing related to the reclamation and reuse of asphalt in City of Phoenix pavement projects. This project, currently in the laboratory testing phase, tested three types of pavement: binder, virgin aggregate and reclaimed asphalt, to establish engineering properties and create a new mix design. Phase I also included a literature review and survey of current practices by local and national agencies.

RESULTS: The survey determined that Arizona agencies (state and local) have been slow to adopt the use of RAP as a regular practice, limiting content integration or how it may be used. Initial laboratory tests show that RAP design mix meets performance standards. A pilot for Phase II is currently in progress.

DIVERSION IMPACT: If implemented, incorporating RAP at a moderate percentage into new mixes on future maintenance pavement projects will lead to less need for virgin binder and aggregate resulting in greater resource conservation and a more environmentally friendly approach to paving. Exact waste diversion potential will be determined in future project phases.

BENEFITS: Cross-department collaboration. Reduced Greenhouse Gas emissions. Resource conservation.

Phoenix Staff: Peter Rupal, City of Phoenix

ASU Faculty: Kamil Kaloush, Shane Underwood

ASU Global Sustainability Solutions Services Staff: Stratis Giannakouros, Project Manager; Marta Hulley Friedman, Director; Jessica Groeneveld, Program Coordinator

ASU Students: Gonzalo Zelada Arredondo, Graduate Research Assistant; Phani Sasank Kaligotia, Graduate Student; Padmini Priyandarsini, Post Doctoral Researcher



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2016 Community Greenhouse Gas Emissions Inventory



OVERVIEW: This report is a follow-up to the first community-scale Greenhouse Gas (GHG) emission inventory for calendar year 2012. The report calculated an updated level of emissions from 2012 to 2016 as well as the largest contributors to Phoenix's GHG emissions and identified areas where city efforts have made the largest impact. Tracking emissions over time will allow Phoenix to evaluate the effectiveness of its emissions reduction policies and programs. Furthermore, the inventory provides a platform for Phoenix to develop best practices for reducing its carbon footprint.

RESULTS:

- » 2016 total Greenhouse Gas emissions in Phoenix were 15,684,329 metric tons of CO₂ equivalents (MTCO₂e)* and were reduced by 7.2 percent compared to 2012 levels of 16,897,600 MTCO₂e.
- » Total per capita emissions were 9.7 MTCO₂e for Phoenix, compared to 11 tons per capita emissions in 2012.
- » The transportation sector is the largest source of emissions, responsible for 60 percent of total emissions in Phoenix.

DIVERSION IMPACT: No waste diversion impacts were directly investigated.

BENEFITS: Provides comprehensive information for decision-making around the City of Phoenix's Greenhouse Gas emissions reduction goals. By reducing Greenhouse Gas emissions, the City will not only help to mitigate climate change, but also help to reduce the incidence of health problems from ground-level ozone as a co-benefit.

Phoenix Staff: Joe Giudice, Environmental Programs Manager, City of Phoenix; Joe Gibbs, Environmental Quality Specialist, City of Phoenix; Mark Hartman, Chief Sustainability Officer, City of Phoenix

ASU Global Sustainability Solutions Services Staff: Stratis Giannakouros, Project Manager; Richard Rushforth, Subject Matter Expert; Marta Hulley Friedman, Director; Jessica Groenveld, Project Coordinator

ASU Students: Arvind Prabu, Graduate Student, Ira Fulton School of Engineering

*CO₂ equivalent or carbon dioxide equivalent, is a standard unit for measuring carbon footprints. The idea is to express the impact of each different Greenhouse Gas in terms of the amount of CO₂ that would create the same amount of warming.



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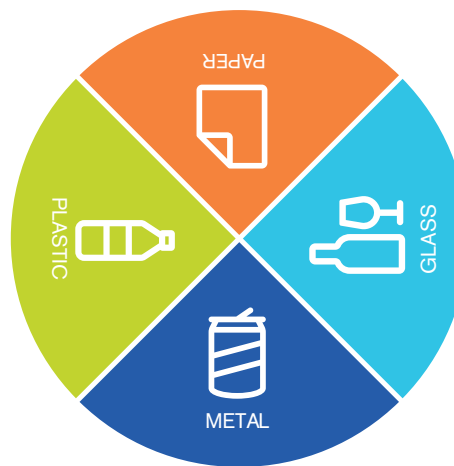


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Quantifying the Gross Maximum Economic Contribution of Materials in the City of Phoenix Waste Stream: Economic Impact Report Phase II

OVERVIEW: The primary objective of Phase II of the Economic Impact Report is to identify and quantify the economic impact of waste diversion options for the currently collected, recycled and additional recoverable tons of plastic, glass, metals and paper in the City of Phoenix municipal waste stream.

RESULTS: Identification and recommendations regarding economic development strategies, investments and expected outcomes for plastic, glass, metals and paper waste streams.



DIVERSION IMPACT: Quantifies potential diversion in terms of economic development through local processing and manufacturing of waste streams by way of economic development, business attraction and/or expansion.

BENEFITS: The economic impact study presents an immense opportunity to make a positive economic impact on the city through its circular economy efforts, specifically those involving the prioritization of circular economy strategic implementation efforts of plastics, paper, glass and metal.

Phoenix Staff: Ginger Spencer, Director, Public Works; Brandie Barrett, Deputy Director, Public Works

Project Partners: Anthony Evans, Sr. Research Fellow, L William Seidman Research Institute, W.P. Carey School of Business

ASU Global Sustainability Solutions Services Staff: Mara DeFilippis, Engagement Manager; Raj Buch, Practice Lead; Marta Hulley Friedman, Director; Jessica Groeneveld, Project Coordinator





PLASTIC: Establish a PET processing facility in the City of Phoenix

input:

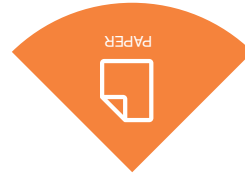
\$ 10-12 million
capital expenditure investment

potential outputs:

\$113.5 million
annual additional contribution to GSP

9,100 tons (PET)
volume of recycled materials (87 percent increase)

50 jobs
annual employment at facility



PAPER: Adopt a multi-state approach where newspaper is shipped out of state but OCC is processed in state

input:

\$ \$60 million
capital expenditure investment

potential outputs:

\$437.4 million
annual additional contribution to GSP

156,000 tons (OCC)
only 22.5K available in Phoenix municipal waste stream

140 jobs
annual employment at facility



GLASS: Extend current 50,000 ton cullet processing operation in City of Phoenix

input:

\$ \$1.5 million
capital expenditure investment

potential outputs:

\$11.4 million
annual additional contribution to GSP

14,100 tons
volume of recycled materials (48 percent increase)

5 jobs
annual employment at facility



METAL: Utilize existing scrap metal network in City of Phoenix

potential outputs:

Based on the utilization of the existing scrap metal network, no additional economic impact will be created.



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Economic Impact Report: Phase III



OVERVIEW: The purpose of the Economic Impact Assessment Phase III is to evaluate the viability for regional processing solutions for PET resources. The analysis will include assessing regional quantities and their respective economic impacts, evaluating the potential for market-based solutions that advance the local circular economy and identifying potential domestic companies that might utilize the feedstock.

RESULTS: Study is still underway with results expected August 2018. The final report and presentation will identify opportunities for the local processing of PET based on feedstock availability throughout the region. Domestic companies that could be located in the City of Phoenix that will utilize the feedstock will be identified.

Phoenix Staff: Ginger Spencer, Director, Public Works; Brandie Barrett, Deputy Director, Public Works; Joseph Rossell, Project Manager Community and Economic Development Department, City of Phoenix

ASU Global Sustainability Solutions Services Staff:

Anthony Evans, Sr. Research Fellow, L William Seidman Research Institute, W.P. Carey School of Business

ASU Students: Mara DeFilippis, Engagement Manager; Raj Buch, Practice Lead; Marta Hulley Friedman, Director; Jessica Groeneveld, Project Coordinator



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Compost Application on Multi-Use Turf In City Parks: Year 3



OVERVIEW: Over the past three years, the City of Phoenix Public Works and Parks and Recreation departments partnered with RISN to evaluate the impact of the application of compost at Phoenix city parks. The objective is to identify the environmental, economic and operational impact of managing multi-use turf at city parks using compost as compared to current non-organic fertilizer-based turf management practices. For this study, compost was applied at plots of turf at six city parks and three plots of turf in downtown Phoenix near City Hall and the City Council Chambers. The goals in Year 3 are the continuation of the soil sampling and lab testing and performing a cost benefit sensitivity analysis to determine if the cost saving from the potential reduced irrigation requirements as a result of using compost would cover the additional cost of managing park turf using compost.

RESULTS: The results of this three year study show that managing park turf using compost provides at least the same level of macro nutrients and an increase in micro nutrients and other soil characteristics, resulting in a healthier soil profile at the parks. Research and the analysis from this study indicates that using compost has the potential to reduce irrigation requirements at the parks not only providing for more sustainable water use, but also potentially saving on the cost of water with the objective of using that savings towards the cost of compost.

DIVERSION IMPACT: Demonstrates a potentially new marketplace for compost and offtake for diverted material. No direct diversion impact.

BENEFITS: The results of this study, along with the City of Phoenix's leadership in circular economy and their commitment to innovate and find creative ways to divert waste and save water, provide an opportunity for a future with healthier parks and the more efficient use of water in city parks.

Phoenix Staff: Stacy Hettmansperger, Operations Manager, Public Works; Larry Polk, Special Operations Supervisor, Parks and Recreation

ASU Faculty: Dr. Rebecca Ball; Dr. Beth Polidoro

ASU Global Sustainability Solutions Services Staff: William Campbell, Senior Project Manager; Marta Hulley Friedman, Director; Jessica Groeneveld, Program Coordinator

ASU Students: Nivedita Biyani, Graduate Student; Michael Shire, Undergraduate Student



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RISN INCUBATOR: Cohort 1

February 2018- August 2018



OVERVIEW: From Arizona State University, the nation's Top University for Innovation, and the City of Phoenix, the Top Performing City overall by Governing and Living Cities, The RISN Incubator is a niche business accelerator for entrepreneurs in the early stages of waste-to-product innovation with the goal of moving a Circular Economy in the Phoenix area forward further and faster.

ECONOMIC IMPACT

- » Positions Created: 26 full-time jobs, four part-time jobs, 19 internships
- » Capital Raised: \$1.3 million
- » Revenues Generated: \$3.1 million
- » New Innovations: Ten products launched, two patents filed

VENTURES

- | | |
|---------------------------|------------------------------------------|
| » BlueGreen Recycle | » +Swappow |
| » TrashZero | » Bites. |
| » Hygiea | » Renewlogy |
| » Nektar Energy | » Circonomy Solutions (10/2017- 04/2018) |
| » Global Guardian Project | » Hathority (10/2017- 04/2018) |

HIGHLIGHTS:

- » Call for Innovators launched in May 2017. Applications were accepted on a rolling basis.
- » Two companies successfully engaged with the City of Phoenix Public Works Department on pilot projects. One of these companies successfully completed their pilot and the other is currently in the middle of their pilot. These pilots enable the companies to prototype their products/services with Phoenix. The City of Phoenix releases Requests For Proposals (RFPs) as part of the Reimagine Phoenix Initiative to achieve the City's goal of diverting 40% of its trash from the landfill by the year 2020 and grow a circular economy in Phoenix. Companies can competitively submit a proposal for these RFPs. The incubator assists with navigating these processes for the ventures, and this can be a pathway for technology commercialization.
- » Another one of the companies in the program went through a merger and acquisition towards the end of the cohort, and they also are working with municipalities in the Metro Phoenix region to commercialize their technologies.
- » Ventures engaged with ASU faculty in the Ira A. Fulton Schools of Engineering. These types of opportunities enable ventures to gain access to high quality experts, labs for further testing of their technologies and to engage students with applied use-inspired research projects.
- » Ventures also engaged with students for internship opportunities and six interns were placed with ventures.

TESTIMONIALS

"The RISN Incubator is the first circular economy incubator of its kind, and a much needed addition for early stage innovators working through commercialization. Being an inaugural member has helped Renewlogy secure a grant from the Arizona Commerce Authority and compete for a City of Phoenix RFP to set up a facility. RISN's network and advice has been invaluable."

–Renewlogy

"The RISN Incubator has catalyzed our ability to do business better. We are experiencing fast growth, and the mentoring at this stage has been key to our progress. The team has helped us learn to communicate more effectively with key audiences/stakeholders, and better anticipate and measure the success variables that matter most to them. Being part of a cohort of amazing and committed entrepreneurs has opened additional doors to collaboration--to partnership opportunities we would not otherwise have had."

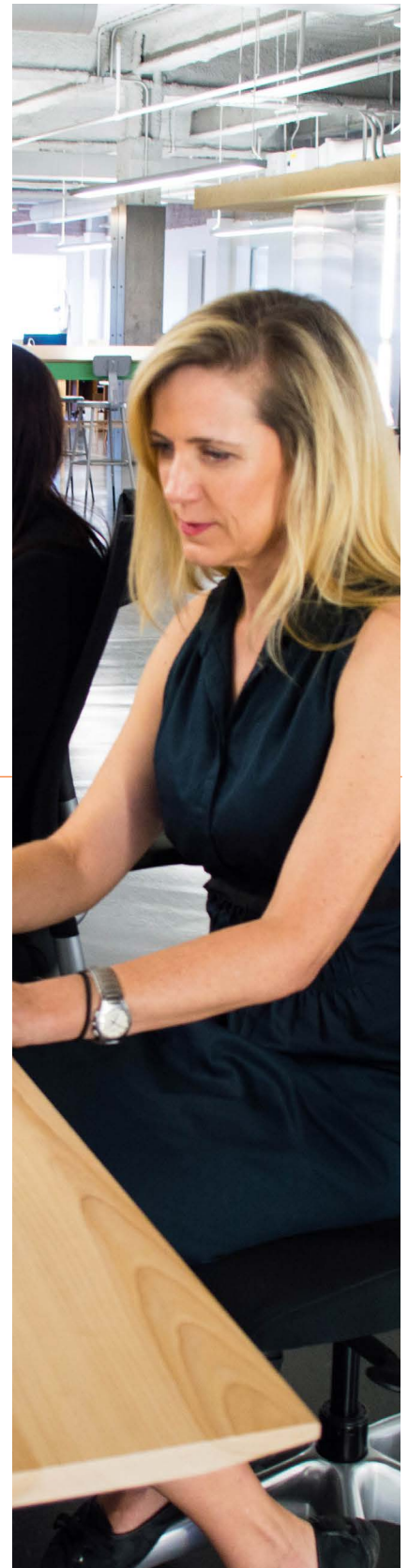
–Hathority

RISN INCUBATOR: Cohort 2

June 1, 2018-November 30, 2018

VENTURES

- » Renewlogy (returning from Cohort 1)
- » Circonomy Solutions (returning from Cohort 1)
- » Hygiea (returning from Cohort 1)
- » TrashTalk
- » BlueBridge
- » Recyclops





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Plastics #3-7 to 3D Filament



OVERVIEW: This project aims to repurpose the combined category #3-7 waste plastics (excluding #5) to fabricate filaments that are valuable as a resource for its next useful life. These filaments and the filament fabrication procedure can be coupled with 3D printers to produce products ready to use in a 'one-step' process. This project examines the quality of the filaments, testing their thermal stability (i.e., recyclability, durability) and mechanical durability (i.e., strength, modulus and toughness) as compared to traditional origin polymers.

STATUS: In progress, expected completion in November 2018.

DIVERSION IMPACT: If the repurposing is determined to be plausible, it would provide a new value for #3-7 plastics, diverting them from landfill.

BENEFITS: Economic opportunity and generating value from plastics that currently have no value; landfill avoidance; increase diversion.

Phoenix Staff: Joe Giudice, Assistant Director, Public Works; Brandie Barrett, Deputy Director, Public Works; Rick Peters, Deputy Director, Public Works

ASU Faculty: Dr. Kenan Song

ASU Global Sustainability Solutions Services Staff: Mara DeFilippis, Project Manager; William Campbell, Sr. Project Manager; Jessica Groeneveld, Program Coordinator



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Sustainability Solutions Festival



OVERVIEW: In February 2018, the Sustainability Solutions Festival engaged 33,702 participants to (re)imagine how we connect through education, communication, innovation, transportation and recreation. Fifteen events throughout the month included conferences such as GreenBiz 17, Second Nature Presidents Climate Commitment, Global Reporting Initiative and the World Business Council for Sustainable Development conference, and public events like ASU's Night of the Open Door, City Lights Movie Nights Film Screening and Family Day at Arizona Science Center.

RESULTS:

- » 33,702 people were engaged in 15 events in and around Phoenix
- » 2,000 sustainable lunch kits that included a reusable sandwich bag and spork were distributed at public events during the Sustainability Solutions Festival.
- » Estimated 2.5 million impressions across traditional and digital media
- » 11,701 site visits by 7,432 unique users on the Festival web page, sustainabilityfestival.asu.edu, between December 1, 2017 and February 28, 2018, prominently featuring sponsor logos
- » 272,000 impressions across 6,000 social media interactions on Facebook, Instagram and Twitter

BENEFITS: The event helps to raise the profile of the City of Phoenix and the greater Phoenix region as a sustainability leader among diverse audiences: the global business community, government entities, thought leaders and the public.

Project Partners: City of Phoenix Public Works Department, City of Phoenix Water Department, City of Phoenix Aviation Department, Salt River Project, Walton Family Foundation, Arizona Public Service, Ewing Irrigation Systems and Landscape Supply, Southwest Gas, GreenBiz, Downtown Phoenix Inc., Arizona Science Center, Changing Hands Bookstores, Gammage Scholars and City Scape Phoenix

RISN STAFF

ARIZONA STATE UNIVERSITY



Patricia Reiter
executive director



Marta Hulley Friedman
*director
(through May 2018)*



Tom Seager
faculty director



Rajesh Busch
*director, sustainability
practice, international
development*



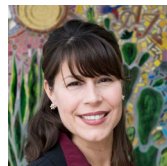
JiMi Choi
*associate vice president,
office of knowledge
enterprise development*



Alicia Marseille
*director, resource
innovation & solutions
network incubator*



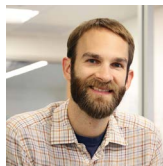
William Campbell
sr. project manager



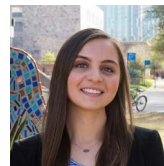
Mara DeFilippis
*project engagement
manager*



Stratis Giannokouros
project manager



Andrew Bernier
post-doctoral fellow



Amanda Jordan
*project coordinator, resource
innovation & solutions
network incubator*



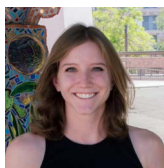
Kelly Saunders
program manager



Jason Franz
*senior manager,
strategic marketing and
communications*



Cathy Clifton
strategic marketing



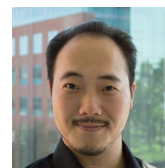
Ashley Quay
graphic designer



Heather Irish
fiscal specialist



Jessica Groeneveld
project coordinator



John Tang
contracts coordinator

GRADUATE STUDENTS

Gonzalo Zelada Arredondo | *graduate research assistant*

Nivedita Biryani | *graduate student*

Veronica Head | *graduate student*

Phani Sasank Kaligotia | *graduate student*

Surya Ramani Iyer | *graduate research assistant (RISN incubator)*

Arvind Prabu | *graduate student*

Karishma Thakkar | *graduate student*

Vatika Vardhan | *graduate student*

Aishwara Koparde | *graduate student*

RISN INCUBATOR ADVISORY COUNCIL:

Ginger Spencer | Director, Public Works, City of Phoenix

Ron Gonen | Co-Founder and CEO, Closed Loop Partners

Melissa Sanderson | VP of International Affairs,
Freeport McMoRan

John Heckman | Managing Partner, Anthesis Group

Jamie Bohan | Senior Director of Recycling and
Technology Development, Republic Services

Jason Webber | Venture Capital Principal, Sustainable
Conversion Ventures

Christine Mackay | Director of Community and Economic
Development, City of Phoenix

Ji Mi Choi | Associate Vice President of Knowledge Enterprise
Development, Arizona State University

ASU SUSTAINABILITY EXPERTS

Kenan Song

POSITION:

Assistant Professor

PROJECTS:

3-7 Plastics to 3D Printer Filament

ABOUT:

Dr. Song's research interest includes the processing-structure-property relationships in advanced composite materials (AMCs). Specifically, Dr. Song's research is focused on the advanced manufacturing, characterization, simulation and application of polymer-based nanoparticle-filled composites, aiming for high performance in structural and functional utilizations. Nanoparticles of interest include one-dimensional nanotubes, two-dimensional nanochips and zero-dimensional nanospheres.

Thomas P. Seager

POSITION:

- » Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- » Lincoln Fellow of Ethics and Sustainability, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering
- » Associate Professor, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering

PROJECTS:

Year Three Base Operations, RISN Incubator, Regional Circular Organic Resource System
(aka Green Organics)

ABOUT:

Thomas P. Seager is an Associate Professor in the School of Sustainable Engineering & the Built Environment at Arizona State University in Tempe AZ. Dr. Seager leads research teams working at the boundaries of engineering and social science to understand innovation for resilient infrastructure systems, including the life-cycle environmental consequences of emerging energy technologies, novel approaches to teamwork and communication in socio-technical integrative settings and engineering ethics education.

Adolfo Escobedo

POSITION:

- » Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- » Assistant Professor, School of Computing, Informatics, and Decision Systems
- » Engineering, Ira A. Fulton Schools of Engineering

PROJECTS:

SRP Waste Characterization Study

ABOUT:

Dr. Escobedo is a researcher in the field of industrial engineering and operations research. His research interests are in the theory and application of mathematical programming and computing, specifically in the design and analysis of algorithms for decision theory, power systems operations and planning, optimization software development and circular economy.

Kamil Kaloush

POSITION:

- » Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- » Associate Professor, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering

PROJECTS:

Reclaimed Asphalt Pavement (RAP)

ABOUT:

Dr. Kaloush's research interests include both asphalt and Portland cement concrete mixtures design, characterization, advanced laboratory testing and field performance evaluation. Dr. Kaloush is also known for his work on modified pavement systems that include the utilization of crumb rubber and fibers. Dr. Kaloush teaches courses on highway materials and construction, performance evaluation and management and sustainable materials and energy use.

Rebecca Ball

POSITION:

- » Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- » Associate Professor, School of Mathematical and Natural Sciences, New College of Interdisciplinary Arts and Sciences
- » Affiliated Faculty, Center for Biodiversity Outcomes, Julie Ann Wrigley Global Institute of Sustainability

PROJECTS:

Compost Application on Multi-Use Turf in City Parks (aka Parks Turf Study Year 2)

ABOUT:

Dr. Ball's research focuses on the factors that control organic matter turnover and nutrient dynamics in soils, with a focus on the biotic component, both microbial and faunal. Her research also addresses how patterns of these compare across systems and biomes. The overall goal is to improve our mechanistic understanding of soil biogeochemical processes to allow improved predictions of how these processes will be affected by global change.

Beth Polidoro

POSITION:

- » Senior Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- » Assistant Professor, Environmental Chemistry, School of Mathematical and Natural Sciences, New College of Interdisciplinary Arts and Sciences
- » Associate Director of Research, Center for Biodiversity Outcomes, Julie Ann Wrigley Global Institute of Sustainability

PROJECTS:

Compost Application on Multi-Use Turf in City Parks

ABOUT:

Dr. Beth Polidoro is an assistant professor of Environmental Chemistry in the School of Mathematical and Natural Sciences. Her primary research interests are in applied toxicology and environmental assessment within the context of biodiversity conservation, human health and sustainable development. Dr. Polidoro has a broad background in the chemical, ecological and environmental sciences.

Anthony Evans

POSITION:

- » Sr. Research Fellow

PROJECTS:

Economic Impact Report Phase I, II, and III

ABOUT:

Dr. Evans is a senior researcher for the L. William Seidman Research Institute at Arizona State University. His research and consulting interests lie within the areas of sport and leisure, entertainment marketing, public transport and energy.

THE YEAR AT A GLANCE

2018 Funding Allocations

RISN and Affiliated Projects	Funding Source			Total
	Phoenix	ASU	Other	
Base Operations	\$64,000	\$200,000		\$264,000
Base Operations allocated to Incubator	\$136,000			\$136,000
Sustainability Solutions Festival 2018	\$15,000			\$15,000
RISN Incubator	\$75,000	\$27,108		\$102,108
2016 Community GHG	\$23,000			\$23,000
Turf Study Year 3 Phase 1 (Dec-Jul)	\$15,000			\$15,000
Turf Study Year 3 Phase 2 (Sept-Nov)	\$32,000			\$32,000
Reclaimed Asphalt Pavement Phase II FY18 costs	\$79,500	\$3,614		\$83,114
Economic Impact Phase 3	\$36,500			\$36,500
3-7 Plastics to 3D Printer Filament	\$24,000	\$8,615		\$32,615
SRP Waste Sort			\$45,000	\$45,000
RISN Business Incubator			\$500,000	\$500,000
Total:	\$500,000	\$239,337	\$545,000	\$1,284,337

RISN Affiliated Proposals Submitted But Not Awarded

Sponsor	Title	Amount	Submitted
National Geographic	Ocean's Plastics	\$100,000	1/5/2018
National Science Foundation (NSF)	Circular Economy Innovation Ecosystem	\$750,000	2/1/2018
USAID	Vietnam Ocean's Plastics	\$150,000	3/31/2018
EREF	On Demand	\$190,000	7/13/2018 pending
EREF	Regional Circular Economy	\$193,000	7/13/2018 pending
		Total:	\$1,383,000

Conferences Attended

Conference Name	Date
VERGE 2017	9/19 - 9/21/17
Ellen MacArthur Foundation CE100 Accelerator Chicago*	9/27 - 9/28/17
AZ Recycling Coalition*	10/19/17
CEOs for Cities*	10/31 - 11/1/17
DIF: Leading an Innovative Path to CE*	11/15/17
DIF: The City of Phoenix: Economic Impact Studies of Implementing a Circular Economy*	11/16/17
DIF: Using the Circular Design Guide to Guide New Ventures *	11/17/17
DIF: The Arcosanti Experiment: What Does the Circular Economy at 100% Adoption Look Like?*	11/22/17
Arizona Forward Luncheon*	12/8/17
GreenBiz*	02/06- 02/08/18
GreenBiz Ethical Circular Economy workshop*	2/6/18
Ellen MacArthur Foundation CE100 USA Accelerator Phoenix*	03/07 - 03/08/18
Closed Loop, EMF, NYU Acre, ASU, City of Phoenix Collaboration Meeting*	5/1/18
US Chamber of Commerce Foundation CE Summit*	5/7 - 5/10/18
Sustainable Brands*	6/4 - 6/7/18
ISSST Incubator*	6/25 - 6/27/18
ISSST Ethical Circular Economy*	6/25 - 6/27/18
ISSST Economic Impact*	6/25 - 6/27/18
Ellen MacArthur Foundation Higher Ed Symposium*	6/17 - 6/19/18
Ellen MacArthur Foundation Annual Summit	6/21/18

*speaking

Speaking Engagements

October 2017

AZRC

- » Economic Impact Report presentation and panel discussion including Brandie and Anthony Evans and led by Mara
- » RISN Incubator presentation and panel discussion including Brandie and Alicia (and Jason Webber) and led by Mara
- » Workshop: Ethical Circular Economy Certificate Workshop attended by 12 people and led by Mara and Raj.

November 2017

Disruptive Innovation Festival 2017

- » Online
- » Alicia Marseille, Mara DeFilippis and ASU faculty
- » Alicia spoke on the RISN Incubator
- » Mara spoke on the Economic Impact Assessment report
- » ASU faculty and students spoke on the Arcosanti experiment
- » DIF is a three-week long online and open access ideas festival. This year's theme was focused on answering the questions "what if we could redesign everything?"

December 2017

Arizona Forward Luncheon

- » Phoenix, AZ
- » Alicia Marseille
- » Alicia was a panelist for this event and spoke to a high level group of stakeholders/members from over 250 companies across the state about the RISN Incubator program and its work.

February 2018

GreenBiz '18

- » Phoenix, AZ
- » Alicia Marseille, Ji Mi Choi
- » Ventures had the opportunity to display during the conference and work to build relationships with key stakeholders. There was also a Celebrations Dinner, hosted by ASU and the City of Phoenix, where ventures displayed their work and were recognized for their work in sustainability on stage by Ji Mi Choi and the Director of the Julie Ann Wrigley Global Institute of Sustainability, Gary Dirks.

School of Sustainability Guest Lecturer

- » Tempe, AZ
- » Alicia Marseille
- » Speaking at two separate graduate level courses

March 2018

Ellen MacArthur Foundation CE100

- » Phoenix, AZ
- » Alicia Marseille, Brandie Barrett, Lori Collins
- » This event was attended by key stakeholders from public and private entities globally. The RISN Incubator presented with the City of Phoenix Public Works and Economic Development departments. Ventures also participated in the event, were highlighted, and one of the ventures had the opportunity to participate in a co-pitch project.

May 2018

U.S. Chamber of Commerce Foundation Sustainability Summit

- » Washington, D.C.
- » Mara DeFilippis, Dan O'Neill
- » Ethical Circular Economy Workshop session held at the conference with 14 in attendance. Dan filled in for Raj Buch.

June 2018

International Symposium on Sustainable Systems and Technology (ISSST)

- » Buffalo, NY
- » Amanda Jordan, Raj Buch, Mara DeFilippis
- » A three-hour session presenting on Circular Economy Solutions: Innovation, Disruption and Collaboration. Amanda presented on Innovation while Raj and Mara hosted a condensed version of the Ethical Circular Economy workshop.

Sustainable Brands

- » Vancouver, British Columbia, Canada
- » Alicia Marseille
- » Alicia served as a judge for the Innovation Open event. One of the Incubator ventures, Renewlogy, was the grand prize winner.

Workshops

September 2017

Trash Hack 2017

- » Tempe, AZ
- » Alicia Marseille
- » 46 students across 20 majors and eight colleges came together over the course of three days with a goal of challenging plastic waste and designing solutions. Students were given access to experts, hardware tools, prototyping tools, work space and more. The winning team was awarded a 3D Makerbot printer.

October 2017

Closed Loop Partners Conference

- » New York, NY
- » Alicia Marseille
- » A small conference held by Closed Loop Partners. Key stakeholders from large corporations, foundations, private equity groups, universities and municipalities came together at Google's NYC office to discuss the opportunities in circular economy and the innovation that is occurring.

November 2017

Disruptive Innovation Festival 2017

- » Online
- » Alicia Marseille
- » DIF is a three-week long online and open access ideas festival. This year's theme was focused on answering the questions "what if we could redesign everything?" The Design Challenge integrated the Ellen MacArthur Foundation's circular design kit and created a challenge for ventures looking to enter into the RISN Incubator.

April 2018

Nike Design with Grind Challenge

- » Tempe, AZ
- » Alicia Marseille, Amanda Jordan
- » A four-hour workshop hosted as part of the Nike Circular Innovation Challenge in partnership with OpenIDEO. There were 43 student participants. Each were placed into teams and worked over the course of the day to generate ideas on how to incorporate recycled Nike grind material into new innovation projects or develop technologies to advance footwear recycling.

May 2018

Circular Economy Co-Creation & Collaboration Workshop

- » Brooklyn, NY
- » Alicia Marseille, Amanda Jordan, Raj Buch
- » Hosted in partnership with New York University's ACRE/Urban Future Lab. There were 24 participants representing various stakeholders in circular economy including Danone North America, Seventh Generation, Danish CleanTech Hub, Closed Loop Partners, Ellen MacArthur Foundation, City of Phoenix, City of Austin and Dow Chemical Company.

US Chamber of Commerce Foundation 4th Annual Sustainability & Circular Economy Summit

- » Washington, D.C.
- » Mara DeFilippis, Amanda Jordan, Dan O'Neill
- » This year's conference theme was "Translating Value to Ignite Action." The event explored how to effectively implement sustainable and circular strategies and featured case studies, interactive breakout sessions and hands-on toolkit exercises. Participants gained a better understanding of what has (and hasn't) worked, what trends are emerging around these issues and how to communicate the value of sustainability and circularity as a business strategy to a wide array of business units and consumers.

June 2018

Tonto Creek Camp Workshop

- » Payson, AZ
- » Alicia Marseille, Amanda Jordan
- » Presented on entrepreneurship and innovation to a group of 50+ at-risk youth (living 150% below federal poverty line) from throughout the state. A Q&A session was held as well as a brief activity to engage the campers and get them thinking about innovation and entrepreneurship.



City of Phoenix



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