

# RISN Resource Innovation and Solutions Network

Reimagine Phoenix  
Transforming Trash Into Resources



**Reimagine**  
the future of Phoenix region  
when we all lessen our impact,  
use resources more wisely,  
and support a beautiful,  
more sustainable future.

**ASU** SCHOOL of SUSTAINABILITY

ARIZONA STATE UNIVERSITY

<sup>i</sup> Ross, A. (2011). *Bird on Fire: Lessons from the World's Least Sustainable City*. Oxford University Press.

<sup>ii</sup> Reimagine Phoenix. (2014). Retrieved from <https://www.phoenix.gov/publicworks/reimagine>

# Creating a Circular Economy for Green Organics

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## CURRENT STATE ANALYSIS

Municipal Solid Waste is at the forefront of the sustainability movement of the 21<sup>st</sup> century. Sadly, our unsustainable Phoenix has been the topic of books detailing urban sprawl, poor air quality, and poor water management.<sup>i</sup> Added to the list, the Phoenix-Metro region has growing environmental concerns of landfilling, such as methane gas emissions, which led to a rigorous goal to divert 40% from landfills by 2020 as part of the Reimagine Phoenix Initiative.<sup>ii</sup>

For solutions, many cities and states are considering the economic, environmental, and social impacts of feedstock aggregation and a circular economy.

Our focus is on the waste streams of "residential green organics" to analyze the benefits, best practices, and challenges involved with green organic waste and a circular economy. This data will support

states and cities in the development and successful implementation of related policies.

### Waste Characterization Study

- Single-family homes curbside pick-up and individual resident drop-offs
- 40-50% of the contents in trash and recycle bins are compostable materials
- Green organics include yard waste - grass and trimmings from trees and shrubs).
- If all compostable materials are diverted from the waste stream then Phoenix would meet its diversion goals.
- "Tan Can" pilot study for green organics collection (no food scraps) in some areas.



### Add Food Waste Collection

Collecting food waste will increase landfill diversion rates and increase the quality of the compost products.



# CIRCULAR ECONOMY

A circular economy is an economy that is regenerative by design where the two materials flows (a) biological materials, designed to reenter the biosphere, and (b) technical materials, designed to circulate with minimal loss of quality, are ultimately powered by renewable energy (RISN 2014).

## Economic Impacts

The list of positive economic impacts is extensive, from business partnerships and industry clusters for supply chain enhancement to job creation through innovation, new businesses, tourism, and capital investment. Positive earnings also come in many forms: sales profit, tax revenues, reduced processing and recycling costs, and branding to attract talent and business. Lastly, resource efficiency (better use and reuse of inputs assures less natural resource use over time) creates value and results in price stabilization, resource security, risk reduction.

## Environmental Impacts

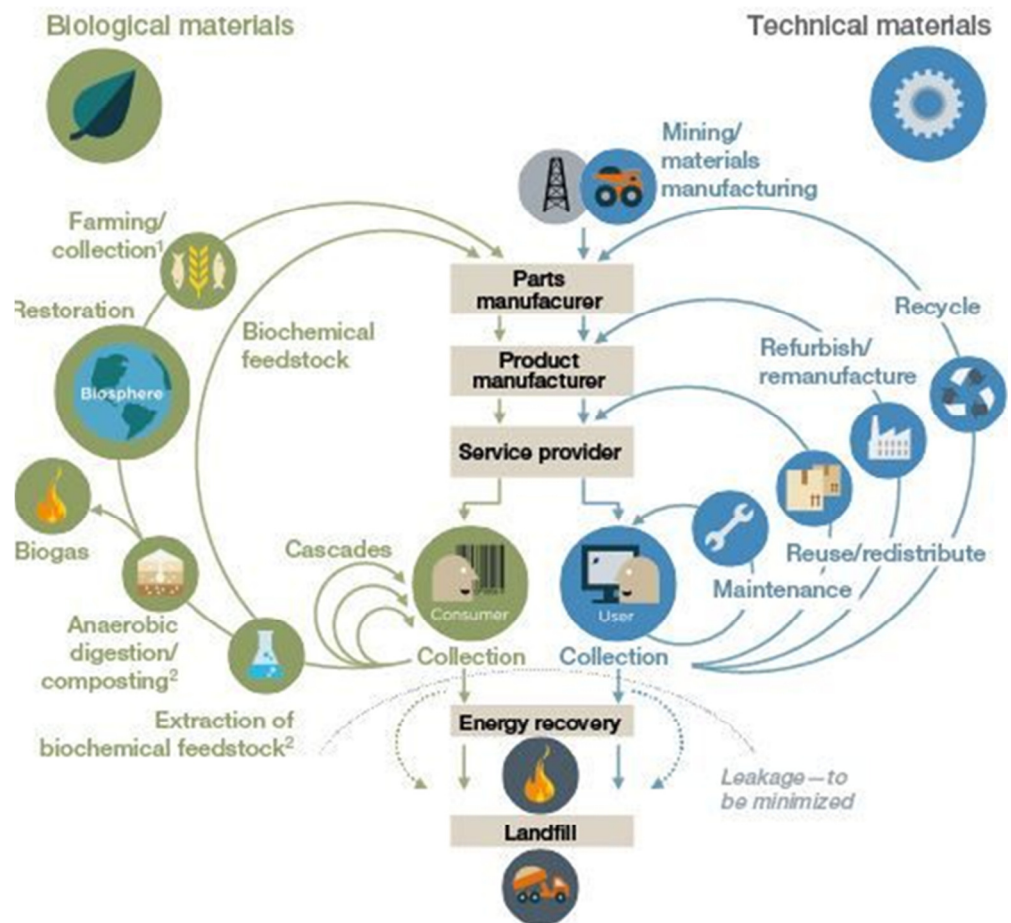
The foremost environmental impact of a circular economy is healthier systems from fewer inputs and less waste. When landfills are not being used, there are lower GHG emissions from waste transportation because less hauling and lower levels of methane and other landfill gases from less decomposition. This leads to better air quality, enriched land productivity and soil health, and improved water management.

## Social Impacts

The Hanover Principles were developed for the 2000 World's Fair as design principles for sustainability and #6 says to eliminate the concept of waste and shift to a more

"We (the City of Phoenix) need to show is how easy it is and the **benefits of growing your own food.**"  
– Terry G.

Nationally, recycling and reuse industries are reported to generate **~\$12.9 billion** in federal, state, and local tax revenues (NERC 2009).



Source: Ellen MacArthur Foundation

For every 1 million tons of organic material composted and used locally, almost **1,400 jobs (at \$16-20/hr.)** are created each year (ILSR 2014).

sustainable mindset. A circular economy would certainly perpetuate this principle and be an excellent catalyst for change. Also, community empowerment is important for change by acknowledging citizens as the

driving force in creating, keeping, and sustaining the city (Almere Principle #7 as defined by international sustainability expert William McDonough).