



INNOVATION RESEARCH
INTERCHANGE
Accelerating Value Creation



IRI

May 22–25
Philadelphia, PA

2023 ANNUAL CONFERENCE



Biggest Challenge Board

- Post your current challenges under the following categories on the relevant board:
 - Chemicals of concern
 - Decarbonization
 - Circular economy
 - Social issues
- Use dots to 'upvote' challenges that resonate with you.

Waste Challenge Board

- Write down your desired collaborations on the "Available" and "Wanted" sections of the Waste Challenge Board and attach your business card.
- At the end of the session, check the board to see if you have any connections.

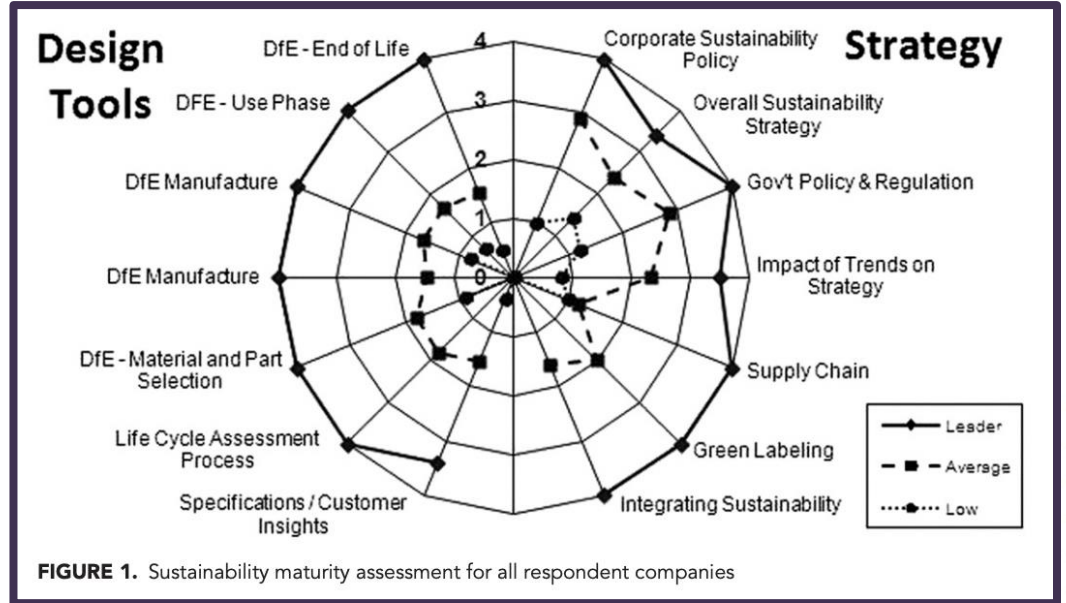
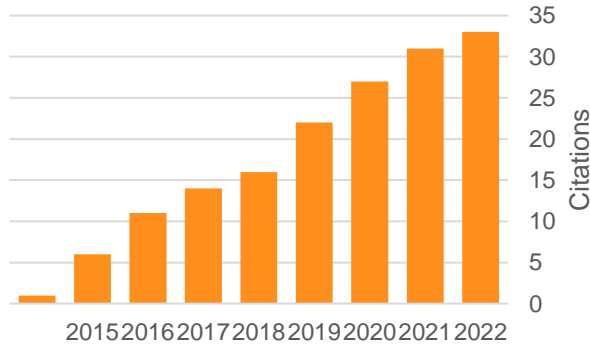
Exploring Sustainable Solutions

Navigating Challenges and Opportunities in
Innovation

*Jamie Pero Parker, RTI Innovation Advisors and
Amy Costello, Armstrong World Industries*

Interest in the Sustainability Maturity Model is growing.

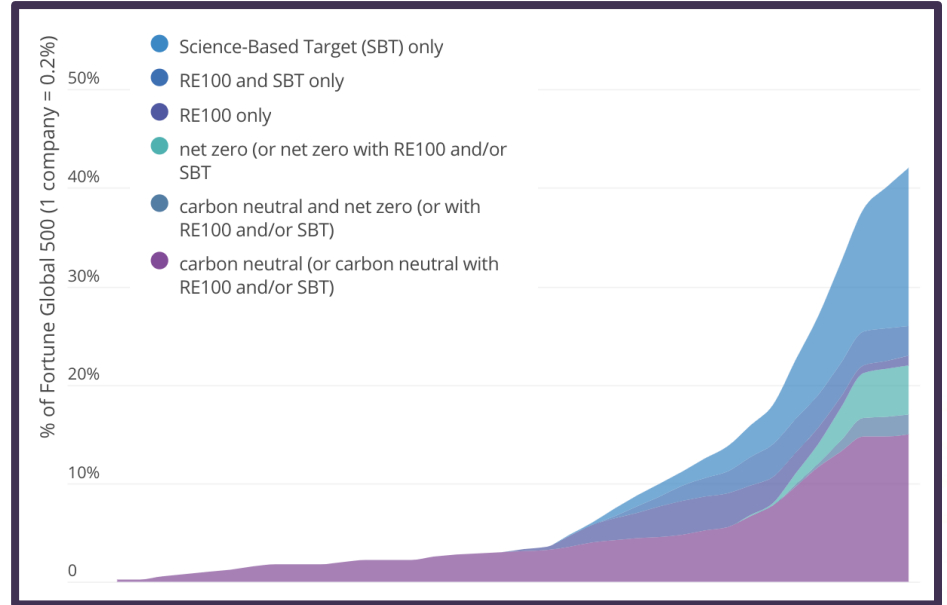
The Sustainability Maturity Model analyzes 14 different dimensions of sustainability. This work has seen continued interest since publication.



Source: A Maturity Model for Sustainability in New Product Development (DOI 10.5437/08956308X5701143)

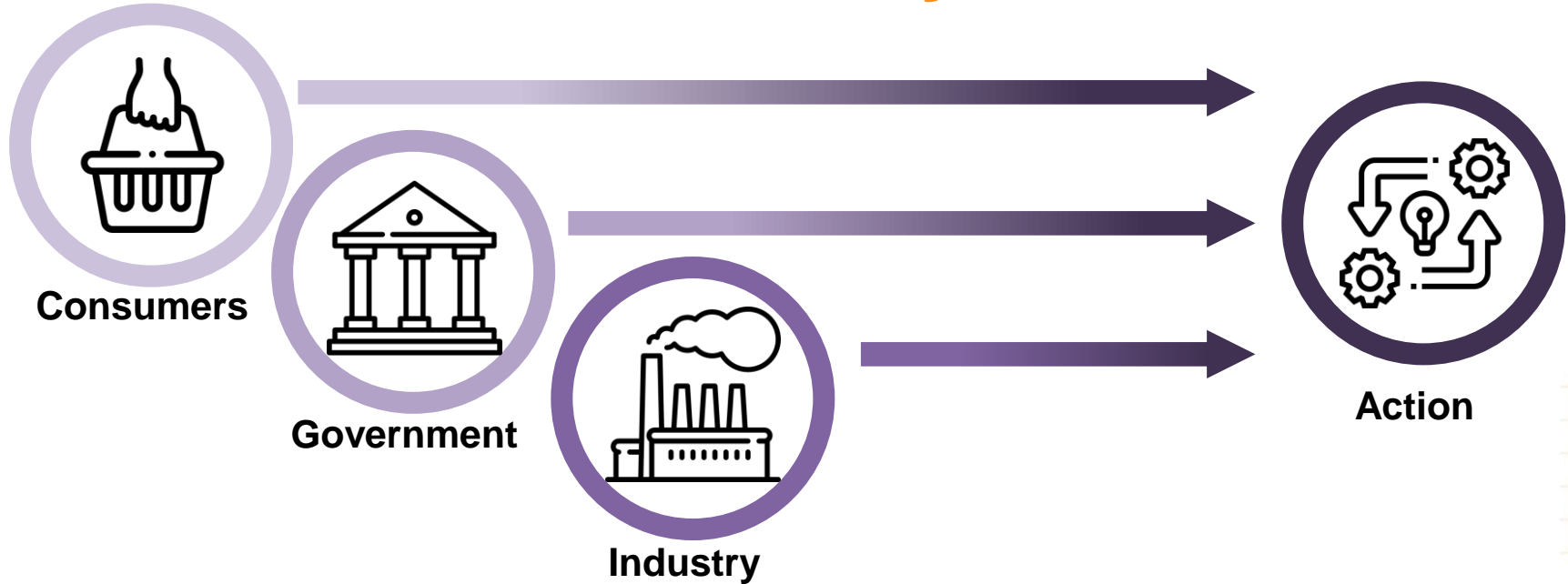
Sustainability has become a key tenet in business.

- 40% of global CEOs think their organization will no longer be economically viable in 10 years, with 82% implementing initiatives to reduce emissions.
- 42% of Fortune Global 500 companies now (2022) have significant climate milestone(s) for 2030, with 63% targeting 2050. This is up from 23% in 2019.



Source: Climate Impact Partners, PWC "The Leadership Agenda"

A confluence of factors is driving the focus on sustainability



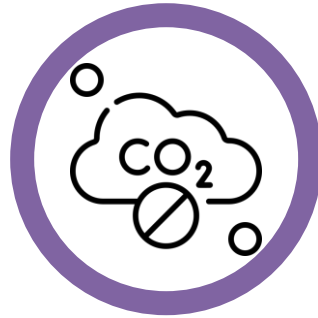
Industry is facing many wicked sustainability challenges



**Chemicals of
Concern**



Plastics



**Carbon &
Climate Change**



**Environmental
Justice**



Systems Change

Current state of Chemicals of Concern

\$17.5 trillion

is the annual societal cost of using PFAS, when environmental pollution and health costs are considered

1000s

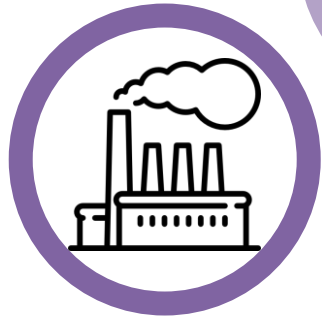
of consumer products contain PFAS



Increasing advocacy, press and documentaries have increased **consumer awareness**.



The US and EU **Governments** are looking to ban PFAS.



Companies across apparel, personal care products, baby products, furniture, and footwear (such as L.L. Bean, Ikea, H&M and Keen) have removed PFAS from all product lines.

Sources: The Guardian, ChemSec, Bloomberg Law, NRDC, PFAS Central

Current state of the Plastics Challenge

5.25 trillion
pieces of plastic debris
are in the ocean

only 14%
of household waste is
recycled globally

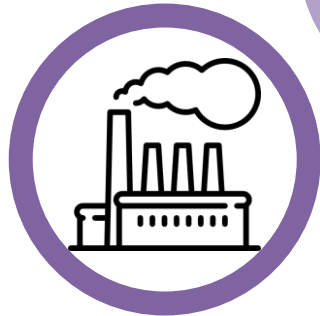
only 9%
of plastic was recycled
in the US in 2018



Consumers stated they are willing to pay 29% more for a product from recycled materials



Governments have passed national EPR laws in at least 54 countries.



Over 1000 **Companies** have signed onto Ellen MacArthur Foundation's vision for a plastics circular economy.

Sources: National Geographic, internal research, EPA Facts & Figures, Plastics Today, OECD, Recykal, Ellen MacArthur Foundation, HBR

Current state of Carbon & Climate Change

\$2 trillion

is the potential future cost of climate inaction in the US

over 1°C

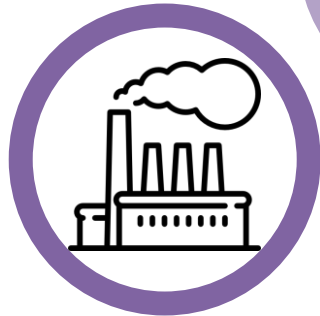
is how much the average global temperature has increased since 1880



Over 40% of **Consumers** preferred renewable energy utility generation in 2019.



Governments covering 91% of global GDP have passed national net zero targets.



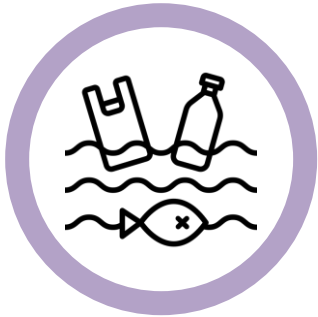
Over 950 **Companies** globally have made carbon neutral pledges.

Sources: NPR, NASA, Net Zero Tracker, IEA, Cogent Reports

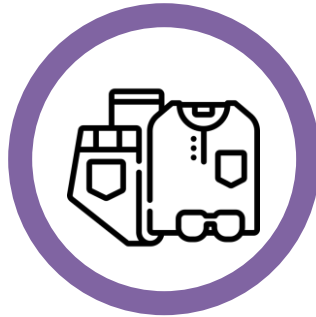
Innovation caused the problem...



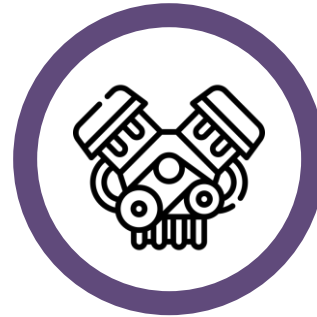
PFAS



Plastic Packaging



Synthetic Fabrics



Internal
Combustion
Engines



Oil & Gas
Refining

Innovation caused the problem... and can help solve it



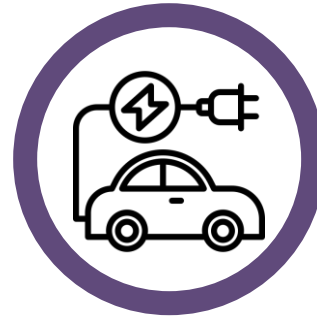
Safe Alternatives



PCR Resins



Bio-attributed
Packaging

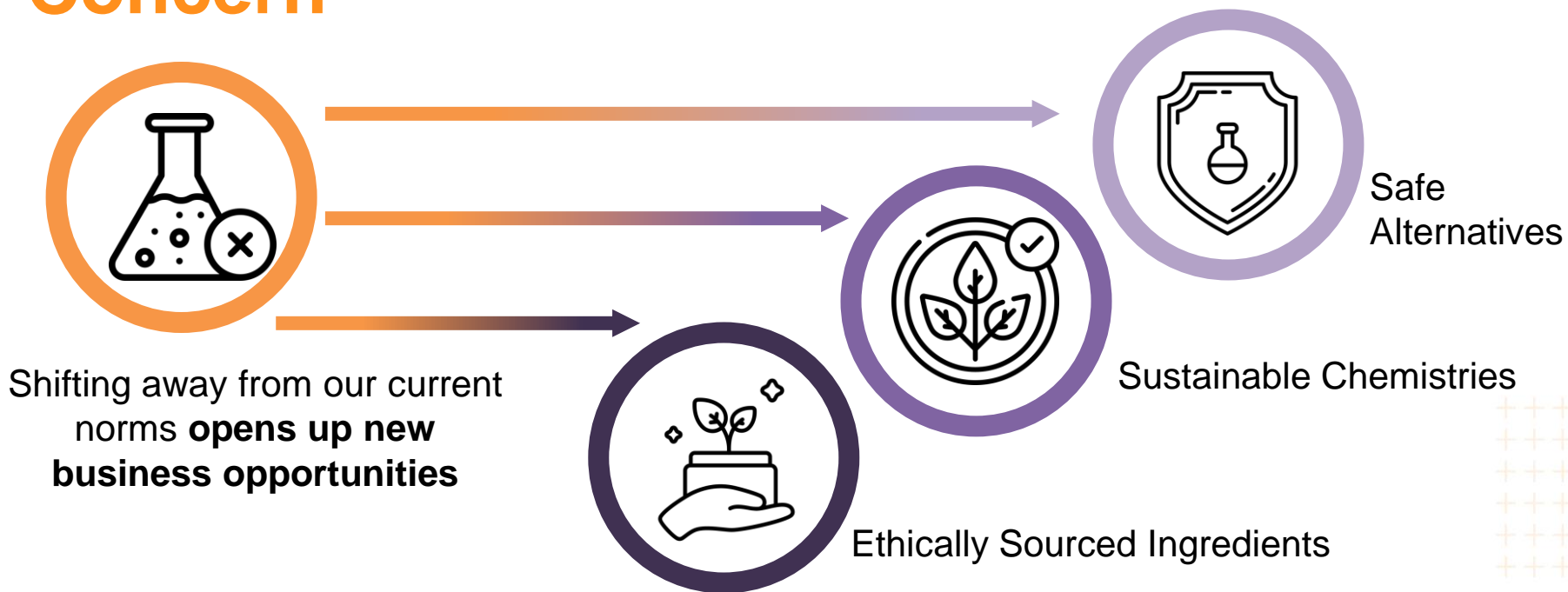


Electric Vehicles

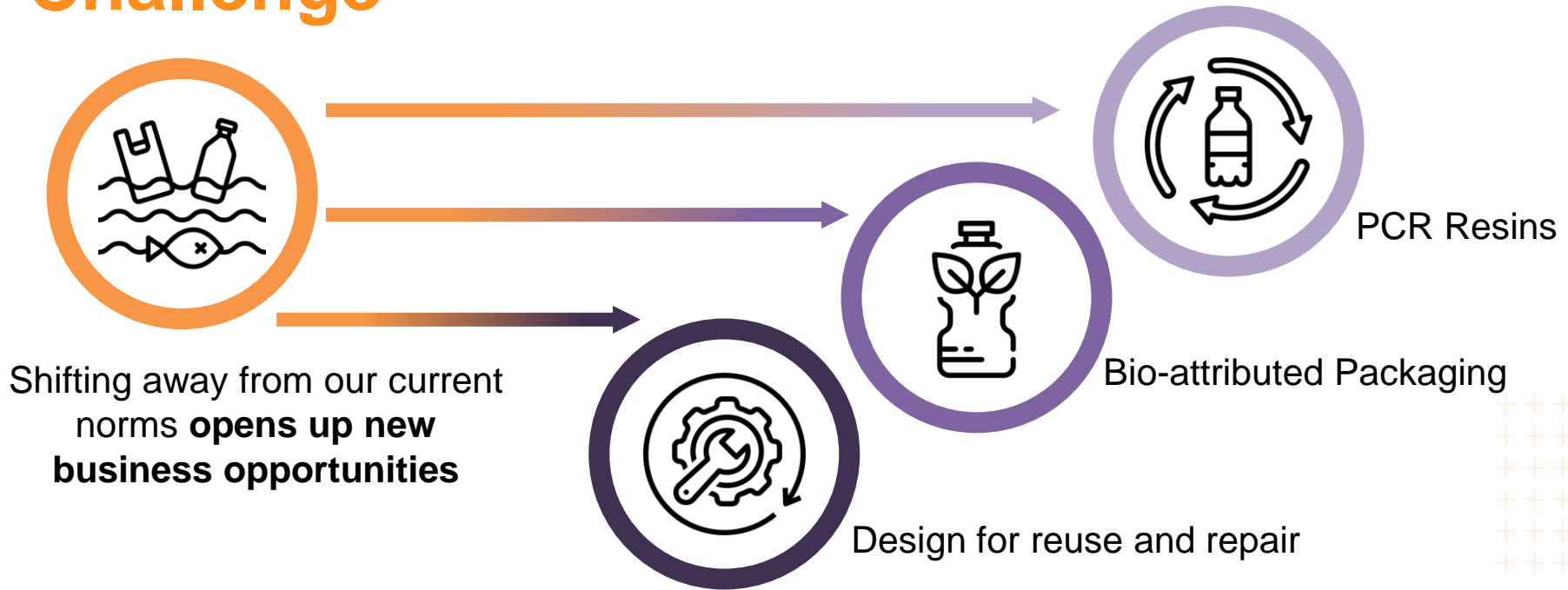


Renewable
Energy

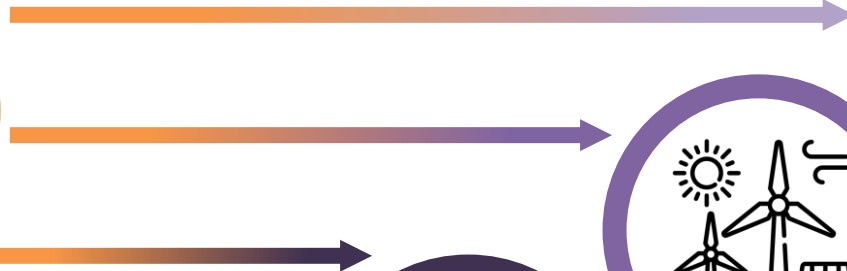
Innovation opportunities in Chemicals of Concern



Innovation opportunities in the Plastics Challenge

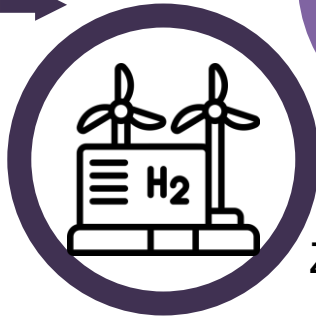


Innovation opportunities in Carbon & Climate Change



Shifting away from our current norms **opens up new business opportunities.**

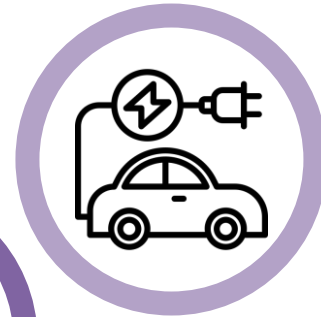
Over \$1 Trillion was invested in the energy transition in 2022



Zero Emission Fuels



Renewable Energy



Electric Vehicles

Sources: BloombergNEF

The challenge of Systems Change

There is no "silver bullet" for sustainability.

All sustainability challenges are systems challenges

To solve, organizations must increase collaborations with their competitors and across the value chains

Cross Value Chain Collaborations

Competitor Collaborations

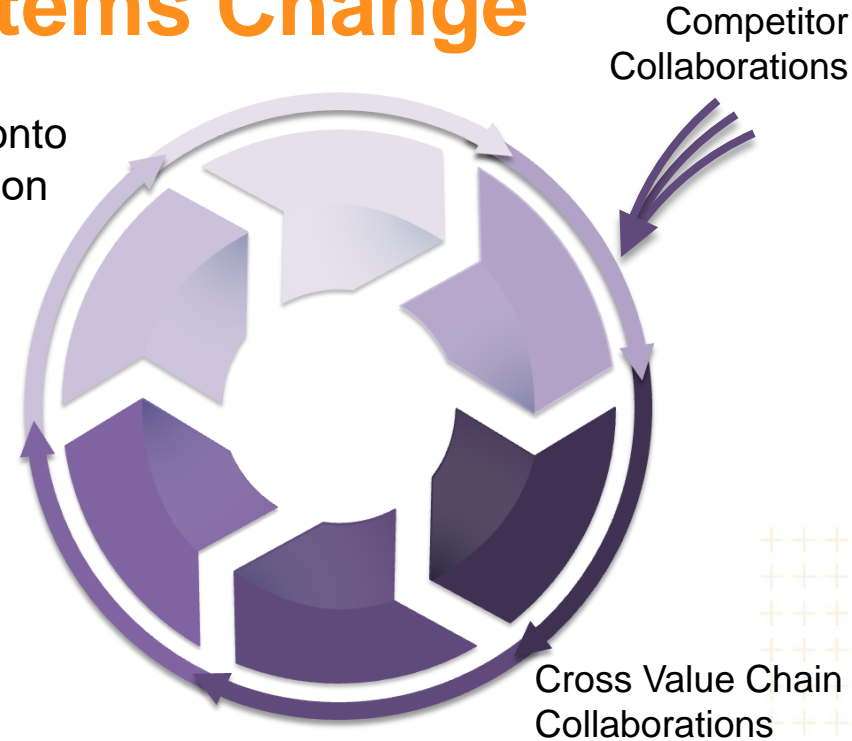


The opportunity in Systems Change

>1000 companies globally have signed onto Ellen MacArthur Foundation's vision for a plastics circular economy

961 companies globally have made carbon neutral pledges

91% of global GDP is captured by national government net zero targets



Source: Ellen MacArthur Foundation, Net Zero Tracker, IEA

Environmental Justice must be central to the new system we build.

Predominantly Black and Hispanic neighborhoods are disproportionately more likely to...



Have **peaker plants**, one of the dirtiest forms of energy, **located nearby**



Have **water sources polluted with toxic chemicals**

With 2°C of global warming, Black and African American individuals are...

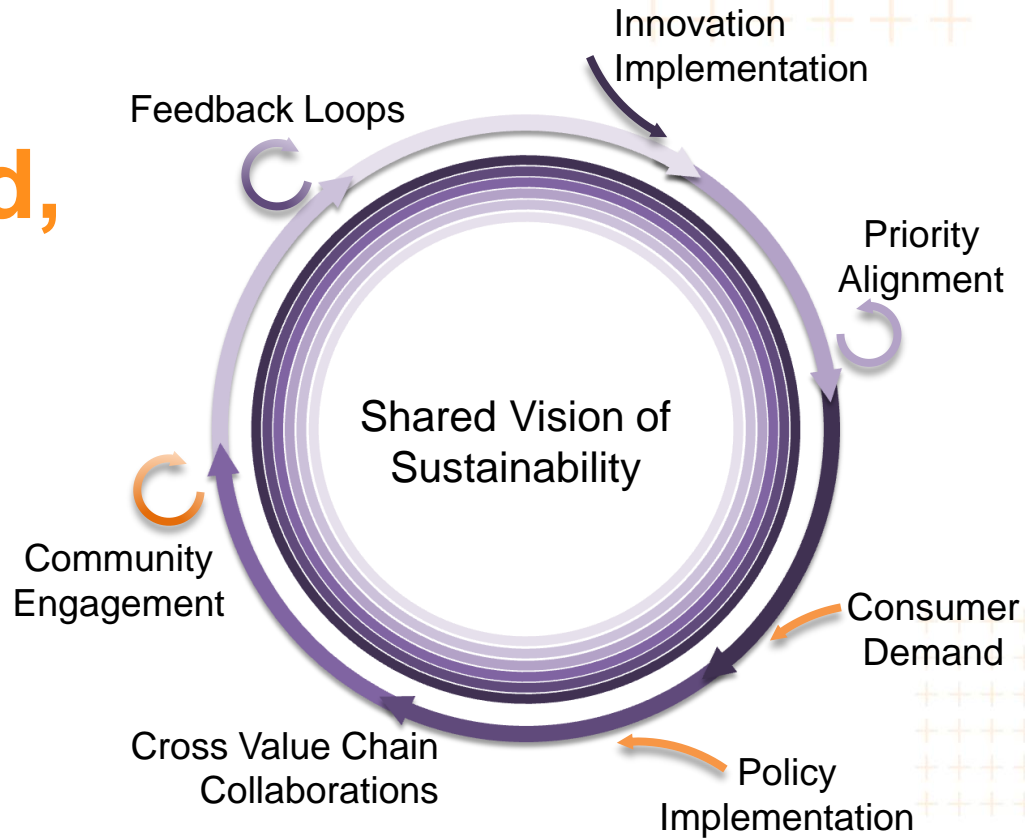
40% more likely to currently live in areas with highest projected increases in **extreme temperature related deaths**

Hispanic and Latino individuals are...

43% more likely to currently live in areas with highest projected reductions in **labor hours** due to extreme temps.

Sources: EPA "Climate Change and Social Vulnerability in the United States" The Verge, EPA EJScreen, Clean Energy Group,

To create a more sustainable world, we need new innovations *and* systems change.



Foreside chat: Sustainability at Armstrong World Industries



Amy Costello
Product Stewardship and
Sustainability Manager
Armstrong World Industries



Join us in the hot seat!

Share your challenge and get real time feedback from your colleagues.



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NATIONAL ASSOCIATION OF
Manufacturers