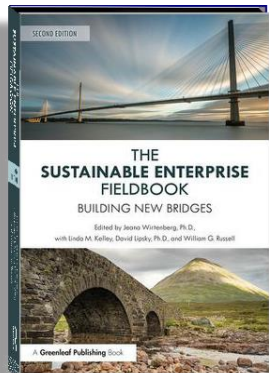


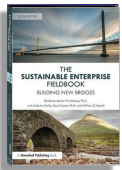
# Poverty and inequity; and Constraints on growth

Sustainable globalization

**Linda Morris Kelley**  
**Transitioning to Green**  
**April 30, 2020**

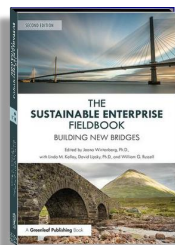


# Who's in the Zoom Room today?



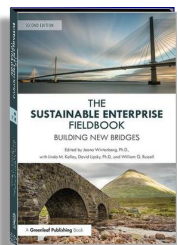
# What about power and sustainability?

Question for today



# Power

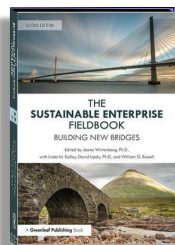
- **I can!**
- Power is the ability to act.
  - Mental models
    - What is seen as possible?
    - Beliefs and values
    - Barriers
    - Controls – stops, against the roll, a brake
  - Social structures and frameworks
- Networked connections increase power





Ignorance, allied with power, is the most ferocious enemy justice can have.

- *James Baldwin*

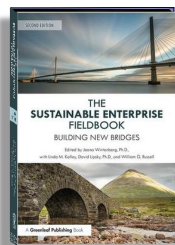


# Poverty and inequity

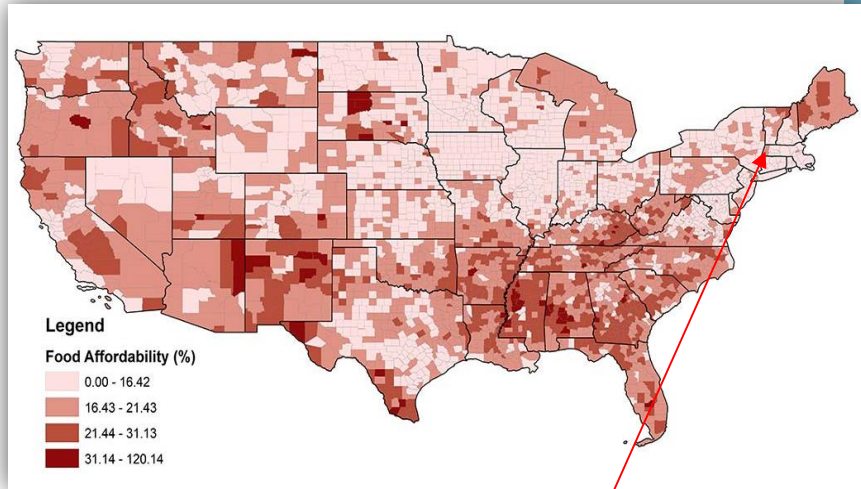


New market creation

Copyright 2016. V.G. Axelrod, J. Harmon, L.M. Kelley, W.G. Russell, and J. Wirtenberg. *Six lenses for sustainable globalization*



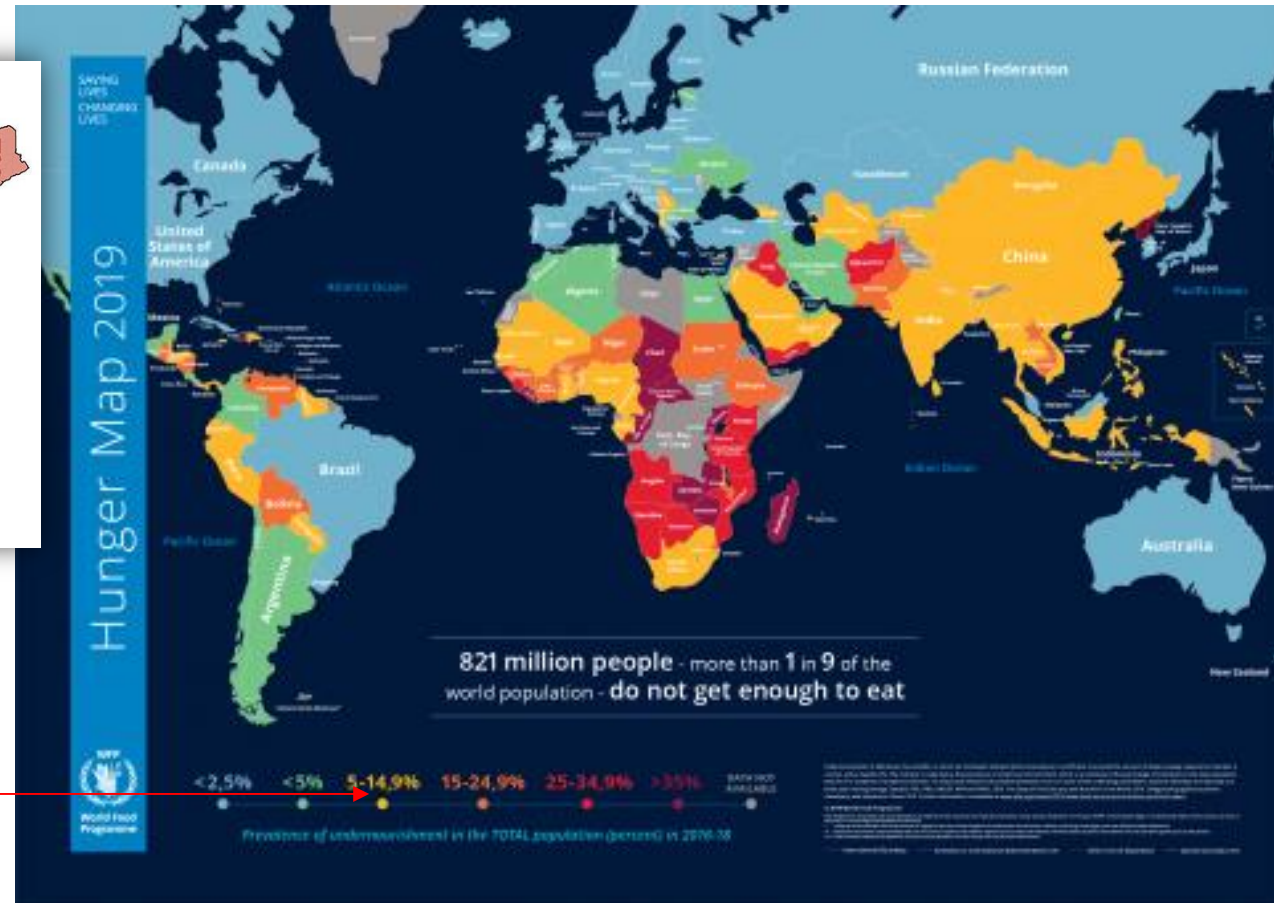
# Food insecurity, an indicator of poverty



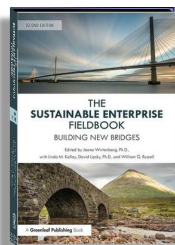
<https://www.publichealthpost.org/research/national-food-affordability-a-county-level-analysis/>

12,350 people in Berkshire County, MA, 9.7%, are food insecure.

<https://map.feedingamerica.org/county/2017/overall/massachusetts/county/berkshire>

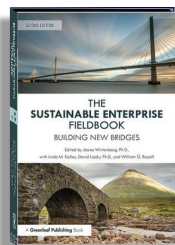


<https://www.wfp.org/publications/2019-hunger-map>



# Short, selected history of equity

- **Golden Rule** – Do unto others as you would have others do unto you
- **Magna Carta** – TO ALL FREE MEN OF OUR KINGDOM we have also granted, for us and our heirs for ever, all the liberties written out below, to have and to keep for them and their heirs, of us and our heirs:
- **Declaration of Independence** – We hold these truths to be self-evident, that all men are created equal
- **Gettysburg Address** – Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.





# United Nations Universal Declaration of Human Rights December 10, 1948



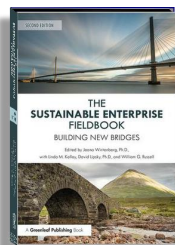
**Whereas recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world,...**

## **Foundation of Our Common Future**

- Human Rights law
- Community Development

## **Working Cities Challenge**

- Living Cities
- Federal Reserve Bank of Boston
- Working Cities Challenge
- New England Gateway Cities
- Working Cities Pittsfield



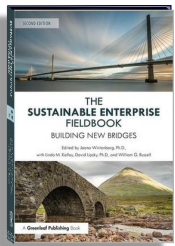
# Inequity and precarity

## Inequity

- Fewer resources accumulate for work done
- Fewer opportunities for investment
- Fewer opportunities for education
- Less wealth built
- Disincluded people

## Precarity

- Job insecurity
- Food insecurity
- Housing insecurity
- Transportation insecurity
- Uncertain healthcare
- Devalued people



# New market creation: the Zabaleen

Cairo, Egypt. 2020 population 20,900,000 people



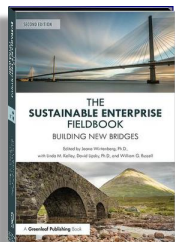
<https://placemanagementandbranding.wordpress.com/2012/04/16/the-zabbaleen-functional-informal-waste-management-in-cairo-part-i/>



<https://www.theguardian.com/global-development/poverty-matters/2014/mar/27/waste-egypt-refuse-collectors-zabaleen-cairo>



<https://www.connectthecultures.com/zabaleen-garbage-city-video/>

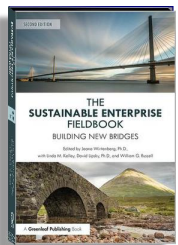


# Pune, India, Waste Pickers

Pune, India, 2020 population 7.5 million people



[https://thecityfix.com/blog/urban-transformations-pune-india-waste-pickers-go-trash-treasure-sarah-parsons-anne-maassen-madeleine-galvin/?utm\\_source=twitter.com&utm\\_medium=wrcities&utm\\_campaign=socialmedia&hootPostID=3a7ed5fdc0f779c976ec64e4762fcee7](https://thecityfix.com/blog/urban-transformations-pune-india-waste-pickers-go-trash-treasure-sarah-parsons-anne-maassen-madeleine-galvin/?utm_source=twitter.com&utm_medium=wrcities&utm_campaign=socialmedia&hootPostID=3a7ed5fdc0f779c976ec64e4762fcee7)



# New market creation

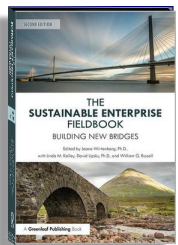
- What are your thoughts about market creation?
- What are the goals?
- What, where, how might new markets be created?
- How would you relate new market creation to sustainability?

**Adidas sold 1 million pairs of shoes made from ocean plastic last year (2017-8)**

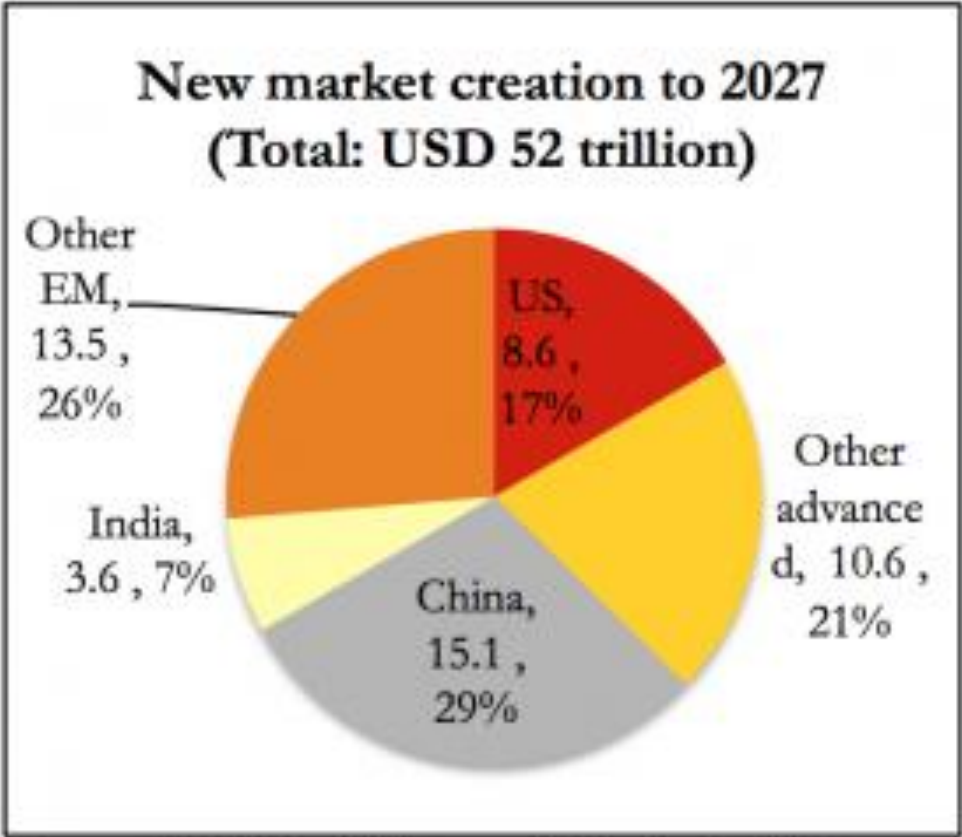
*© Parley with the Oceans -- The men's shoe by Adidas, made with recycled ocean plastic*



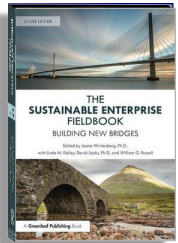
<https://www.treehugger.com/sustainable-fashion/adidas-sold-1-million-pairs-shoes-made-ocean-plastic-last-year.html>



# New market creation



*Source: IMF World Economic Outlook 2017; IMA analysis. Absolute contribution to world new market in USD trillion; share of total in percentage.*

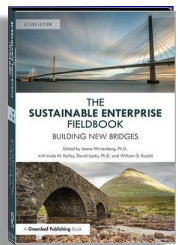


# Afgan girls build ventilators from used car parts



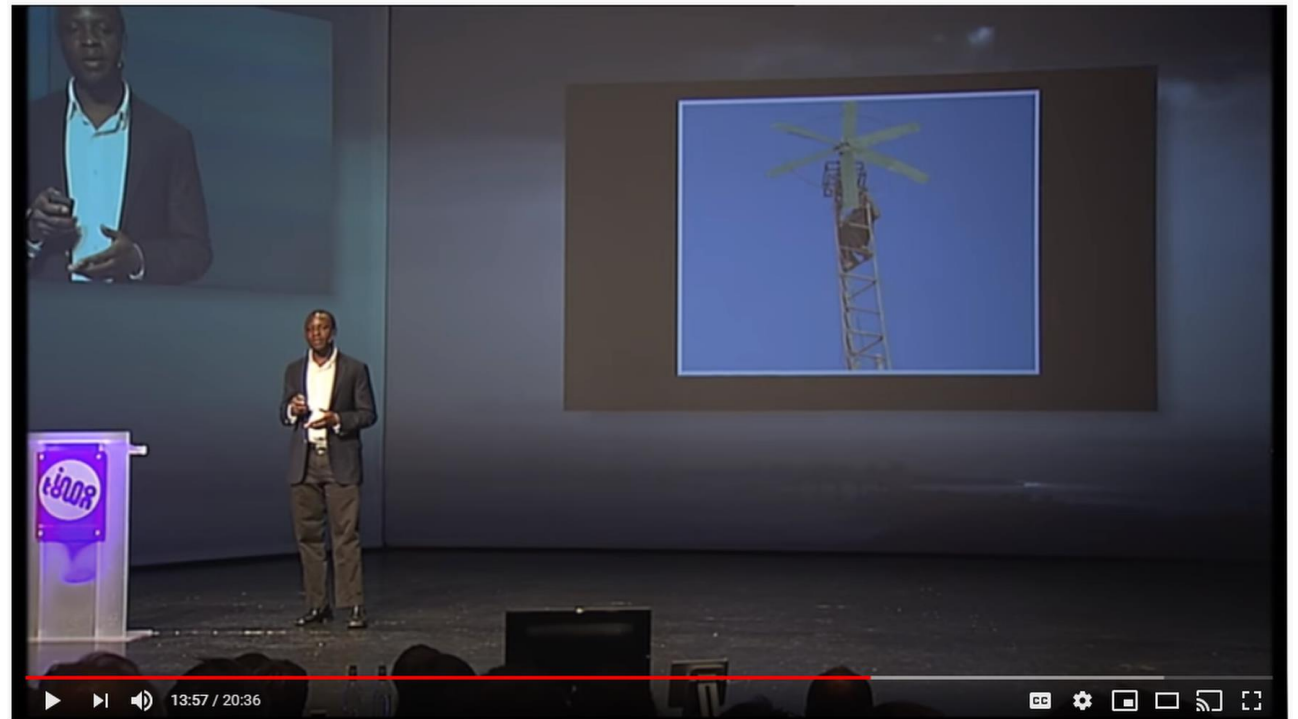
Workers of an all-female robotic team build a ventilator in preparation for Covid-19 coronavirus patients, at a workshop, in Herat. — AFP Relaxnews

<https://www.thestar.com.my/tech/tech-news/2020/04/19/covid-19-afghan-girls-try-building-ventilator-from-used-car-parts>



# William Kamkwamba, the boy who harnessed wind

- 2002, Malawi, William at age 13 build a windmill from salvaged materials and a library book, pumping water to avert famine in his village
- 2019, 31 years old, graduated from Dartmouth in 2014, worked with IDEO and now with [WiderNet](#) providing digital education to underserved areas of the world.

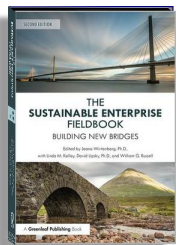


William Kamkwamba - HOW I HARNESSSED THE WIND.

76,876 views · Aug 29, 2016

1.2K 21 SHARE SAVE ...

[https://www.youtube.com/watch?v=PYt41OKmxus&feature=emb\\_rel\\_end](https://www.youtube.com/watch?v=PYt41OKmxus&feature=emb_rel_end)





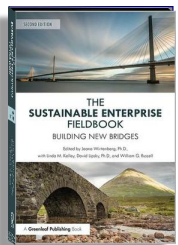
# Inequity

What are some of the inequities raised by this COVID-19 pandemic?

How might innovative, out-of-the-box thinking and actions change these for the better?

Crisis are not sufficient to lead to the reduction of inequality. See e.g. post-2008 money creation. It all depends on the intellectual, political and institutional mobilizations and solutions emerging from the crisis.

*Thomas Picketty, Capital and Ideology*

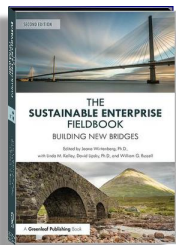


# Constraints on growth



## Resource depletion

Copyright 2016. V.G. Axelrod, J. Harmon, L.M. Kelley, W.G. Russell, and J. Wirtenberg. *Six lenses for sustainable globalization*

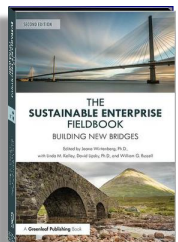


# Phosphorus (P)

Why is this element important?

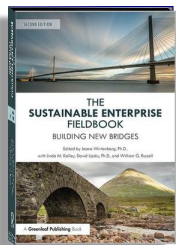
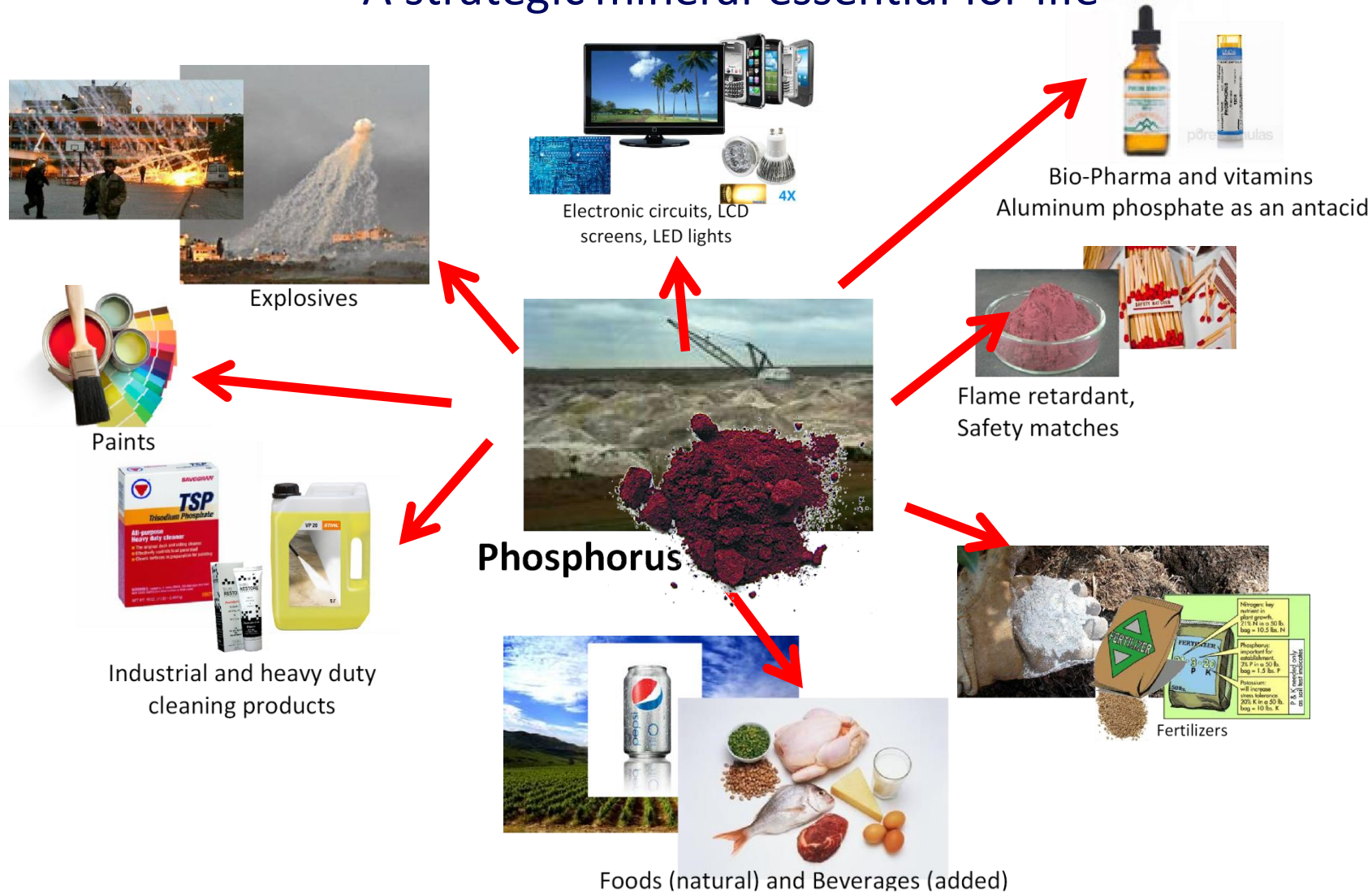


**Phosphorus**

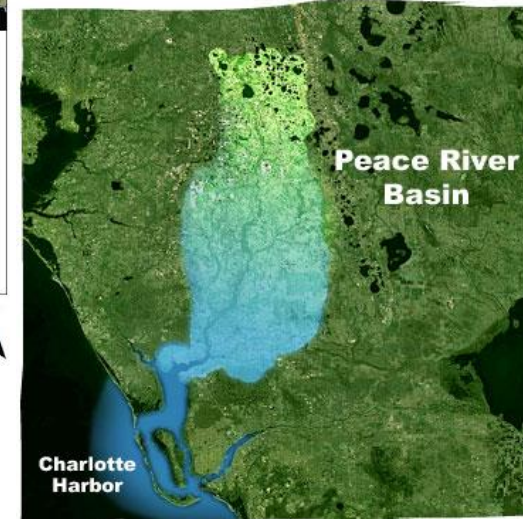
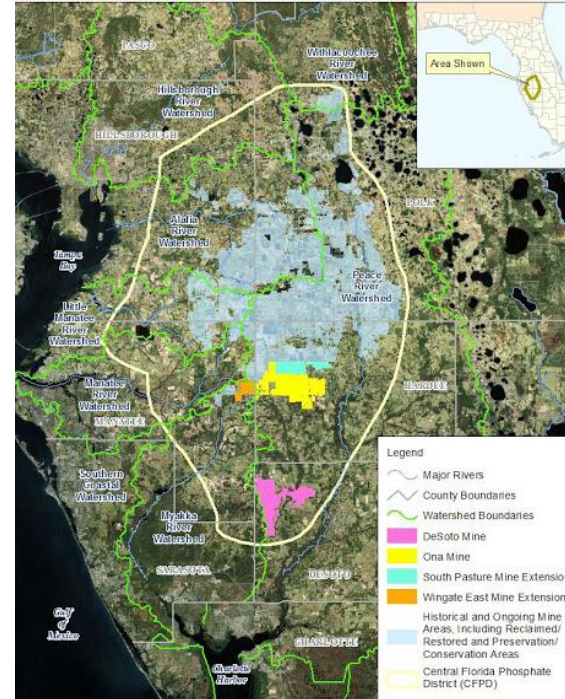


# Phosphorus (P)

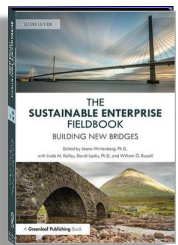
A strategic mineral essential for life



# Southwest Florida's Bone Valley and phosphorus

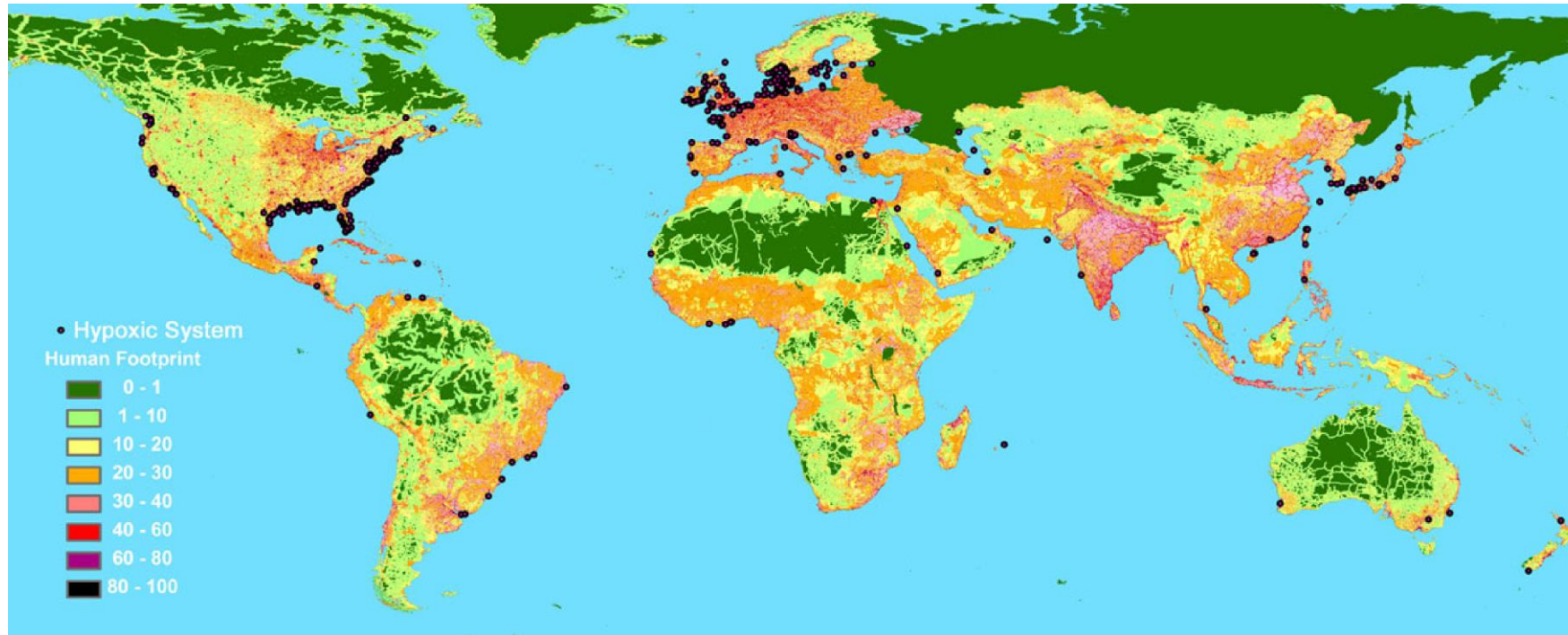


- US has 19% of the world's phosphorus. 65% of that is in Florida
- On days of adequate flow, the Peace River supplies about 6 million gallons of drinking water to residents who live in Charlotte, Sarasota and Desoto counties (over half a million people).

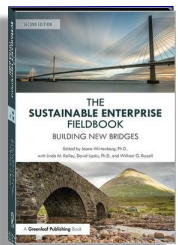


# Phosphorus and water quality

What are the issues? Who are the stakeholders?



A combination of seasonal and permanent **dead zones** dot the densely inhabited coastal areas around the globe.



# Phosphorus: innovation for increased sustainability

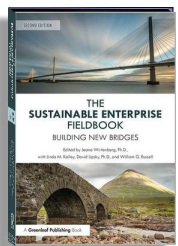
2009. Cle  
operating  
phosphor  
United St  
Advanced  
Plant. Thi  
approxim  
the struvi  
fertilizer.

<http://www.advanced-wastewater-treatment-plant-struvite-recovery-project>



A nitrate bioreactor and a PhosphoReduc system were installed as the innovative, low cost solution to reduce phosphorus, solids and pathogens originating from the heavy animal use areas runoff.

<http://phosphoreduc.org/projects-appl/agricultural-effluents-treatment/heavy-animal-use-areas-runoff-treatment-pa>



# Graphite's use and future

## MINING

China (70+%), Mexico, Canada,  
Brazil, Madagascar = 97%  
US mine in Alaska  
-- open pit mining: amorphous,  
flake, or vein

## FORMS of Carbon

- Graphite = multiple layers
- Graphene = 1 layer the depth of a single atom
- Diamond



## GRAPHITE

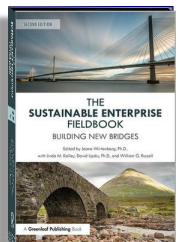
Pencils  
Paints  
Brakes  
Dry lubricants  
Molds in foundries  
Anode material in lithium batteries

## GRAPHENE

High electrical conductivity  
Harder than diamond  
Tougher than steel  
More elastic than rubber  
Lighter than aluminum

**Graphite (crystalline carbon) has no good substitutes and there is almost no recycling.**

**What might be some ways to capture and recycle used graphite?**





# Reimagining and restructuring the economic base: planet > people > profit

- Respect
- Reuse
- Repurpose
- Recycle
- Recouple
- Regenerate
- Rejuvenate

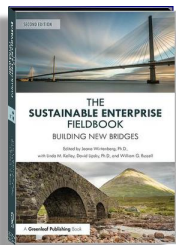


**January 2020, retail and service industries = 70% of US economy**

# Decoupling economic growth from exploitation of natural and social resources

## Linking growth to service and innovation

- The value of intellectual property
- The value of natural resources
- “Do no harm”
- Biomimicry and thriving
- There is no waste in nature

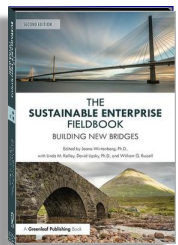


# Climate normal > climate weirding

- Droughts and wildfires
- Rain, snow, megastorms, and flooding



<https://grist.org/article/we-broke-down-what-climate-change-will-do-region-by-region/>



# Climate extremes, USA, autumn 2019

## Kincadee fire in Sonoma County, CA

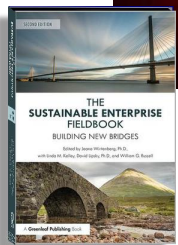


<https://www.nytimes.com/2019/10/24/climate/california-wildfires-climate-change.html?action=click&module=RelatedLinks&pgtype=Article>

## Tropical storm Imelda, Southeast Texas

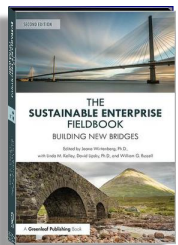
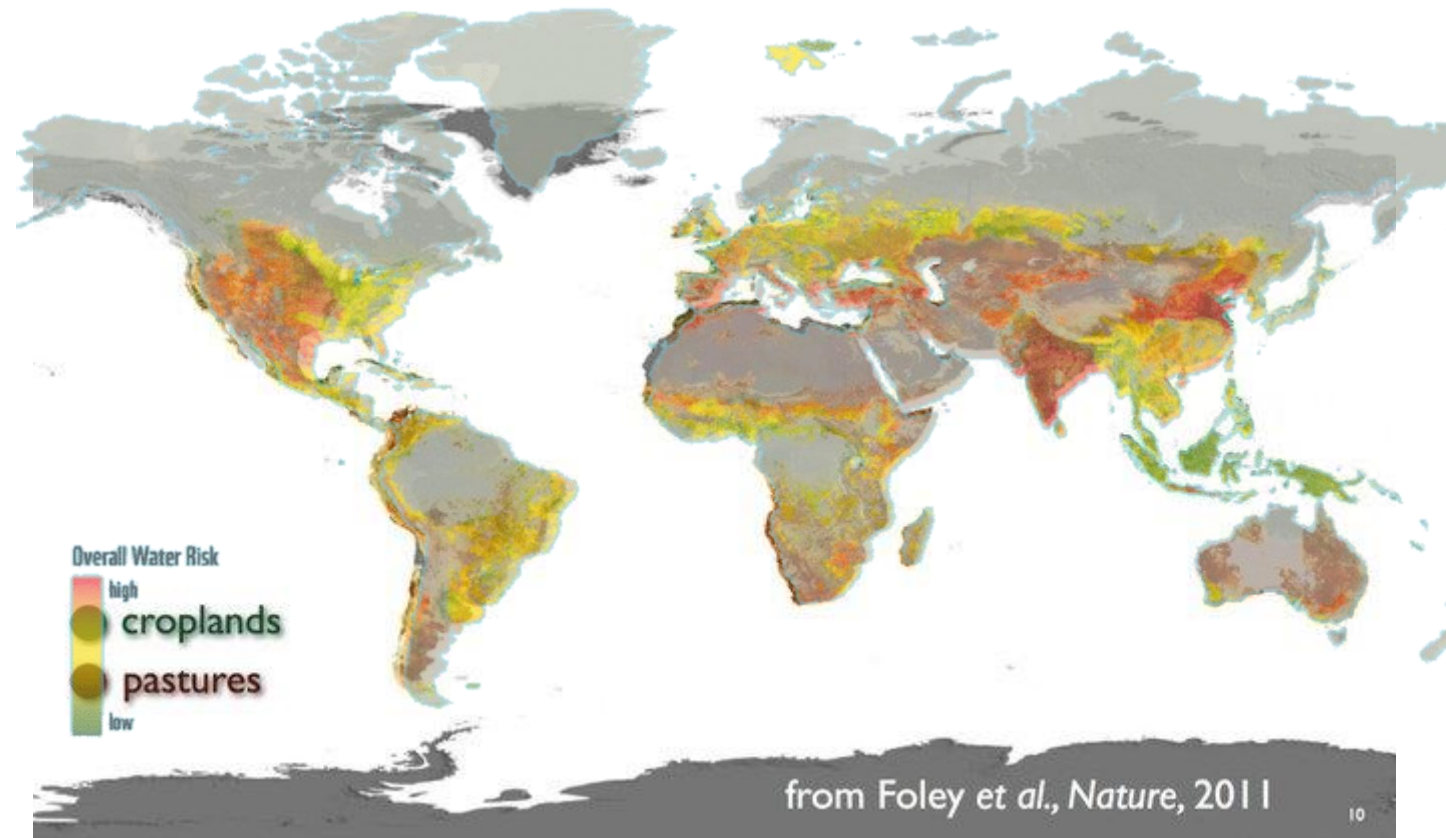


<https://weather.com/>



# Breadbaskets around the globe

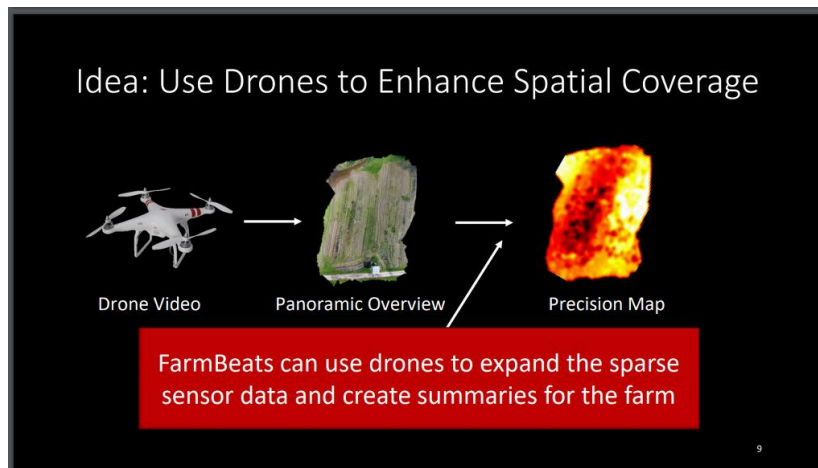
- Availability and access to food
- Depleted aquifers
- Drought
- Flood



# Using IoT and land sensing in farm management

## Microsoft

- Wireless technologies
- Big data
- Artificial Intelligence
- Soil sensing

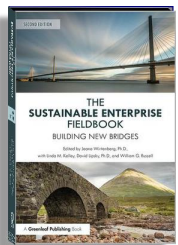


<http://www.microsoft.com/en-us/research/project/farmbeats-iot-agriculture/>

## Essex Farm, Plattsburg, NY

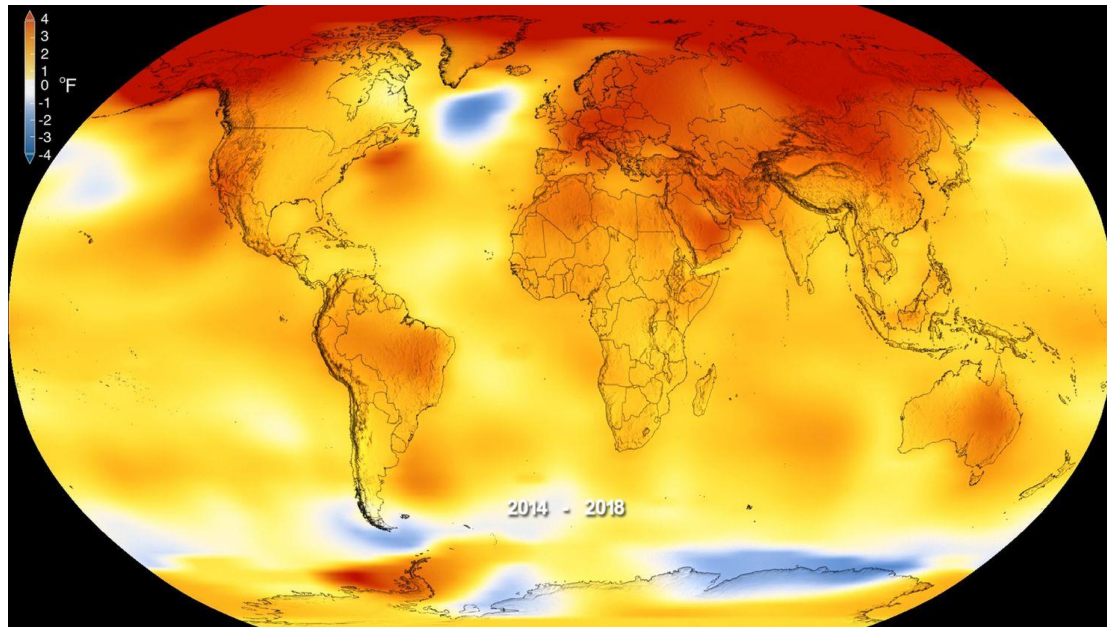


<https://www.wcax.com/content/news/Why-a-tech-giant-teamed-up-with-a-small-North-Country-farm-490597191.html>

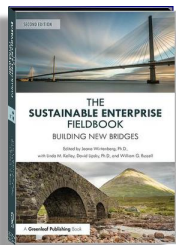
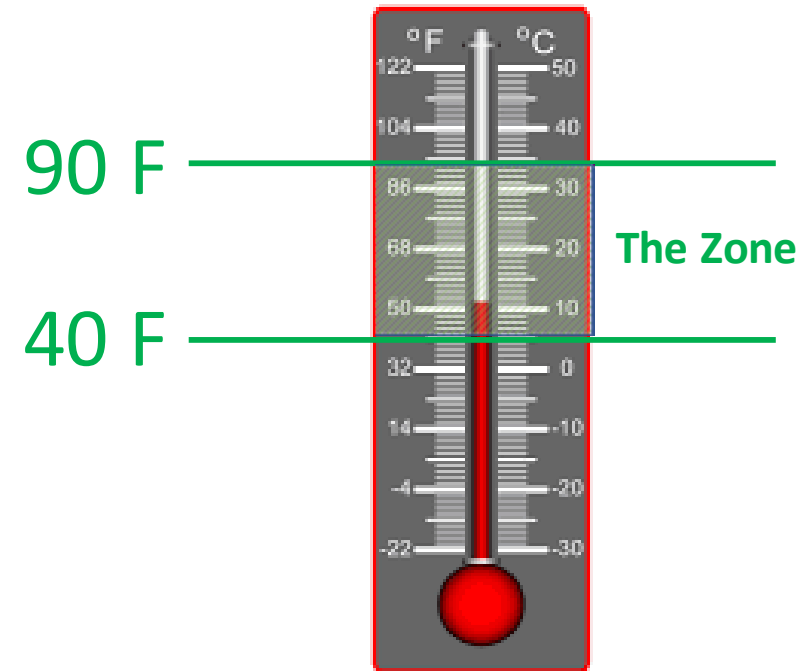


# Human habitable zones and global temperatures

## Increases in global temperature

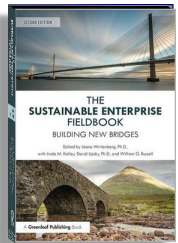


What temperatures can humans tolerate on a prolonged basis?



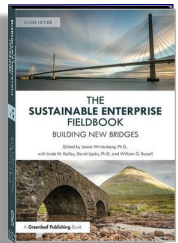
# What are we sustaining?

Question remains





# Reflections on today?



# Thank you for being here!

Preparation for **Session 4**, a) Migration of talent; b) Geopolitical.  
Read: p. 50 (first half of the page)

