Sustainability

Developing the Next Generation of Female Environmentalists

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May 5, 2023

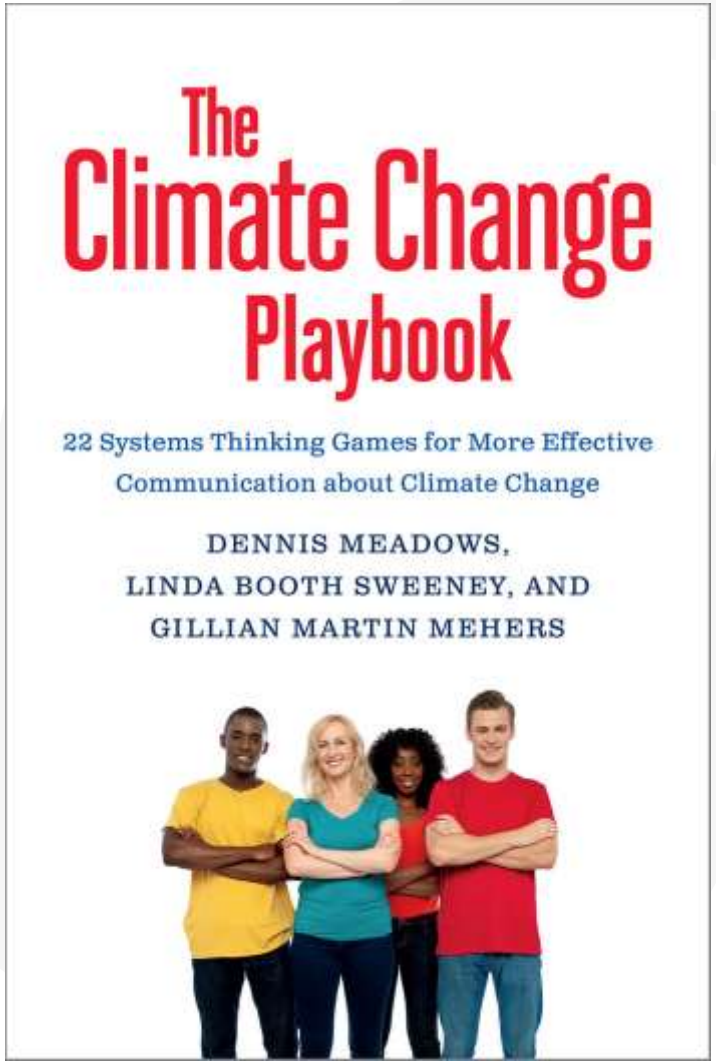
University of Nebraska Omaha

Handing the Earth off to the next generation like...

What is Sustainability?

What is Sustainability

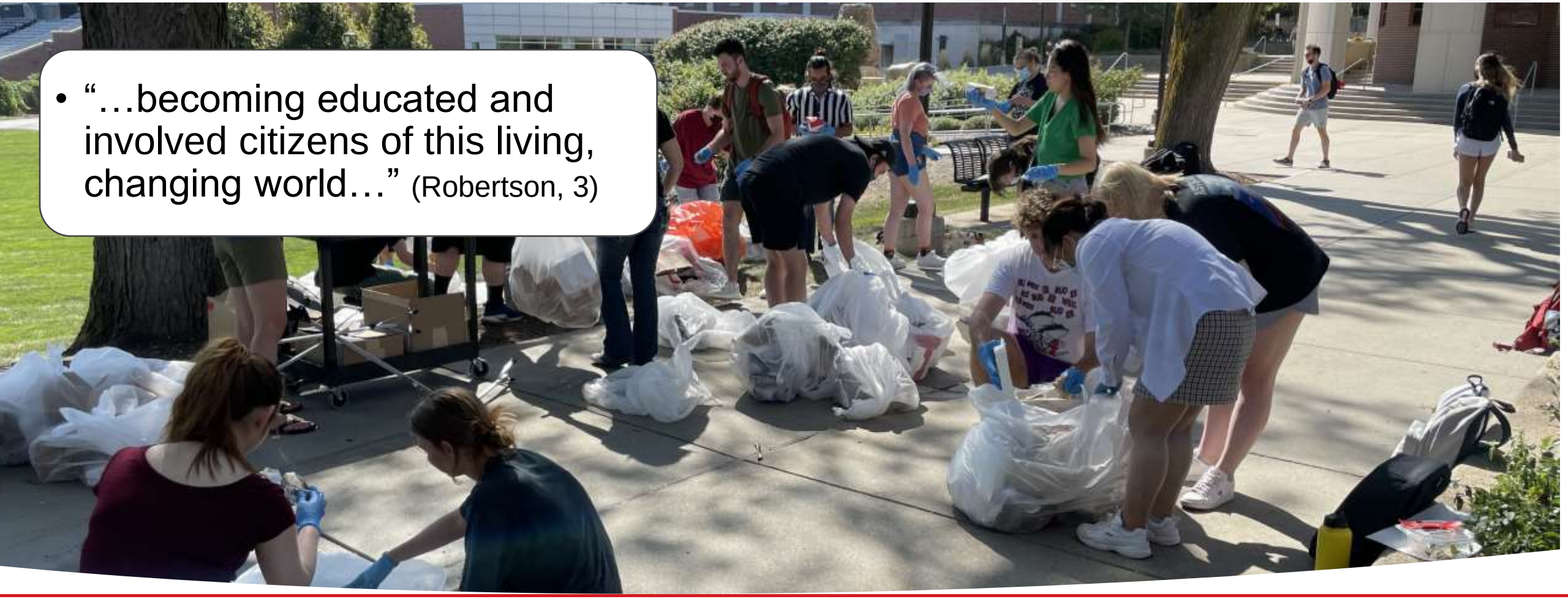
- “Comparing Two Pens” activity



What is sustainability about?

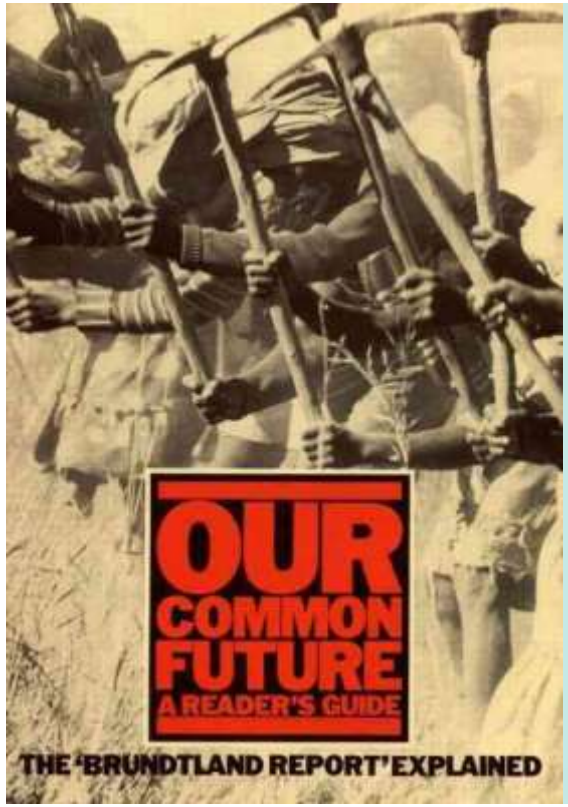
- “Seeing and recognizing the dynamic, cyclical, and interdependent nature of all the parts and pieces of life on earth…” (Robertson, 3)

What is sustainability about?



- "…becoming educated and involved citizens of this living, changing world…" (Robertson, 3)

Origins



"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Brundtland Report, 198

Definitions of Sustainability

Sustainable Development (SD)

Meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

-- Brundtland Commission, 1987 --

Sustainability

The possibility that human and other forms of life on earth will flourish forever.

-- John Ehrenfeld, Professor Emeritus, MIT --

Sustainable Development (SD)

Enough - for all – forever.

-- African Delegate to Johannesburg (Rio+10) --

Sustainable Development Goals (SDGs)

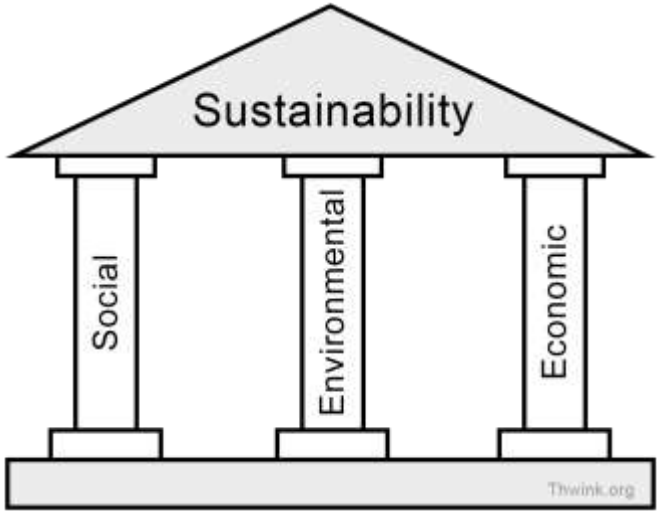
- Developed in 2015
- “They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.”

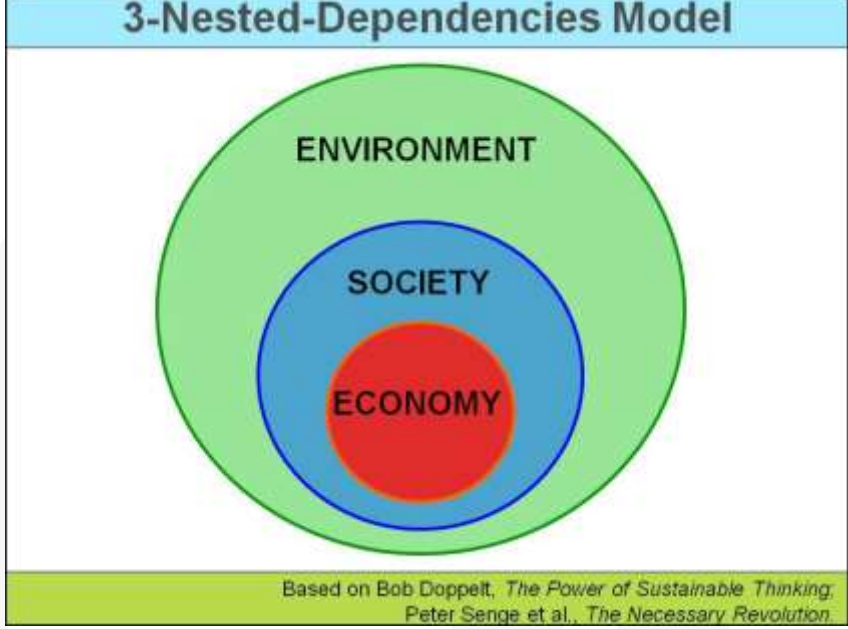
Teaching Sustainability with the SDGs

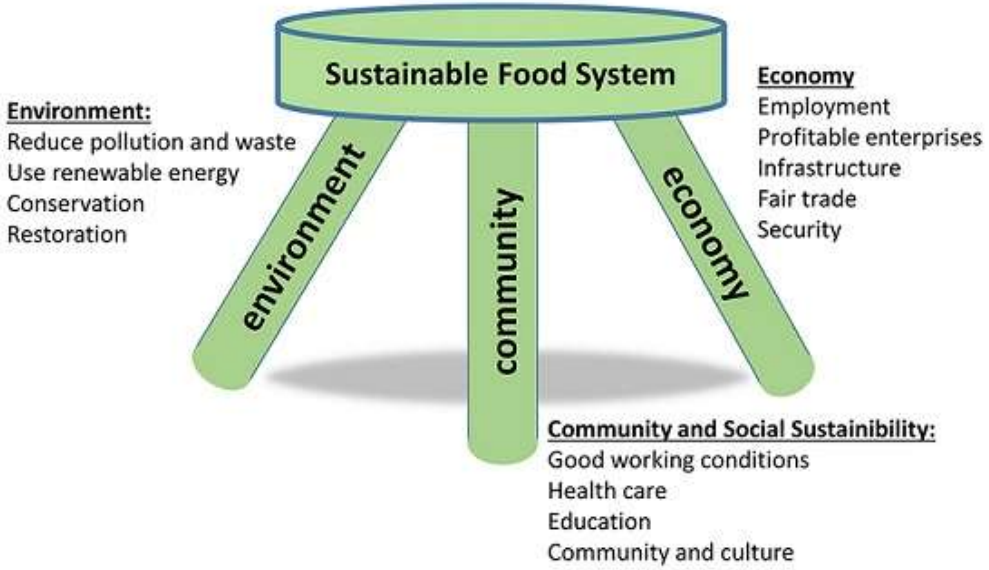
- https://en.unesco.org/themes/education/sdgs/material

- As the 2030 deadline looms, curriculum is moving away from using the SDGs

Three Pillars/Triple Bottom Line







Topics

- Climate Change
- Waste
- Food Systems
- Transportation
- Environmental Justice
- Ecopsychology
- Biomimicry
- Ecological Economics

Climate Change

- “The alarm bells are deafening, and the evidence is irrefutable: greenhouse-gas emissions from fossil-fuel burning and deforestation are choking our planet and putting billions of people at immediate risk. Global heating is affecting every region on Earth, with many of the changes becoming irreversible.”
    - UN Secretary-General António Guterres

Climate change: IPCC report is 'code red for humanity'

By Matt McGrath
Environment correspondent

9 August | Comments

COP26

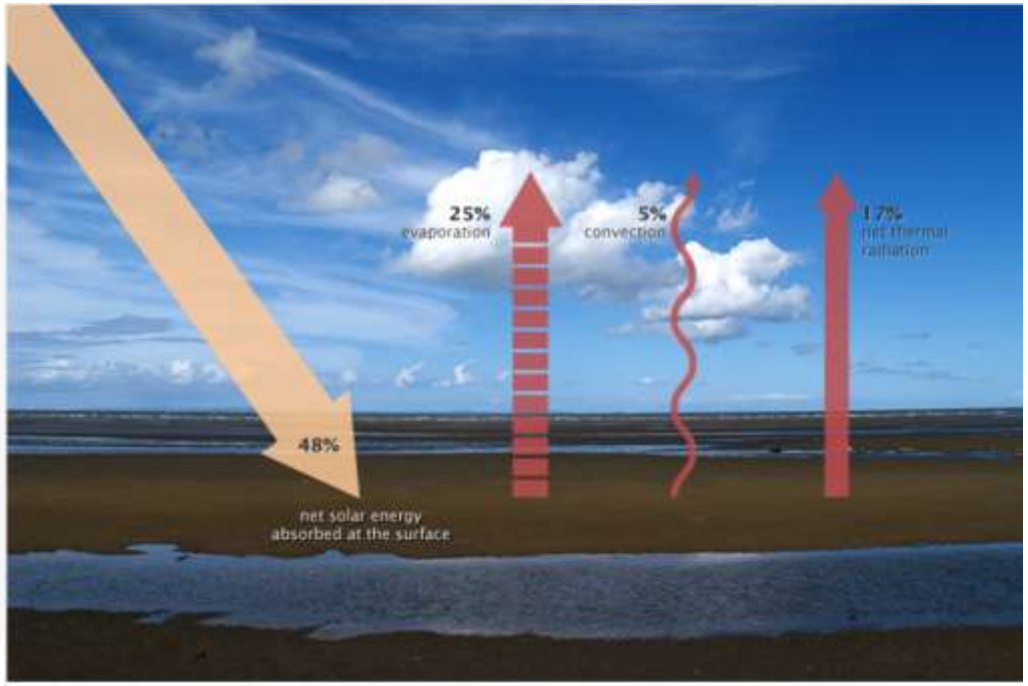
EPA

Human activity is changing the climate in unprecedented and sometimes irreversible ways, a major UN scientific report has said.

Climate Change

- The amount of radiation from the Sun on human time scales does not change (solar constant)

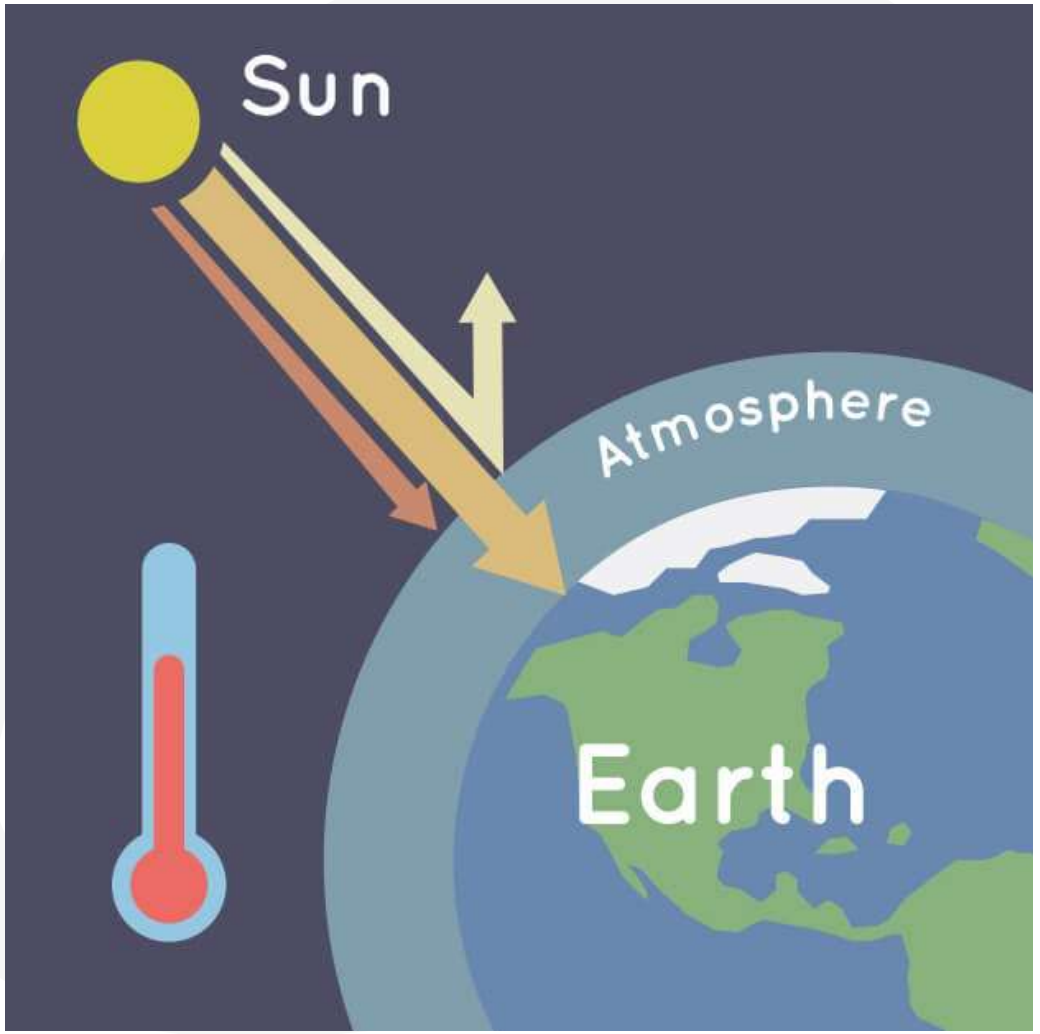
- The only thing that can cause warming is changing the rate at which energy leaves the Earth system.



If we do not lose energy at the rate in which we obtain it, the system warms.

Climate Change

- By adding greenhouse gases into the atmosphere, we increase the amount of gases in the air that absorb energy
  - energy is not released to space as fast as it accumulates.

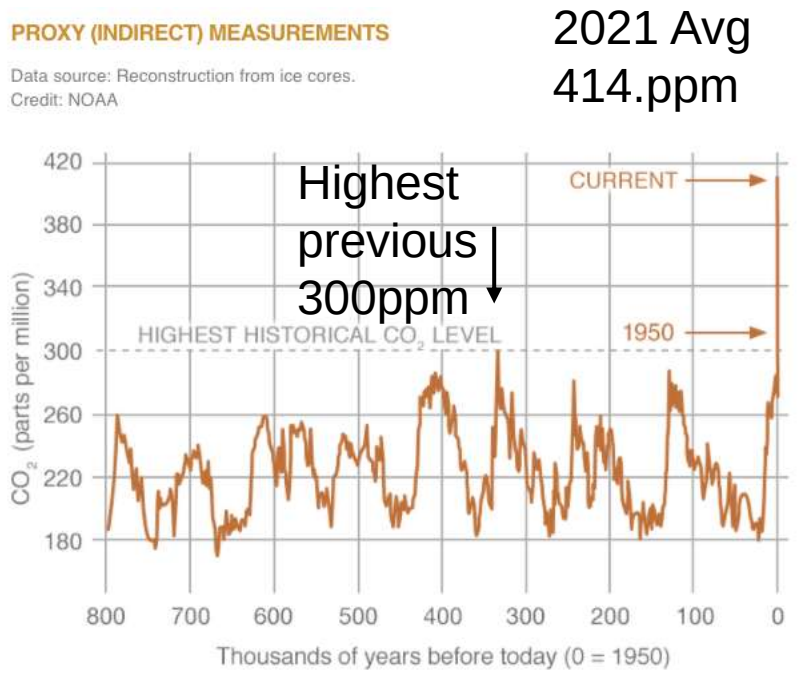


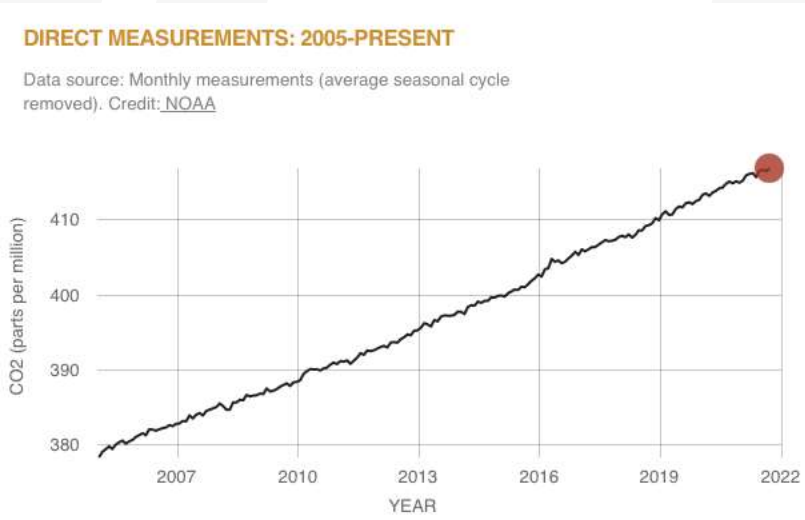
Climate Change

Climate Change

- “Carbon dioxide in the atmosphere warms the planet, causing climate change. Human activities have raised the atmosphere’s carbon dioxide content by 50% in less than 200 years.”

NASA Website



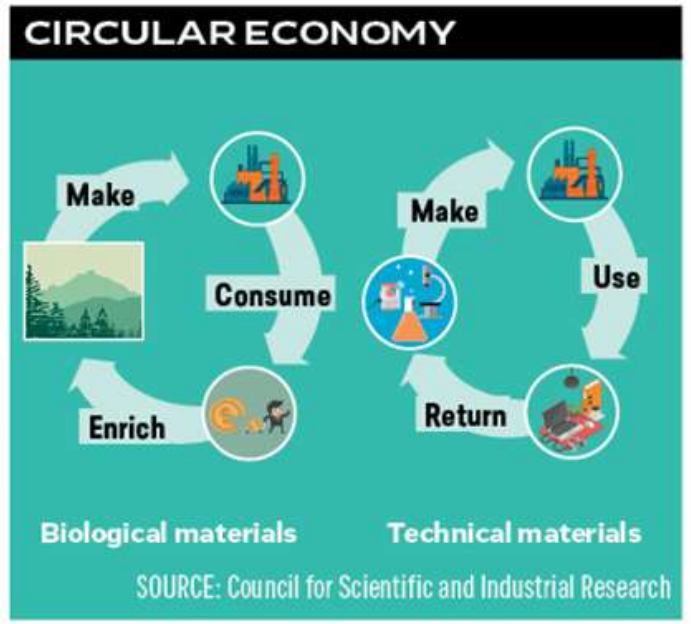


Waste

- “The idea of waste is a human construct. In other parts of the biosphere, matter moves in continuous cycles and waste from one organism is food for another, but in the industrial model of the world the movement is linear. We move materials into the waste stream when we can no longer find ways to use them.” (268, Robertson)

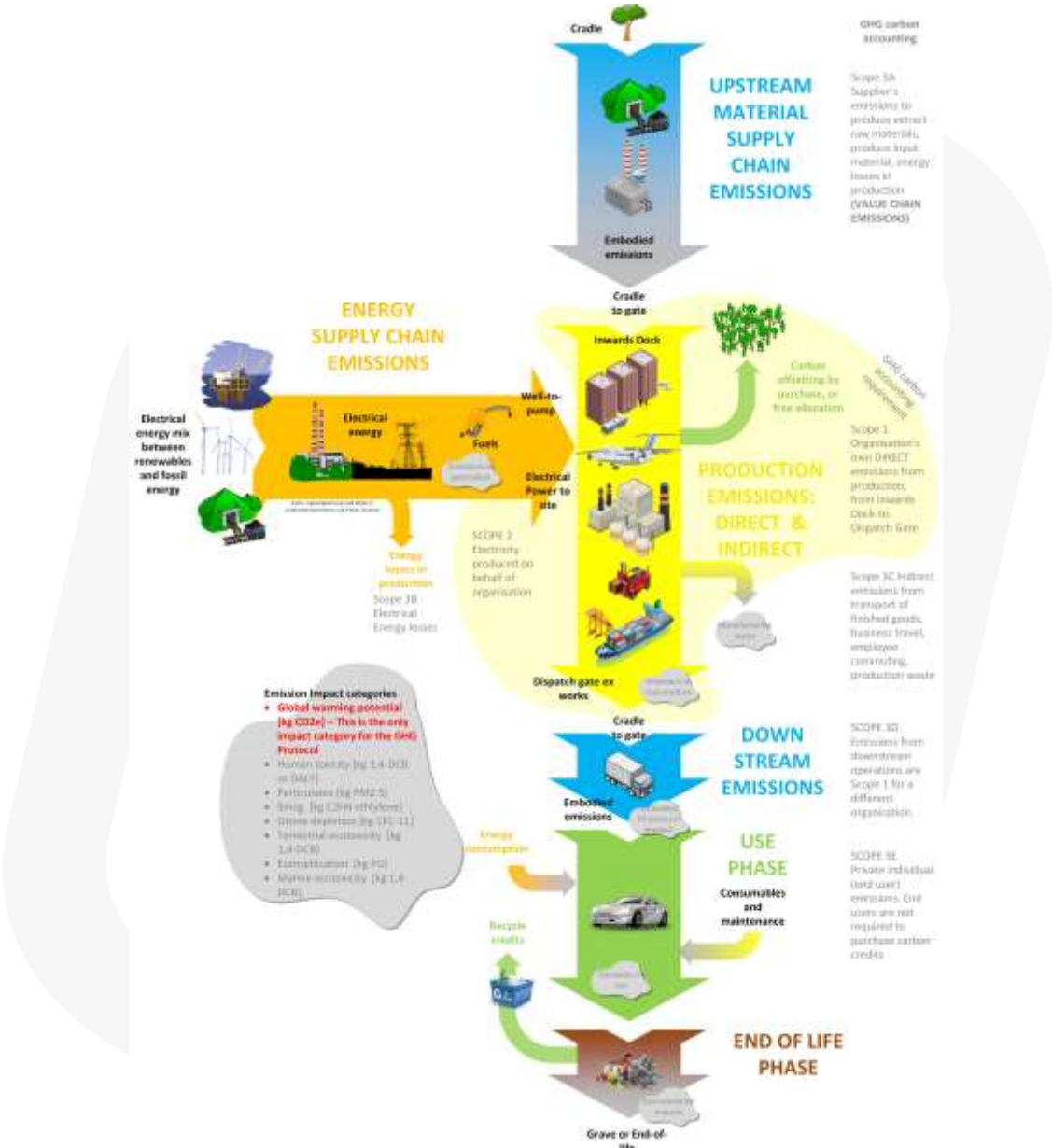
“Waste is, as chemist Paul Connett says, "resources in the wrong place" (Leonard 2010, 183).”

VS



Life Cycle Analysis

- Studies the environmental impacts of product/service from “cradle to grave”
  - Greenhouse gas emissions
  - Ozone depletion potential
  - Water use
  - Landfill waste

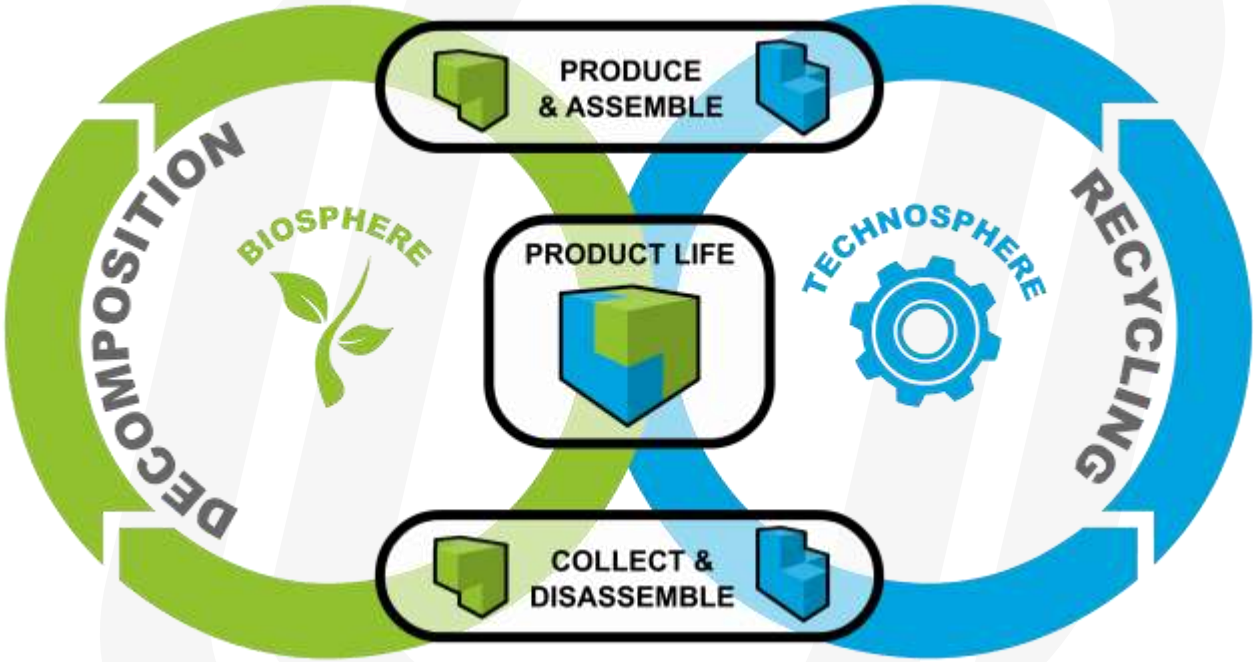


John Pons CC0, https://commons.wikimedia.org/w/index.php?curid=123517276

Zero Waste

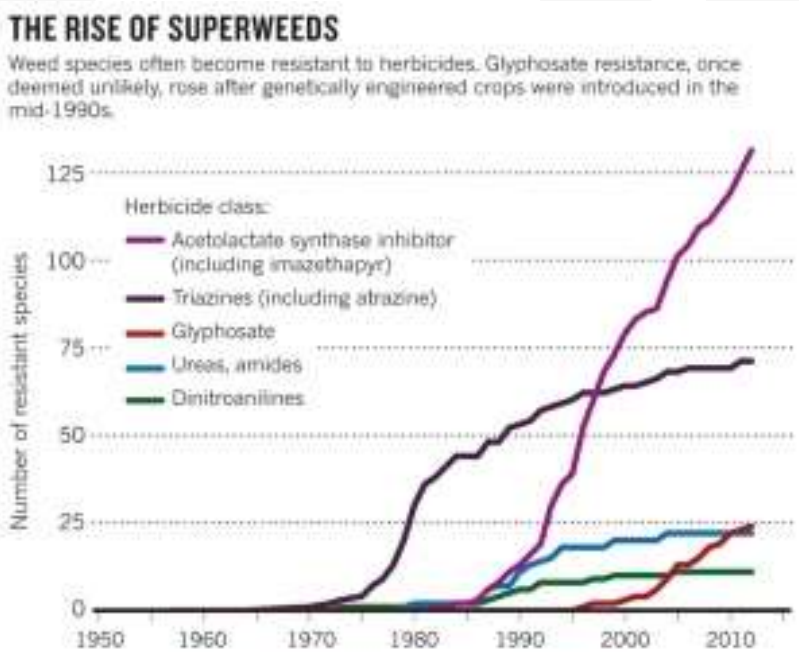
- Involves rethinking the entire production and wasting system

- “Aims for cradle-to-cradle, closed-loop cycling of non-toxic matter that will allow the biosphere in which we are embedded to continue intact into the future.”



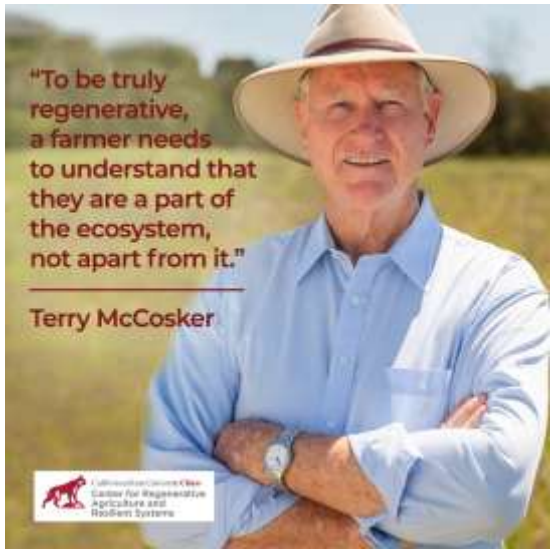
Food Systems

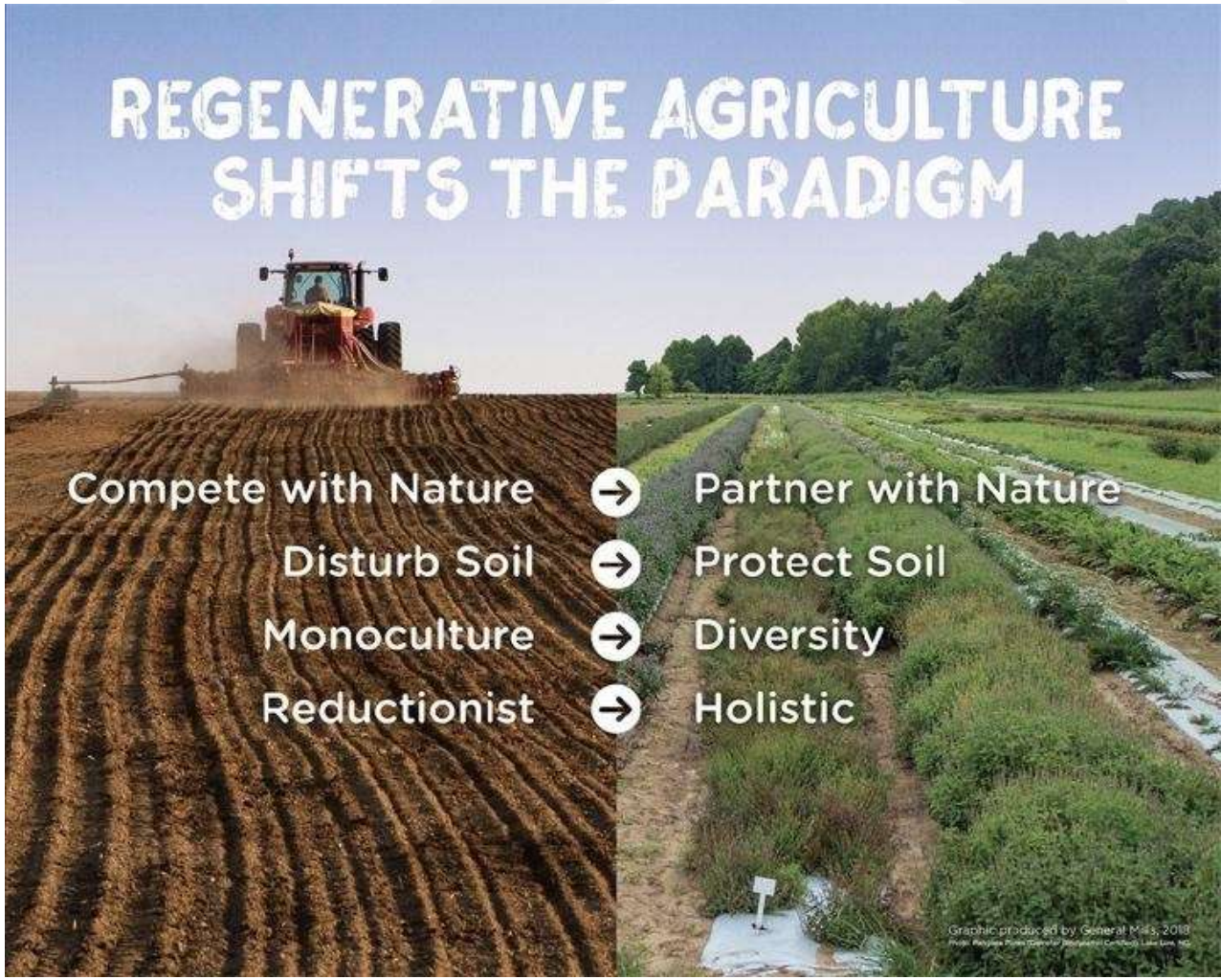
- Industrial agriculture has greatly expanded yields; negative impacts to human and non-human systems
  - Loss of biodiversity
  - Soil depletion
  - Water pollution and depletion
  - Food waste



Regenerative Agriculture

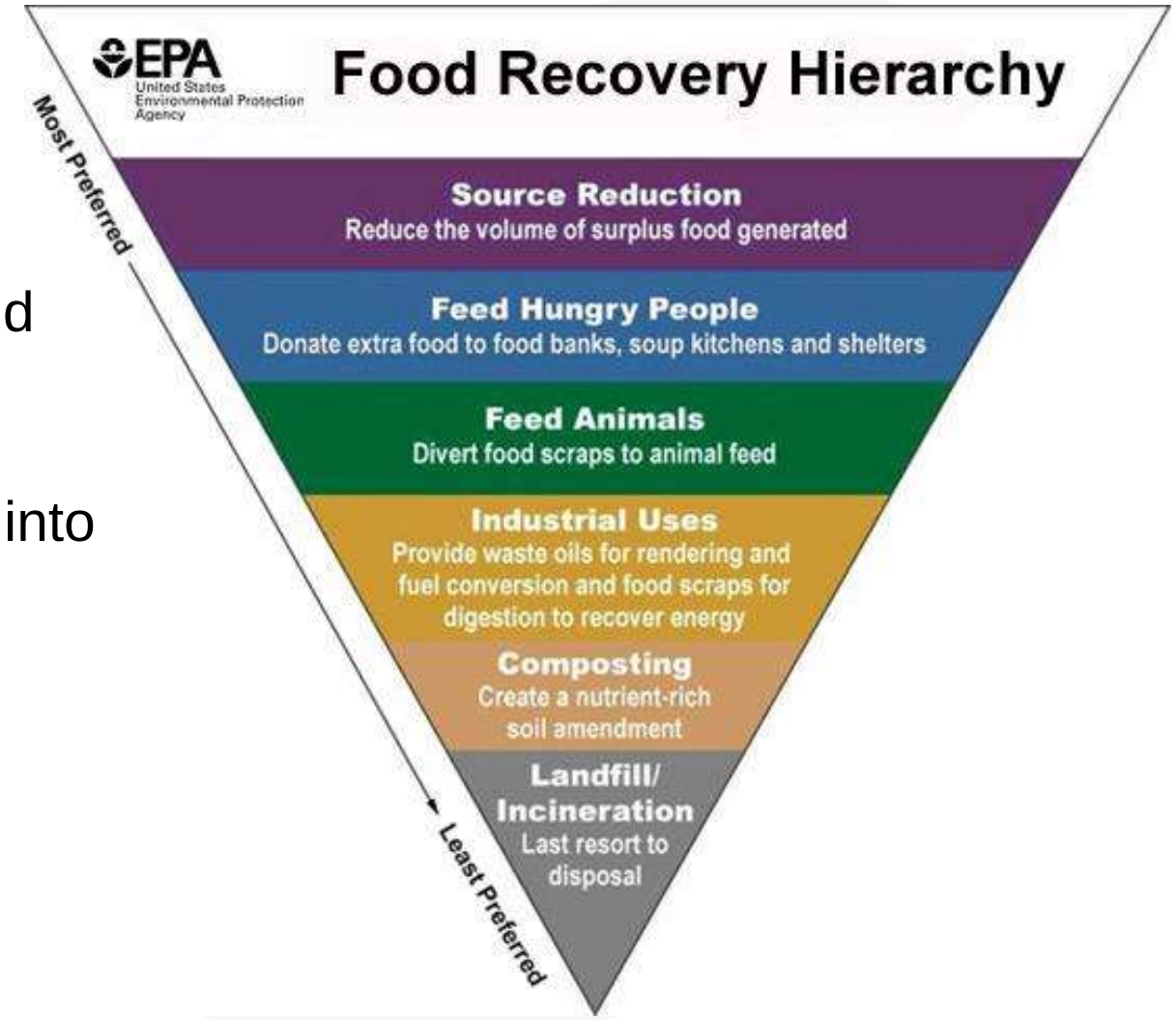
- Composting
- Polycropping





Food Waste

- When we examine our food system, we find that many resources within it aren't used efficiently.
- *WASTED! The Story of Food Waste* dives into the problem and covers many creative solutions.



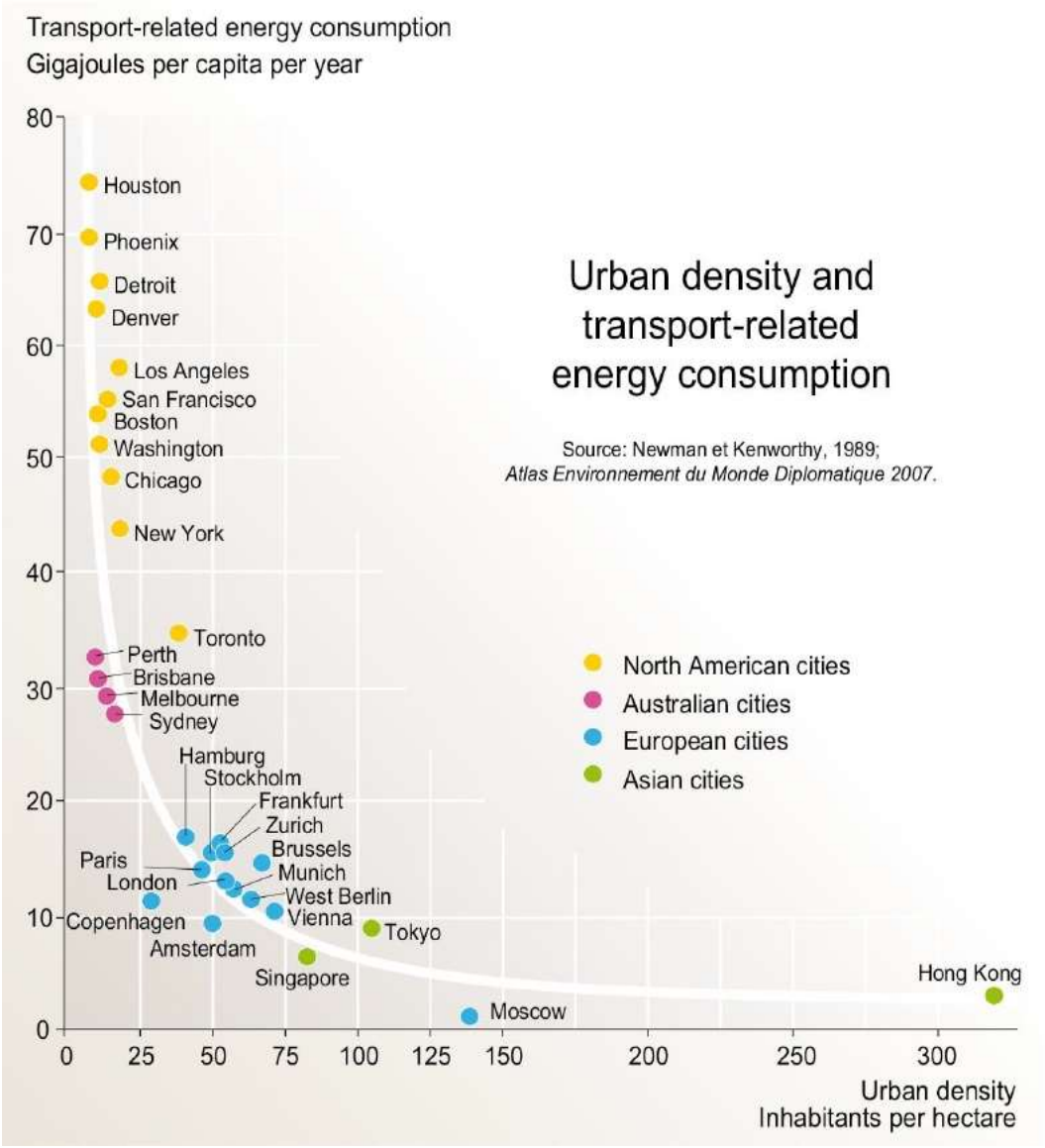
Urban Agriculture

- Farming that uses traditional, organic practices as well as newer techniques

economist.com

Transportation

- The transport sector accounts for a significant proportion of energy use and air pollution
- Urban design has a significant impact on energy consumption



Health Impacts

- Exposure to air pollutants linked to cardio-pulmonary diseases
- Sedentary lifestyle
- Approximately 40,000 killed per year in the US
  - 4.5 million seriously injured per year

Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity

Reid Ewing, Tom Schmid, Richard Killingsworth, Amy Zlot, Stephen Raudenbush

Abstract

Purpose. *To determine the relationship between urban sprawl, health, and health-related behaviors.*

Design. *Cross-sectional analysis using hierarchical modeling to relate characteristics of individuals and places to levels of physical activity, obesity, body mass index (BMI), hypertension, diabetes, and coronary heart disease.*

Setting. *U.S. counties (448) and metropolitan areas (83).*

Subjects. *Adults (n = 206,992) from pooled 1998, 1999, and 2000 Behavioral Risk Factor Surveillance System (BRFSS).*

Measures. *Sprawl indices, derived with principal components analysis from census and other data, served as independent variables. Self-reported behavior and health status from BRFSS served as dependent variables.*

Results. *After controlling for demographic and behavioral covariates, the county sprawl index had small but significant associations with minutes walked (p = .004), obesity (p < .001), BMI (p = .005), and hypertension (p = .018). Residents of sprawling counties were likely to walk less during leisure time, weigh more, and have greater prevalence of hypertension than residents of compact counties. At the metropolitan level, sprawl was similarly associated with minutes walked (p = .04) but not with the other variables.*

Conclusion. *This ecologic study reveals that urban form could be significantly associated with some forms of physical activity and some health outcomes. More research is needed to refine measures of urban form, improve measures of physical activity, and control for other individual and environmental influences on physical activity, obesity, and related health outcomes. (Am J Health Promot 2003;18[1]:47–57.)*

Key Words: Physical Activity, Urban Design, Sprawl, Obesity, Prevention Research

INTRODUCTION

The links between physical activity and health outcomes are well established. At the time of the Surgeon General's *Report on Physical Activity and Health* in 1996, hundreds of research studies were amassed providing evidence of these links.[1] Physical inactivity contributes to increased risk of many chronic diseases and conditions, including obesity, hypertension, non–insulin-dependent diabetes, colon cancer, osteoarthritis, osteoporosis, and coronary heart disease. Despite the health benefits of physical activity, 74% of U.S. adults do not get enough physical activity to meet public health recommendations and about one in four U.S. adults remains completely inactive during their leisure time.[2,3]

One consequence of physical inactivity—obesity—has reached epidemic proportions across age, race/ethnic, and socioeconomic groups.[4,5] Recent data from the National Health and

Search **Bloomberg**

Hyperdrive

Traffic Deaths in U.S. Exceed 40,000 for Third Straight Year

By Ryan Beene

February 12, 2019, 11:01 PM CST

Economic Impacts

- “Despite a $1 billion widening project to improve traffic along a 10-mile stretch of the 405 Freeway that connects the San Fernando Valley and West Los Angeles, traffic is worse now in the Sepulveda Pass than it was when construction was completed several years ago.”

LOCAL NEWS

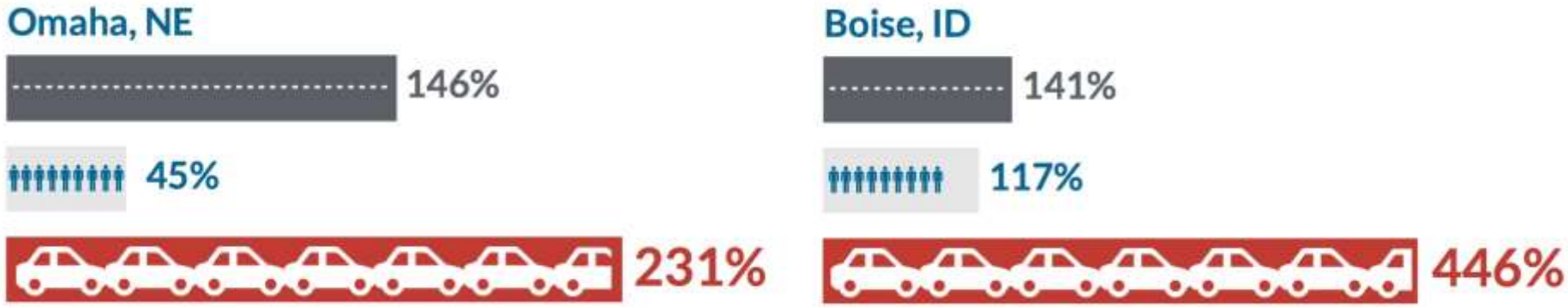
Traffic on 405 Fwy Is Worse 5 Years After $1 Billion Widening Project in Sepulveda Pass: Study

by: Eric Spillman, Tracy Bloom, Steve Kuzj
Posted: May 7, 2019 / 08:16 AM PDT
Updated: May 7, 2019 / 02:40 PM PDT

LINK

Economic Impacts

- Can we afford to keep funding the same approach that does not alleviate congestion?



Change in freeway lane-miles, population growth, and annual hours of delay in the largest 100 urbanized areas from 1993-2017. Delay is defined as extra time spent traveling at congested rather than free-flow speeds.

Downtown Omaha Parking

Transportation Policy IS Climate Policy

NEWS › TRANSPORTATION • News

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More rapid bus lines, fewer highway expansions: New plans for metro Denver set shift in project funding

State rules require climate-minded revisions to regional and CDOT project plans

A rendering shows how East Colfax Avenue in Denver would change at Krameria Street with the introduction of center-running dedicated bus lanes in a bus rapid transit system that the city has been planning with RTD. More BRT projects that reserve traffic lanes for buses are likely under revised regional and state transportation plans.

By **JON MURRAY** | jmurray@denverpost.com | The Denver Post

10-20-22

Denver spent $4.1 million to get more people on e-bikes. It worked

Denver launched a rebate program to encourage residents to buy e-bikes and drive less. It's already wildly popular.