Beyond GDP: The Ongoing Search to Measure "Wellbeing"

- OLLI Fall Term 2022
- Wednesdays, 1-3pm
- Sept. 14 thru Nov. 2
- Co-facilitators:

David Carlson,

EEE Forum founder

and

Paul Belanger,

EEE Forum webmaster

‘Doughnut’ Economics, Climate Change, and the SDGs” Session #6 Outline

- OLLI Announcements
- Highlights from Session #5 – SDSN Reports on SDG progress; Food Insecurity
- Doughnut Economics, Climate Change, and the SDGs
- 5-minute break
- Guest presentation and Q&A: **see next slide**
- Looking ahead to Session #7 (Oct. 26th)

Week #6 (October 19th) -- Guest Presentation: "Regenerative Economics and the SDGs"

Brenna Simmons-St. Onge

Executive Director

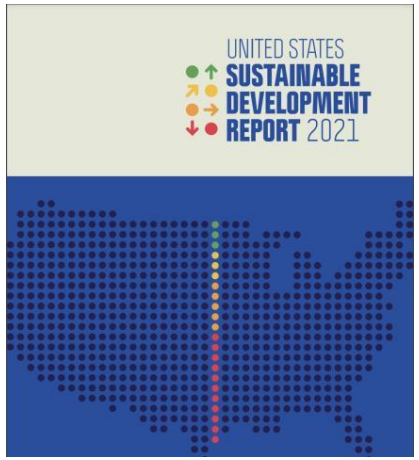
The Alliance Center

THE ALLIANCE CENTER

CONNECTING PEOPLE. INSPIRING IMPACT.

Recent SDSN Reports: Nations, U.S. States & Cities

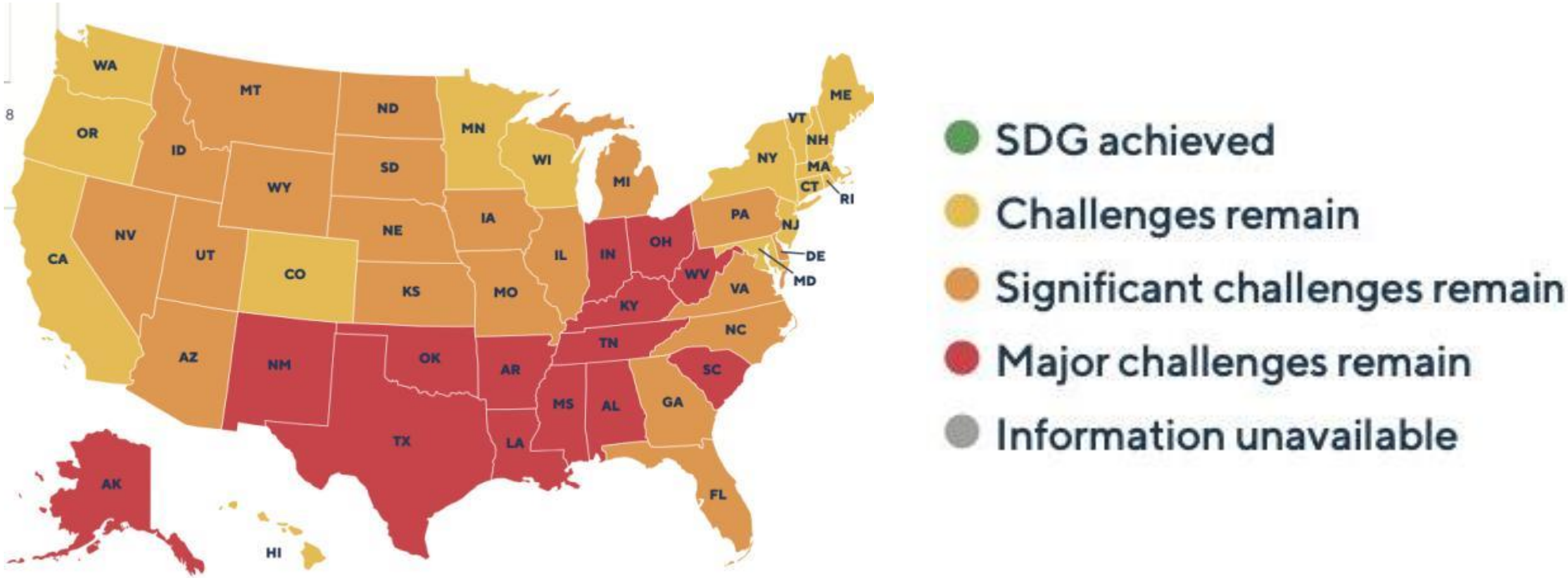
In 2022, the U.S. ranks #41 out of 163 countries—worse than #31 out of 166 countries in 2020.



In 2021, Colorado ranked #13 out of 50 states, improving from #15 in 2018.

In 2019, the Denver-Aurora-Lakewood MSA ranked #22 and Colorado Springs #68 out of the 105 largest cities and MSAs in the U.S.

2021 Status of SDG Progress by States toward 2030



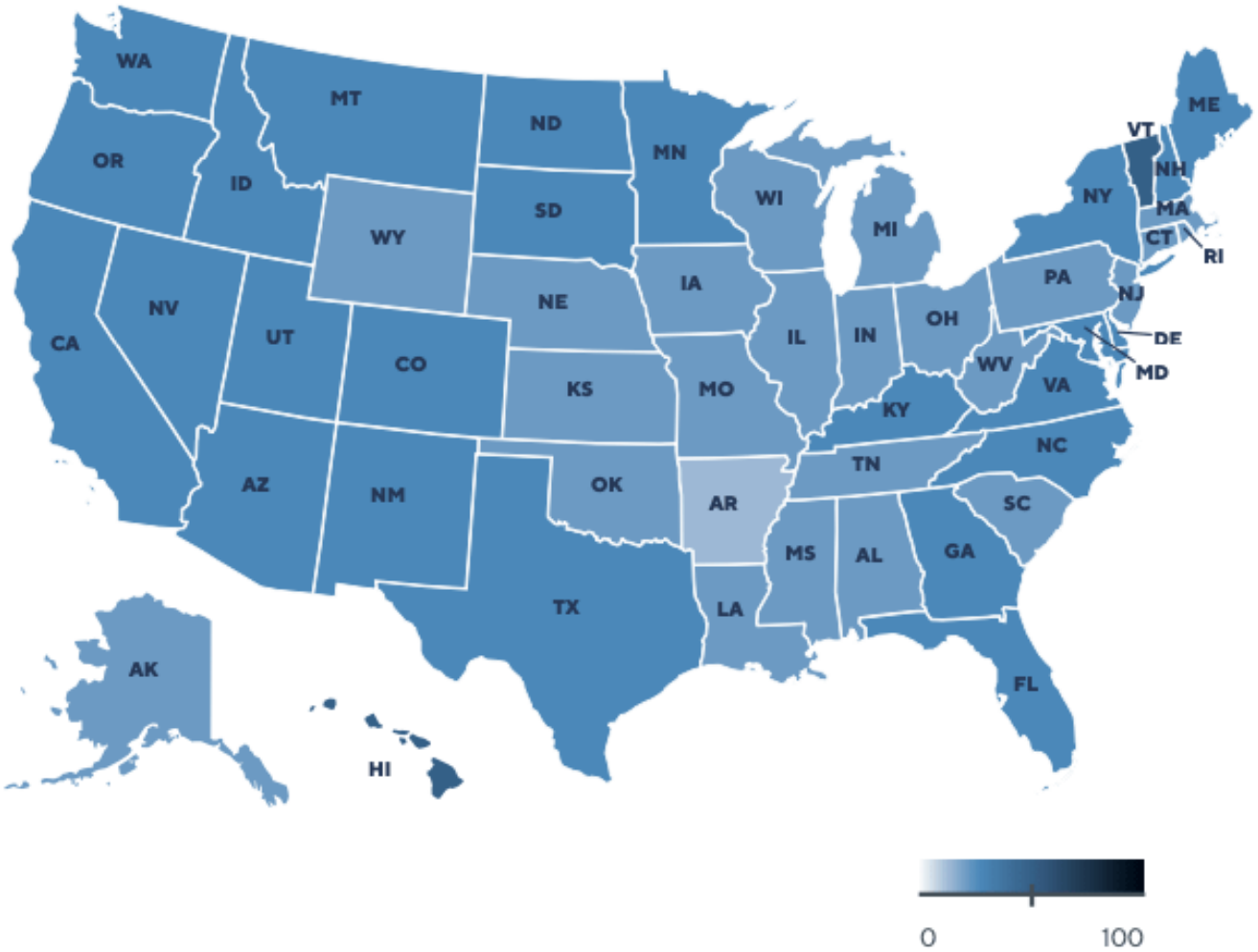
2021 SDSN U.S. States Report – Highlights

- No state has met the SDGs, and none are currently “on track” to achieve the SDGs by 2030. ☹
- All states are stagnating on the SDGs. ☹
- Every state has at least 20% of indicators going in the wrong direction. If SDG progress were scored as an exam, nearly 2/3 of state and indicator values would be getting an 'F’. ☹
- However, there are 81 indicators where at least one state is on track for SDG achievement, which demonstrates that while progress thus far is unacceptably slow, there are bright spots across the country and achievement is within reach. ☺

2021 U.S. States Report

Leave No One Behind

Colorado ranks
#10th out of 50 states



AFTER COVID: Food Insecurity, Climate Change, NEW Challenges

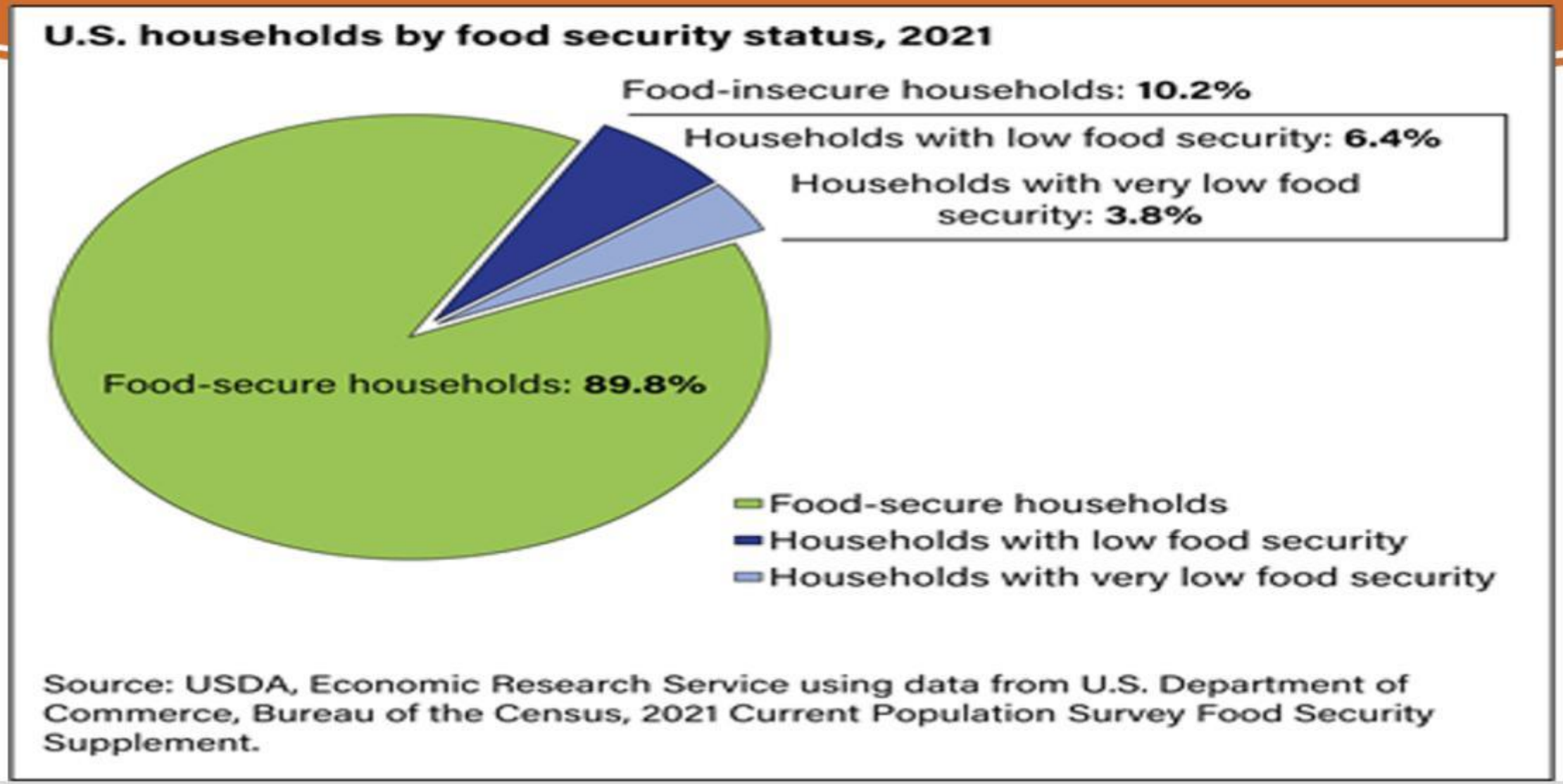
A FOCUS ON LOCAL FOOD ACCESS & SUSTAINABILITY

BEYOND GDP. -- OCTOBER 12, 2022

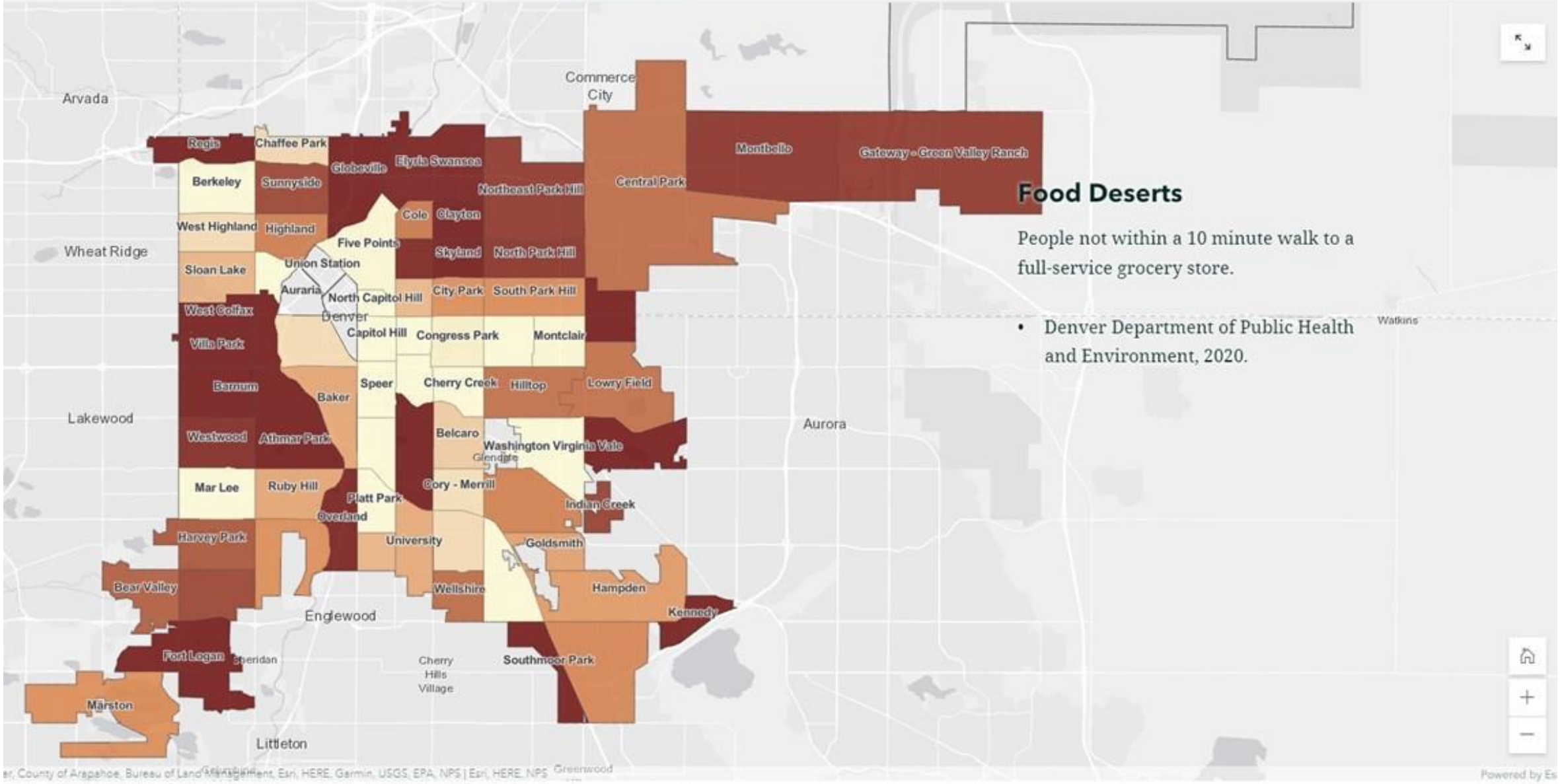
PATRICIA IWASAKI, MSW. -- ADJUNCT INSTUCTOR, "FOOD SYSTEMS, FOOD JUSTICE"

GRADUATE SCHOOL OF SOCIAL WORK, UNIVERSITY OF DENVER

FOOD INSECURITY IS A HOUSEHOLD MEASURE



Denver Human Services Index | Health Indicators | Education Indicators | Community Indicators



‘Doughnut’ Economics, Climate Change, & the SDGs

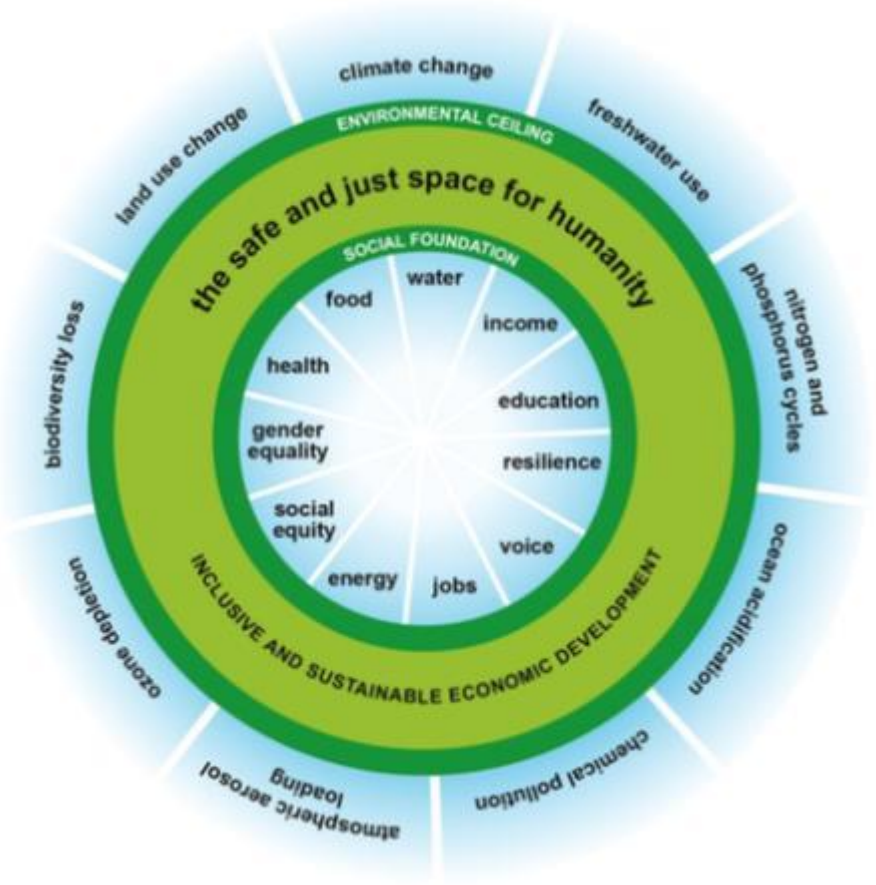
- **Session #6 – The “Doughnut” model, “Doughnut” economics, and the SDGs.**
  - In advance of the 2012 U.N. Conference on Sustainable Development, Oxfam ecological economist Kate Raworth developed a “doughnut” model to visualize 11 key domains of human wellbeing, encircled by nine environmental global thresholds that must not be breached. We trace the evolution of this visually compelling model of human and ecological wellbeing, connections with the SDGs, and its application by the city of Amsterdam.

Why it’s time for “Doughnut Economics”

Kate Raworth
December 16, 2014

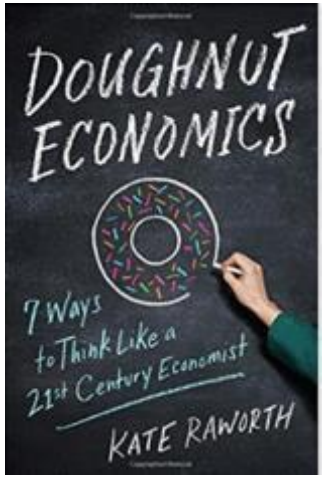
https://youtu.be/1BHOflzxPjI

The “Oxfam’ Doughnut – Kate Raworth, 2012



“In the lead-up to the UN Conference on Sustainable Development in June 2012 (known as Rio+20), and the High-Level Summit on the Millennium Development Goals in 2013, there is a growing debate on how to draw up renewed and expanded global development goals which bring together the twin objectives of poverty eradication and environmental sustainability. Figure I below brings them into a single framework.”

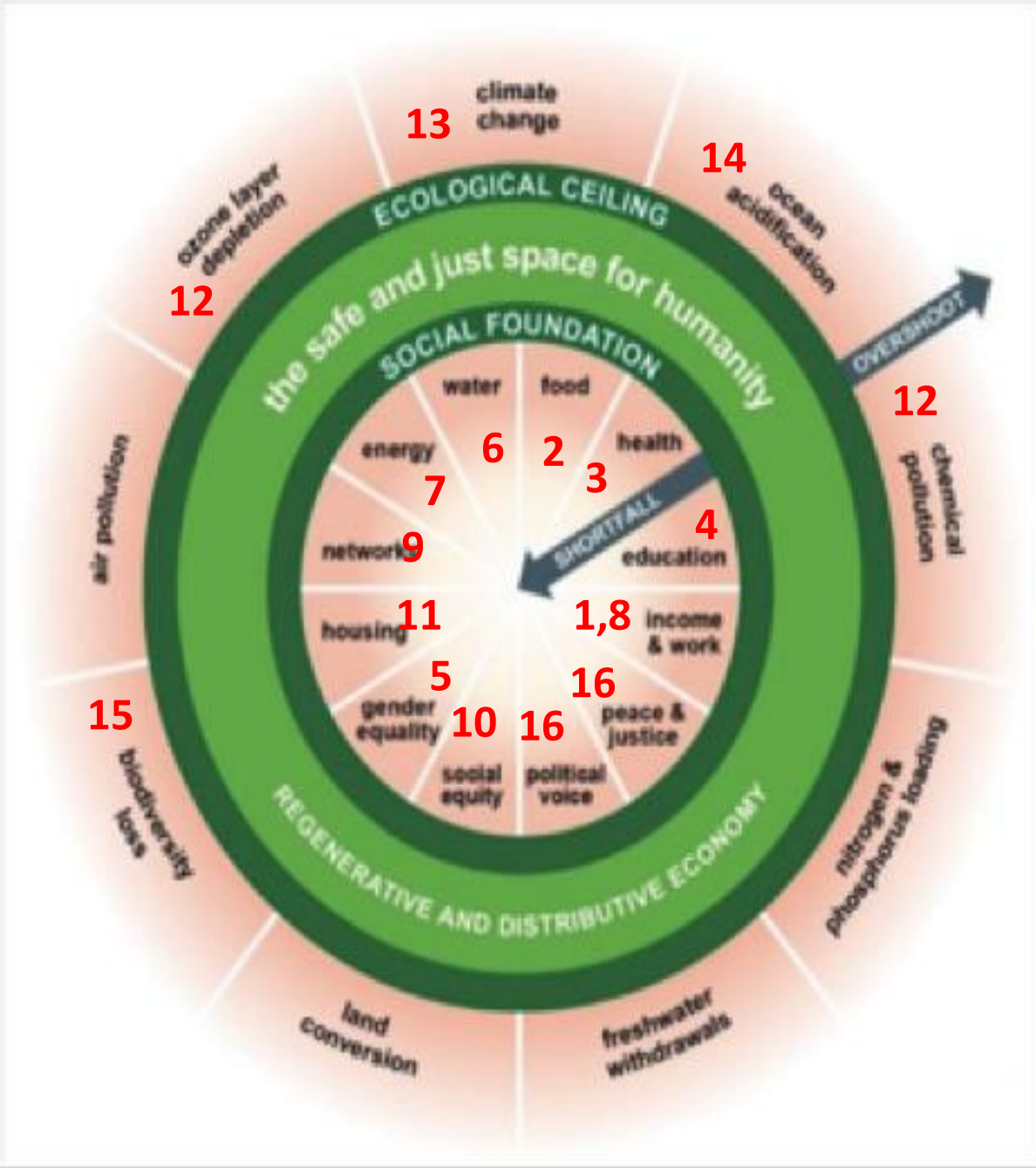
The “Doughnut” of Social and Planetary Boundaries
Kate Raworth, Oxford Ecological Economist



“Put simply, it’s a radically new compass for guiding humanity this century. And it points toward a future that can provide for every person’s needs while safeguarding the living world on which we all depend.”
--*Doughnut Economics*, p. 39.

Mapping the SDGs onto the Raworth Doughnut

Goal 1: No poverty
Goal 2: Zero hunger
Goal 3: Good health and wellbeing
Goal 4: Quality education
Goal 5: Gender equality
Goal 6: Clean water and sanitation
Goal 7: Affordable and clean energy
Goal 8: Decent work and economic growth
Goal 9: Industry, innovation, and infrastructure
Goal 10: Reduced inequalities
Goal 11: Sustainable cities and communities
Goal 12: Responsible consumption and production
Goal 13: Climate action
Goal 14: Life below water
Goal 15: Life on land
Goal 16: Peace, justice, and strong institutions
Goal 17: Partnerships for the goals

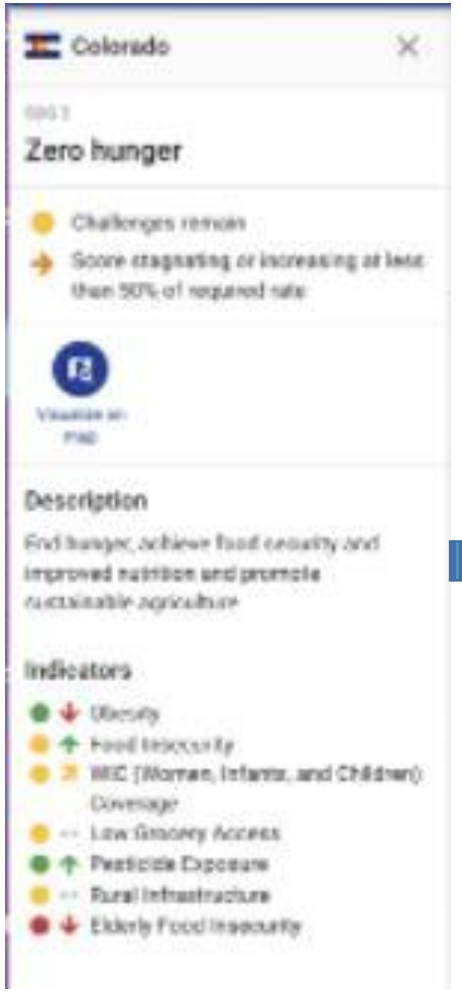


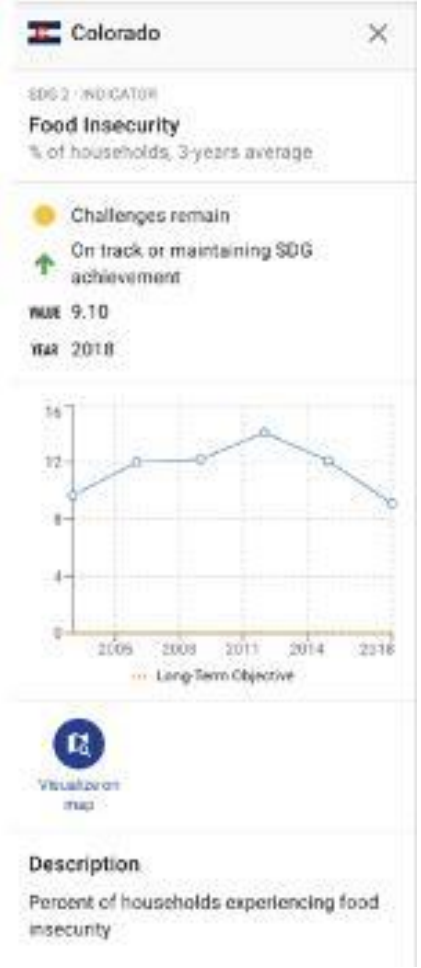
- End of Carlson slide deck

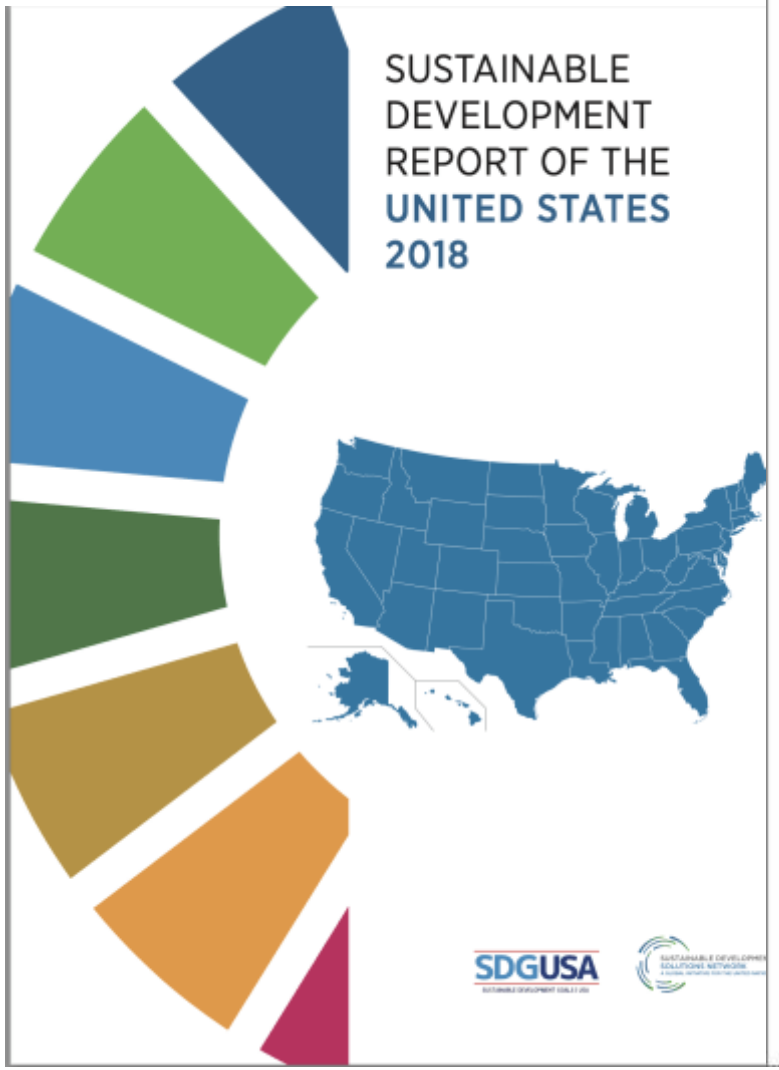
EXTRA SLIDES FOLLOW

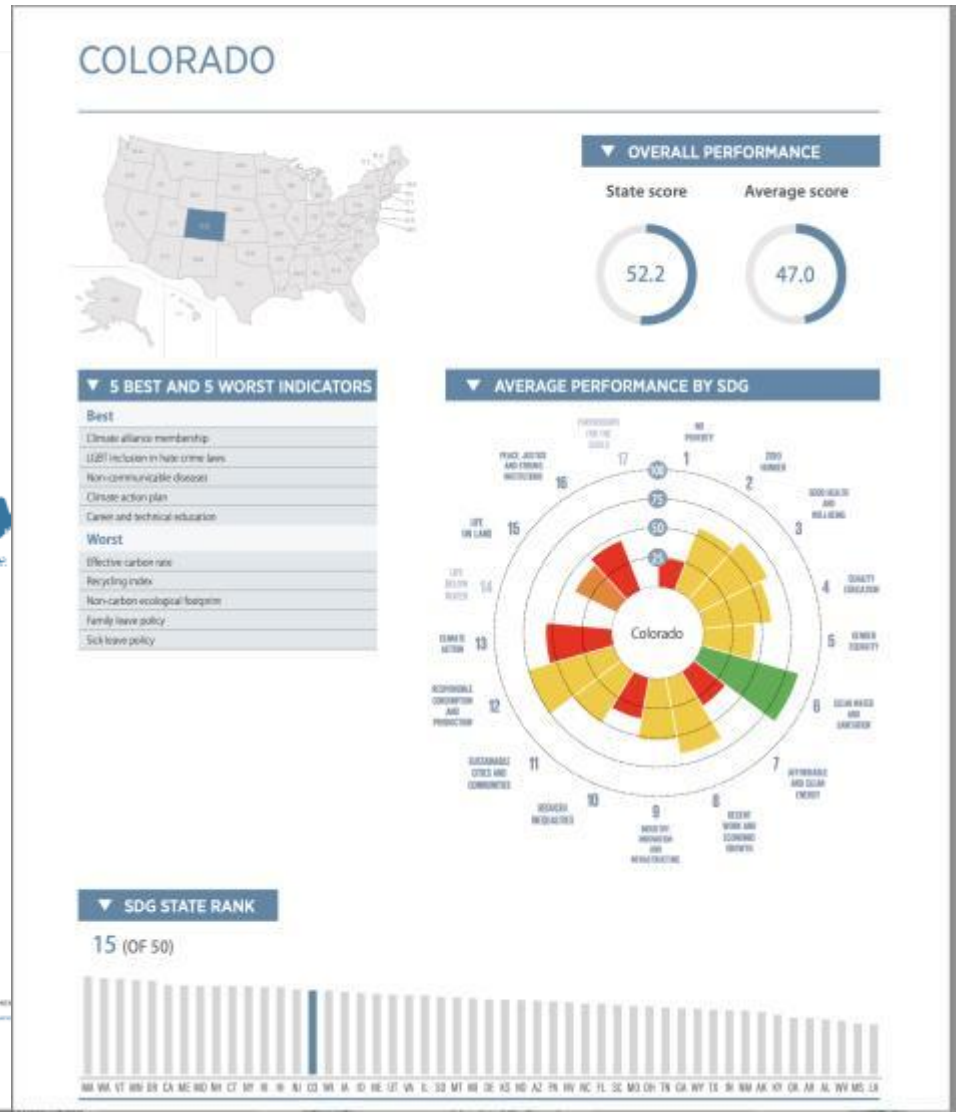
Indicators for each SDG are available at 2021 SDSN Colorado Profile.

2021 report: From SDG dashboard TO SDG#2 ZERO HUNGER indicators TO FOOD INSECURITY indicator metric






SUSTAINABLE DEVELOPMENT REPORT OF THE UNITED STATES 2018
SDGUSA


COLORADO
OVERALL PERFORMANCE
State score
Average score
52.2
47.0
5 BEST AND 5 WORST INDICATORS
Best
Climate alliance membership
LGBT inclusion in hate crime laws
Non-communicable disease
Climate action plan
Career and technical education
Worst
Effective carbon rate
Recycling index
Non-carbon ecological footprint
Family leave policy
Sick leave policy
AVERAGE PERFORMANCE BY SDG
Colorado
SDG STATE RANK
15 (OF 50)

COLORADO
Performance by Indicator

	Value	Rating	Rank
SDG1 – End Poverty			
Affordable housing (per 100 Extremely Low Income Renter Households)	27		45
Could not see doctor due to cost (% of adult population)	12.0		25
Family leave policy (worst 0–1 best)	0		6
Living below national poverty line (%)	11.0		11
Sick leave policy (worst 0–1 best)	0		11
Families receiving TANF (per 100 families in poverty)	26.3		13
Working poor (% of population 16–64)	2.4		19
SDG2 – Zero Hunger			
Elderly food insecurity (%)	3.8		2
Living in food desert (%)	17.3		9
Food insecurity (% of households)	10.3		8
Prevalence of obesity (% adult population)	22.0		1
Pesticide exposure (per 100,000 people)	23.7		7
Rural infrastructure index (worst 0–100 best)	64.7		12
WIC coverage rate (% of eligible families)	41.0		47
SDG3 – Good Health and Well-Being			
Adolescent pregnancy rate (births per girl/woman aged 15–19)	17.8		20
HIV prevalence (per 100,000)	253.6		28
Primary health care practitioners (% of need met)	38.4		41
Infant mortality rate (per 1,000 live births)	5.6		16
Life expectancy at birth (years)	80.2		7
Maternal mortality (per 100,000 live births)	0.20		7
Non-communicable diseases (per 100,000 people aged 35–75)	301.4		2
Drug overdose deaths (per 100,000 people)	15.4		20
Smoking rate (% of adults who are current smokers)	15.6		17
Suicide rate (per 100,000 people)	19.0		44
Incidence of tuberculosis (per 100,000 people)	1.5		17
Deaths due to road collisions (per 100,000 people)	9.0		19
Child vaccine coverage (% of population 19–35 months)	83.5		22
Subjective Wellbeing index (worst 0–100 best)	62.9		6
SDG4 – Quality Education			
Higher education (% aged 25–34, bachelors or higher)	40.4		10
Students with debt (% of college graduates)	53		11
Career and technical education (% of graduates placed)	97.4		3
High school graduation rate (% of public graduates)	78.9		45
Early education (%)	48.9		15
Basic reading achievement (% of grade 8 students)	78.3		20
SDG5 – Gender Equality			
Contraceptive deserts (% of persons in need located in a desert)	94.6		17
Female labor force (% of total labor force participation)	93.3		41
LGBT inclusion in hate crime laws (worst 1–4 best)	4		1
Women in government (% in state legislature)	38.0		4
Sexual violence (lifetime prevalence)	36.2		23
Gender wage gap (% of men's median wage)	84.3		5
Women-owned businesses (% of solely-owned businesses)	40.6		16
SDG6 – Clean Water and Sanitation			
Dams with Emergency Action Plans (% of high hazard potential dams)	96.2		11
Incomplete plumbing (% of occupied housing units)	0.31		11
Water stress index (Normalized Deficit Index)	0.130		27
Safe drinking water violations (% of people drinking water with violations)	9.0		12
SDG7 – Affordable and Clean Energy			
CO_2 intensity of electricity ($mtCO_2$/TWh)	0.661		40
Low-income energy burden (% of income spent on energy)	32		25
Energy efficiency (thousand BTU/dollar of GDP)	5.2		14
Renewable energy consumption (%)	8.6		26
Renewable energy production (%)	3.7		43
SDG8 – Decent Work and Economic Growth			
Banking access (per 10,000 people)	3.6		36
Employment discrimination (per 100,000 people)	36.0		38
Employment to population ratio (% of population aged 20–64)	76.0		13
Youth not in employment, education or training (NEET) (%)	10.7		14
Real GDP growth (%, average of 5 years)	3.30		4
Unbanked rate (%)	4.4		16
Unemployment rate (% of population 25–64)	4.8		15
Fatal occupational injuries (per 100,000 workers)	4.0		16
SDG9 – Industry, Innovation and Infrastructure			
Scientific journal articles (per 1,000 doctorate holders)	900.9		23
Broadband access (% of households)	73.6		7
Deficient bridges (%)	5.7		14
Internet use (%)	75.4		47
Patents (per 1,000 individuals in S&E occupations)	17.4		21
Poor roads (%)	21		29
Research and development expenditure (% of GDP)	2.1		20
STEM employment (% of employed population)	8.7		4
SDG10 – Reduced Inequalities			
Case for Inclusion index (worst 0–100 best)	76.4		10
Gini coefficient (best 0–1 worst)	0.459		21
Hate groups (per 100,000 people)	0.29		29
Pollution Burden (percentage point difference for people of color)	3.8		46
Racism index (best 0–100 worst)	55.5		40
Uninsured (%)	7.5		23
SDG11 – Sustainable Cities and Communities			
Sustainable transportation (% of commuters)	7.4		14
Overcrowded housing (% of occupied housing units)	2.7		34
Park access (%)	74		3
PM 2.5 exposure ($\mu g/m^3$)	6.6		12
Rent burdened population (%)	52.3		45
SDG12 – Responsible Consumption and Production			
Chemical pollution (lbs/m^2)	312.6		15
Lead emissions (kg/capita)	0.0020		20
NOx emissions (kg/capita)	42.7		29
Recycling index (worst 0–4 best)	1		34
SO_2 emissions (kg/capita)	5.7		13
VOC emissions (kg/capita)	44.7		26
SDG13 – Climate Action			
Resilient building codes (% of jurisdictions subject to hazards)	33		40
Climate alliance membership (worst 0–1 best)	1		1
Global warming awareness (%)	71.0		14
Climate action plan (worst 0–1 best)	1		1
Energy-related CO_2 emissions (tCO_2/capita)	16.6		27
Effective carbon rate (USD/tCO_2)	0.00		11
FEMA mitigation coverage (%)	51.9		48
Weather costs (% of GDP)	0.1693		44
Weather injuries/fatalities (per 100,000 people)	0.54		24
SDG15 – Life on Land			
Change in forest area (%, 5 year change)	0.3		23
Invasive management plan (worst 0–1 best)	0.33		42
Non-carbon ecological footprint (% of biocapacity)	113.8		38
Protected area (% of total area with GAP status 1–2)	9.7		13
SDG16 – Peace, Justice and Strong Institutions			
Incarceration rate (per 100,000 people)	856.9		19
State Integrity Index (worst 0–100 best)	67		7
Jail admission rate (per 100,000 people)	5689.1		22
Justice Index (worst 0–100 best)	55.5		5
Lawsuit climate survey (worst 0–100 best)	67.6		35
Homicides (per 100,000 people)	3.7		20
Voter turnout (% of voting age citizens)	69.5		3

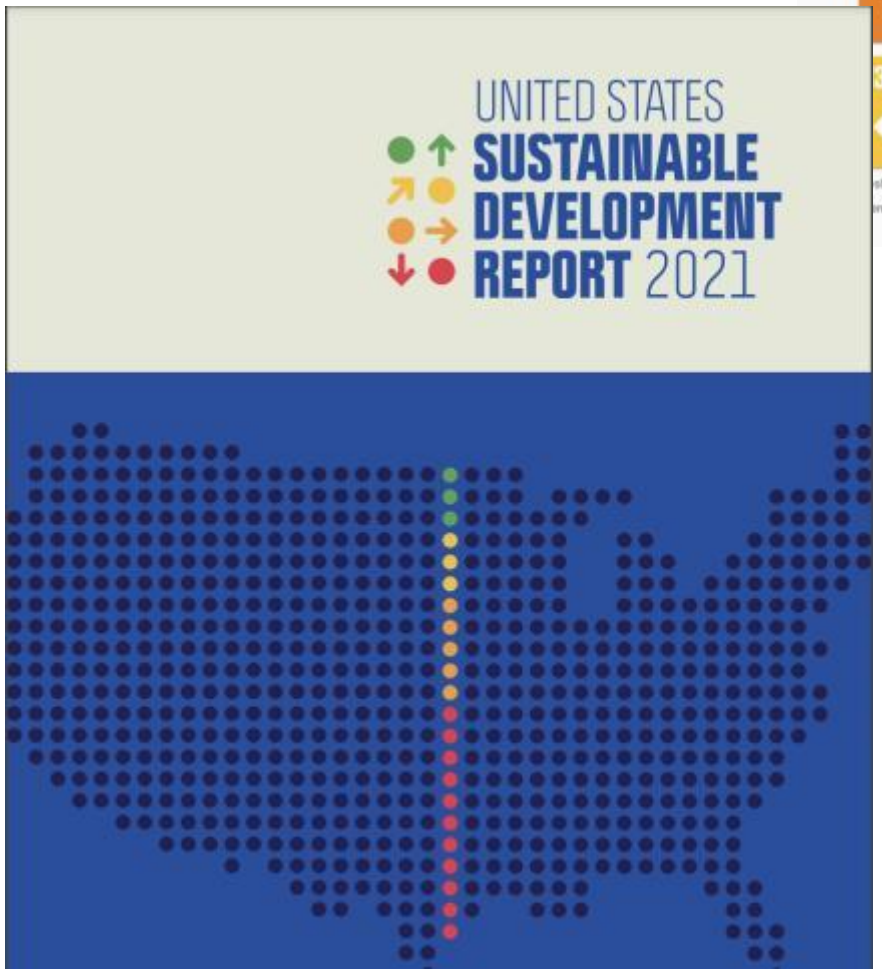
2018 U.S. State Report SDG#2 ZERO HUNGER Close-up of its 7 indicators

SDG2 – Zero Hunger			
Elderly food insecurity (%)	3.8		2
Living in food desert (%)	17.3		9
Food insecurity (% of households)	10.3		8
Prevalence of obesity (% adult population)	22.0		1
Pesticide exposure (per 100,000 people)	23.7		7
Rural infrastructure index (worst 0–100 best)	64.7		12
WIC coverage rate (% of eligible families)	41.0		47

Indicators

- Obesity
- Food Insecurity
- WIC (Women, Infants, and Children) Coverage
- Low Grocery Access
- Pesticide Exposure
- Rural Infrastructure
- Elderly Food Insecurity

2021 U.S. State Report SDG#2 ZERO HUNGER and its 7 Indicators


UNITED STATES
SUSTAINABLE
DEVELOPMENT
REPORT 2021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12
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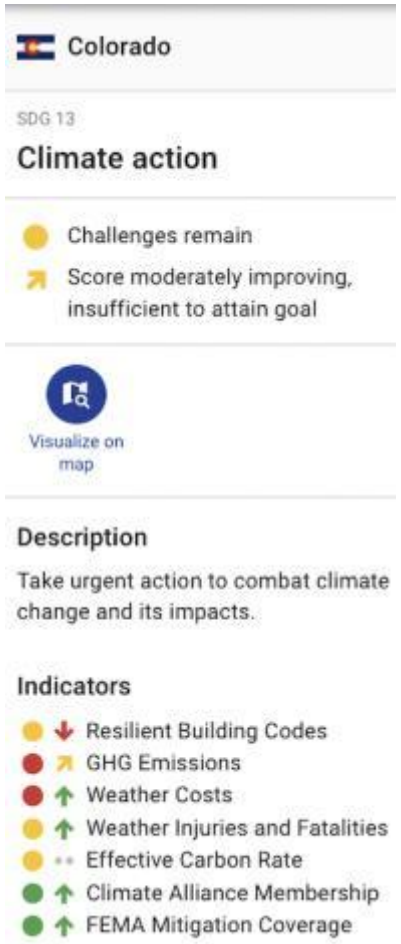
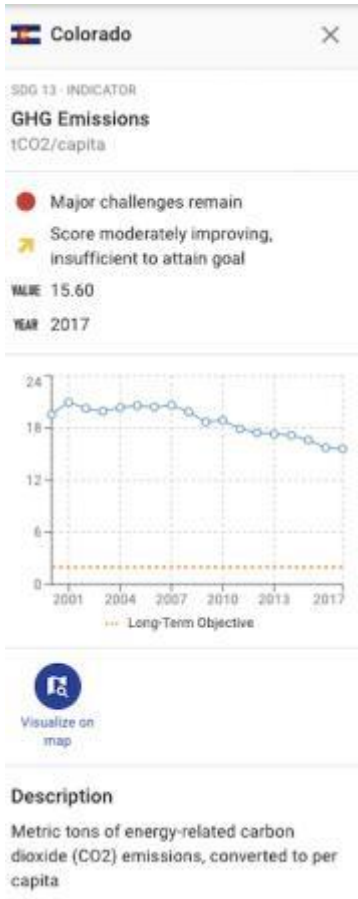
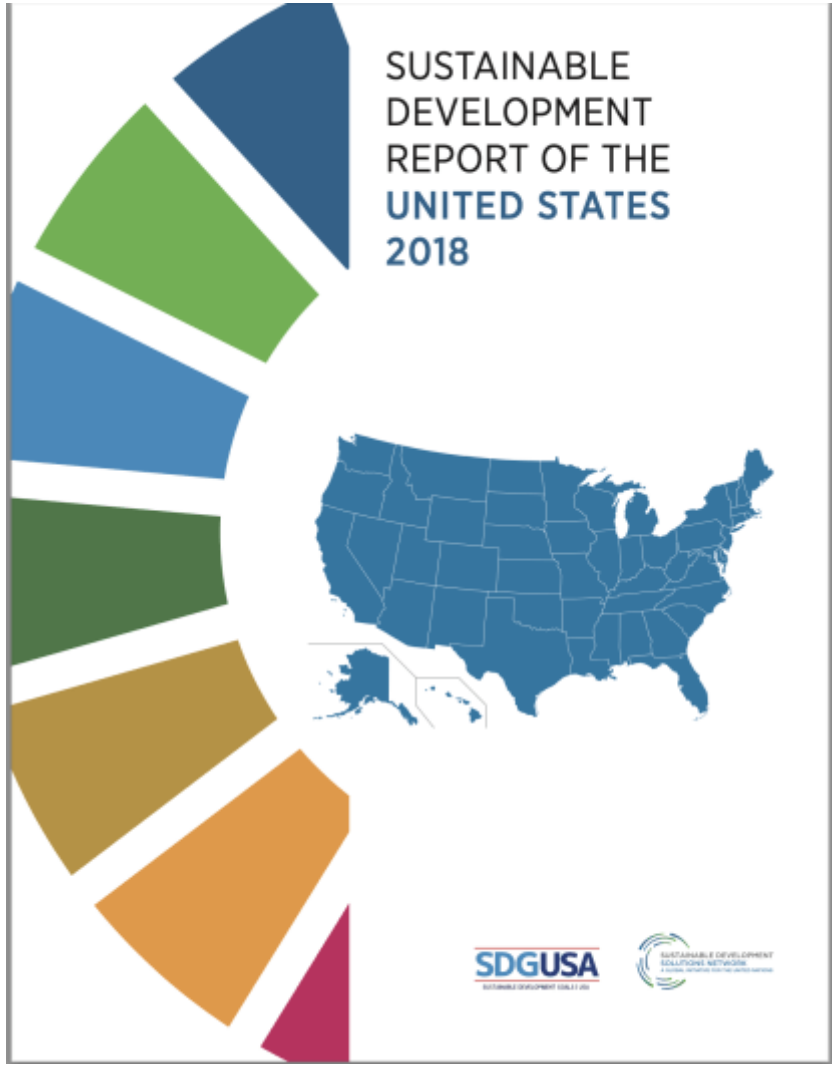
14
15
16
17
SDG achieved
Challenges remain
Significant challenges remain
Major challenges remain
Information unavailable
On track or maintaining SDG achievement
Moderately improving
Stagnating
Decreasing
Trend information unavailable

2021: From SDG dashboard TO SDG13 CLIMATE ACTION indicators TO GHG EMISSIONS metric



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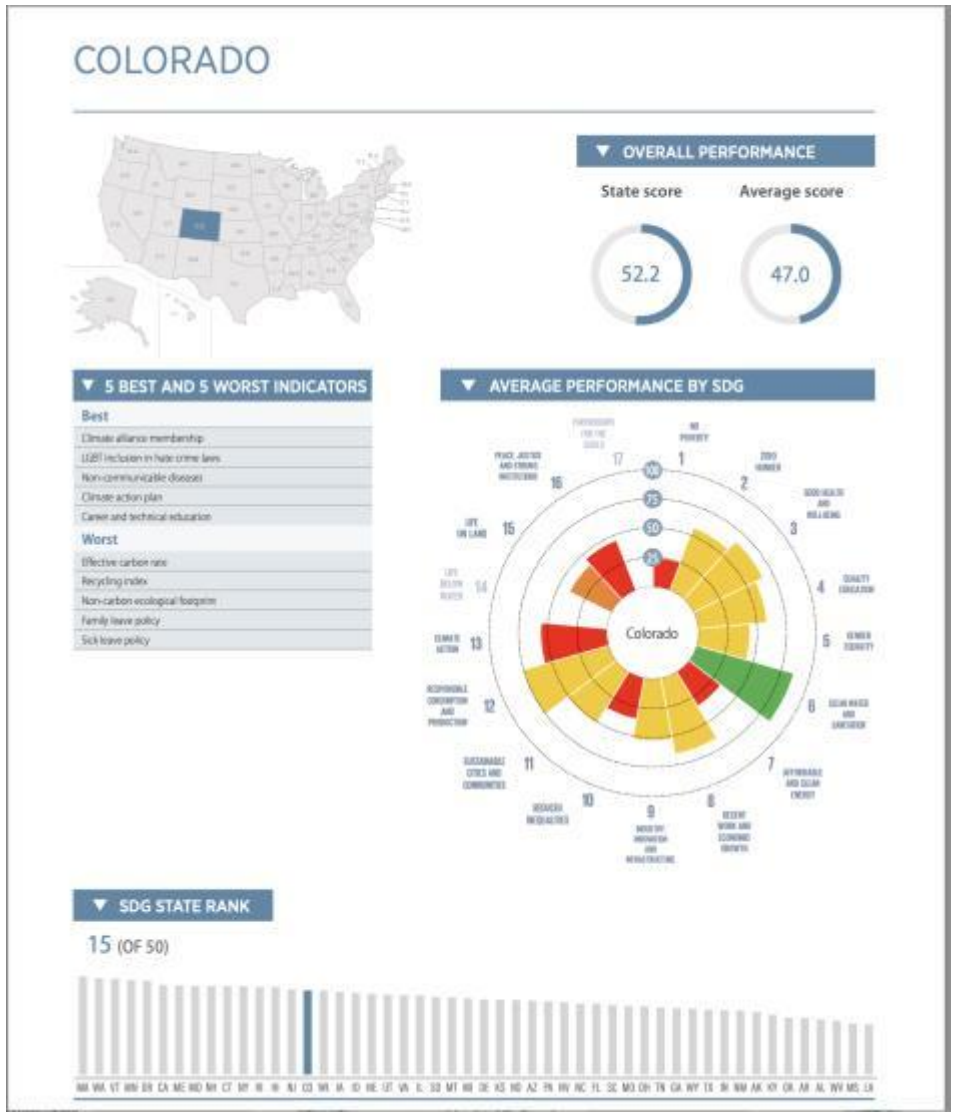
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Internet use (%)	75.4		47
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SDG11 – Sustainable Cities and Communities			
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Park access (%)	74		3
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Rent burdened population (%)	52.3		45
SDG12 – Responsible Consumption and Production			
Chemical pollution (lbs/m^2)	312.6		15
Lead emissions (kg/capita)	0.0020		20
NOx emissions (kg/capita)	42.7		29
Recycling index (worst 0–4 best)	1		34
SO_2 emissions (kg/capita)	5.7		13
VOC emissions (kg/capita)	44.7		26
SDG13 – Climate Action			
Resilient building codes (% of jurisdictions subject to hazards)	33		40
Climate alliance membership (worst 0–1 best)	1		1
Global warming awareness (%)	71.0		14
Climate action plan (worst 0–1 best)	1		1
Energy-related CO_2 emissions (tCO_2/capita)	16.6		27
Effective carbon rate (USD/tCO_2)	0.00		11
FEMA mitigation coverage (%)	51.9		48
Weather costs (% of GDP)	0.1693		44
Weather injuries/fatalities (per 100,000 people)	0.54		24
SDG15 – Life on Land			
Change in forest area (%, 5 year change)	0.3		23
Invasive management plan (worst 0–1 best)	0.33		42
Non-carbon ecological footprint (% of biocapacity)	113.8		38
Protected area (% of total area with GAP status 1–2)	9.7		13
SDG16 – Peace, Justice and Strong Institutions			
Incarceration rate (per 100,000 people)	856.9		19
State Integrity Index (worst 0–100 best)	67		7
Jail admission rate (per 100,000 people)	5689.1		22
Justice Index (worst 0–100 best)	55.5		5
Lawsuit climate survey (worst 0–100 best)	67.6		35
Homicides (per 100,000 people)	3.7		20
Voter turnout (% of voting age citizens)	69.5		3

2018 U.S. State Report SDG13 – CLIMATE ACTION Close-up of its 9 indicators

SDG13 – Climate Action			
Resilient building codes (% of jurisdictions subject to hazards)	33		40
Climate alliance membership (worst 0–1 best)	1		1
Global warming awareness (%)	71.0		14
Climate action plan (worst 0–1 best)	1		1
Energy-related CO_2 emissions (tCO_2/capita)	16.6		27
Effective carbon rate (USD/tCO_2)	0.00		11
FEMA mitigation coverage (%)	51.9		48
Weather costs (% of GDP)	0.1693		44
Weather injuries/fatalities (per 100,000 people)	0.54		24

Indicators

- Resilient Building Codes
- GHG Emissions
- Weather Costs
- Weather Injuries and Fatalities
- Effective Carbon Rate
- Climate Alliance Membership
- FEMA Mitigation Coverage

2021 U.S. State Report SDG13 CLIMATE ACTION and its 7 indicators

Oxfam Discussion Papers

A SAFE AND JUST SPACE FOR HUMANITY

CAN WE LIVE WITHIN THE DOUGHNUT?

Kate Raworth

Oxfam

Humanity's challenge in the 21st century is to eradicate poverty and achieve prosperity for all within the means of the planet's limited natural resources. In the run up to Rio+20, this discussion paper presents a visual framework – shaped like a doughnut – which brings planetary boundaries together with social boundaries, creating a safe and just space between the two, in which humanity can thrive. Moving into this space demands far greater equity – within and between countries – in the use of natural resources, and far greater efficiency in transforming those resources to meet human needs.

Oxfam Discussion Papers

Oxfam Discussion Papers are written to contribute to public debate and to invite feedback on development and humanitarian policy issues. They are work in progress documents and do not necessarily constitute final positions or reflect Oxfam policy positions. The views and recommendations expressed are those of the author and not necessarily those of Oxfam.

www.oxfam.org/grow GROW Oxfam

The "Doughnut" of Social and Planetary Boundaries

". . . a simple visualization of the dual conditions . . . that underpin collective human well-being. The <u>social foundation</u> demarks that Doughnut's inner boundary and sets out the basics of life on which no one should be left falling short. The <u>ecological ceiling</u> demarks the Doughnut's outer boundary, beyond which humanity's pressure on Earth's life-giving systems is in dangerous overshoot. Between the two sets of boundaries lies the <u>ecologically safe and socially just space</u> in which humanity can thrive."

--*Doughnut Economics,* p. 254

Mapping the SDGs onto the Raworth Donut

Goes to comments
NOTES ON SOCIAL FOUNDATION DOMAINS—DAVID TO SIMPLIFY

- *Social foundation domains and boundary indicators*. The 12 dimensions of social foundation (above left) are an expansion and revision of Raworth's original list of 11 dimensions (above right) and published in her February 2012 Oxfam Discussion Paper, "A Safe and Just Space for Humanity: can we live within the doughnut?" These 11 dimensions received the most mentions from a survey of social priorities returned by representatives from 80 national governments in preparation for the June 2012 U.N. Conference on Sustainable Development (a.k.a. Rio+20). Most domains in 2012 carry over to the 2017 Doughnut: "resilience" has been dropped; "income" and "jobs" are now combined; and "peace and justice," "housing," and "networking" have been added.

- Raworth (2012) provided 12 illustrative indicators of the extent of global deprivation for eight of the 11 dimensions of social foundation; indicators for "voice," "jobs," and "resilience" were left "to be determined" (Oxfam 2012, 10). Raworth (2017) provides 20 "illustrative" indicators for its 12 dimensions of social foundation (*DE*, 255); Nine of the 12 original indicators were carried over to the 2017 list.
- Oxfam Discussion Paper. Oxford: Oxfam International. 2012, p4. Hereinafter, Oxfam 2012. Available at .https://policy-practice.oxfam.org.uk/publications/a-safe-and-just-space-for-humanity-can-we-live-within-the-doughnut-210490

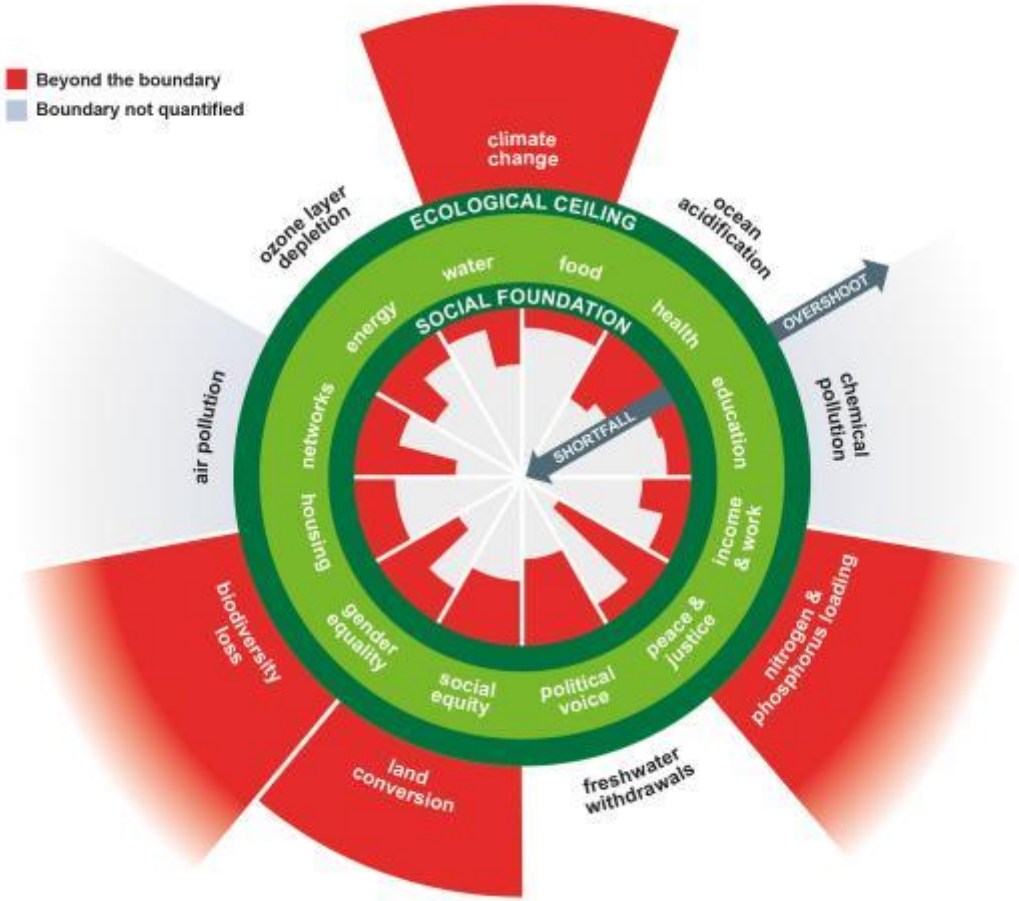
NOTES ON PLANETARY BOUNDARIES

- *Planetary ecological processes, boundaries, and indicators.* The nine earth-system processes featured in both Raworth Doughnuts were identified as essential for maintaining global ecological stability by a group of Earth-system scientists brought together in 2009 by the Stockholm Resilience Centre, led by Johan Rockström. Quantitative boundary levels were proposed in 2009 for seven of the nine global ecological processes; levels for air and chemical pollution were listed as “to be determined.” Of these nine processes, three were judged to have been breached: climate change, biodiversity loss, and nitrogen loading. Findings were published later that year by Rockström et al. in a detailed, 33-page paper and a four-page summary.
-

- With one exception, the 11 indicators of ecological overshoot identified in 2009 have been carried over to the 2017 list. (Change in radiative forcing (watts per meter squared) was dropped as a climate change indicator.) Planetary boundaries for air and chemical pollution are still listed as “to be determined.” The major change since 2009 is the breaching of a fourth ecological ceiling—the planetary boundary for land use. The control variable is the “area of forested land as a proportion of forest-covered land prior to human alteration”; the planetary boundary is “at least 75%” but the current (2017) value and trend are “62% and falling (i.e., worsening)” (*DE,* 258).
-

The Raworth Doughnut:

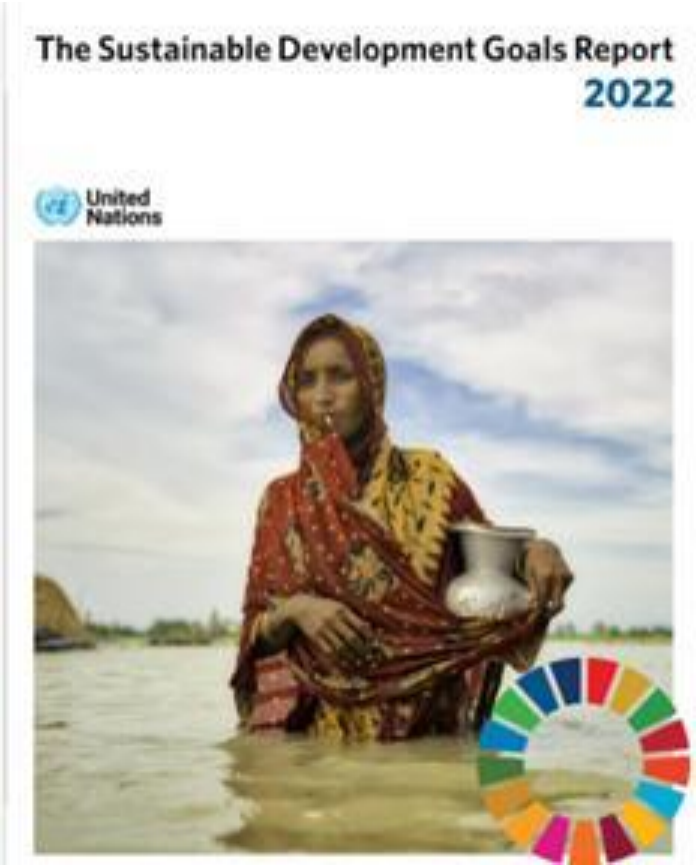
Red indicates Social Foundation shortfalls & Ecological Boundary overshoots



Goal 1: No poverty
Goal 2: Zero hunger
Goal 3: Good health and wellbeing
Goal 4: Quality education
Goal 5: Gender equality
Goal 6: Clean water and sanitation
Goal 7: Affordable and clean energy
Goal 8: Decent work and economic growth
Goal 9: Industry, innovation, and infrastructure
Goal 10: Reduced inequalities
Goal 11: Sustainable cities and communities
Goal 12: Responsible consumption and production
Goal 13: Climate action
Goal 14: Life below water
Goal 15: Life on land
Goal 16: Peace, justice, and strong institutions
Goal 17: Partnerships for the goals

Paul’s presentation on climate

KEY MESSAGES The Sustainable Development Goals Report 2022



01. Cascading crises put the SDGs at risk.
02. COVID-19 has had a devastating impact on the SDGs.
03. Conflicts are destroying the lives of many and destabilizing the world.
04. We are in the grips of a climate catastrophe and the window to avert it is rapidly closing.
05. The vulnerable are being hit the hardest.
06. Data and statistics can light the way.
07. SDGs are our roadmap out of crises and for our own survival.

https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf
https://unstats.un.org/sdgs/files/report/2022/SDGs_Report_Key_Messages_2022.pdf

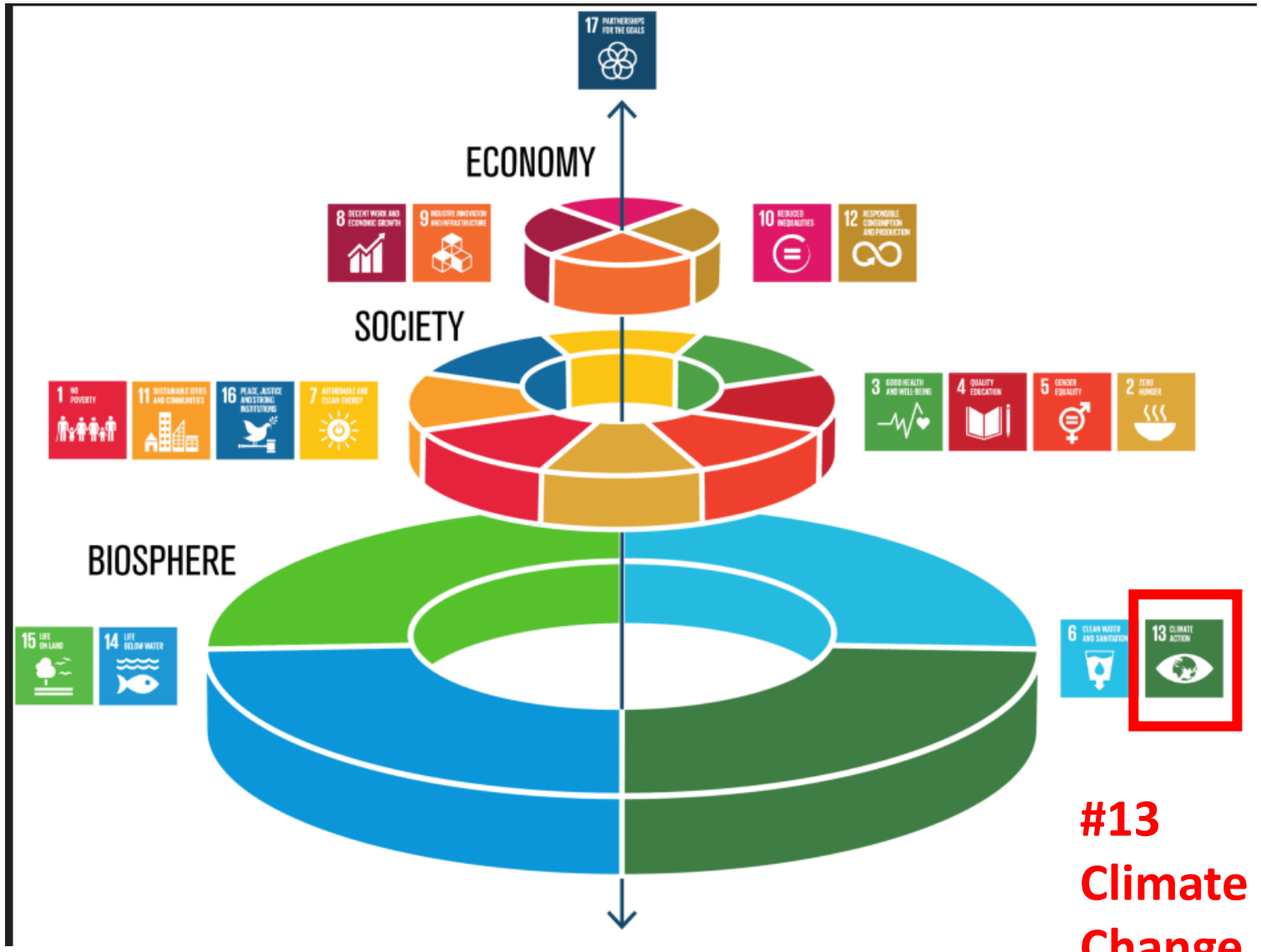
2000 (8 MDGs) vs 2015's 17 SDGs

From NO mention of climate change to #13 Climate Change

Goal 1: No poverty
Goal 2: Zero hunger
Goal 3: Good health and wellbeing
Goal 4: Quality education
Goal 5: Gender equality
Goal 6: Clean water and sanitation
Goal 7: Affordable and clean energy
Goal 8: Decent work and economic growth
Goal 9: Industry, innovation, and infrastructure
Goal 10: Reduced inequalities
Goal 11: Sustainable cities and communities
Goal 12: Responsible consumption and production
Goal 13: Climate action
Goal 14: Life below water
Goal 15: Life on land
Goal 16: Peace, justice, and strong institutions
Goal 17: Partnerships for the goals

The 17 SDGs as they relate to :

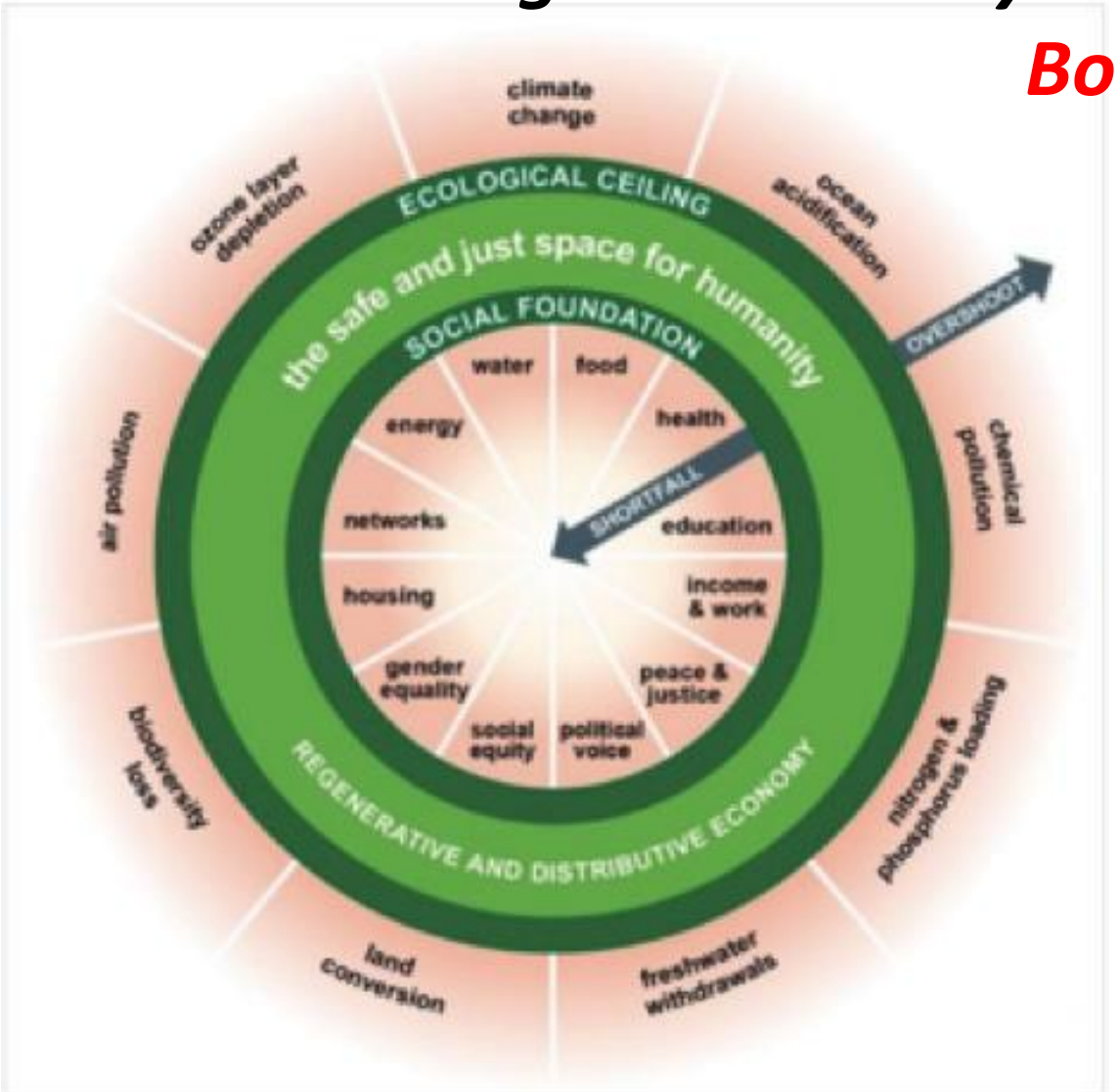
- Biosphere
- Society
- Economy

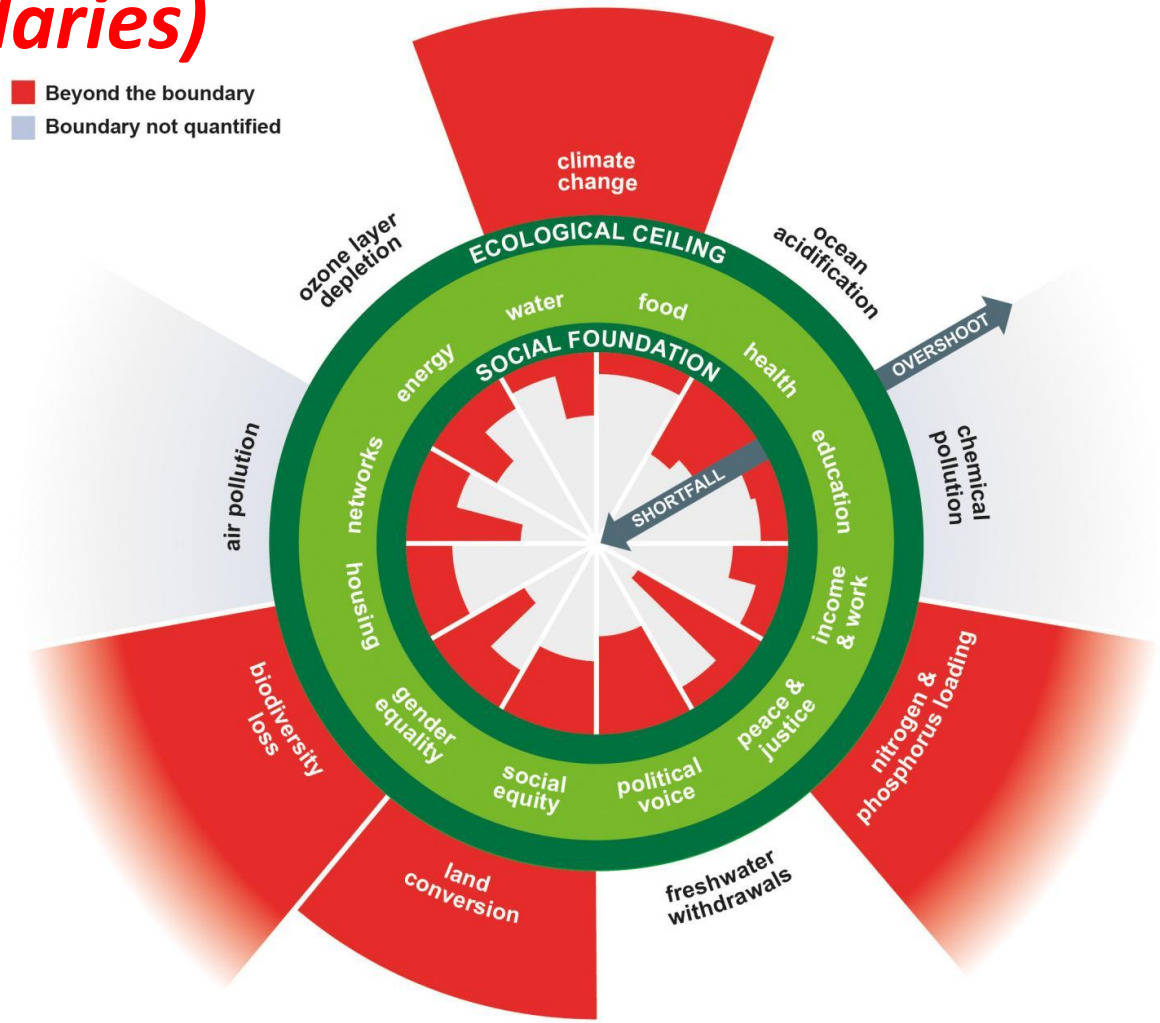


#13 Climate Change

The Raworth Doughnut:

Red indicates Social Foundation shortfalls (of 12 human wellbeing) & Ecological Boundary overshoots (amongst 9 Ecological Boundaries)





Goal 13

CLIMATE ACTION

There is no country that is not experiencing the drastic effects of climate change. Greenhouse gas emissions are more than 50 percent higher than in 1990. Global warming is causing long-lasting changes to our climate system, which threatens irreversible consequences if we do not act.

The annual average economic losses from climate-related disasters are in the hundreds of billions of dollars. This is not to mention the human impact of geo-physical disasters, which are 91 percent climate-related, and which between

Reference: click here

Goal 13

CLIMATE ACTION

SDG 13 Facts and action called for

Facts (as of 2017):

- 1.0° C (1.8°F)
- + ~9” sea level rise;

+1°

Celsius

As of 2017 humans are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels.

+20

cm

Sea levels have risen by about 20 cm (8 inches) since 1880 and are projected to rise another 30–122 cm (1 to 4 feet) by 2100.

https://www.undp.org/sustainable-development-goals?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQjwyt-ZBhCNARIsAKH1175L9-qMU13nVOsBLqQCporg6n5YTH7WWx6fT2WH9M9rIJa_9ujUAb#climate-action

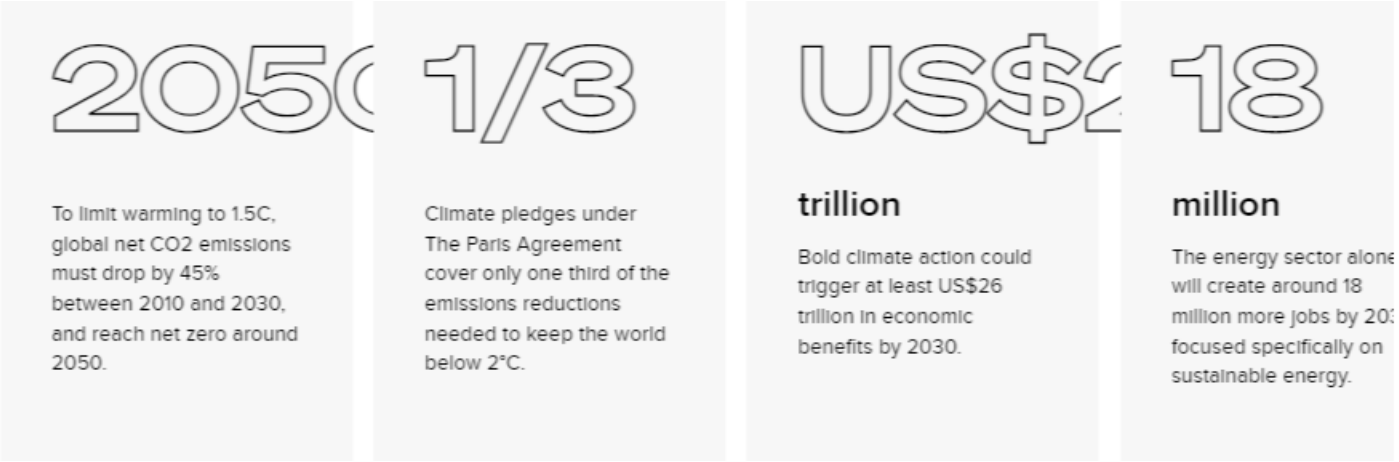
Goal 13

CLIMATE ACTION

SDG 13 Facts and action called for

Actions needed:

- need to limit to 1.5°C by 2050
- Paris Climate Pledges, if honored, only reduces 1/3rd of the GHGs needed.
- Bold action can save at least $26 trillion US
- + create 18 million jobs



https://www.undp.org/sustainable-development-goals?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQjwyt-ZBhCNARIsAKH1175L9-qMU13nVOsBLqQCporg6n5YTH7WWx6fT2WH9M9rIJa_9ujUAb#climate-action

SDG 13 GOAL TARGETS:

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- Integrate climate change measures into national policies, strategies and planning
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
- Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

IPCC Reports: THE BASIS

Since 1988, the IPCC has prepared six (6) comprehensive Assessment Reports (AR) about knowledge on climate change. They address:

- **Causes**
- **potential impacts**
- **response options.**

https://www.ipcc.ch/reports/ https://www.ipcc.ch/about/history/

The Latest IPCC Reports: 3 reports + Synthesis

Latest: 2021-2022 6th Assessment reports (AR6)

- **AR6 Climate Change 2021: The Physical Science Basis** - August 2021
- **AR6 Climate Change 2022: Impacts, Adaptation and Vulnerability** - February 2022
- **AR6 Climate Change 2022: Mitigation of Climate Change** - April 2022
- **AR6 Synthesis Report: Climate Change 2022** - September 2022

https://www.ipcc.ch/reports/

6 Big Findings from the IPCC 2022 Report on Climate Impacts, Adaptation and Vulnerability

1. Climate impacts are already more widespread and severe than expected.
2. We are locked into even worse impacts from climate change in the near-term.
3. Risks will escalate quickly with higher temperatures, often causing irreversible impacts of climate change.
4. Inequity, conflict and development challenges heighten vulnerability to climate risks.
5. Adaptation is crucial. Feasible solutions already exist, but more support must reach vulnerable communities.
6. But some impacts of climate change are already too severe to adapt to. The world needs urgent action now to address losses and damages.

https://www.wri.org/insights/ipcc-report-2022-climate-impacts-adaptation-vulnerability#:~:text=The%20report%20finds%20that%20every,is%20not%20safe%20for%20all.

What does this mean?

In simplest terms:

- More Extreme weather events and resultant impacts: bigger storms, more wildfires, droughts and floods, etc.
- Sea level rise first felt in storm surges and local flooding
- Ocean acidification and potential food chain impacts
- Agricultural shift
- Biodiversity impacts
- Etc.

- We will have a world of climate refugees (biospheric)!
  - To cooler climates and higher elevations
  - Away from coasts

Hurricane Ian traumatized Floridians. It also erased their nest eggs.

- As climate change makes natural disasters more frequent and severe Ian offered new evidence that Americans' retirement funds and assets are in jeopardy in vulnerable

“For retirees it’s a double whammy, because many fixed-income retirees buy their homes with cash. Flood damage can go from zero to a very high number very rapidly.”

https://www.politico.com/news/2022/10/10/ian-cracks-floridians-nest-eggs-00060759?cid=apn

Temperature predictions:

- Investment research firm RisQ, real estate company Climate Core Capital and the Harvard Graduate School of Design explored how quickly some of the nation's most desirable real estate **markets would heat up beyond the point of tolerable human living in what they called a "Death Valley Index."**

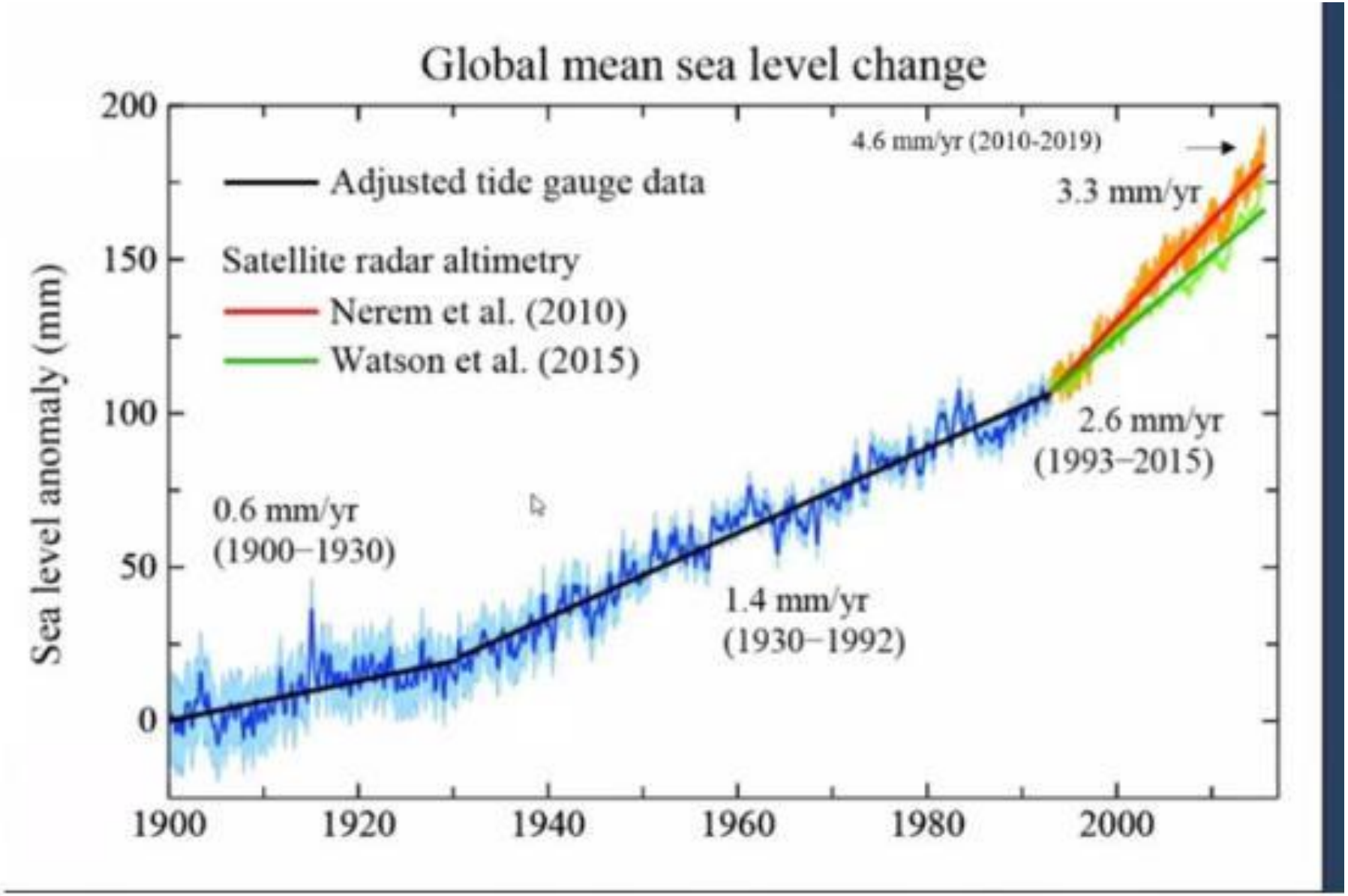
- They measured how soon certain areas' climates would mimic the historical climate of Death Valley, the site of the hottest-ever temperature on record, where between 1981 and 2010 daily temperatures hit **95 degrees Fahrenheit across 161 days on average every year (44%)**

- The exercise concluded that Miami and Houston will achieve that mark by 2026 when high temperatures and humidity are taken into account. Austin would reach it by 2027, Tampa by 2029 and Phoenix by 2038. **Orlando already has**.

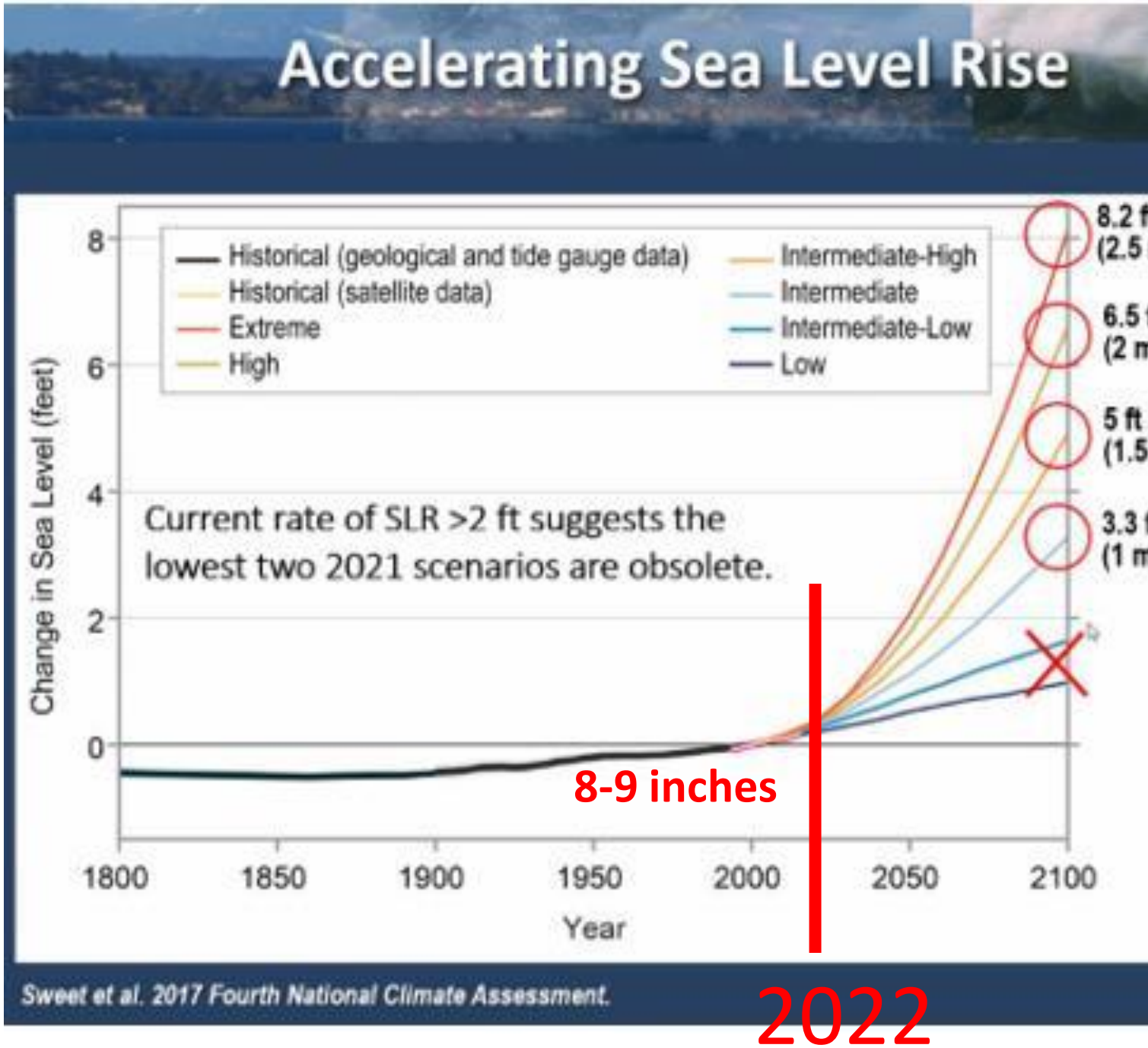
https://www.politico.com/news/2022/10/10/ian-cracks-floridians-nest-eggs-00060759?cid=apn

Sea Level Rise - accelerating

8-9 inches

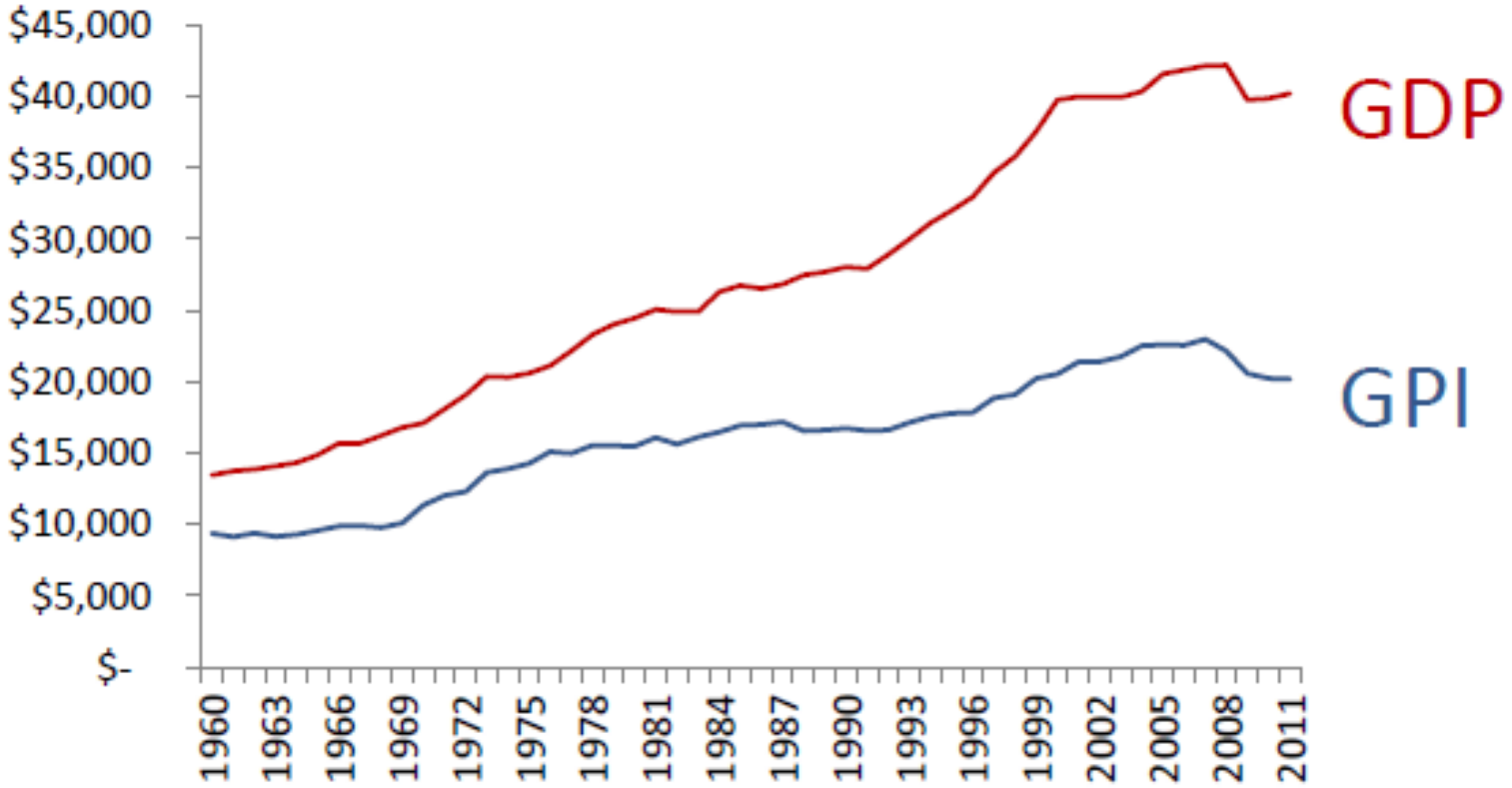


Projected Sea Level Rise



Colorado Results: GPI vs GDP

GDP grew by 300%
GPI grew by 215%



- Extreme Weather events will become more costly resulting in a false GDP – i.e. a divergence of the GDP vs. GPI
- Sea level rise – becomes astronomical

Colorado Fiscal Institute

Chris Stiffler presentation 9/21/2022 to OLLI: Beyond GDP
https://eeeforum.org/wp-content/uploads/2022/09/Chris-Stiffler-Measuring-Genuine-Progress-GPI-Lecture-2022.pdf

My thoughts:

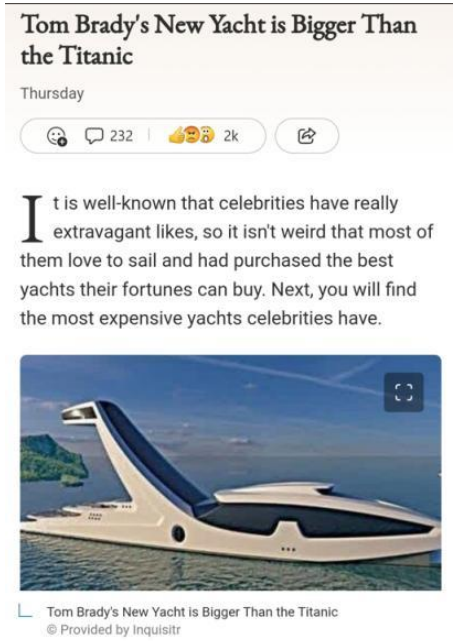
- I'm less concerned about undershoots than overshoots. If we can't control overshoots, such unsustainable practice ultimate causes undershoots.
- Of Highest Priority We need to constrain
  - Carbon emissions
    - Electrify everything using non-carbon sourced energy
    - Install Solar
    - Drive EVs
  - Sequester carbon
    - Direct Air Capture (DAC)
    - Create Carbonate in Basalt –
      - ORCA – Iceland https://climeworks.com/roadmap/orca
        WA - https://quimpergeology.org/2020/03-15-2020-covid-19-cancelation/
    - Soil health, sustainable Ag practices
      - – include no-till, biochar etc.

My thoughts:

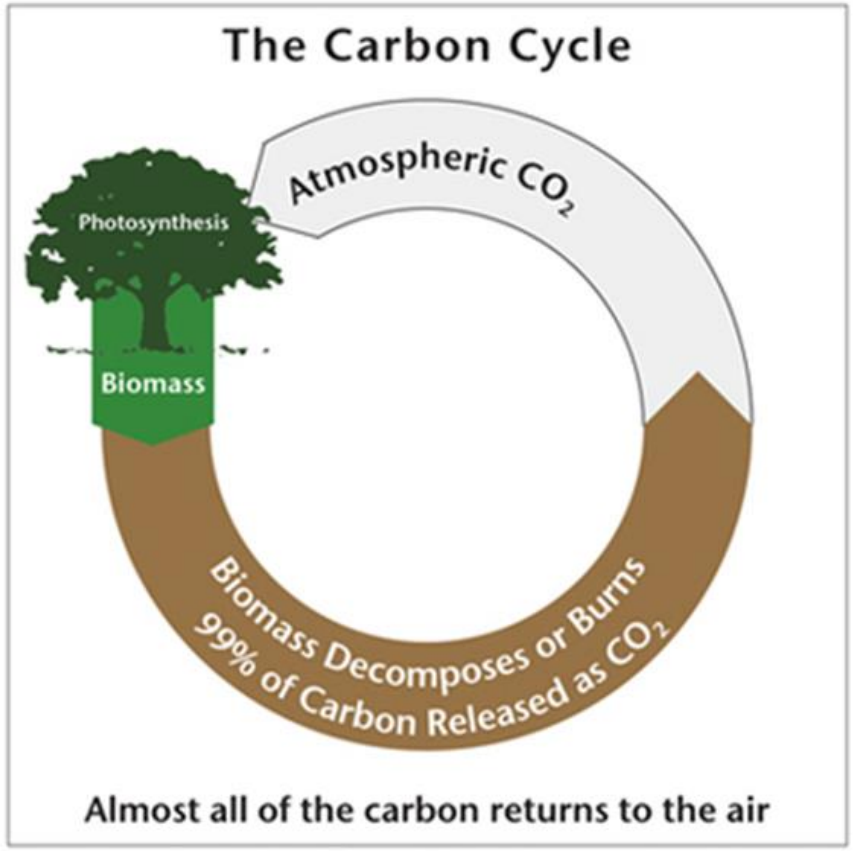
OTHER

- Population – if ALL women had only ONE child we could reduce population to 2 billion people in 5 generations – SEE Eileen Crist reference

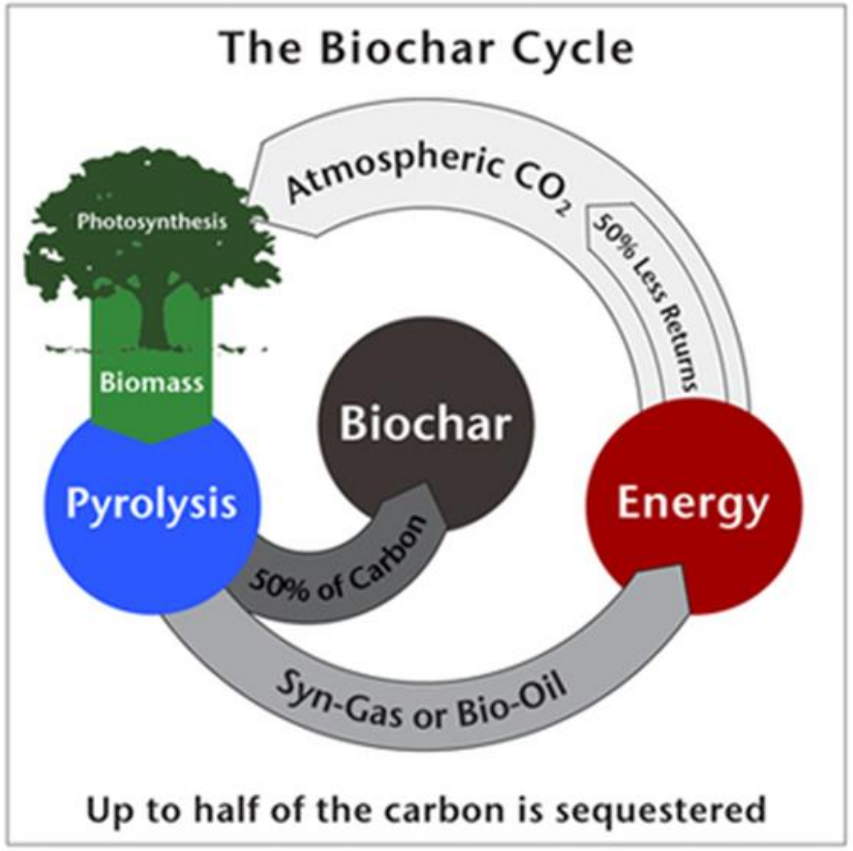
- Transition from growth economics to steady-state/donut economic models coupled with regenerative economic models for sustainable practices.
- We need to scale back our living and retirement expectations:
  - We don’t need to travel all over the world,
  - we don’t need 20,000 ft-2 homes,
  - we don’t need super- exorbidant Titanic yachts



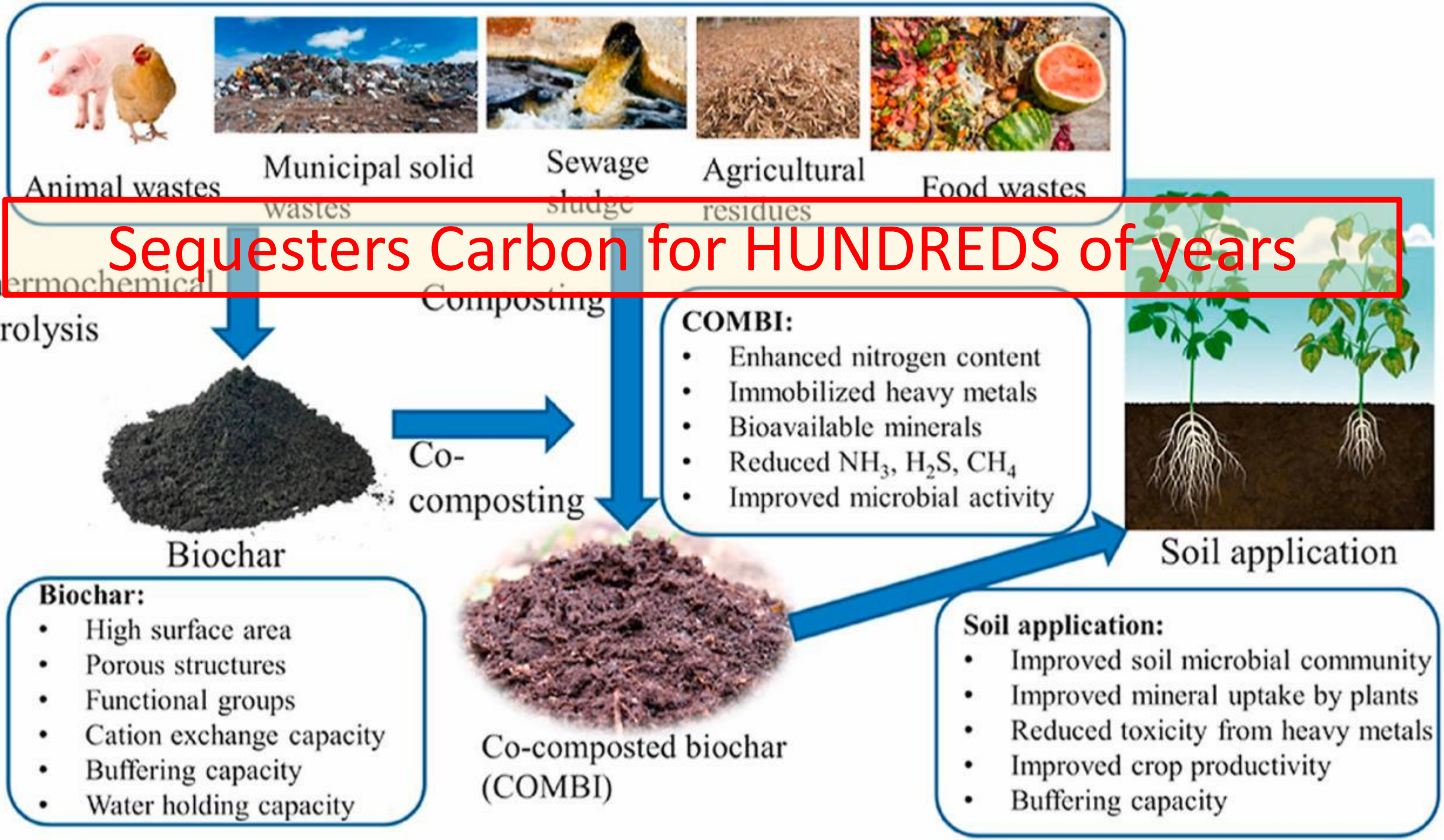
What is Biochar



Green plants remove CO_2 from the atmophere via photosynthesis and convert it into biomass. Virtually all of that carbon is returned to the atmosphere when plants die and decay, or immediately if the biomass is burned as a renewable substitute for fossil fuels.



Green plants remove CO_2 from the atmophere via photosynthesis and convert it into biomass. Up to half of that carbon is removed and sequestered as biochar, while the other half is converted to renewable energy co-products before being returned to the atmosphere.


Animal wastes
Municipal solid wastes
Sewage sludge
Agricultural residues
Food wastes
Sequesters Carbon for HUNDREDS of years
Thermochemical pyrolysis
Composting
Biochar
Co-composting
COMBI:
• Enhanced nitrogen content
• Immobilized heavy metals
• Bioavailable minerals
• Reduced NH_3, H_2S, CH_4
• Improved microbial activity
Soil application
Biochar:
• High surface area
• Porous structures
• Functional groups
• Cation exchange capacity
• Buffering capacity
• Water holding capacity
Co-composted biochar (COMBI)
Soil application:
• Improved soil microbial community
• Improved mineral uptake by plants
• Reduced toxicity from heavy metals
• Improved crop productivity
• Buffering capacity

More thoughts:

Economic shifts:

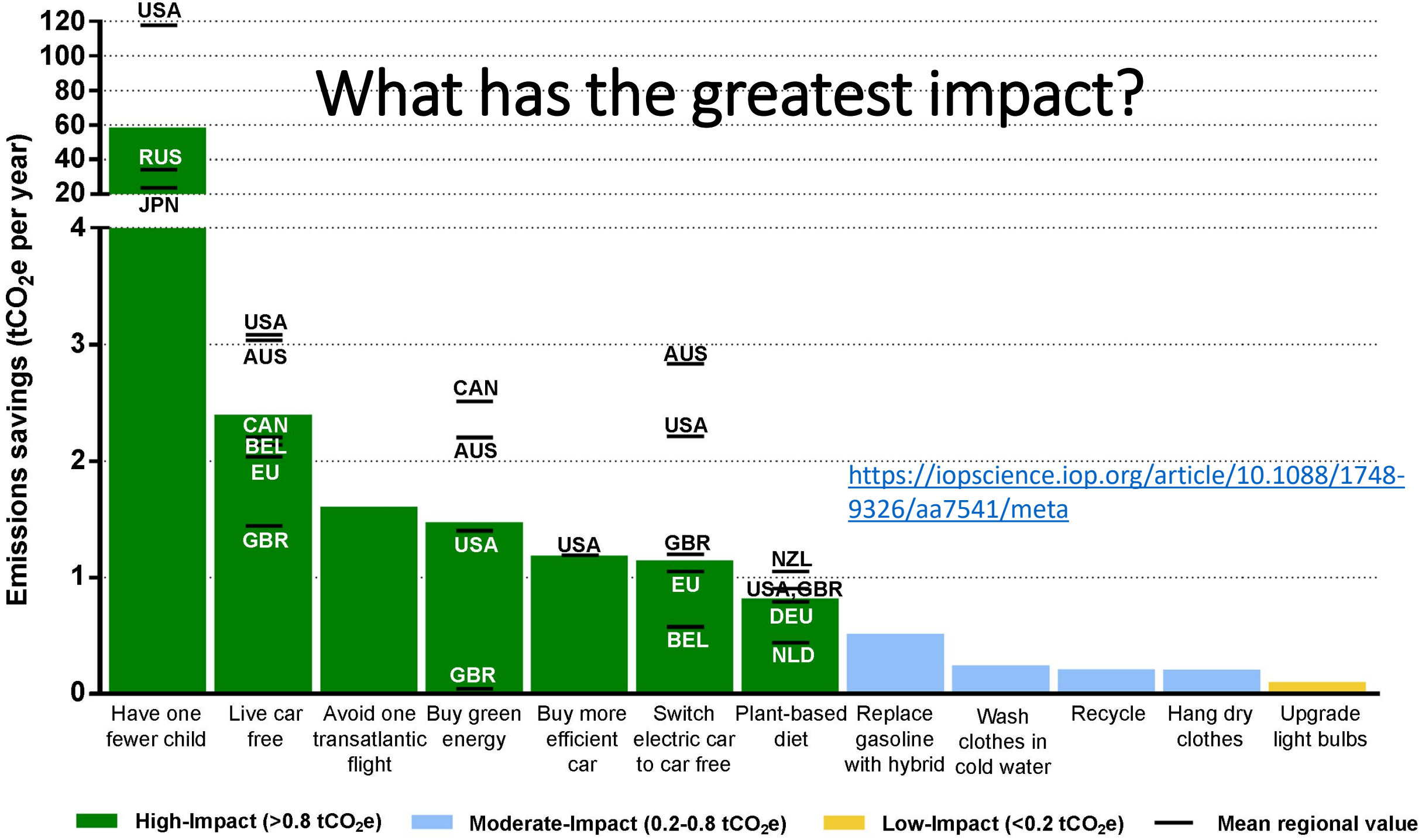
- Growth economics --- don’t work in the long run
- There are debates on degrowth vs green growth as noted in our looking forward email – listed in weekly prelude email and web page

So, then what….

- Regenerative economics, steady state donut, policy changes, etc.

- Dave’s overview thoughts
    - ALLIANCE CENTER – THEIR PROJECT – coalition on regen econ….
    - What the center is for policy changes

What has the greatest impact?



https://iopscience.iop.org/article/10.1088/1748-9326/aa7541/meta

The climate mitigation gap: education and government recommendations miss the most effective individual actions

What can we individually do to reduce our impact? The list is exhaustive

See this paper: https://iopscience.iop.org/article/10.1088/1748-9326/aa7541/meta

https://drawdown.org/

https://www.iea.org/reports/net-zero-by-2050

Can we have a revolution of economics and policies?

Is America Headed for Another Civil War?

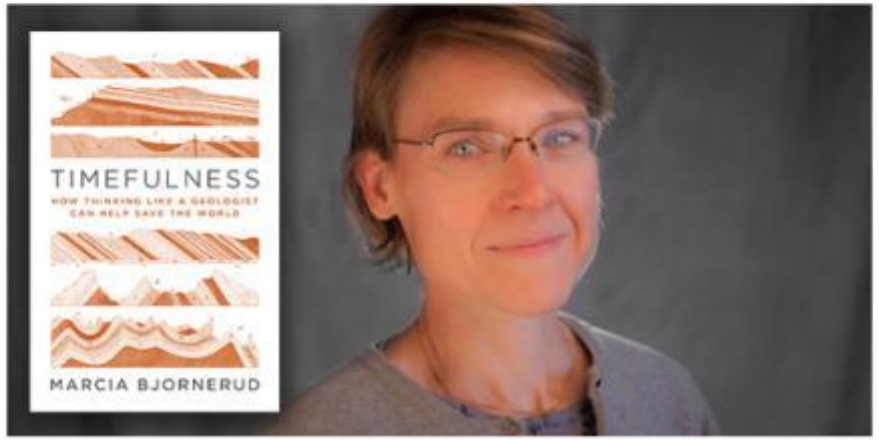
- America is divided and battling many different internal “wars” — over politics, culture, language, religion. Is it possible all this internal division could culminate in a civil war? Today’s episode of “The Argument” brings together Jamelle Bouie and Tim Alberta to assess. Bouie is a Times Opinion columnist and historian of America’s Civil War. Alberta is a staff writer at The Atlantic and made the case that the F.B.I. Mar-a-Lago search is the tipping point for political violence that could put our democracy at stake.

- https://www.nytimes.com/2022/10/12/opinion/the-argument-america-civil-war.html

2022-12-10 Marcia Bjornerud—Timefulness: How to think like a geologist can save the world

September 17, 2022 QMPGEOeditor1

On Saturday, Dec. 10, 2022, Marcia Bjornerud, Professor of Geosciences at Lawrence University in Wisconsin, will share ideas from her book *Timefulness: How Thinking Like a Geologist Can Help Save the World.*



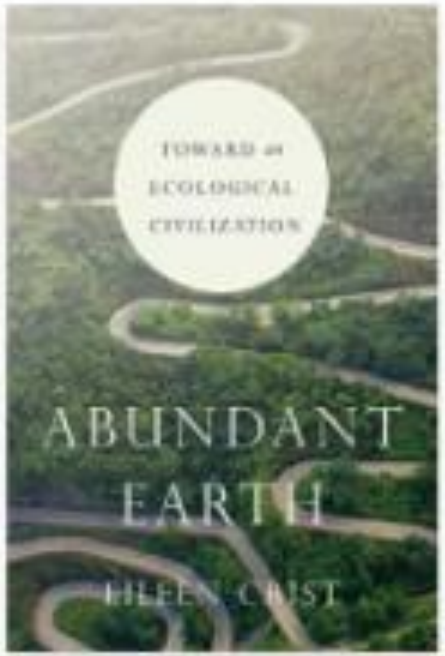
A Geologic Perspective: How thinking like a geologist can help save the world

Save the date: Saturday December 10th 5 p.m. Mountain

https://quimpergeology.org/2022/2022-12-10-marcia-bjornerud-timefulness-how-thing-like-a-geologist-can-save-the-world/

RESOURCES

Resources



Currently Rea...

Rate this book

Preview

Abundant Earth: Toward an Ecological Civilization

by Eileen Crist

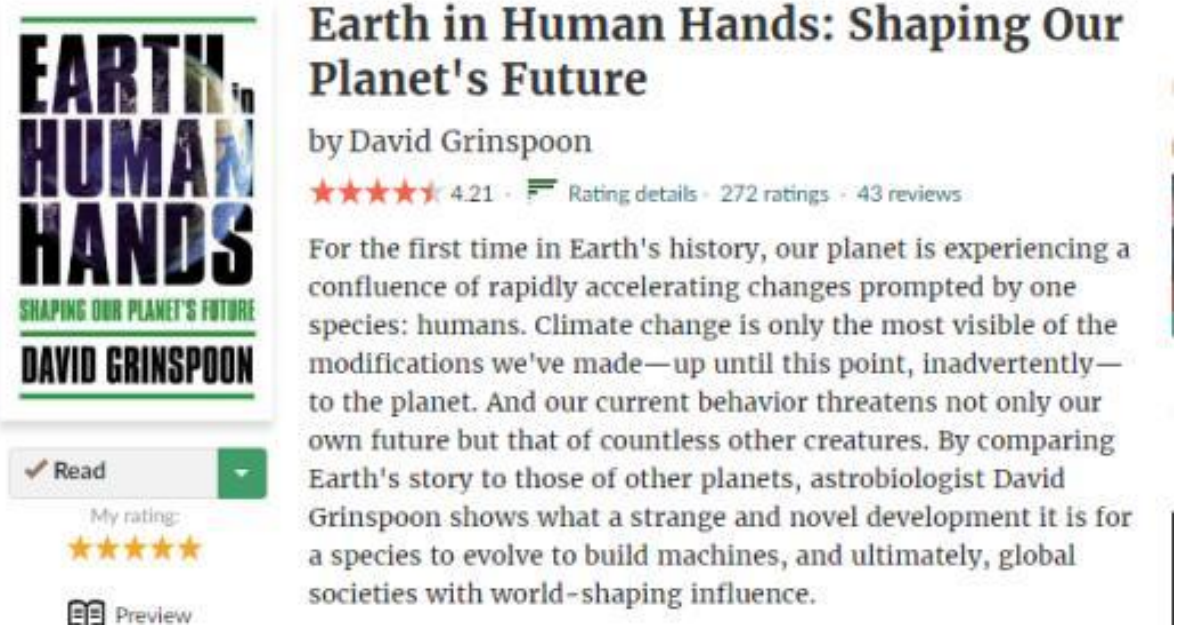
4.33 · Rating details · 3 ratings · 2 reviews

In *Abundant Earth*, Eileen Crist not only documents the rising tide of biodiversity loss, but also lays out the drivers of this wholesale destruction and how we can push past them. Looking beyond the familiar litany of causes—a large and growing human population, rising livestock numbers, expanding economies and international trade, and spreading infrastructures and incursions upon wildlands—she asks the key question: if we know human expansionism is to blame for this ecological crisis, why are we not taking the needed steps to halt our expansionism?

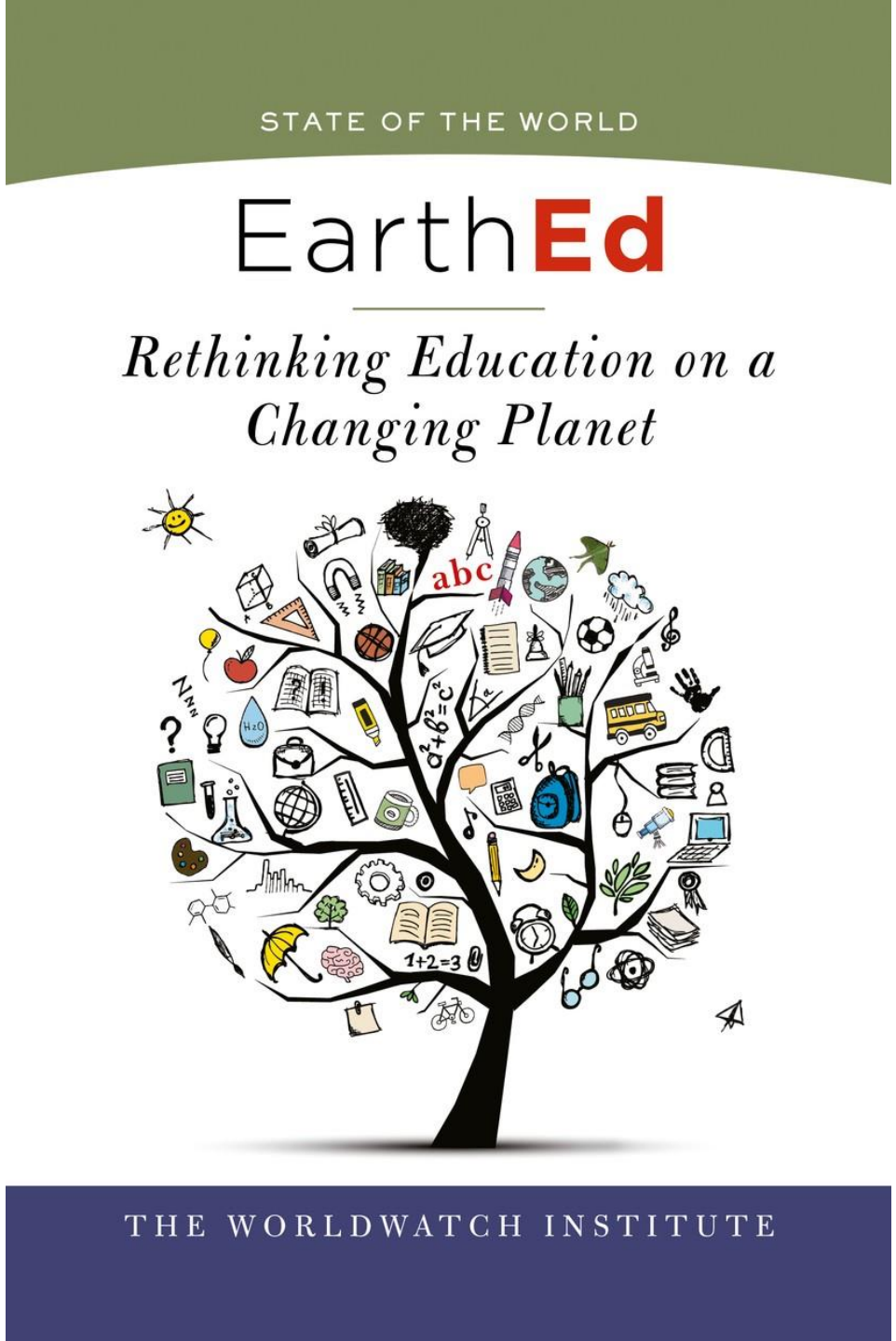
https://www.goodreads.com/book/show/39105295-abundant-earth?from_search=true&from_srp=true&qid=76HySSNn9u&rank=1

Resources: David Grinspoon

Earth in Human hands and associated TEDx talks:
We know what we can do
but we need government leadership partnered with the private sector



https://www.goodreads.com/book/show/26031232-earth-in-human-hands?from_search=true&from_srp=true&qid=8iCQ0YNM0g&rank=1

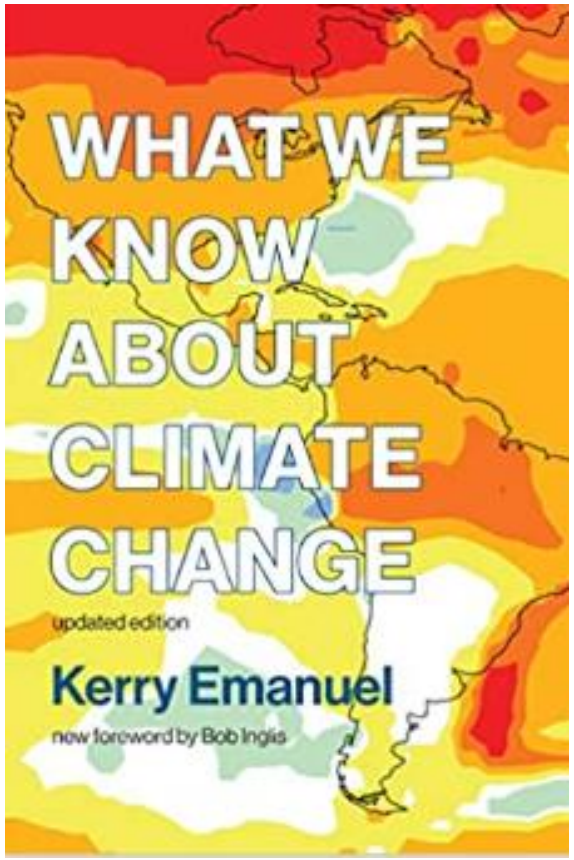


EarthEd: Rethinking Education on a Changing Planet

World Watch Institute:
https://www.socioeco.org/bdf_organisme-299_en.html

https://link.springer.com/chapter/10.5822/978-1-61091-843-5_1

What We Know about Climate Change, updated edition (The MIT Press) Paperback – October 9, 2018



Goodreads

Moved on to Alliance Center:
Brenna Simmon-St.Onge, Executive Director

- Who we are
- How we drive change
- Colorado’s Sustainability Hub
- Our Community
- Living Lab-Demonstration Site

https://www.thealliancecenter.org/

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Week #7 (Oct. 26th) Guest Presentation

"Sustainable, Resilient, and Equitable Communities for the 21st Century" and "Planning to Thrive"

Rocky Piro

PhD, FAICP

Retired Urban Planner, previous Executive Director, Colorado Center for Sustainable Urbanism