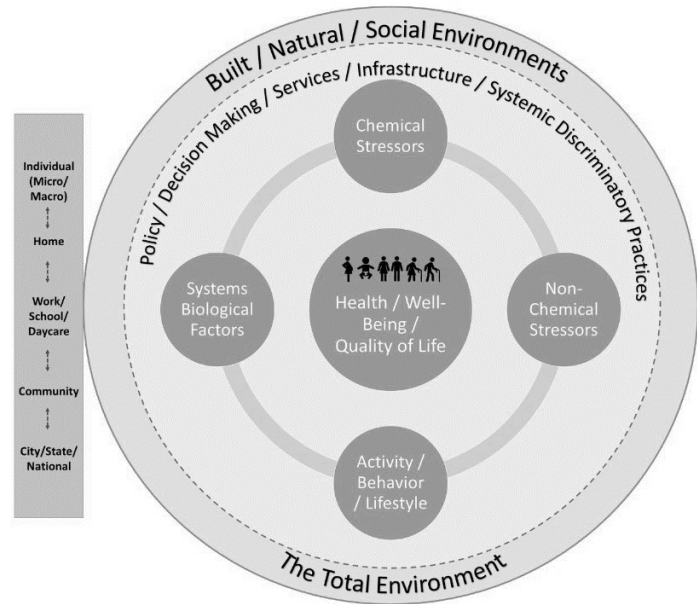


NAVIGATING THE CHALLENGES OF CUMULATIVE AND DISPROPORTIONATE IMPACTS ANALYSES

Meenakshi Rao, Ph.D.
Oregon Department of Environmental Quality
NACAA Spring meeting 2022

EPA

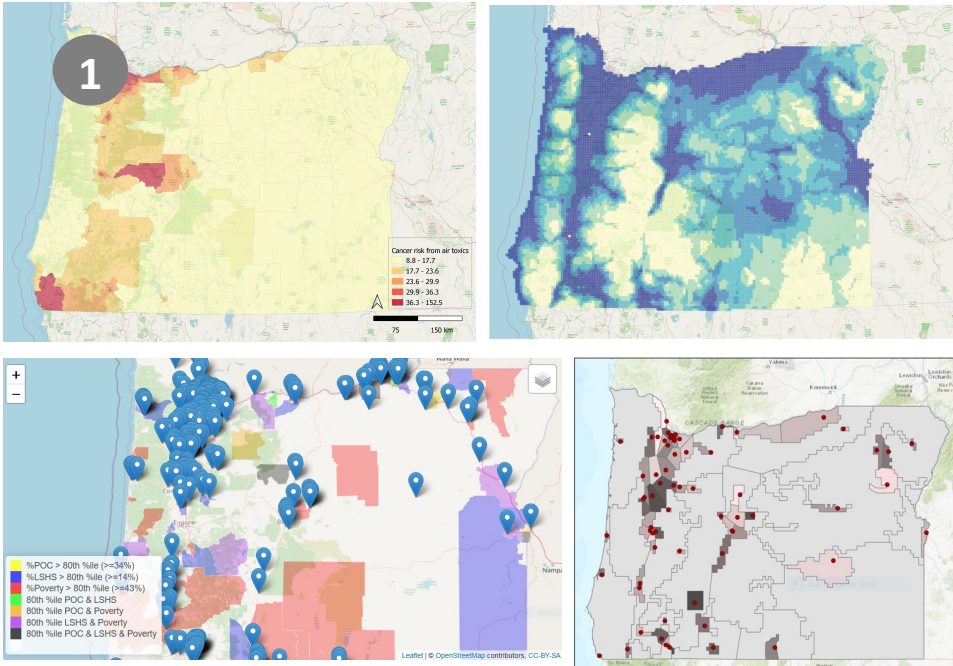
Cumulative Impacts refers to the total burden from chemical and non-chemical stressors that affect the health, well-being, and quality of life of an individual, community, or population at a given point in time or over a period of time.



HB 4077

“**Environmental justice**” means the equal protection from environmental and health risks, fair treatment and meaningful involvement in decision making of all people regardless of race, color, national origin, immigration status, income or other identities....

“**Environmental justice community**” includes communities of color, communities experiencing lower incomes, communities experiencing health inequities, tribal communities, rural communities, remote communities, coastal communities, communities with limited infrastructure and other communities traditionally underrepresented in public processes and adversely harmed by environmental and health hazards, including seniors, youth and persons with disabilities.



Identify how to assess cumulative air pollution burden



Complete preliminary assessment of disproportionate impacts

3

- Data accessibility
- Integrating data + lived experience
- Priorities

Engage with communities

4

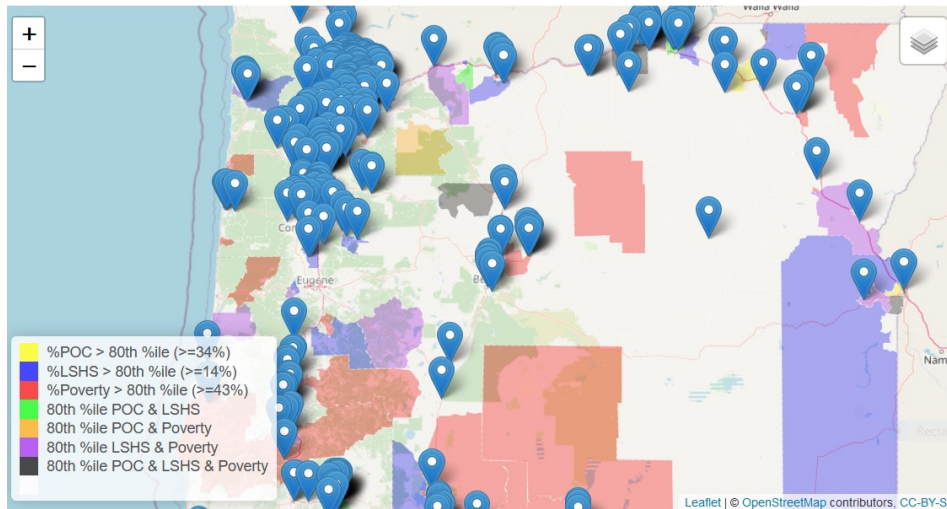
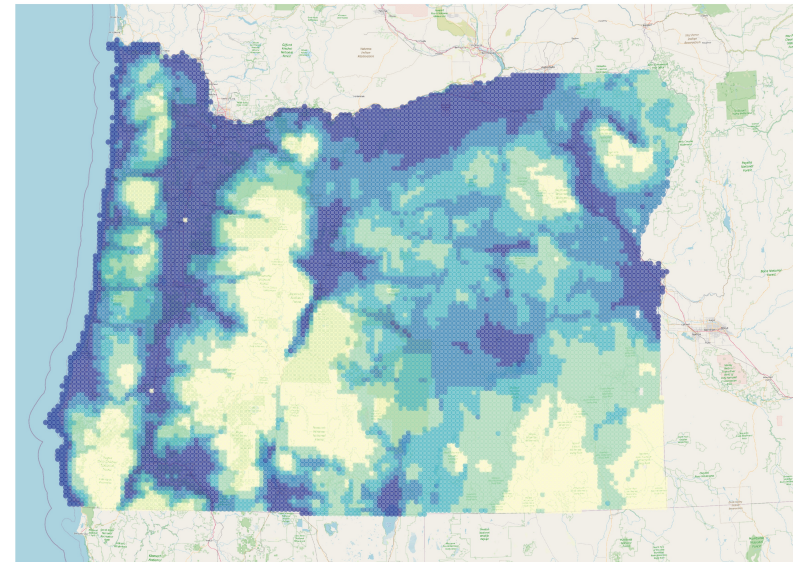
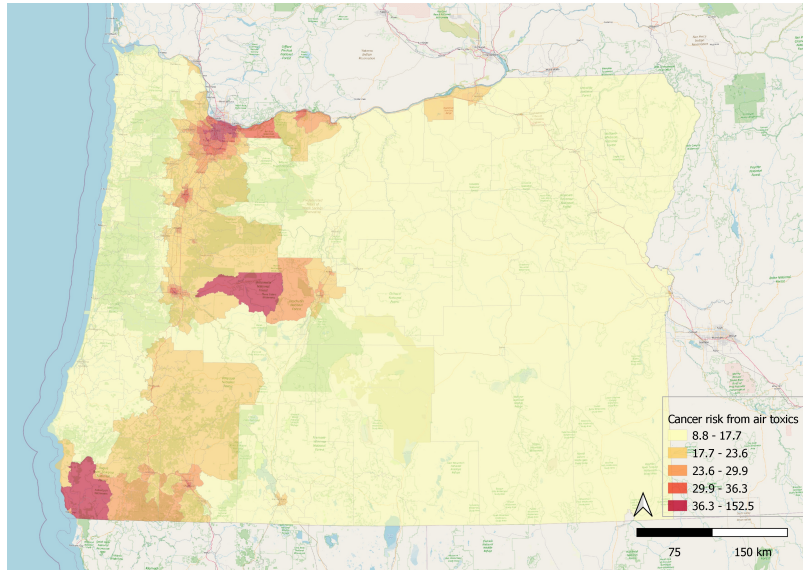
Existing :

- Climate Protection Plan
- Regional Haze
- VW grants
- CAO

Expand scope :

- From program to environment
- Collaborate with other agencies

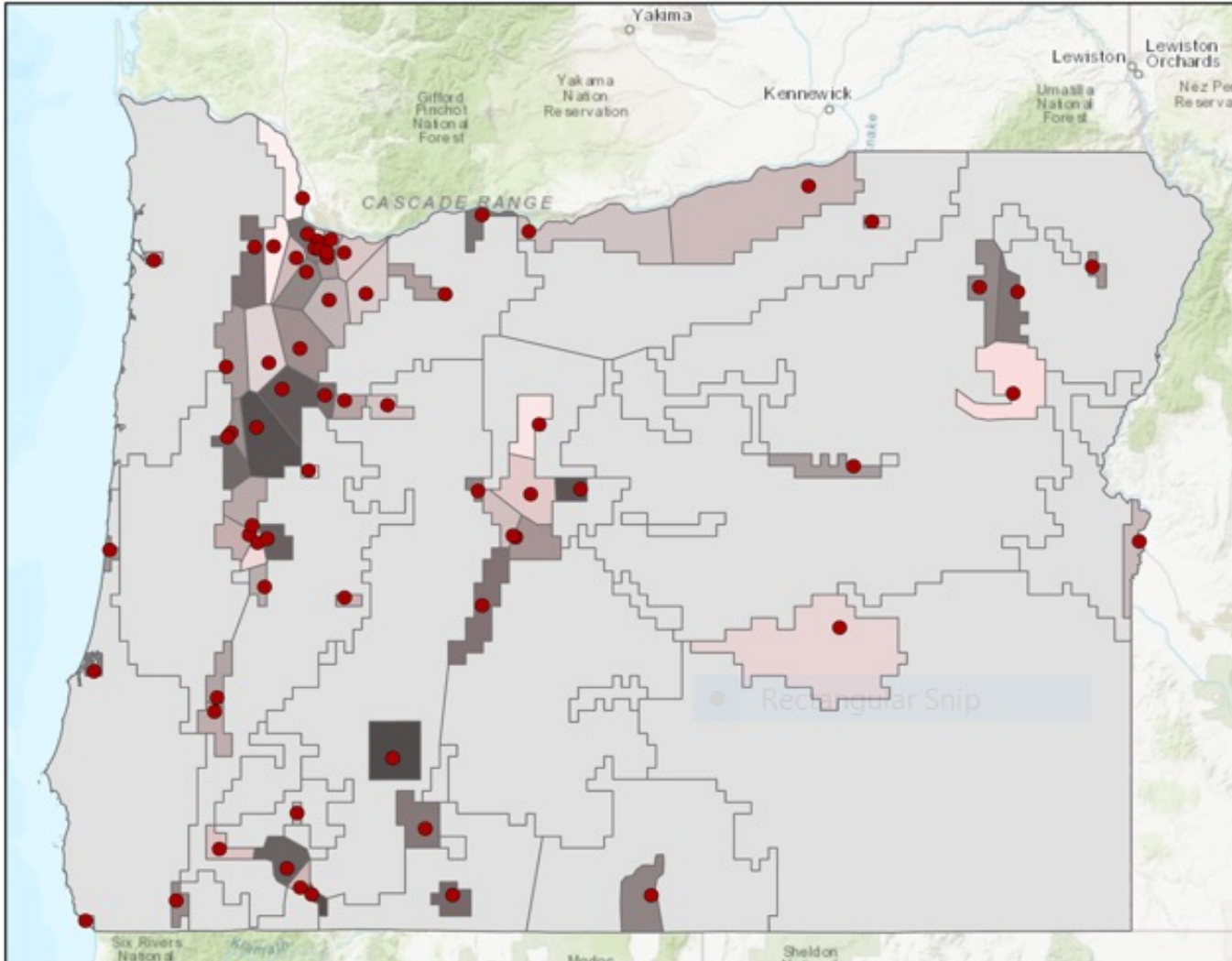
Enact policy



Cumulative Air Pollution

- PM2.5 concentrations
- Cancer risk from air toxins
- Hyperlocal, acute risk from facility emissions

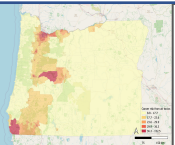
Identify how to assess cumulative air pollution burden



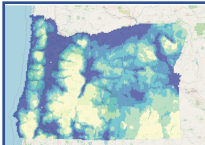
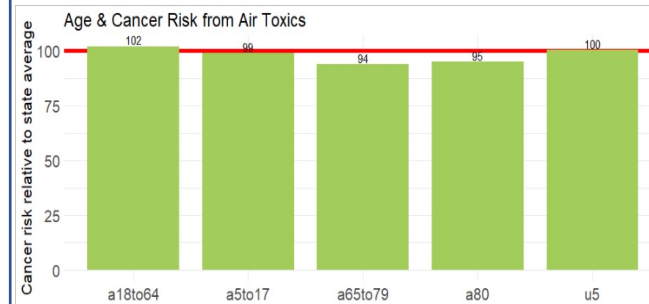
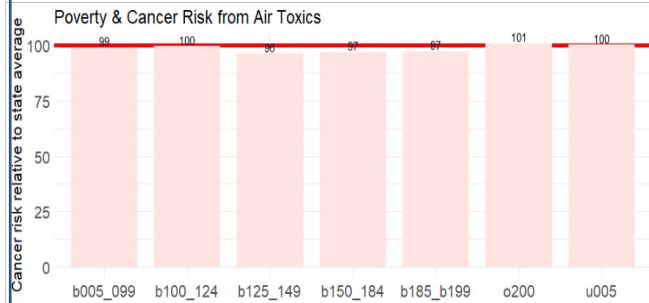
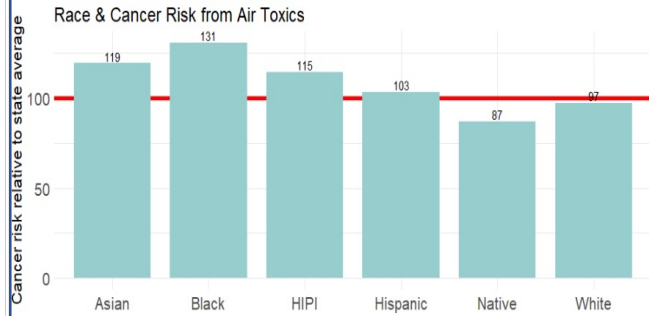
PM2.5 monitoring network coverage:

- Disadvantaged, underserved and vulnerable populations
- Wildfire risk
- Airshed coverage

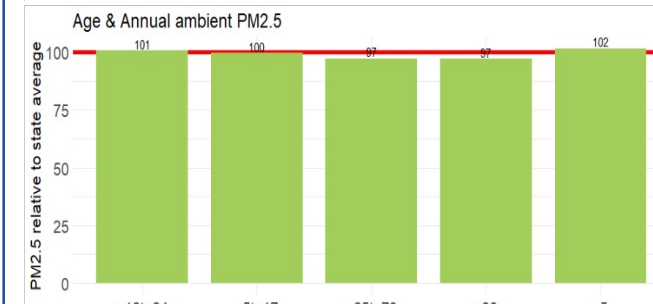
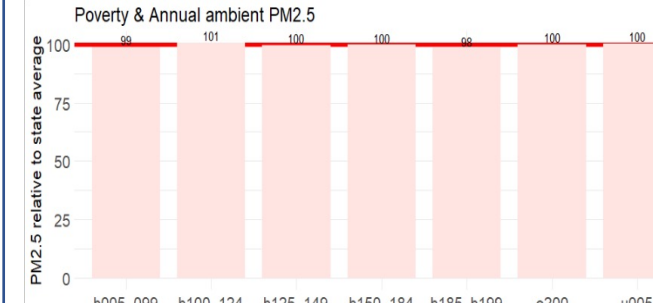
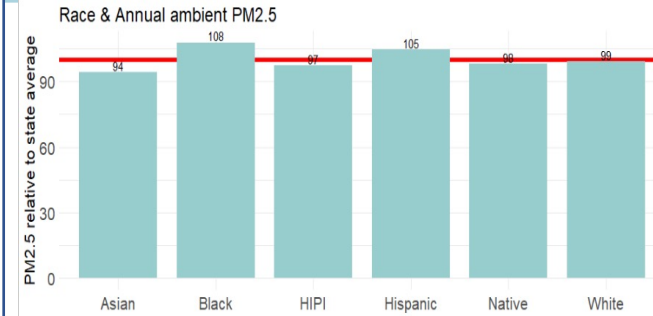
Cumulative air pollution burden: Assessing network coverage



Cancer risk from air toxins



Ambient PM2.5 concentrations



HB 4077

Potential dimensions

- Race/BIPOC
- Income/Poverty
- Age (under 5, over 64)
- Disability
- Immigration status
- Tribal
- Rural
- Coastal
- Remote
- Communities with limited infrastructure
- Underrepresented communities

Health vulnerabilities

In consultation with OHA

- Life expectancy?
- Diabetes?
- Cardiovascular disease?
- Asthma?

Complete preliminary assessment of disproportionate impacts

Cumulative Impacts

Combining indicators

- Quantile ranking and summing of ranks
 - EJScreen
- Weighted sum
 - Regression (California's Healthy Places Index)
 - Principal Component Analysis (Area Deprivation Index)
 - Expert opinion
- Hybrid
 - CalEnviroScreen

From disproportionate impacts to cumulative impacts

How do we develop indicators that:

- Reframe our thinking from reducing pollution burden to enhancing well-being?
- Link local pollution burden to global planetary boundaries?
- Connect the social foundation to community well-being?

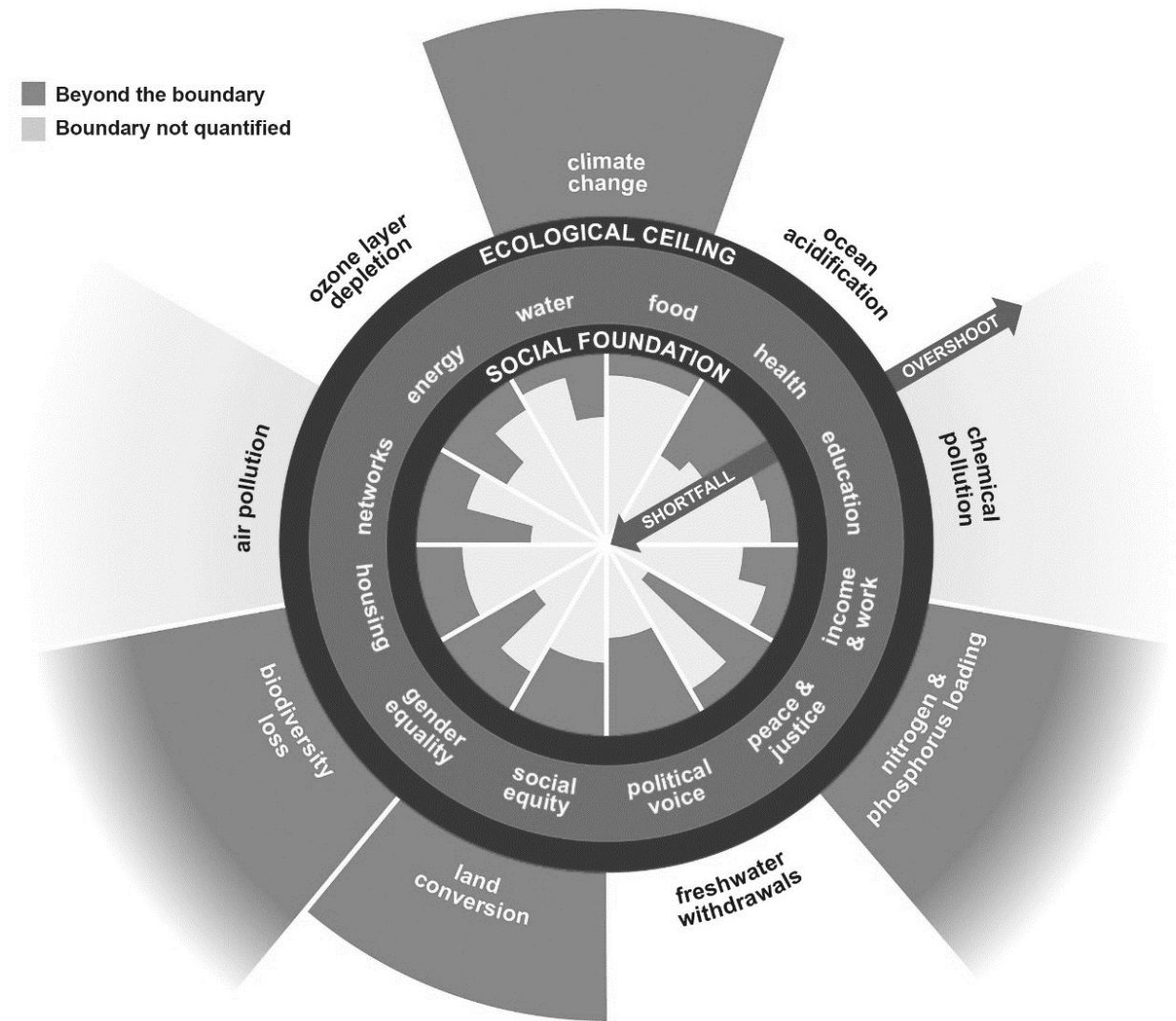


chart: Kate Raworth, Donut Economics

From cumulative impacts to a well-being framework

Environmental Justice statements include:

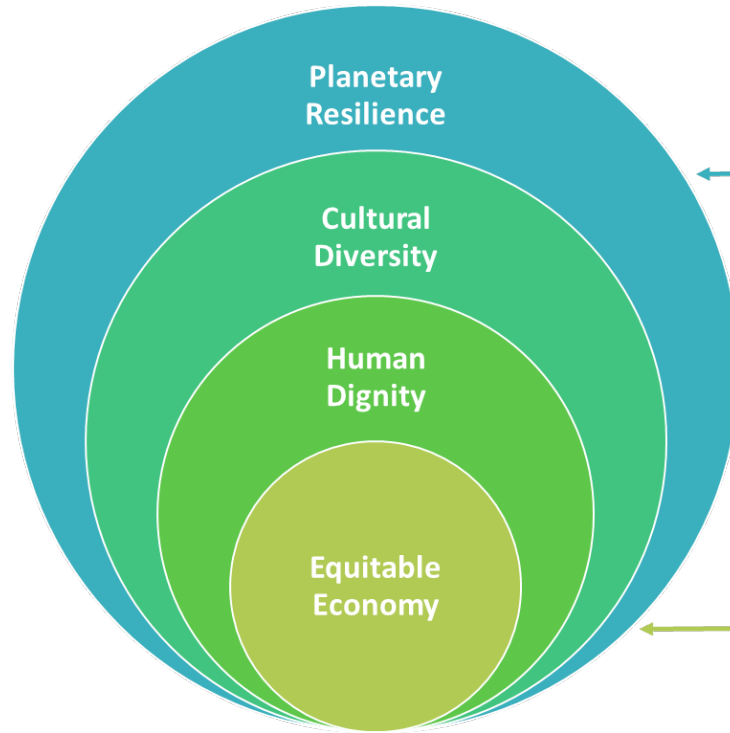
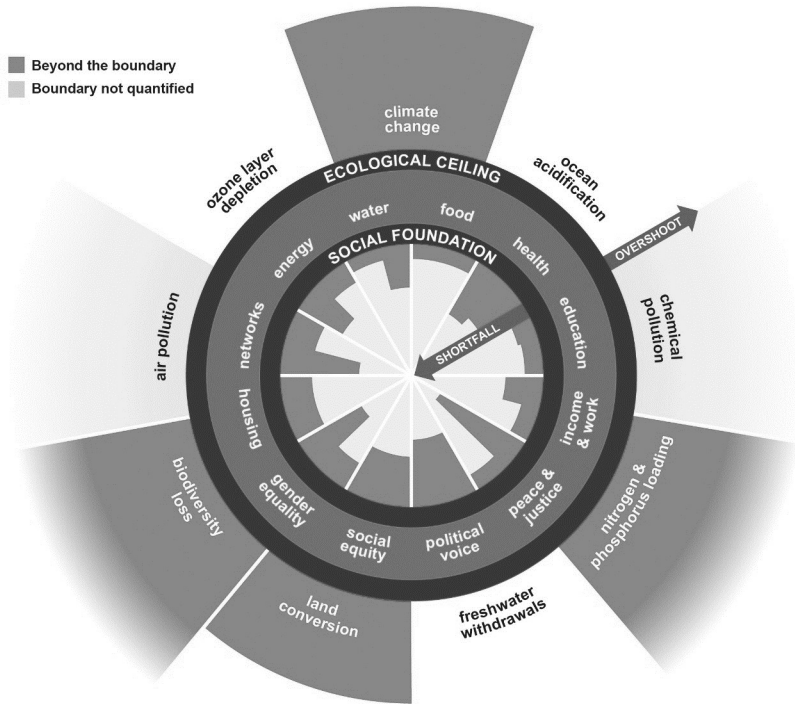
...meaningful involvement in decision making of all people regardless of race, color, national origin, immigration status, income or other identities...

- Making environmental data accessible to all Oregonians
 - Language access
 - Open data & science
 - Outreach to “remote” communities
- Integrating data + lived experience
 - Production- and consumption-based lifecycle analysis*
 - Scenario modeling tools**
 - Community outreach and collaboration
- Collaboratively setting priorities for action & policy making

[*DEQ's Waste Impact Calculator](#)

[** Diesel PM Scenario Tool](#)

Engage with communities



1. PLANETARY BOUNDARIES
2. DEPLETION RATE (biotic and abiotic)
3. ATTRIBUTIONAL LCIA CATEGORIES
4. CULTURAL WISDOM
5. SUSTAINABLE DEVELOPMENT GOALS (alignment)
6. HUMAN DEVELOPMENT INDEX
7. HAPPINESS INDEX
8. GENUINE PROSPERITY INDEX
9. LIVELIHOODS (w/in prevailing regional sectors)
10. GDP+

chart: Kate Raworth, Donut Economics

Well-being as a framework for action – connecting community well-being to planetary boundaries

Current focus Specific Impacts	Working on Cumulative impacts	(Far) Future focus Well-being framework
<ul style="list-style-type: none"> • Program-specific • 6 EJScreen demographic variables • Information to communities • Agency action • Reducing burden 	<ul style="list-style-type: none"> • Program to media to environment • Expanded list of parameters • Dialog with communities • Focus on action at multiple scales • Reducing burden 	<ul style="list-style-type: none"> • Planetary boundaries • Social foundation • Collaborative action... • ...from local to global scales • Well-being and thriving

Enact policy

Looking forward to your comments, questions and discussion on

NAVIGATING THE CHALLENGES OF CUMULATIVE AND DISPROPORTIONATE IMPACTS ANALYSES

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