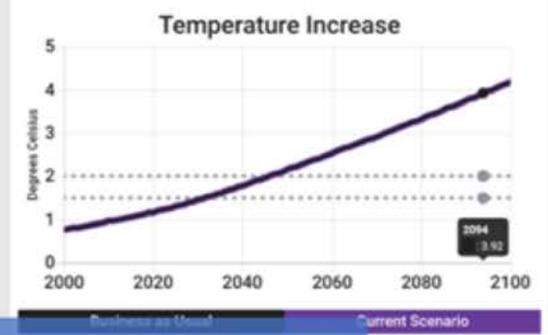
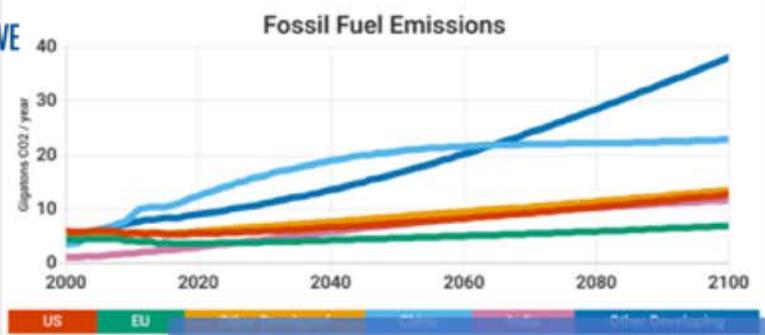


# Multisolving climate change, public health, and wellbeing: A framework for bringing win-win solutions into your classroom

Stephanie McCauley and Juliette Rooney-Varga

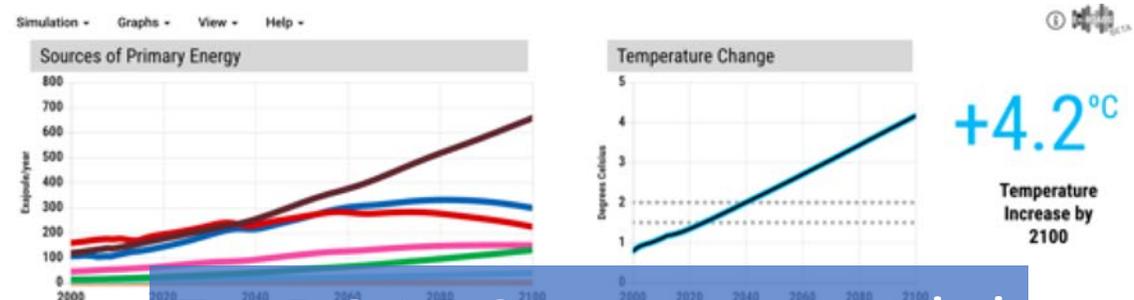
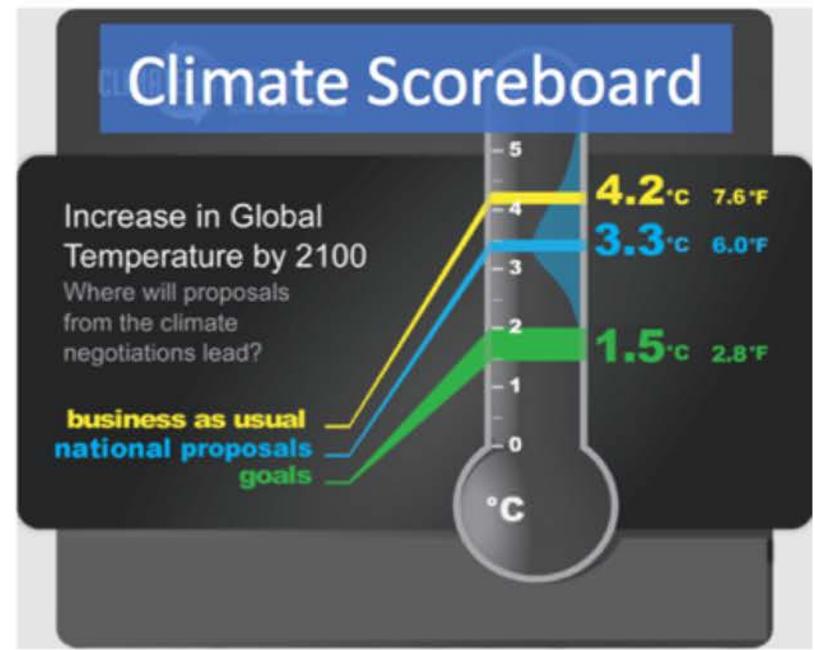




## C-ROADS climate model

Region	Peak Year	Begin Year	Rate	Deforestation	Afforestation
US	2100	2100	0%	0%	0%
EU	2100	2100	0%	0%	0%
Other Developed	2100	2100	0%	0%	0%
China	2100	2100	0%	0%	0%
India	2100	2100	0%	0%	0%
Other Developing	2100	2100	0%	0%	0%

**+4.2°C**  
Temperature increase by 2100



## En-ROADS energy model

Energy Supply: Coal, Oil, Gas, Bioenergy

Renewables, Nuclear, New Technology

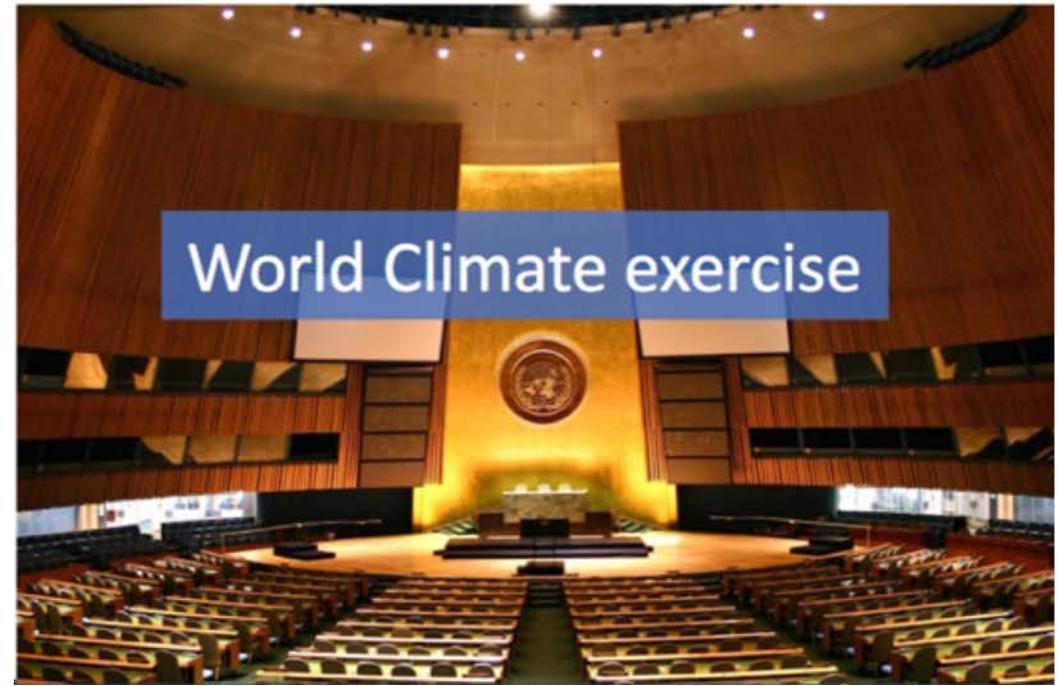
Energy Efficiency, Electrification, Buildings and Industry

Transport, Land and Industry Emissions, Carbon Removal

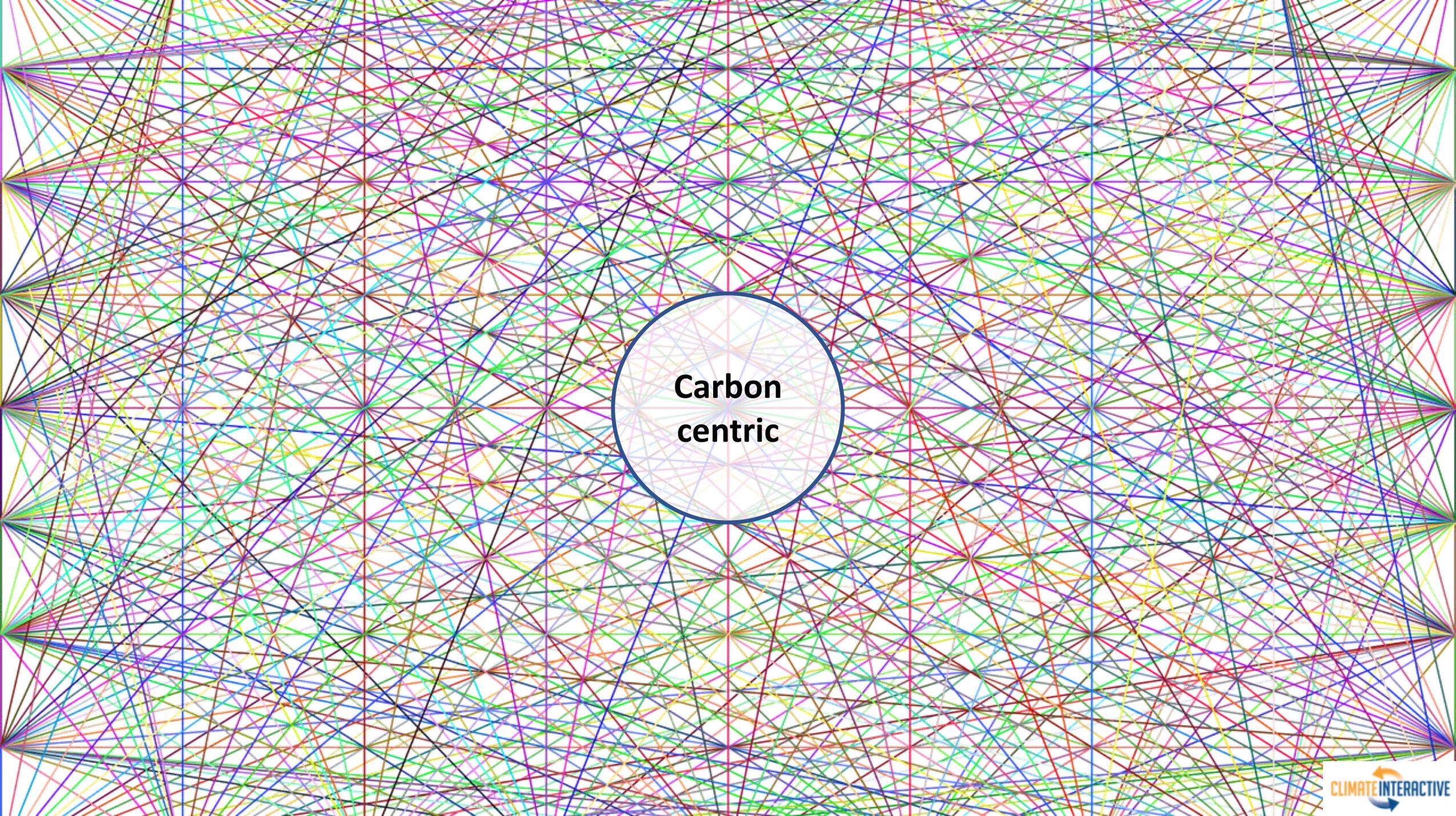
Population, Economic Growth

Carbon Price

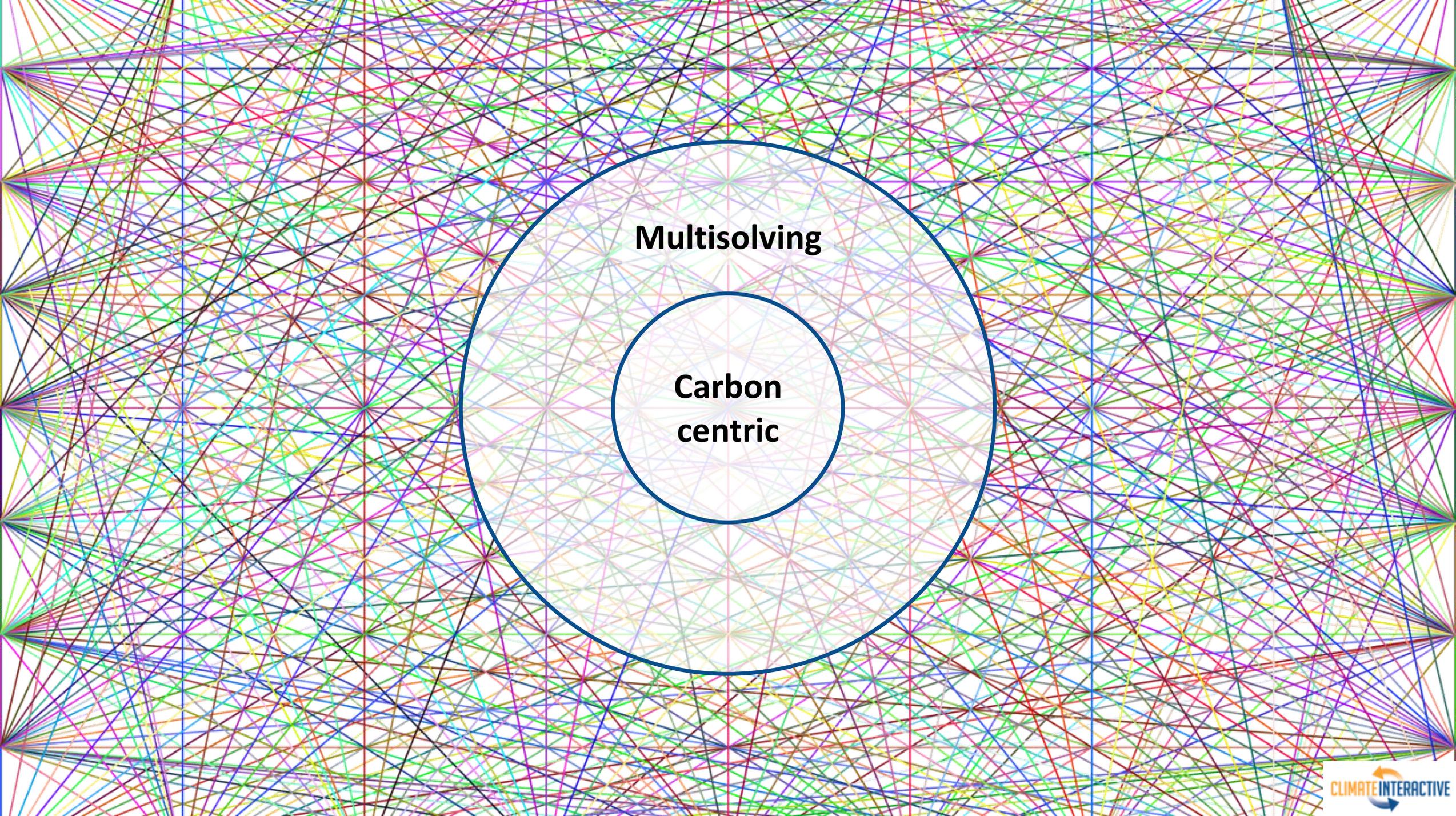
CLIMATE INTERACTIVE MIT MANAGEMENT SLOAN SCHOOL



## World Climate exercise



**Carbon  
centric**



**Multisolving**

**Carbon  
centric**

# MULTISOLVING:

protecting the climate while improving health, equity,  
and well-being



More efficient engines  
and fuel switching. 

Some car travel replaced  
with walking and cycling. 

Reduction in transport CO<sub>2</sub> emissions:

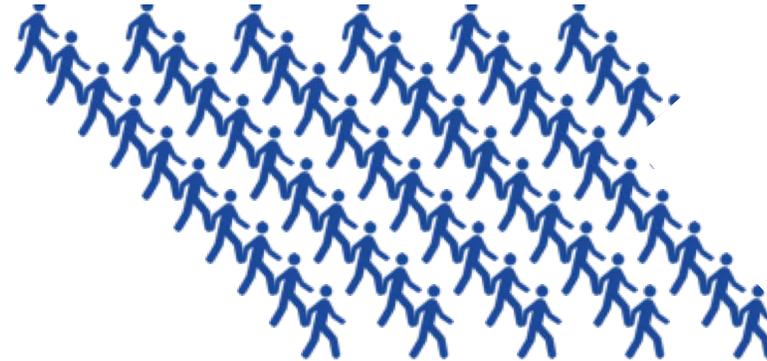
35%

38%

Reduction in premature deaths per million people:

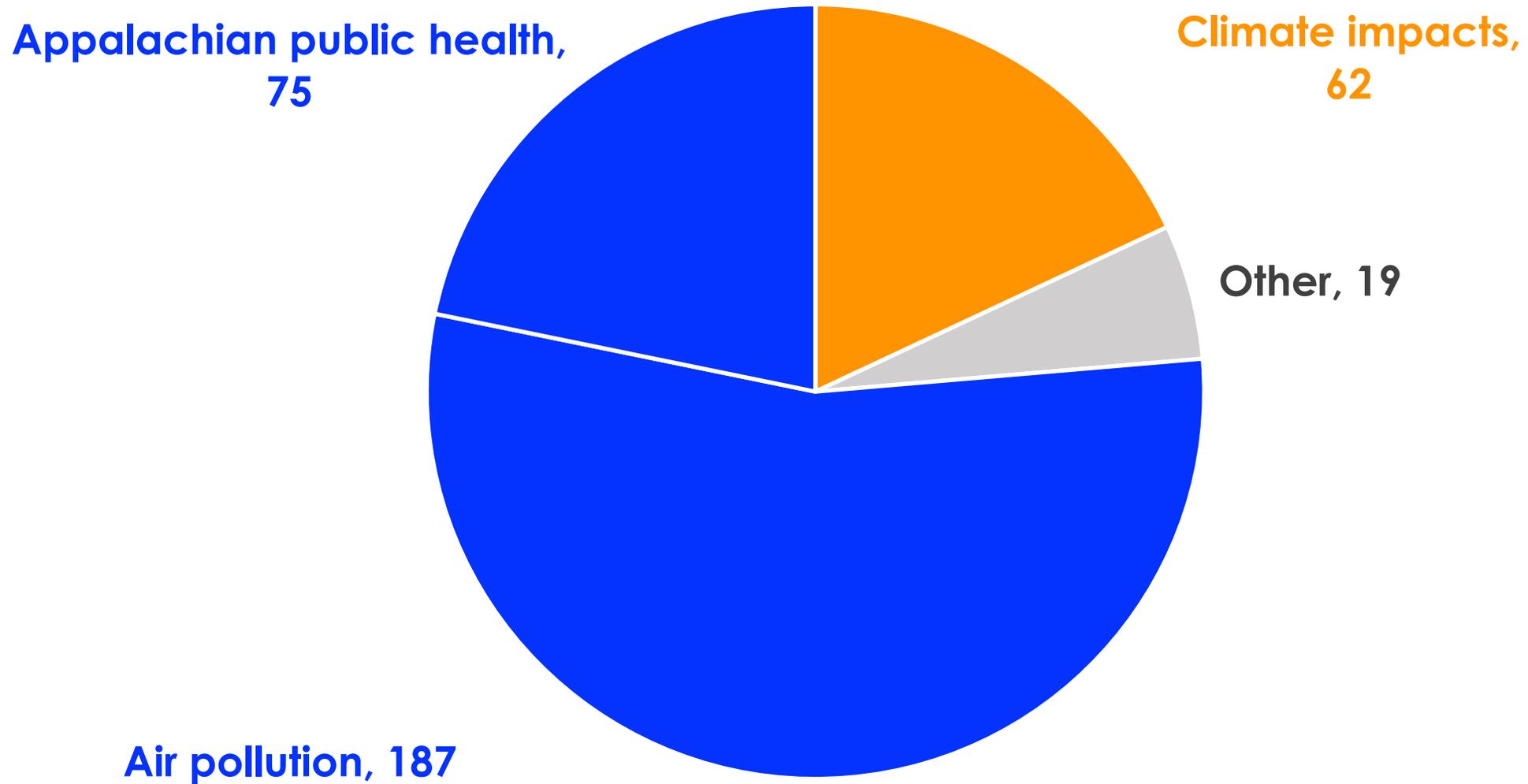


17



530

# Costs of Coal in the US (billion \$)



# Four Reasons To Multisolve on Climate

1

## Ethics

People today are suffering from poverty, inequality, violence, poor health and other problems. Even in the face of dangerous climate change these other causes of suffering deserve response.



2

## Financial practicality

Solving multiple problems with the same investment of time or money makes good fiscal sense when budgets are constrained and needs are high.



3

## Politics

A broad, strong base of people committed to climate action has the best chance of overcoming the power of vested interests that hold the current fossil fuel intensive economy in place.



4

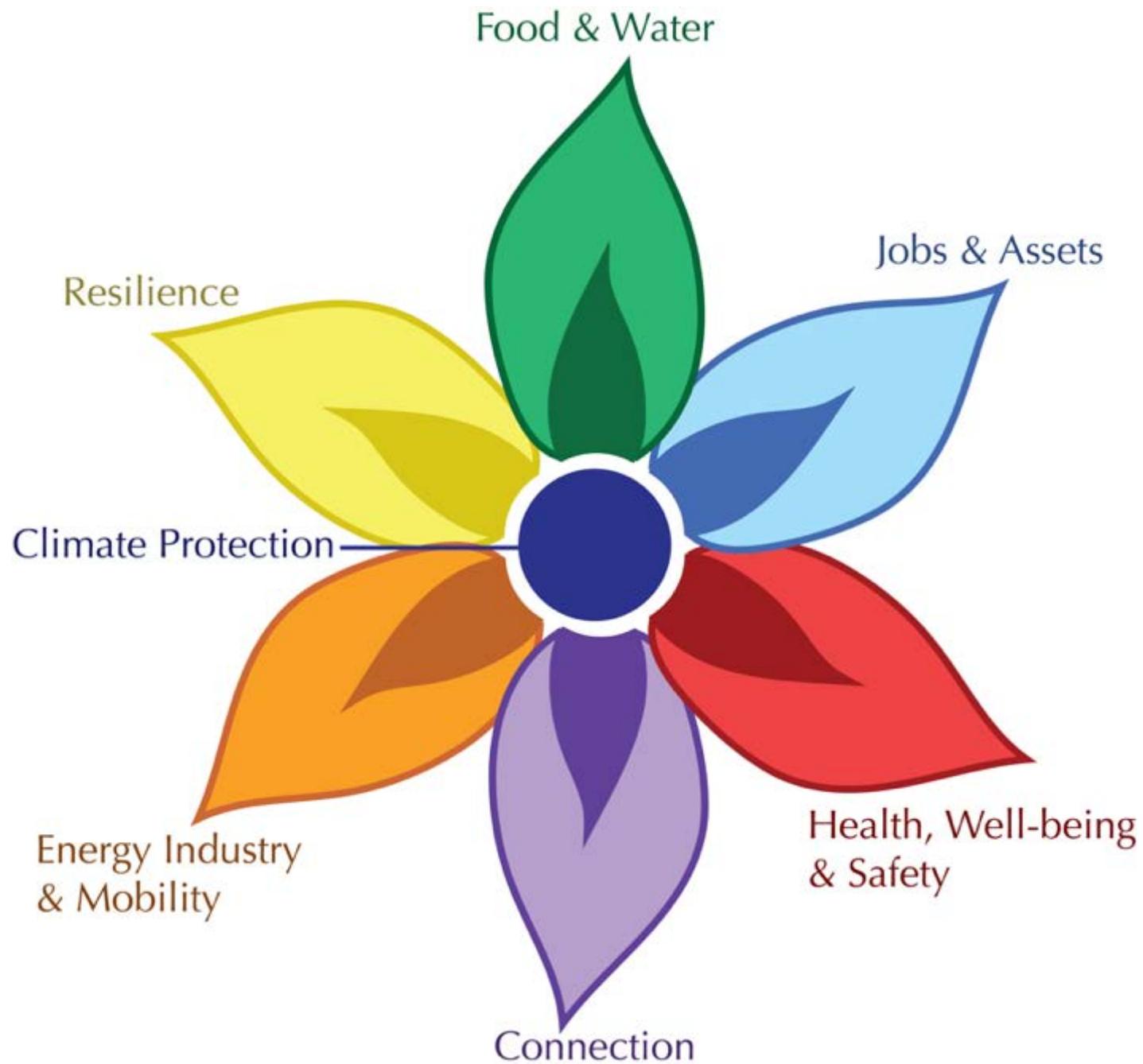
## Systems logic

In an interconnected world, designing to optimize a singular goal - such as carbon emissions - can lead to poor systems-level performance.

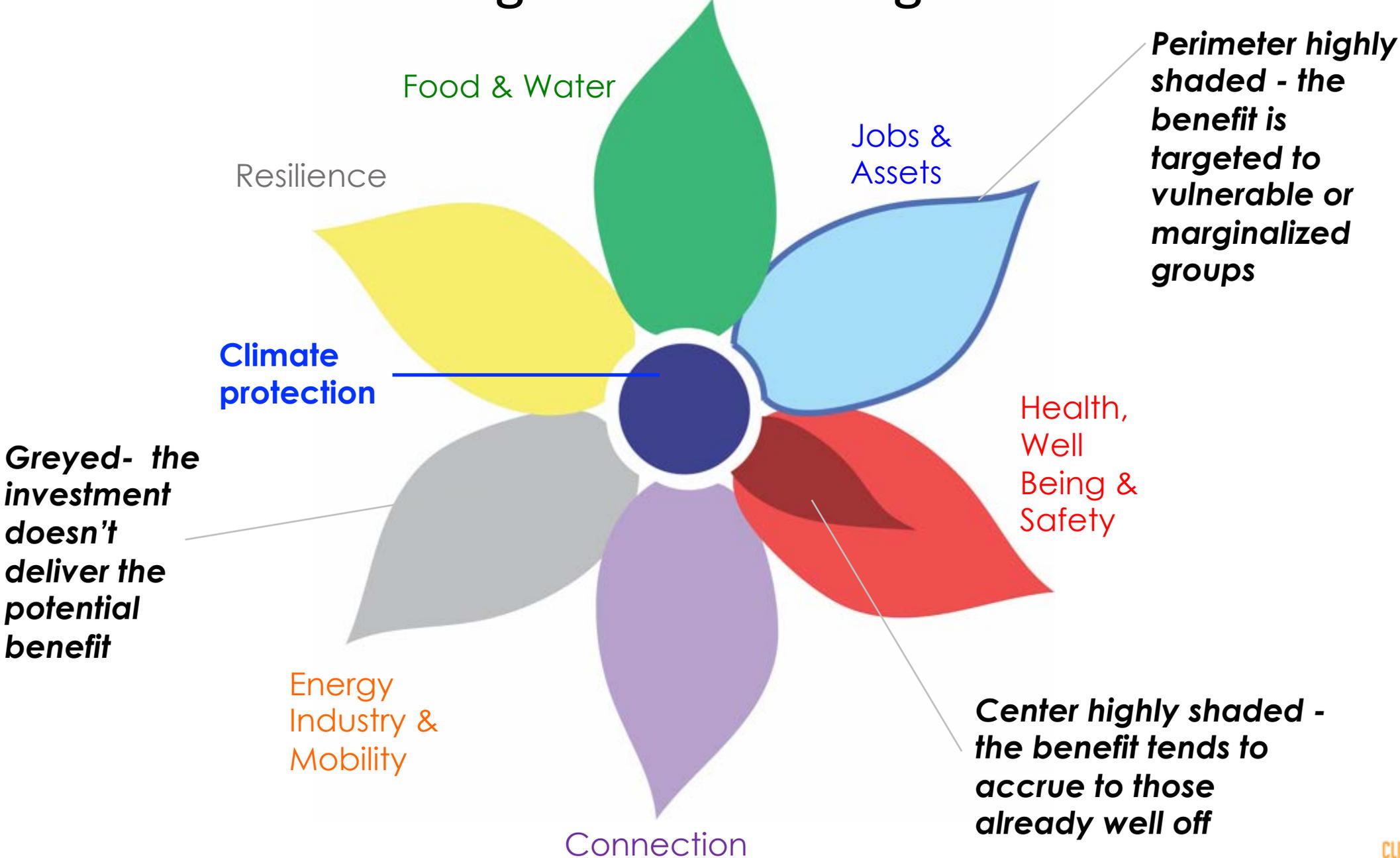


# FLOWER

Framework for  
Long-term,  
Whole-system,  
Equity-based  
Reflection



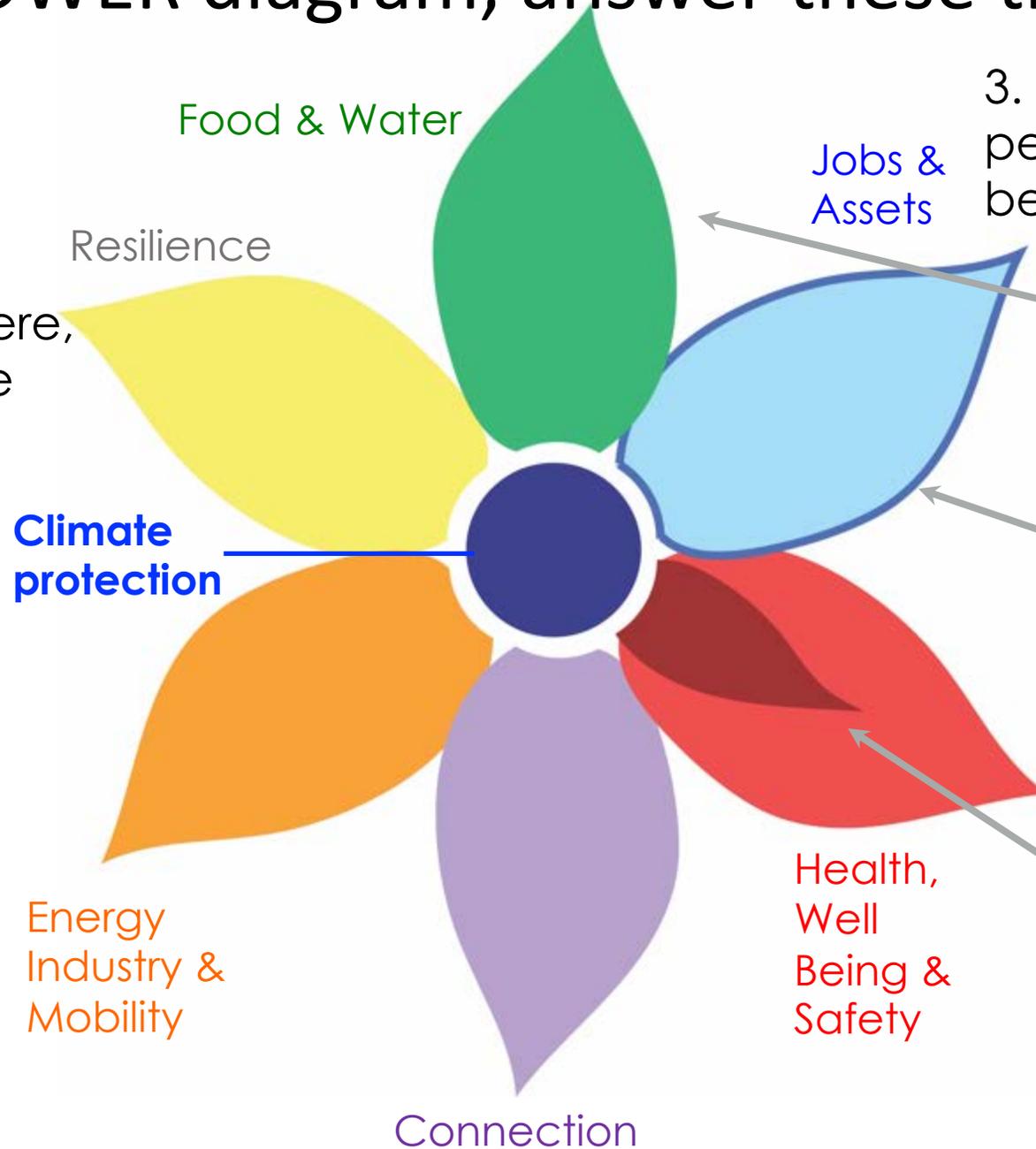
# Reading a FLOWER diagram



# To make a FLOWER diagram, answer these three questions:

1. **Does the project protect the climate?** If your project reduces GHGs in the atmosphere, color the center of the FLOWER **dark blue**.

2. **Co-benefits?** For each of the six petals, ask: does my project produce this benefit? If yes, **color the corresponding petal**. If not, leave the petal uncolored.



3. **Who benefits?** For each petal ask: who receives the benefit?

If **everyone benefits**, shade **evenly**.

If the project most benefits **marginalized groups**, shade the **outer edges more darkly**.

If those **already well off** gain most of the benefit, **shade the center** of the petal darker than the edges.

# FLOWER Example: Compressed work week

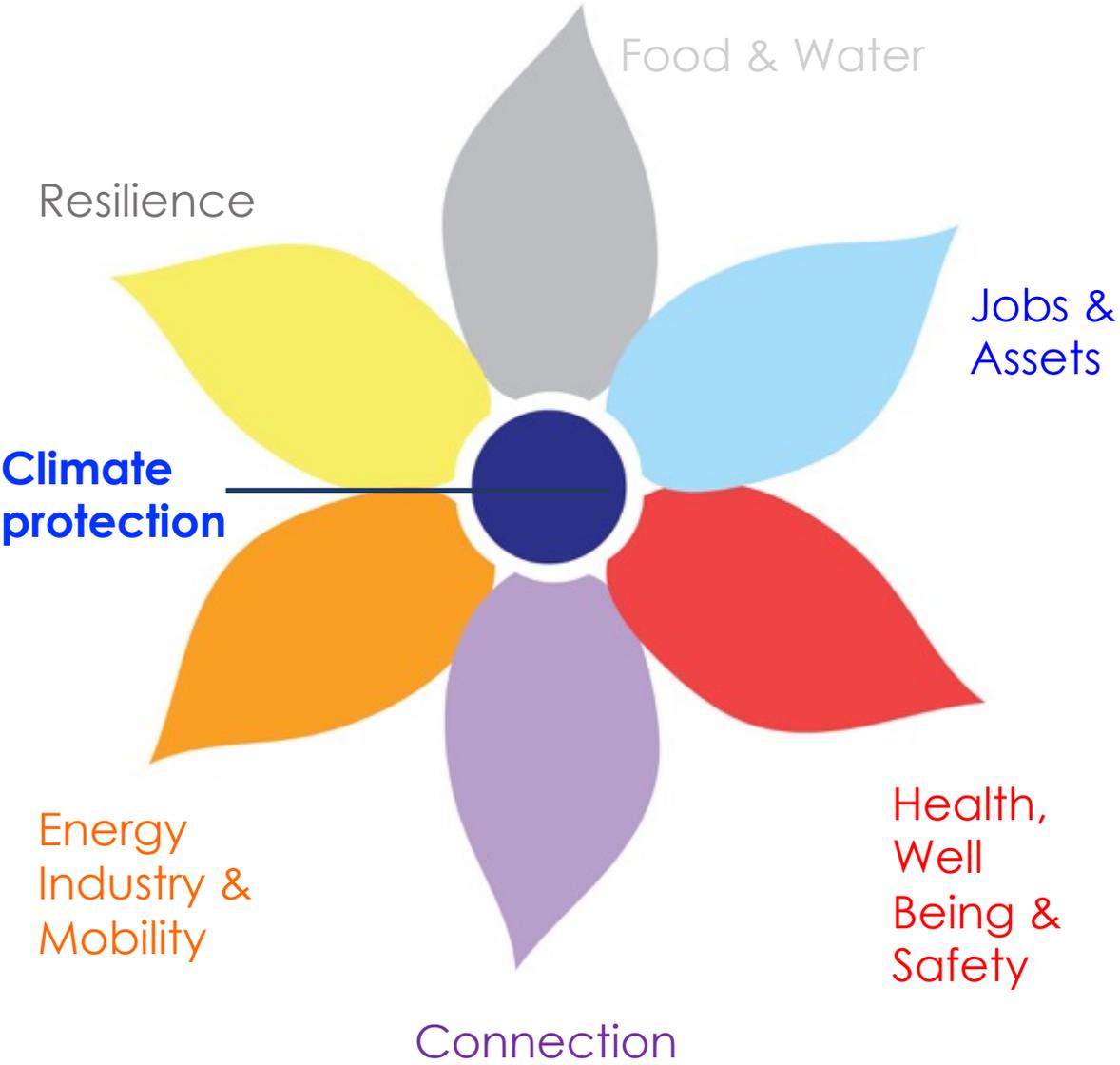


Image from pixabay

# FLOWER Example: Electric car incentives

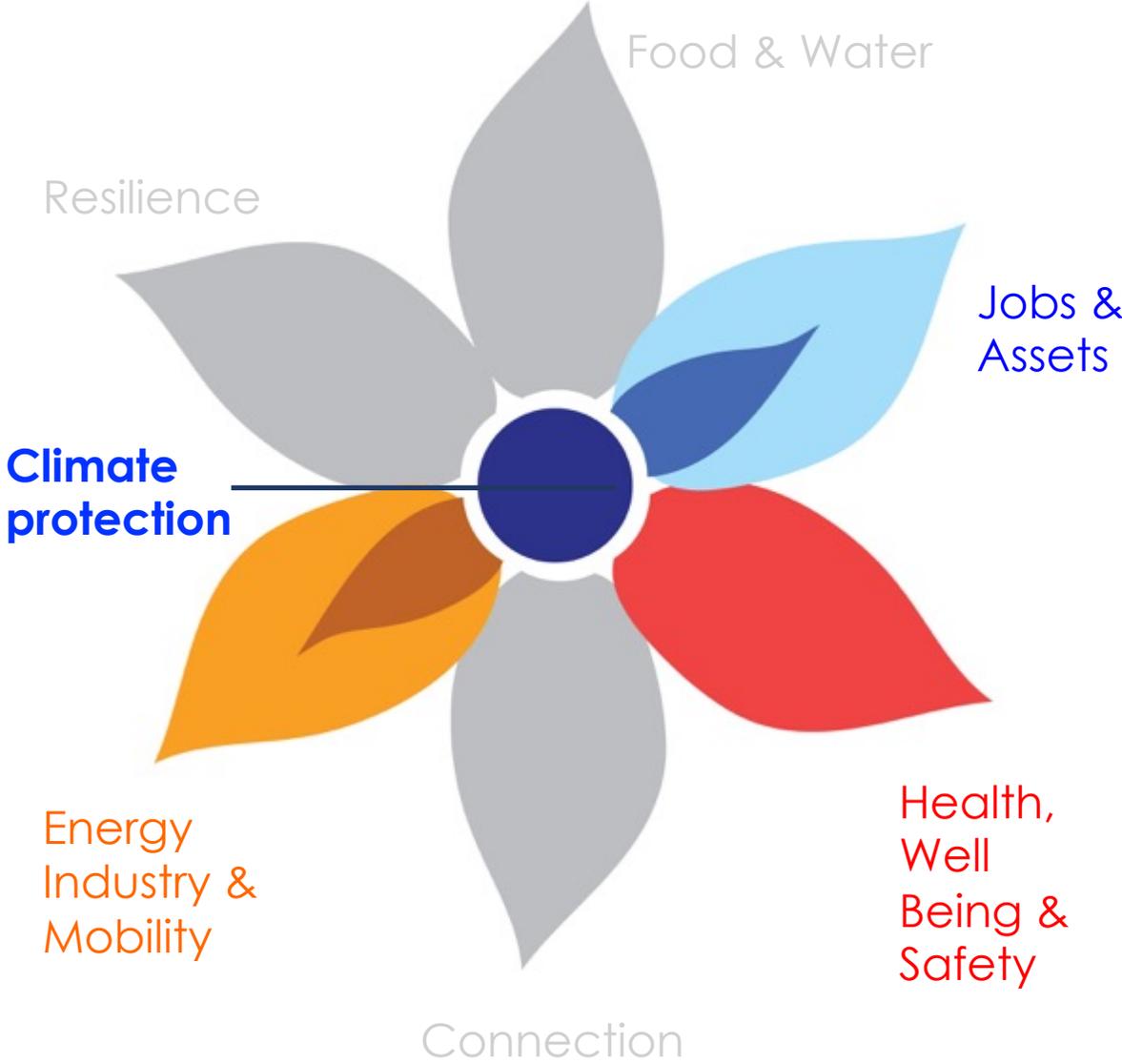
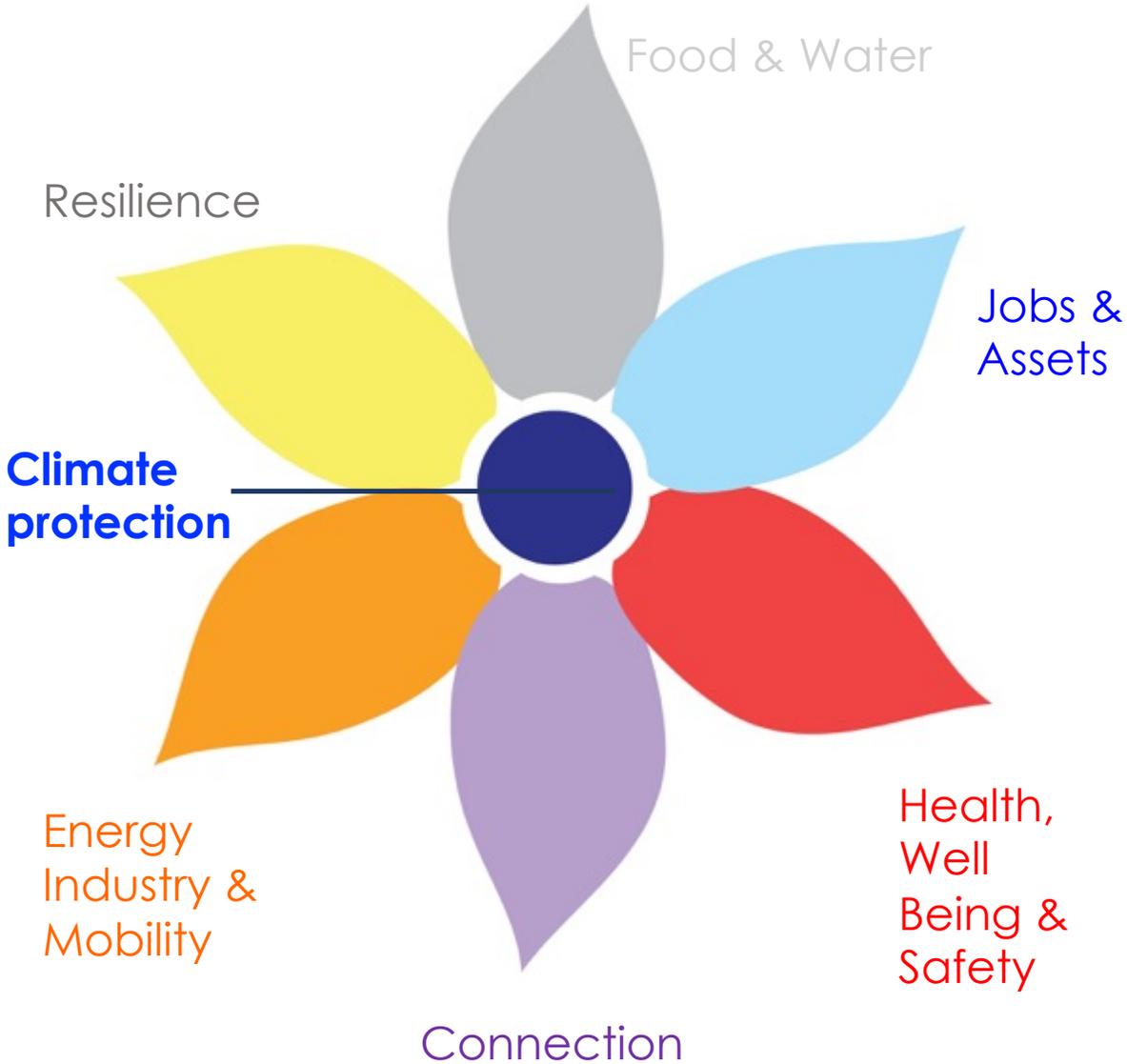
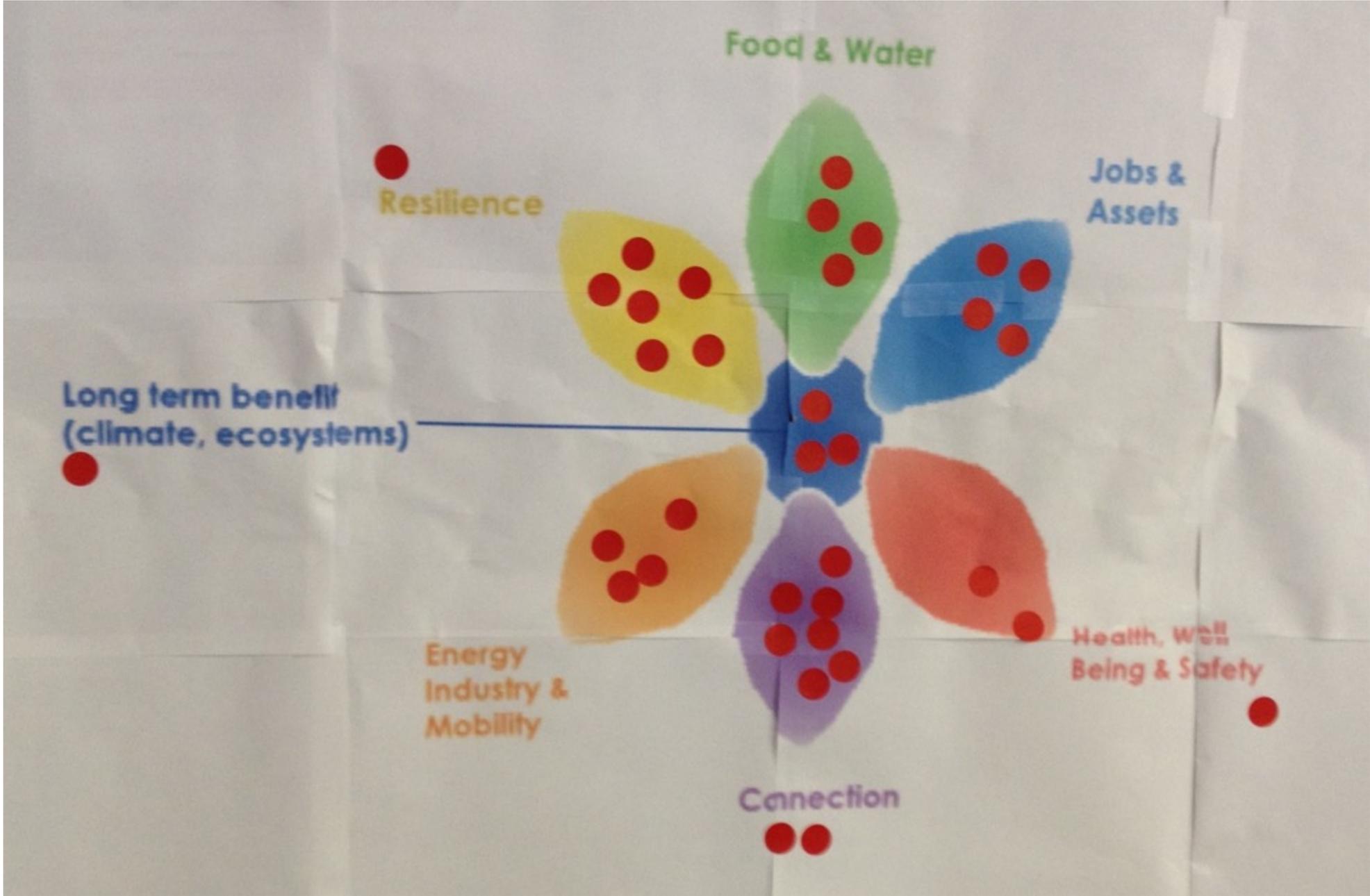


Image from pixabay

# FLOWER Example: Multi-use Greenway





# Benefits of using FLOWER in the classroom

- Adaptable
- Real-world, solutions focus
- Easily combined with service learning and stakeholder engagement
- Offers an effective climate communication tool that can reach beyond 'the usual suspects'
- Opportunity to integrate climate justice in solutions

# Example: FLOWER poster presentations

- 100-level undergraduate course on sustainability
- Presentations at a public event near the end of the semester



# Example: FLOWER with low-income, first-generation-in-college high school students



# Easily adapted to other educational settings

- Provide additional scaffolding and resources for secondary school students
- Written, oral, or poster presentations
- More advanced courses or in-depth assignments:
  - Integrate into service learning projects in which students use FLOWER as a framework for engaging with real-world stakeholders
  - Include system maps (i.e., causal loop diagrams or stock-flow diagrams) that illustrate the interactions between climate action and benefits in other sectors
  - Include quantitative analysis

# Connect With Other Multisolvers



[twitter.com/multisolving](https://twitter.com/multisolving)



[facebook.com/groups/multisolving](https://facebook.com/groups/multisolving)



[multisolving@climateinteractive.org](mailto:multisolving@climateinteractive.org)



[climateinteractive.org/multisolving](https://climateinteractive.org/multisolving)

Thank You!



[scmccauley@climateinteractive.org](mailto:scmccauley@climateinteractive.org)  
[climateinteractive.org/multisolving](https://climateinteractive.org/multisolving)