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Quantifying the Role of Education on Behavior Programs

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Quantifying the Role of Education on Behavior Programs

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Green Ninja

UN Framework Convention on Climate Change (1992)

“Education is an essential element for mounting an adequate global response to climate change”

Clean Technology


MODEL S

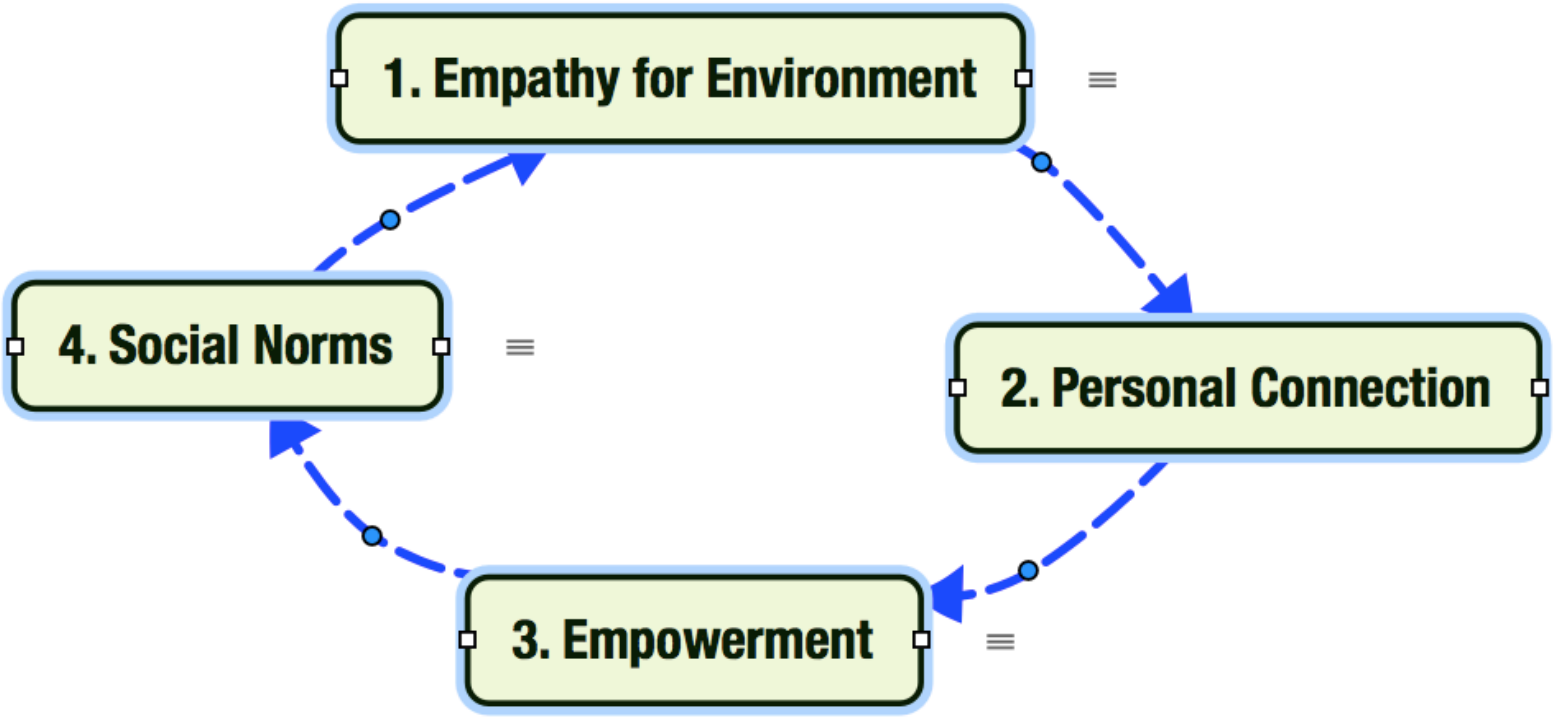

TESLA
TESLA

Question

Can we quantify the potential role of education as a mitigation tool?

University Climate Change Course

- 500 students between 2007-2011
- Employ a behavior change strategy



Survey

- Participants completed survey at least 5 years after taking the class.
- Over 100 responses
- Two categories of questions
  - ***A***: Course engagement and climate literacy
  - ***B***: Behavior change attributed to class

Results – engagement/literacy

- Class popular and memorable (96% would recommend the class to their friends)
- Climate change is personal (80% report having personally experienced the effects of climate change)
- Climate change is fixable (66% think that individual actions can make a difference in reducing climate change)

Results – behavior change

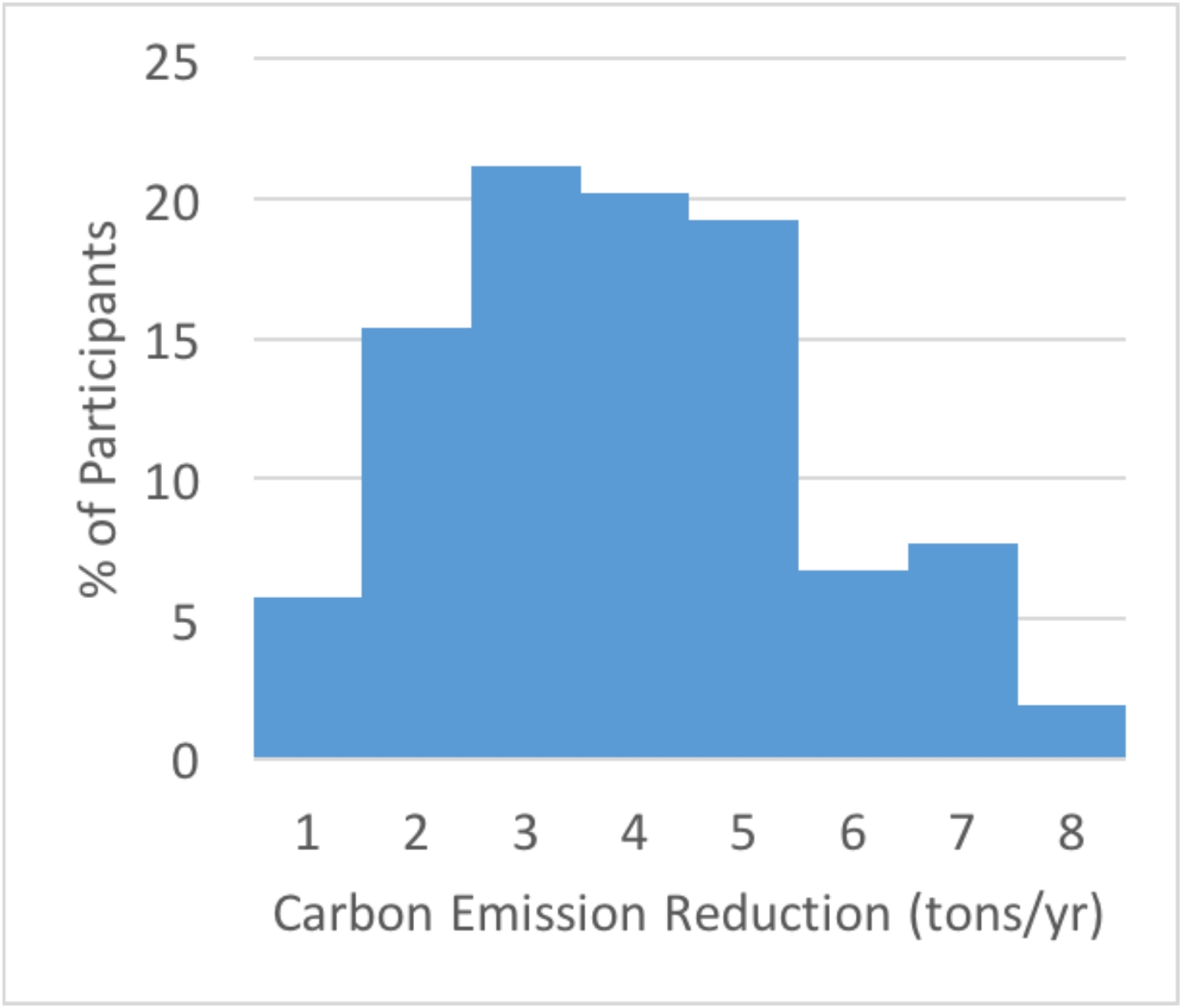
As a result of my participation in this course, I have

- Transportation
- Food
- Home Energy
- Waste

Carbon Footprint Calculator

http://coolclimate.berkeley.edu/calculator

Carbon Reduction (tons/yr)



Avg: 3.6 tons/yr

CA: 0.7 tons/yr

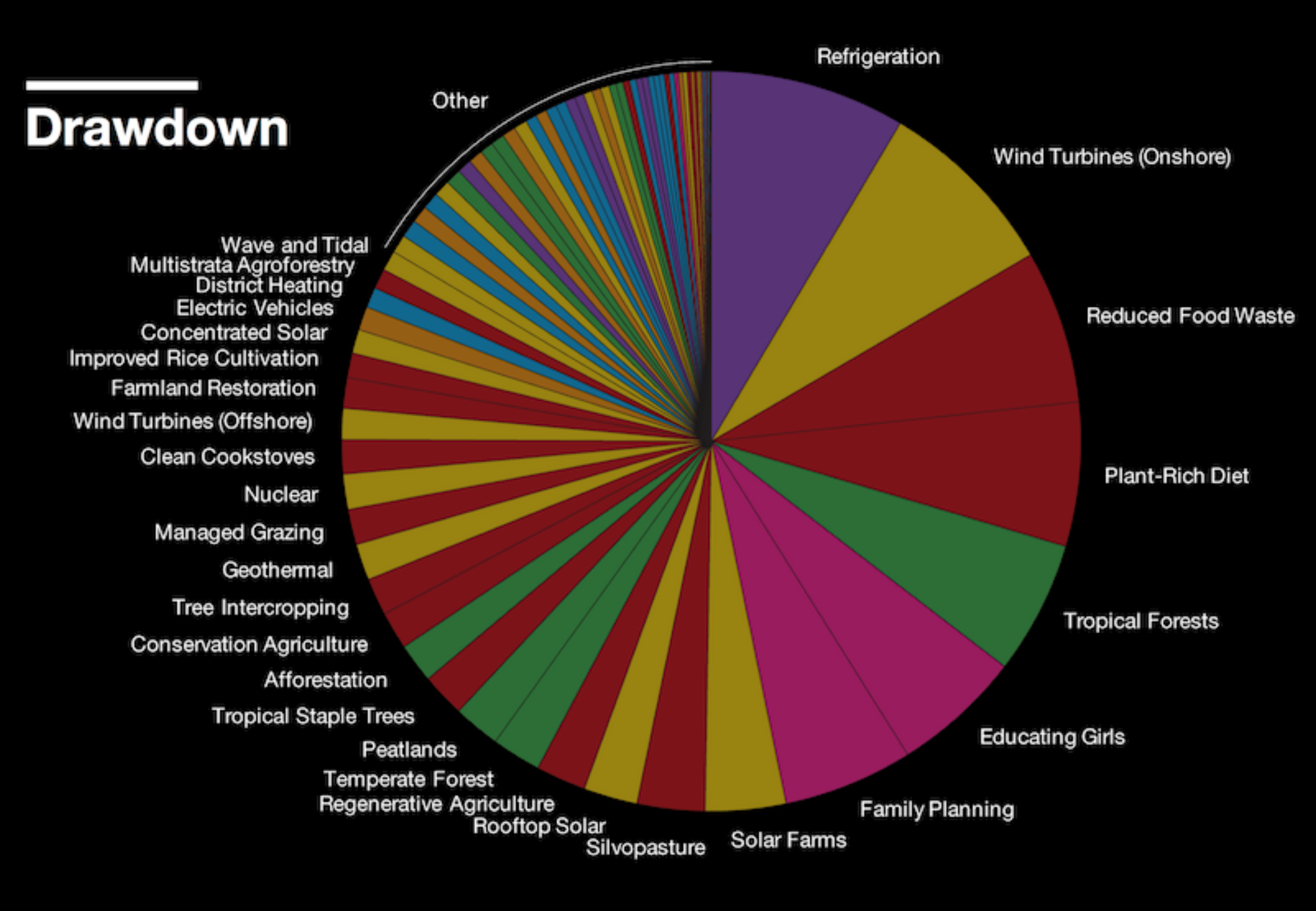
Class: 2.9 tons/yr

DRAWDOWN

THE MOST COMPREHENSIVE PLAN EVER PROPOSED TO REVERSE GLOBAL WARMING

EDITED BY PAUL HAWKEN

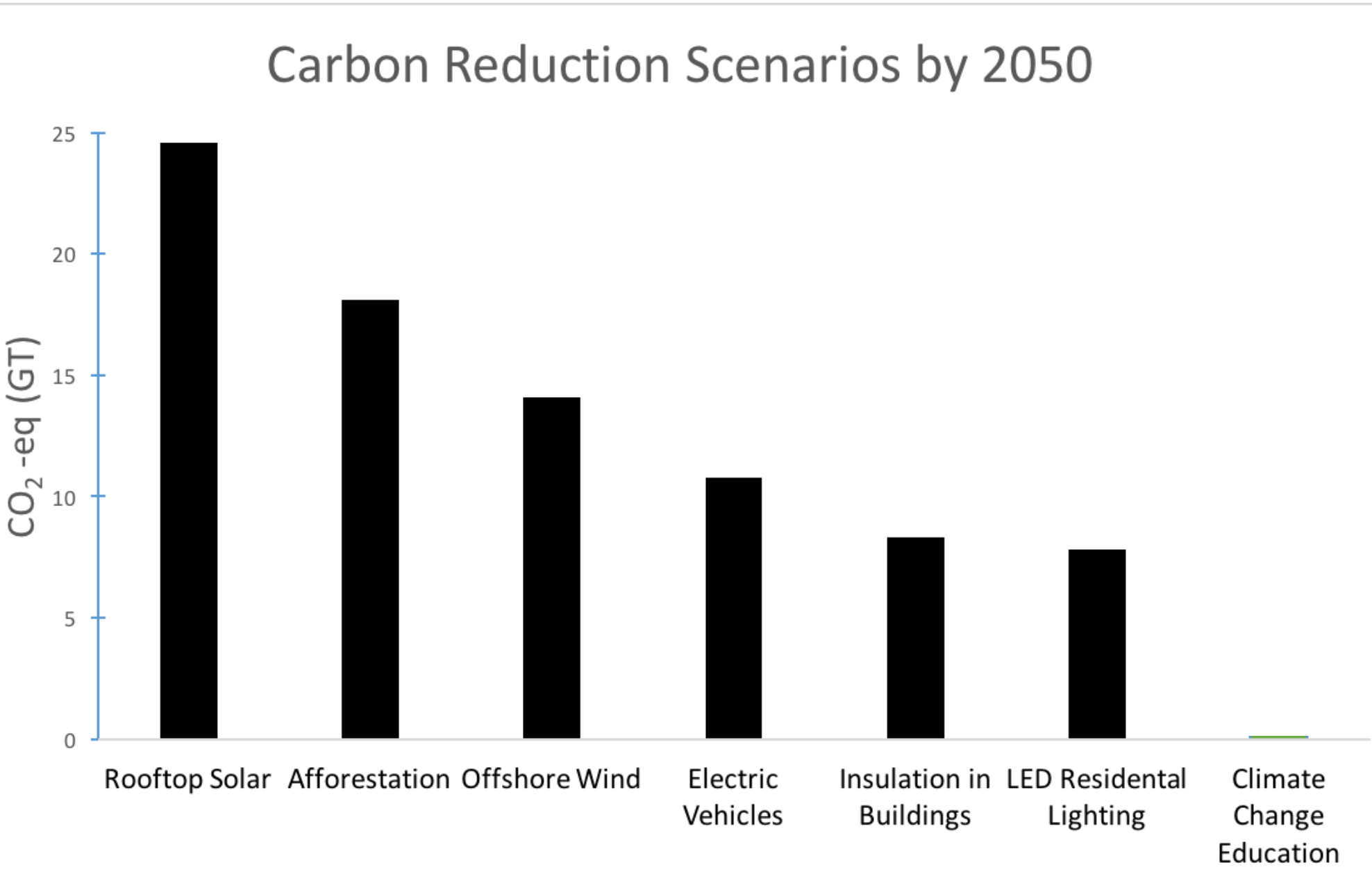
Drawdown


Refrigeration
Wind Turbines (Onshore)
Reduced Food Waste
Plant-Rich Diet
Tropical Forests
Educating Girls
Family Planning
Solar Farms
Silvopasture
Rooftop Solar
Regenerative Agriculture
Temperate Forest
Peatlands
Tropical Staple Trees
Afforestation
Conservation Agriculture
Tree Intercropping
Geothermal
Managed Grazing
Nuclear
Clean Cookstoves
Wind Turbines (Offshore)
Farmland Restoration
Improved Rice Cultivation
Concentrated Solar
Electric Vehicles
District Heating
Multistrata Agroforestry
Wave and Tidal
Other

Climate Change Education Scenario

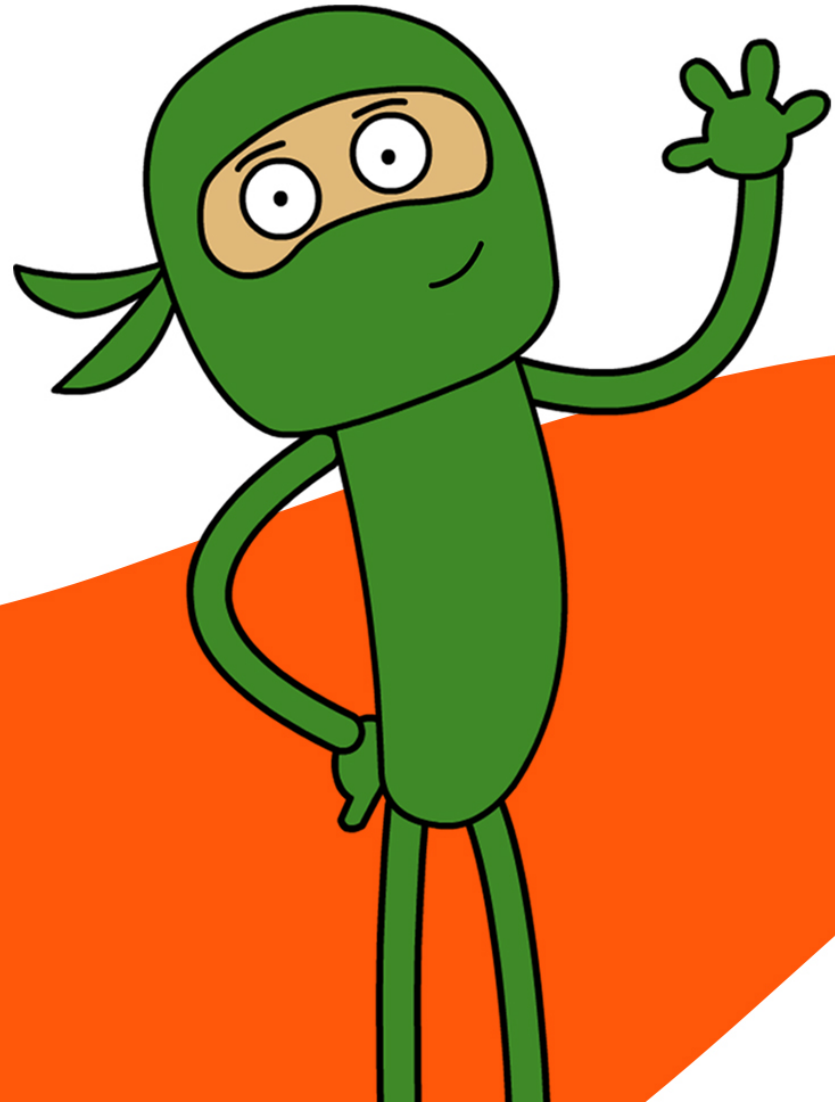
- Each student reduces carbon at 2.9 tons/year
- Number of secondary students grows from >1% in 2020 to 10% by 2050.

Only students from high income and upper middle income countries


Carbon Reduction Scenarios by 2050
CO_2 -eq (GT)
25
20
15
10
5
0
Rooftop Solar
Afforestation
Offshore Wind
Electric Vehicles
Insulation in Buildings
LED Residental Lighting
Climate Change Education

Green Ninja

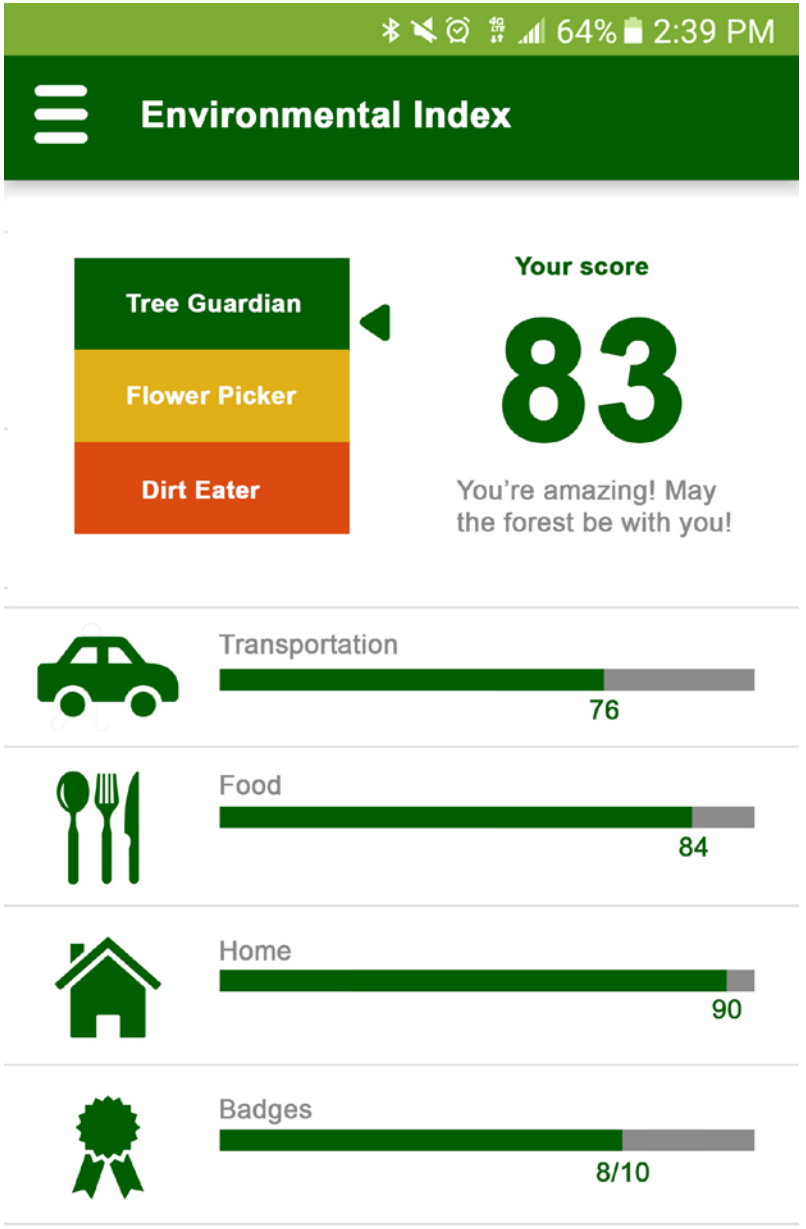
Story
Science
Solutions



Green Ninja

Middle school curriculum that satisfies the new standards and produces verifiable reductions in carbon emissions.

Fitbit for Environmental Education



Summary

- Education can be an effective climate change mitigation tool, provided the education is well designed.
- At scale, education can be as effective as electric cars in reducing carbon emissions.
- Green Ninja is currently offering such education in middle schools.

Thank You!

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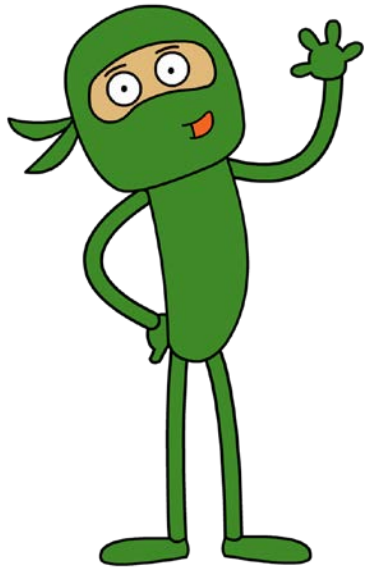
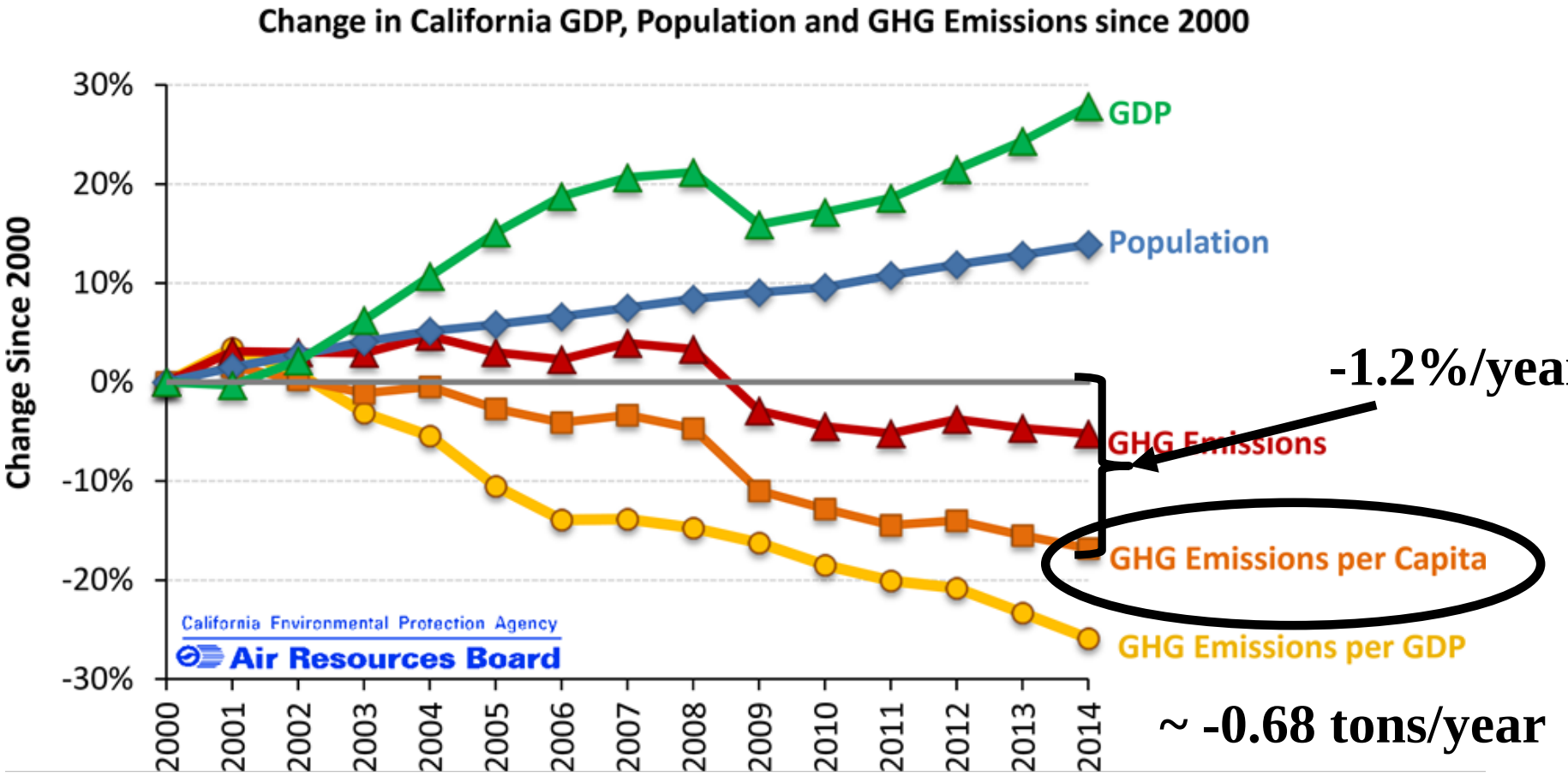


Eugene Cordero acknowledges that he is the majority owner of Green Ninja Inc.

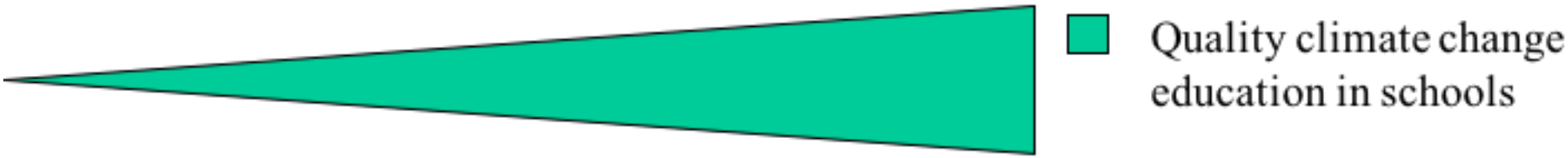


Metric	Associated 2014 Value
GDP	2.1 trillion (2009 $)
Population	38.7 million
GHG Emissions	441.8 $MMTCO_2e$
GHG Emissions per Capita	11.4 metric tons CO_2e per person
GHG Emissions per GDP	209 metric tons CO_2e per million dollars

California Air Resources Board, 2015

Can ‘exceptional’ education produce a U.S. Stabilization wedge?

- If 5.6 million U.S. students receive quality climate education (extrapolating from our results)

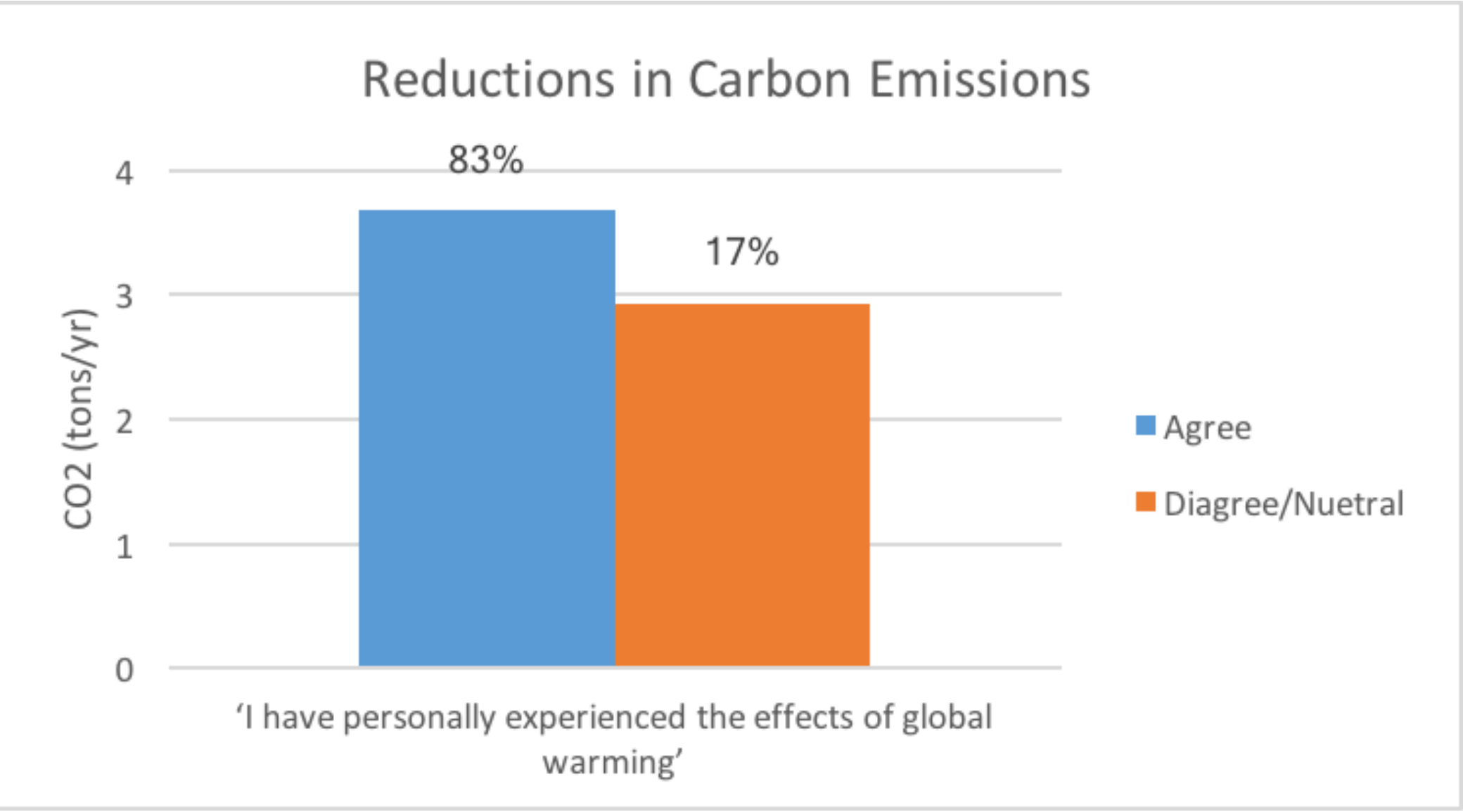


1 US stabilization wedge (0.25 gigatons of C)

1 US stabilization wedge - double fuel economy of US fleet (54 mpg)
1 US stabilization wedge - 6x increase in renewable energy (30% total)

Control Group

Consider average Californian over 5 year time frame


Reductions in Carbon Emissions
83%
17%
4
3
2
1
0
CO2 (tons/yr)
'I have personally experienced the effects of global warming'
Agree
Diagree/Nuetral

Category B Questions

As a result of my participation in this course, I have

- Made the following changes to my transportation methods (e.g., purchase hybrid or electric vehicle, carpool, ride a bike, etc.)
- Made the following actions to reduce energy consumption at home (e.g., purchased energy efficient appliances, installed solar panels, purchased renewable energy, etc.)
- Made food choices to reduce carbon emissions (e.g., reduced red meat consumption)

Carbon Reductions

- The average reduction/alumni is: 3.9 tons of CO_2/yr
  - Waste reduction: 27%
  - Home energy conservation: 24%
  - Food choices: 22% tons
  - Transportation choices: 27%