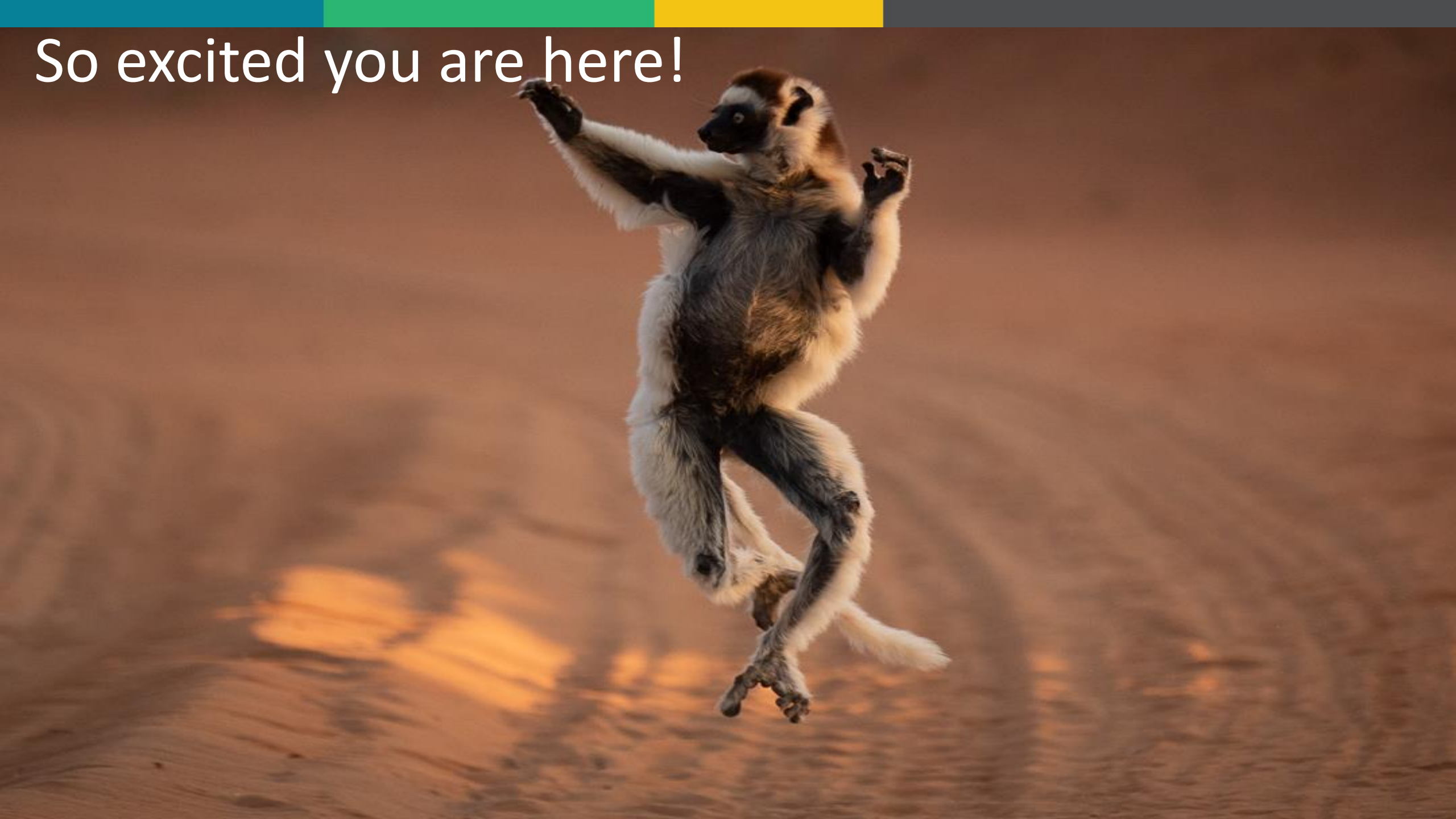
Welcome to the Webinar

January 23


WELCOME!

So excited you are here!



From Principles to Practice:

New Resources for Teaching Climate Education

January 23, 3:00–4:00 PM ET

ee360+ naaee North American Association for Environmental Education

Our three presenters will talk about 3 resources to help advance climate change education.

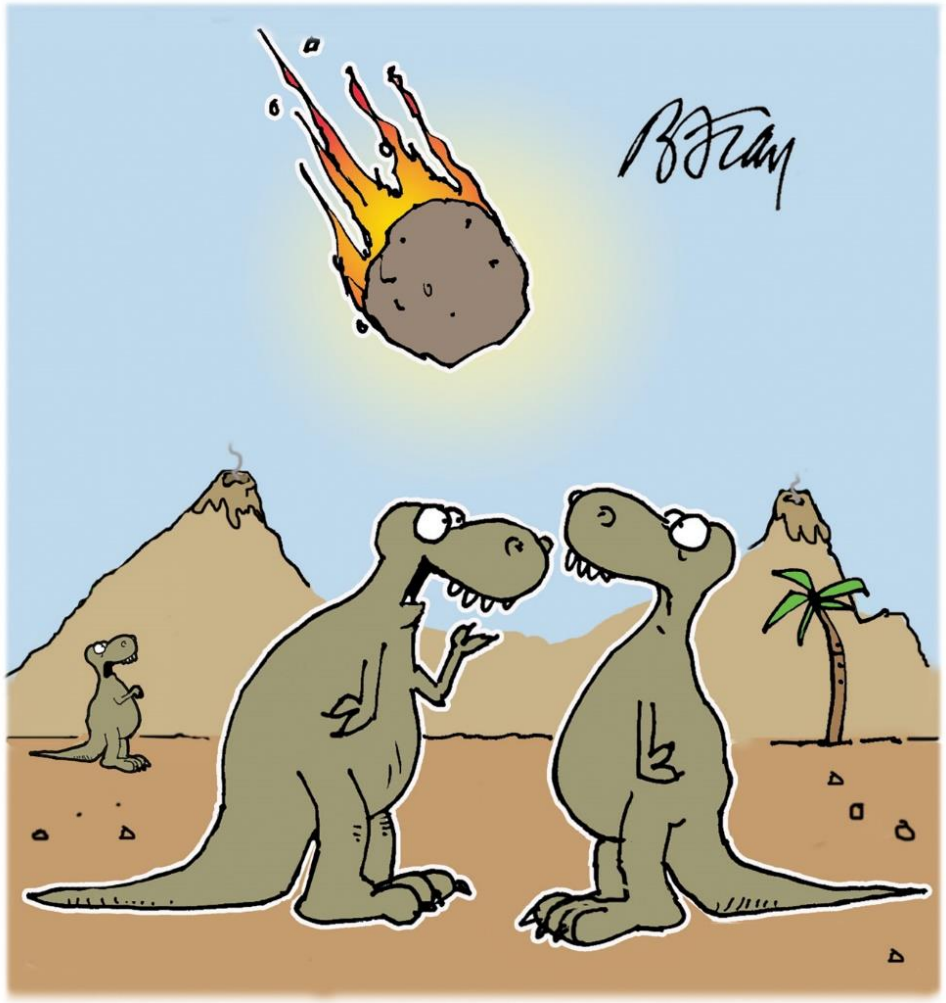
- NOAA’s recently-released "Climate Literacy: Essential Principles for Understanding and Addressing Climate Change"
- NAAEE’s *Educating for Climate Action and Justice,* the latest module in the *Guidelines for Excellence* series
- New high-school climate change lesson plans from MIT that are free and easy to use

A Great Line-up!

Frank Niepold
Senior Climate Education Program Manager
NOAA

Bora Simmons
Director
Project for Excellence Program of NAAEE

Michael Kozuch
Lead Curriculum Developer on Social Sciences
Climate Action Through Education (CATE)
MIT



Climate change is one of NAAEE's strategic priorities and we're excited about today's panel to hear about three new climate education resources.

Additional NAAEE Resources

Sarah Bodor
Senior Director
Capacity Building
NAAEE

We'll put resources in the chat as we go along that will help you with your work!

Reach Your Climate Education Goals!

Coalition for Climate Education Policy

Resources

eeWORKS: Identifying Effective Climate Change Education Strategies

Climate Change Education eePRO Group

Thanks so much for sending us your questions! We will answer as many as we can during the webinar!

NAAEE's Webinar Series: Bringing New Ideas and Insights to the Our Field and Beyond!

Thanks to our Affiliate Co-hosts!

naaee
North American Association for Environmental Education

caee
Colorado Alliance For Environmental Education

WAEE
wisconsin association for environmental education

KACEE
Kansas Association for Conservation & Environmental Education

Maine Environmental Education Association
MEEA

EECO
Environmental Education Council of Ohio

eeai
Environmental Education Association of Indiana

EE NM
Cultivating the Future of Environmental Education

AEEA
Arkansas Environmental Education Association

EENC
Environmental Educators of North Carolina

kaee
Kentucky Association for Environmental Education

RHODE ISLAND RiEEA
Environmental Education Association

NHEE
New Hampshire Environmental Educators

California AEOE
Association for Environmental & Outdoor Education

cbeen.org
columbia basin environmental education network

neeea
new england environmental education alliance

ICEC
Iowa Conservation Education Coalition

HEEA
Hawai'i Environmental Education Alliance

ARIZONA ASSOCIATION FOR ENVIRONMENTAL EDUCATION

usee
Utah Society for Environmental Education

Environmental Education Alliance of Georgia

LEEF
http://leef-florida.org/
League of Environmental Educators in Florida

MAEOE
Maryland Association for Environmental & Outdoor Education

C2E2
Coalition for Conservation and Environmental Education

WYOMING ALLIANCE FOR ENVIRONMENTAL EDUCATION

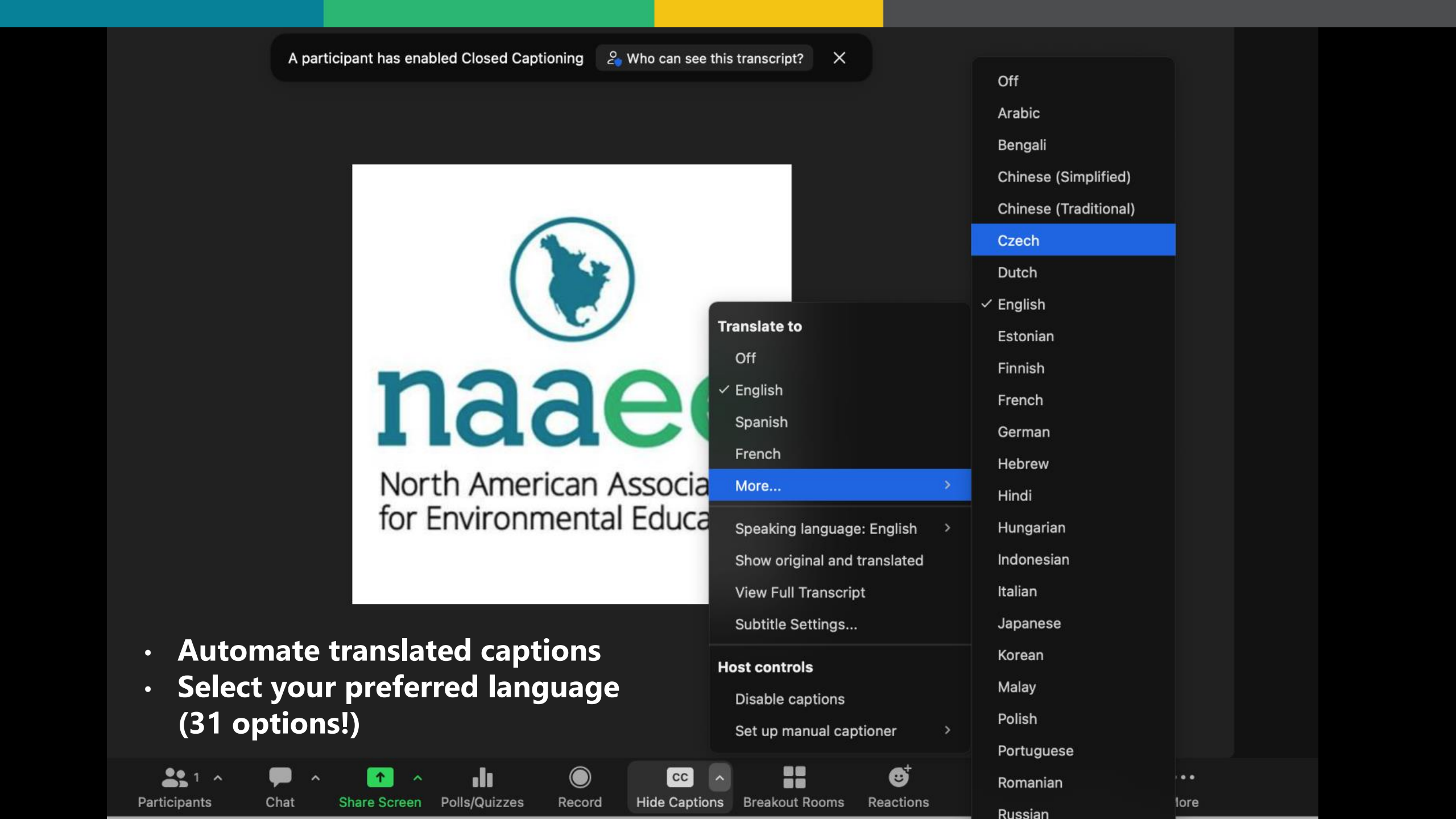
Thanks to EPA and ee360+!

- **Type questions in the chat throughout**
- **For closed captions and translated captions, click Closed Captions**
- **This webinar will be recorded and shared**

Use chat to join conversation & ask questions

For captioning and translations click “Closed Captions”

Unmute Start Video Participants 2 Chat Share Screen Record Show Captions Reactions Apps Whiteboards Leave



- **Automate translated captions**
- **Select your preferred language (31 options!)**

Thanks, Carrie!

Carrie Albright,
Communications and Data Specialist


Our Speakers!

A Great Line-up!

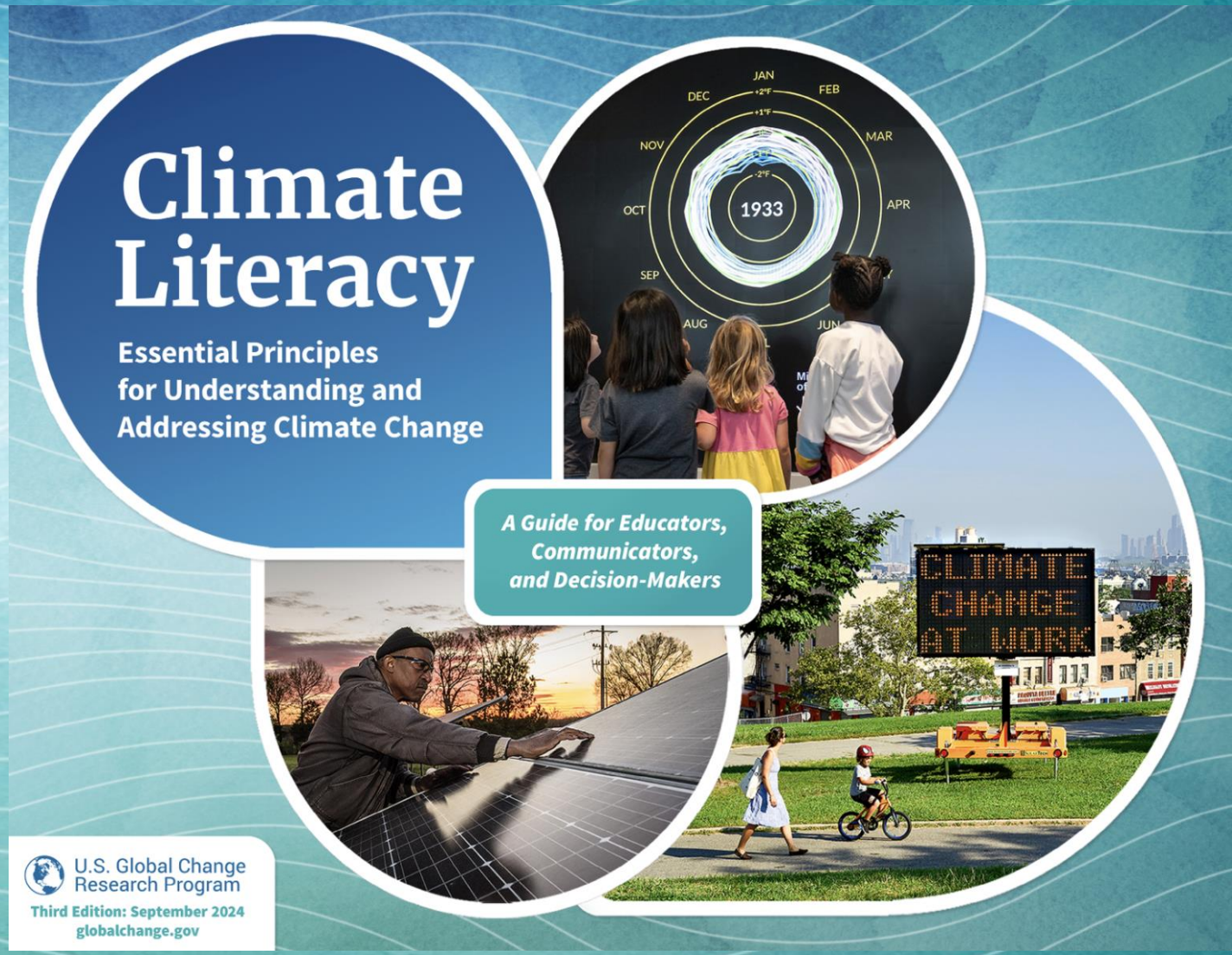
Frank Niepold
Senior Climate Education Program Manager
NOAA

Bora Simmons
Director
Project for Excellence Program of NAAEE

Michael Kozuch
Lead Curriculum Developer on Social Sciences
Climate Action Through Education (CATE)
MIT

Turning It Over to Frank!

Introducing: The Updated Climate Literacy Guide!



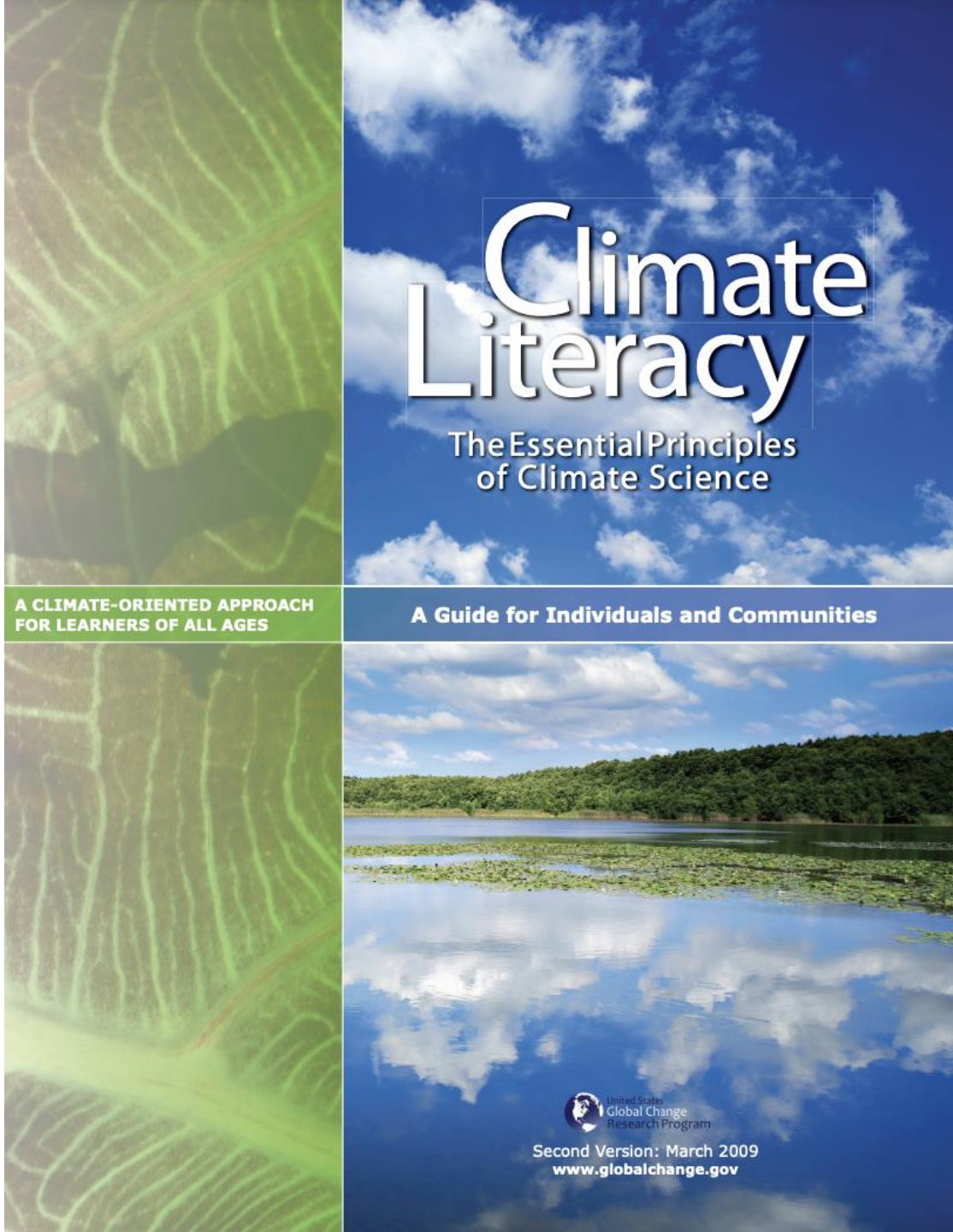
Frank Niepold, NOAA Climate Program Office

Background

First published in **2008**…
Last updated in **2009**.

The guide has informed:

- the NGSS standards (used in 49 of 50 States Science Standards),
- K-12 and college curricula,
- School classes at all levels,
- Museum and park exhibits, and
- education programs across the world.



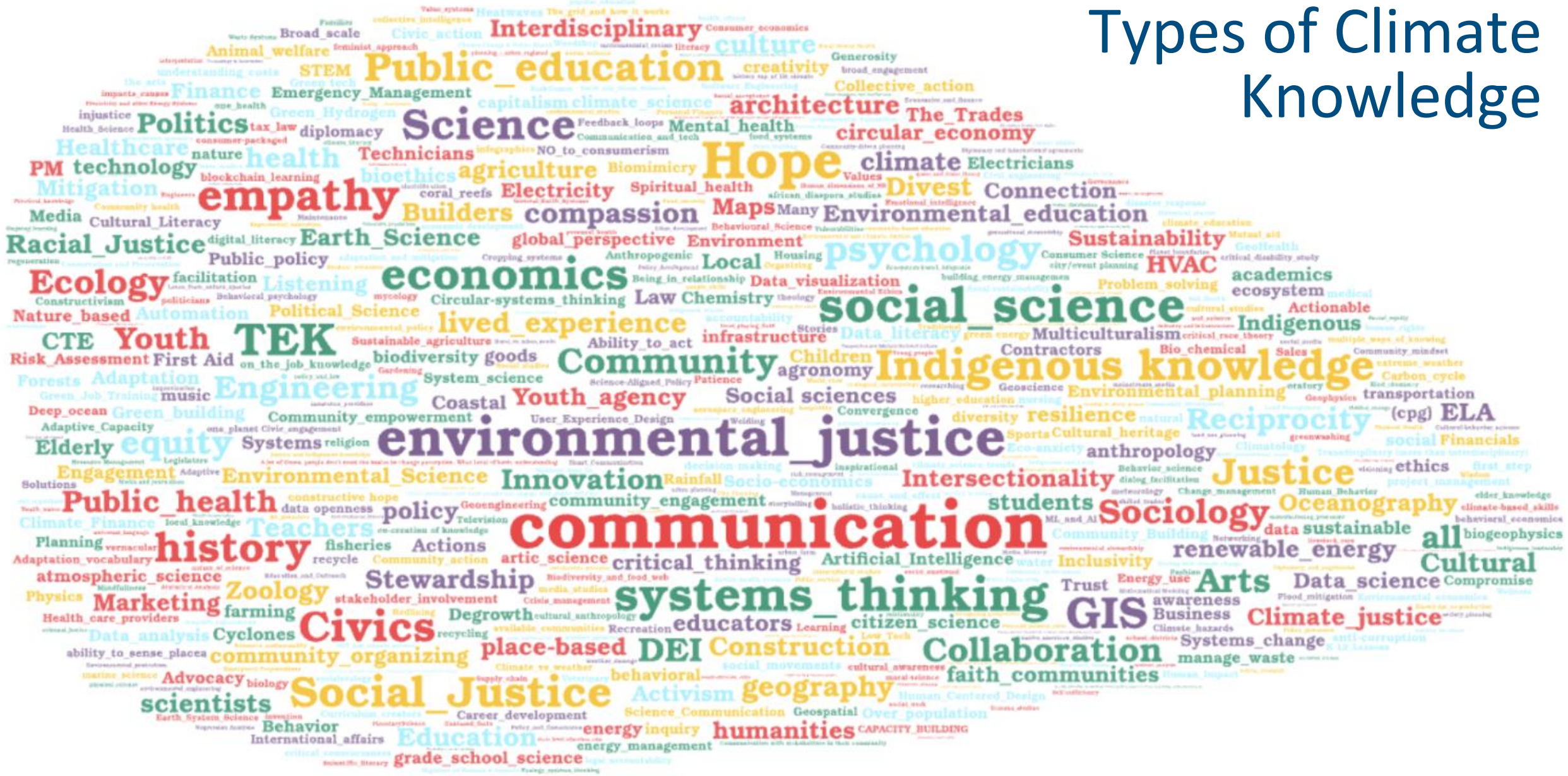
2024 Climate Literacy Guide Writing Team

Where We Started (from the 2023 Climate Literacy Listening session)

What do people need to ***know*** in order to address climate change?

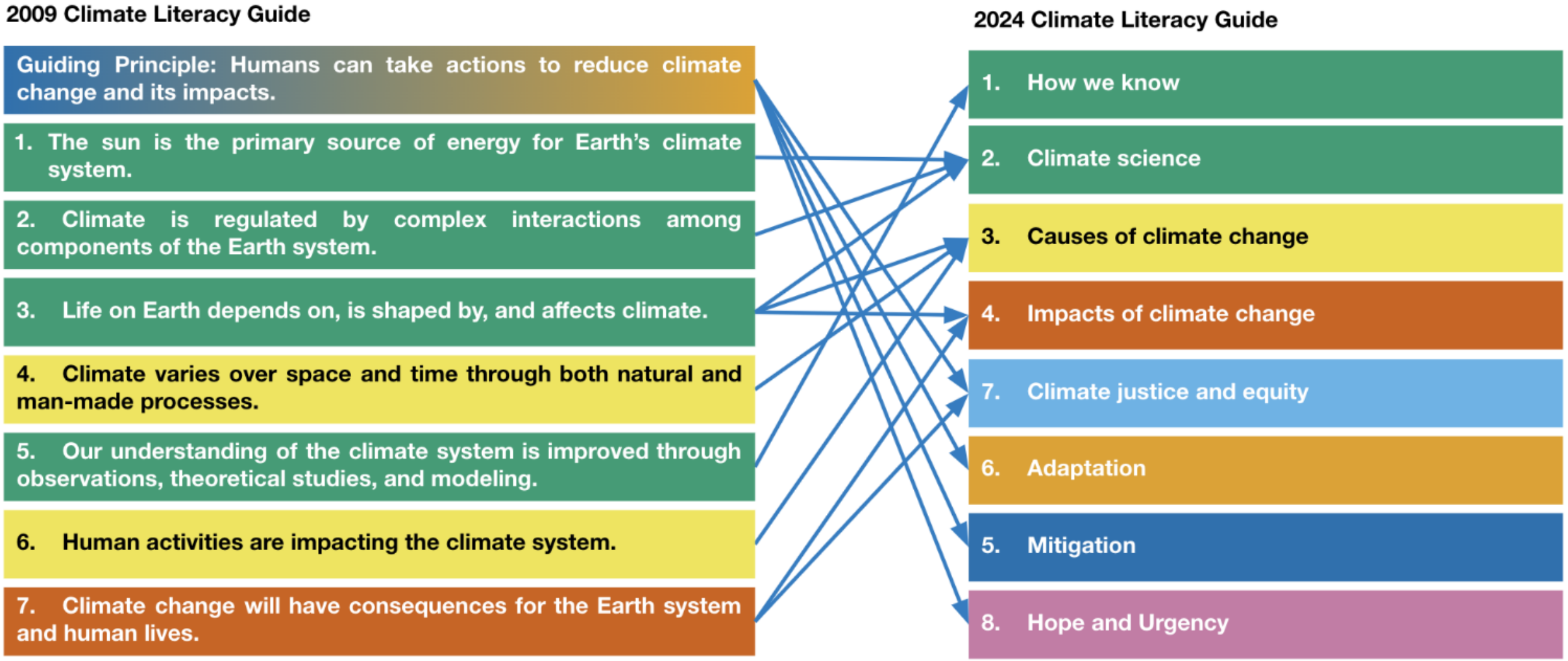
What do people need to ***be able to do*** in order to address climate change?

Types of Climate Knowledge



Climate Science Literacy  Climate Literacy

Building from the 2009 Guide



Climate Literacy now includes:

- local and Indigenous Knowledges,
- social and cultural contexts,
- the social sciences,
- climate solutions, and
- climate justice concepts.

Ritika S., ArtxClimate

Essential Principles of Climate Literacy

1 **HOW WE KNOW**

Scientists understand the climate system through interdisciplinary observations and modeling.

2 **CLIMATE CHANGE**

Greenhouse gases shape Earth's climate.

3 **CAUSES**

Burning fossil fuels and other human activities are causing the planet to warm.

4 **IMPACTS**

Rapid warming and other large-scale climate changes threaten human and ecological systems.

5 **EQUITY**

Climate justice is possible if climate actions are equitable.

6 **ADAPTATION**

Humans can adapt social, built, and natural environments to better withstand the impacts of climate change.

7 **MITIGATION**

Reducing emissions of greenhouse gases from human activities to net zero by 2050 can help limit global warming and climate change impacts.

8 **HOPE AND URGENCY**

A livable and sustainable future for all is possible with rapid, just, and transformational climate action.

A climate literate person…

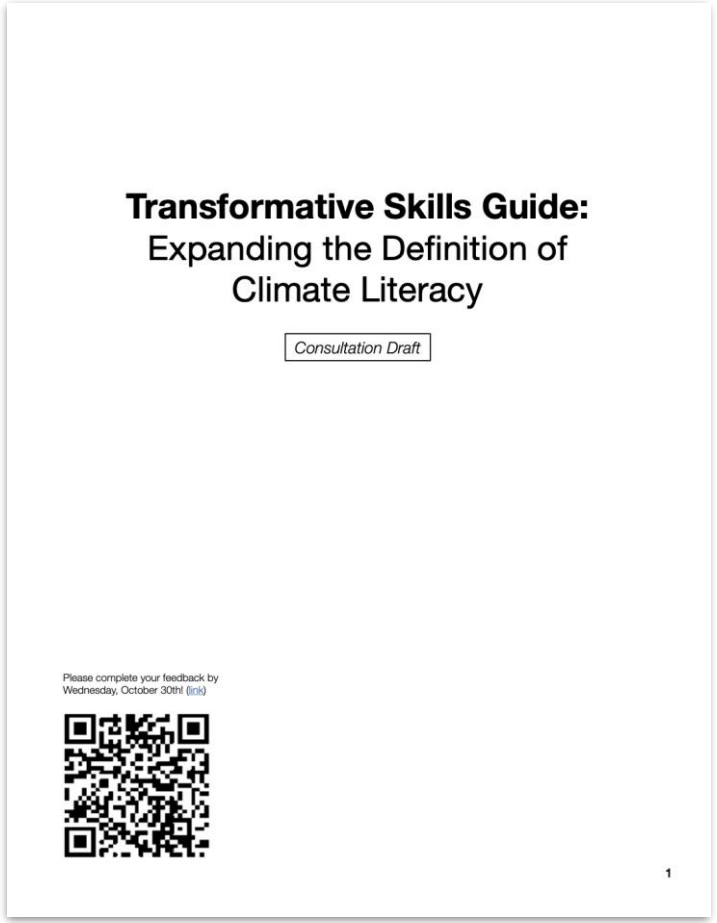
- **understands the essential principles** of Earth's climate system and the options to address human-caused climate change, which are summarized in this guide;
- **recognizes credible information** about climate change and knows where to find it;
- **communicates** about climate change in **accurate** and **effective** ways; and
- **is able** to make **informed decisions** related to climate change.

Knowledge of Earth systems and the human influences of climate change is necessary, but it is not sufficient.

Also required are the human qualities and **skills** needed to translate understanding into effective, transformative collective action.

Knowledge and Skills for Climate Literacy

+



Transformative Skills Guide Collaborative

Thank You!

Let’s do this together.

Guidelines for Excellence

Educating for Climate Action and Justice

naaee
North American Association for Environmental Education

Produced with funding from USEPA, Office of Environmental Education through NAAEE

naaee
North American Association for Environmental Education

Guidelines for Excellence

naaee

North American Association for Environmental Education

Primary Sponsors

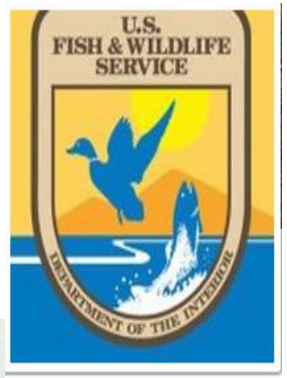
ee360+

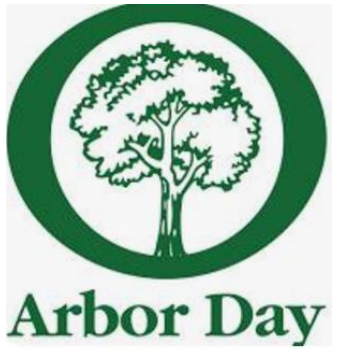
U.S. EPA Office of Environmental Education

This workshop was developed under Assistant Agreement No. NT-83695801-0 awarded by the U.S. Environmental Protection Agency (EPA). It has not been formally reviewed by EPA. The views expressed are solely those of Bora Simmons and EPA does not endorse any products or commercial services mentioned.

And, many other partners

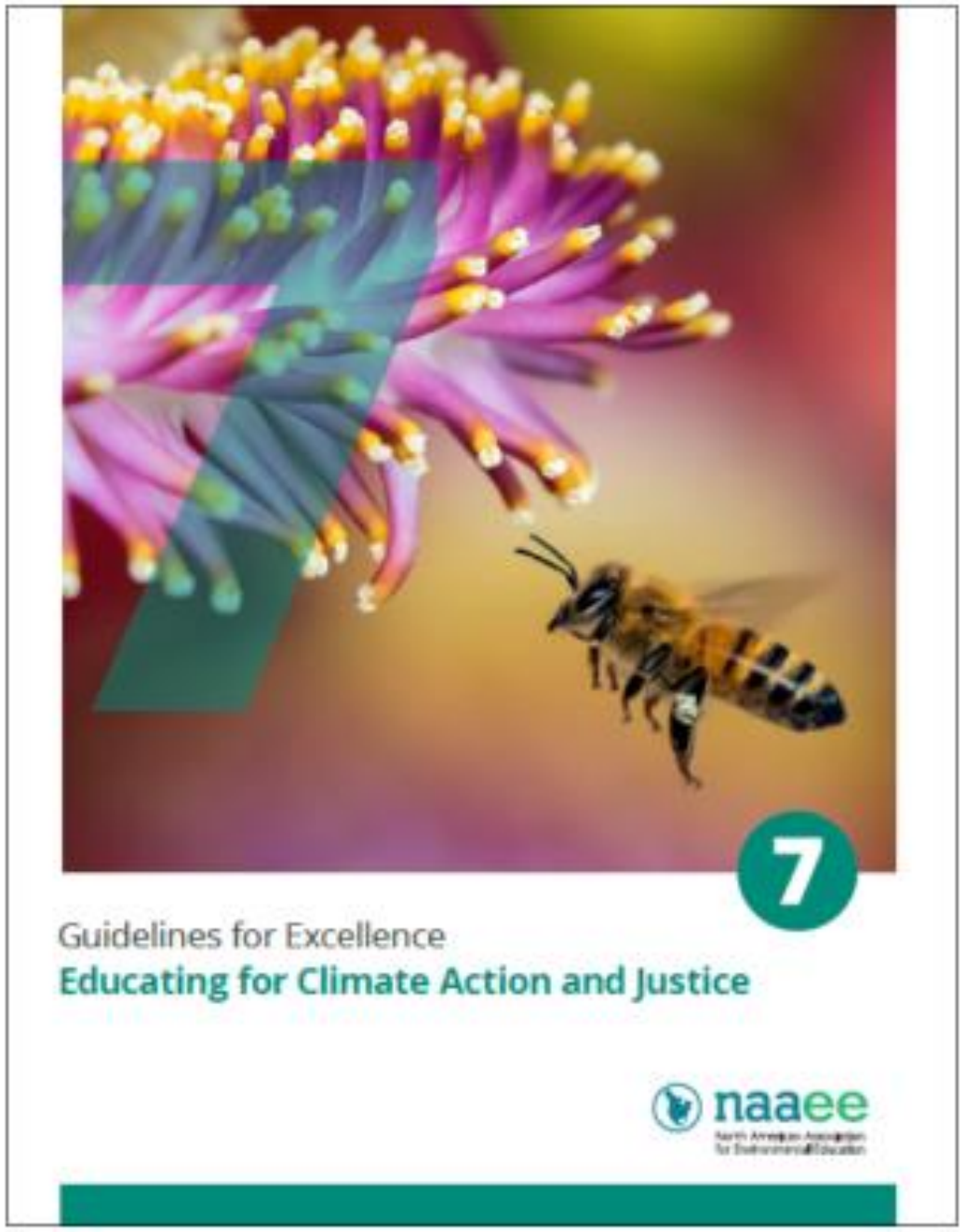
project WET
WATER EDUCATION TODAY





KEEP AMERICA
BEAUTIFUL

Environmental
Educators
of North Carolina


7
Guidelines for Excellence
Educating for Climate Action and Justice
naaee

Our Collective Wisdom

- ❑ Rooted in research and practice
- ❑ Developed through a public participatory process
- ❑ Engages educators in a deep discussion about quality environmental education practice
- ❑ Building EE as a profession

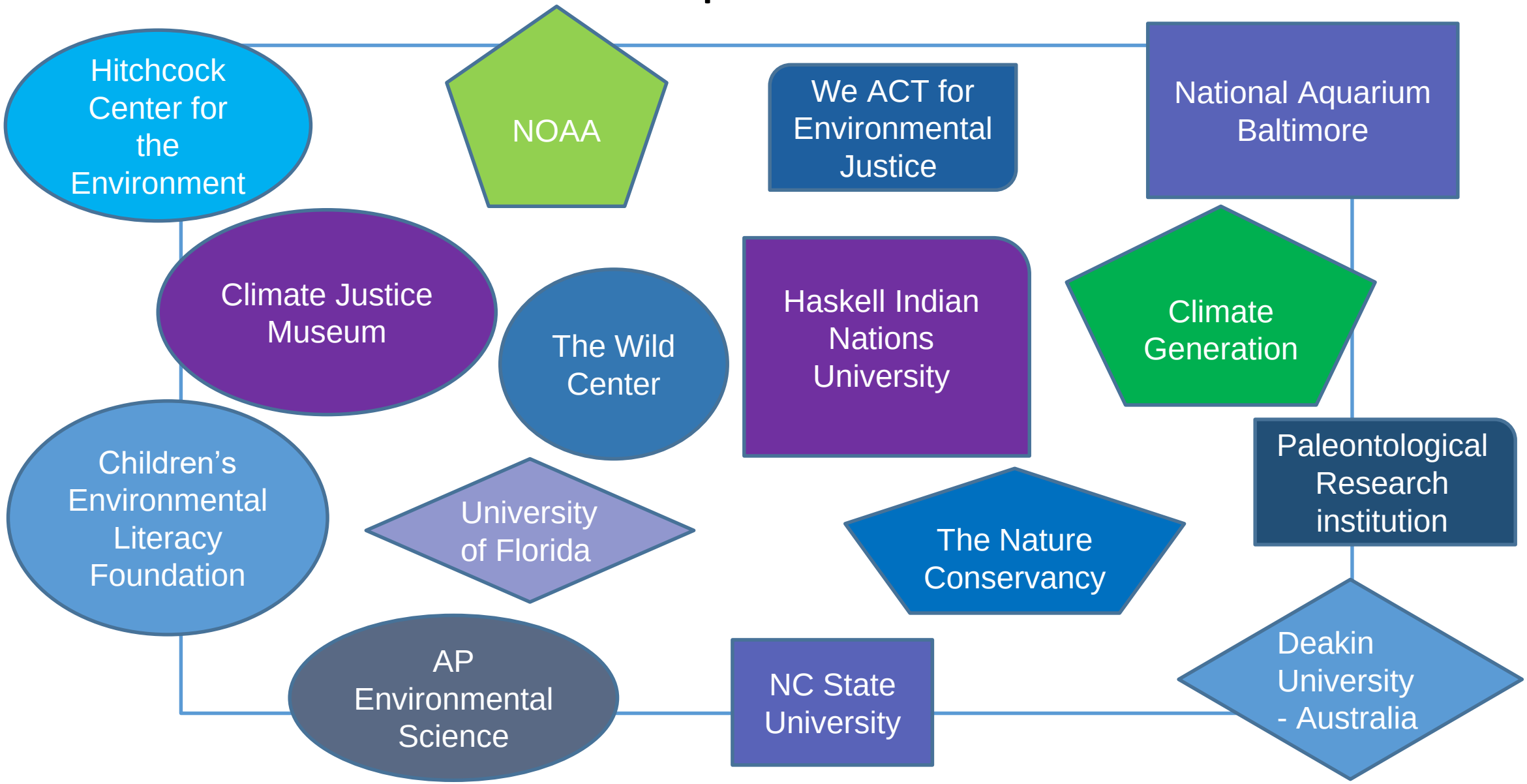
7

Guidelines for Excellence

Educating for Climate Action and Justice

naaee
North American Association for Environmental Education

First Step: Interviews



Step 2: Assemble a Diverse Writing Team

Curtis Bennett –
National Aquarium Baltimore

Zakhia Grant – EcoRise

Kathayoon Khalil –
New England Aquarium

Lindsey Kirkland –
Climate Generation

Jen Krester –
The Wild Center

Gus Medina – Environmental Education Conservation Global

Martha Monroe –
University of Florida

Taylor “Beau” Morton – WE ACT for Environmental Justice

Frank Niepold –
NOAA

Sheila Williams Ridge –
University of Minnesota

Bora Simmons –
Co-Team Leader, NPEEE

Anne Umali – Co-Team Leader, NAAEE

Step 3: Create a Diverse Advisory Committee

Aaron Ambroso
Brock Adler
Megan Bang
Sarah Bodor
Patty Born Selly
Judy Braus
Ellen Ebert
Bill Finnegan
Michael Heinze
Charzy Jones
Vince Meldrum
Taiji Nelson
Kim Noble
Ginger Potter
Dejah Powell
Sarah Schoedinger
Billy Spitzer
Sarah Stapleton
Daniel Wildcat
Andra Yeghoian

Climate Action & Justice Guidelines…

…provides recommendations and resources that support:

using education as a tool for addressing climate change.

Future climate change impacts depend on choices made today.

Fifth National Climate Assessment, 2023

Climate Education…

- Rooted in Climate Systems
- Focuses on Solutions
- Fosters Climate Action
- Centers on Climate Justice

The Climate Crisis

Earth is warming at an unprecedented rate. Human activity is the principal cause.

— NASA Global Climate Change

Solutions focused

IPCC and UNEP have both shown that a rapid shift from fossil fuels to renewables is possible. That restoring ecosystems to store carbon and buffer climate impacts is possible. That investing in nature-based solutions in cities and productive landscapes is possible, and profitable. That action on climate is also action on nature and biodiversity loss, and pollution and waste – the other two prongs of the triple planetary crisis.

Inger Andersen, Executive Director (2023)

Project Drawdown – Solutions: green roof

Fosters Climate Action

Image from Seattle U Center for Environmental Justice and Sustainability

Effective climate change education requires an understanding and a centering on climate justice, as well as a willingness to work toward solutions that address the impacts of climate change.

Photo: Erik McGregor/LightRocket via Getty Images

Five Key Characteristics

Collaborative, Welcoming, and Responsive Learning Environment

Knowledge and Skills for Climate Action

Attention on Climate Emotions

Locally Focused and Community Driven

Civic Engagement for Climate Action

Key Characteristic #1: Collaborative, Welcoming, and Responsive Learning Environments

- Ensure an inclusive learning environment.
- Engage learners in open inquiry.
- Explore worldviews and perspectives.
- Examine climate change information and misinformation.

Key Characteristic #2: Knowledge and Skills to Foster Climate Action

- Build awareness and appreciation.
- Understand climate processes and systems.
- Understand human systems as they relate to climate change.
- Apply systems thinking.
- Develop action strategies and skills.
- Build personal and civic responsibility.

Red Buckeye - M Monroe

Key Characteristic #3: Attention on Climate Emotions.

- Recognize and acknowledge climate emotions.
- Cultivate constructive hope.
- Develop self-efficacy and agency.

Key Characteristic #4: Locally Focused and Community Driven

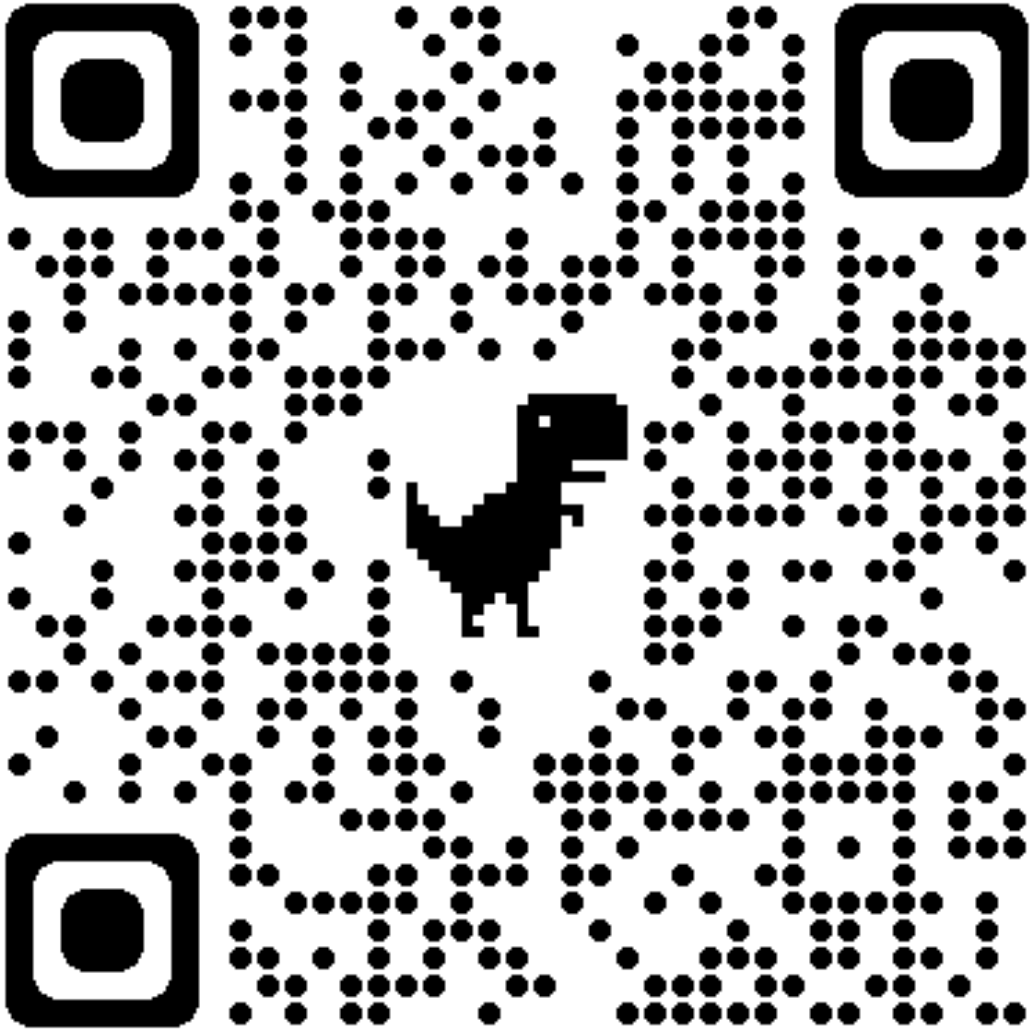
- Know the community.
- Identify key individuals, organizations, and communities of interest.
- Build partnerships and collaborative relationships.
- Collect community concerns about climate actions.

Key Characteristic #5: Civic Engagement for Climate Action

- Investigate community-centered climate concerns.
- Select a civic action goal and plan a strategy for achieving it.
- Take action on selected climate issue(s) and concern(s).
- Celebrate and share progress toward a thriving community.

Learn more about the *Guidelines for Excellence*

https://naaee.org



Thank You!

borasimmons@gmail.com

MIT Climate Action Through Education (CATE)

ceepr.mit.edu/cate

MITei

MIT Center for Energy and Environmental Policy Research

What is CATE?

Provider of multidisciplinary high school climate curriculum resources

- Modular climate curriculum, teacher led MIT-informed
- Massive Open Online Course for educators
- Climate professional development provider
- Fast Forward: MIT’s Climate Action Plan for the Decade
- Faculty Review Committee

Team

Prof. Christopher R. Knittel, MIT Sloan

Aisling O’Grady

Kathryn Teissier du Cros, Language Arts

Lisa Borgatti, Science/Enviro Science

Gary Smith, Physics

Amy Block, Math

Michael Kozuch, History/Sustainability

Faculty Director

Christopher R. Knittel

George P. Shultz Professor of Energy Economics

Professor of Applied Economics

Director, Center for Energy and Environmental Policy Research

Deputy Director for Policy, Energy Initiative

Research

-How the costs of climate change policy vary across households and firms, and how this differs across policy choices?

-Household carbon footprints across the US

CATE Origins

2017	Climate misinformation to 300K science teachers, incl. Chris's father
2018	Chris: conversations at MIT about climate curriculum
2019	First funding proposal as 'CATE'
2020	Landscape interviewing, Faculty Review Committee
2021	Four high school teachers join
2022	First Climate Professional Development Workshop
2023	Second PD Workshop, K-12 Conference, curriculum launch

How do we work with students and teachers?

OUTREACH

Teachers, teacher's unions, administrators, youth climate groups, non-profits, legislation, MA Climate Resilient Schools Coalition

PROFESSIONAL DEVELOPMENT

Offered to 16-30+ high school teachers, with MIT faculty and staff

K-12 CLIMATE CONFERENCE

150+ students and teachers in attendance, April 2023. Second iteration in April 2024.

We want to collaborate with local districts, schools, teachers, administrators!

Role of MIT

FACULTY REVIEW COMMITTEE

Teachers, teacher’s unions, administrators, youth climate groups, non-profits. Curriculum use, input, climate education and policy in the state

CLIMATE PORTAL RESOURCES

tilClimate Podcast, Climate Educator Guides, Digital Climate Primer, Explainers, Ask MIT

CLIMATE ACTION PLAN

Sections 7 “ Educate future generation of leaders, problem solvers & citizens”

How are we funded?

MIT’s Office of the Vice President for Research

MIT’s Climate Nucleus

The Beker Foundation

Collaborations with the Mass. Teachers Assoc. Climate Action Network (MTA CAN) and the American Federation of Teachers (AFT) - MA

What drives us?

SCIENCE

90%+ scientists agree on anthropogenic warming

SOLUTIONS

Empowering students to take action

CRITICAL THINKING

Essential 21st century skill in an era of misinformation

INTERDISCIPLINARY

Life doesn’t happen in disciplinary silos

ACCESSIBILITY

Pull together research, resources, ideas to be accessible for K-12

PRACTICALITY

Grounded in typical requirements for core high school disciplines

Our Curriculum

MULTIDISCIPLINAR

Content for History, English, Math, Science, and World Language classes

MODULAR

Each lesson can be used on its own, or in conjunction with others

PLACE-BASED

Connecting to local data, climate impacts, and history

SOLUTIONS

Emphasizing climate solutions, sense of agency for students

MIT-INFORMED

Connecting to and integrating MITEI and CEEPR research, MIT Climate resources

STANDARDS

MA State Standards

The Baby Boom and Avoiding Doom

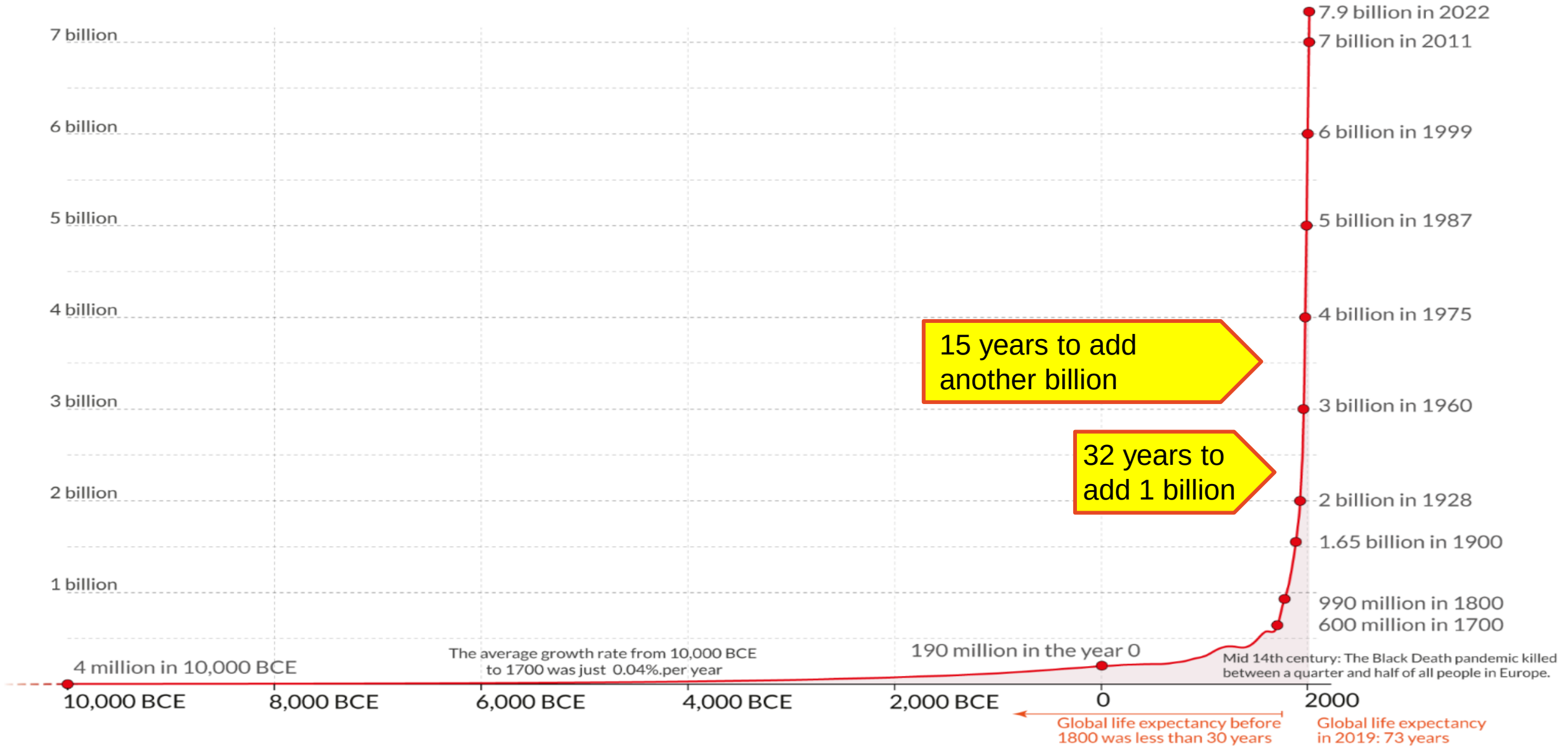
Extinction, Climate Change and Action

MIT CATE
Climate Action Through Education

Our World in Data

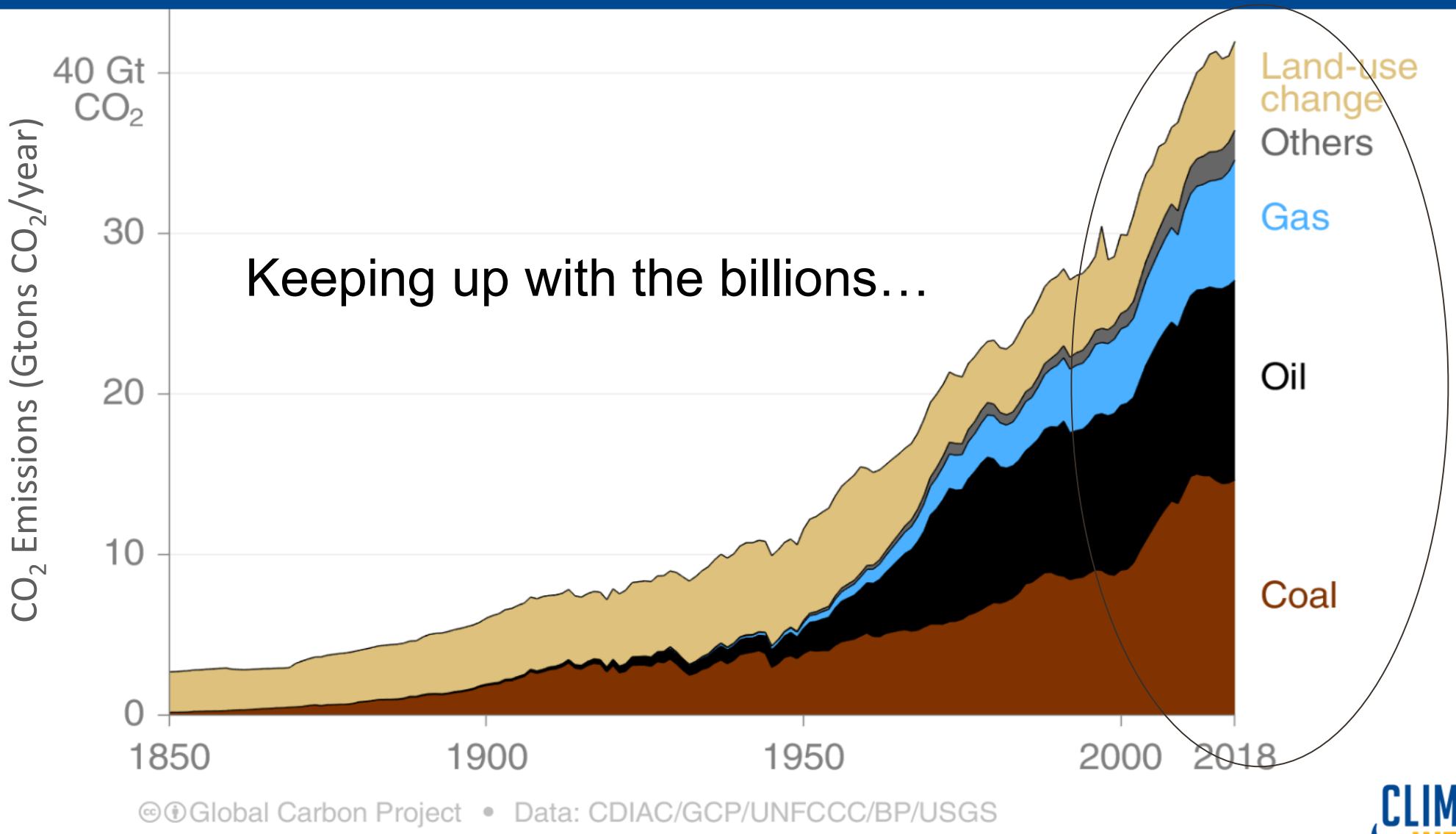
The size of the world population over the last 12.000 years

Demographers expect rapid population growth to end by the end of the 21st century. The UN demographers expect a population of about 11 billion in 2100.



Based on estimates by the History Database of the Global Environment (HYDE) and the United Nations. On OurWorldinData.org you can download the annual data.
This is a visualization from OurWorldinData.org.

CO_2 Emissions by Source



Source: Carbon Dioxide Information Analysis Center (CDIAC)

Others = Emissions from cement production and gas flaring

CLIMATE INTERACTIVE

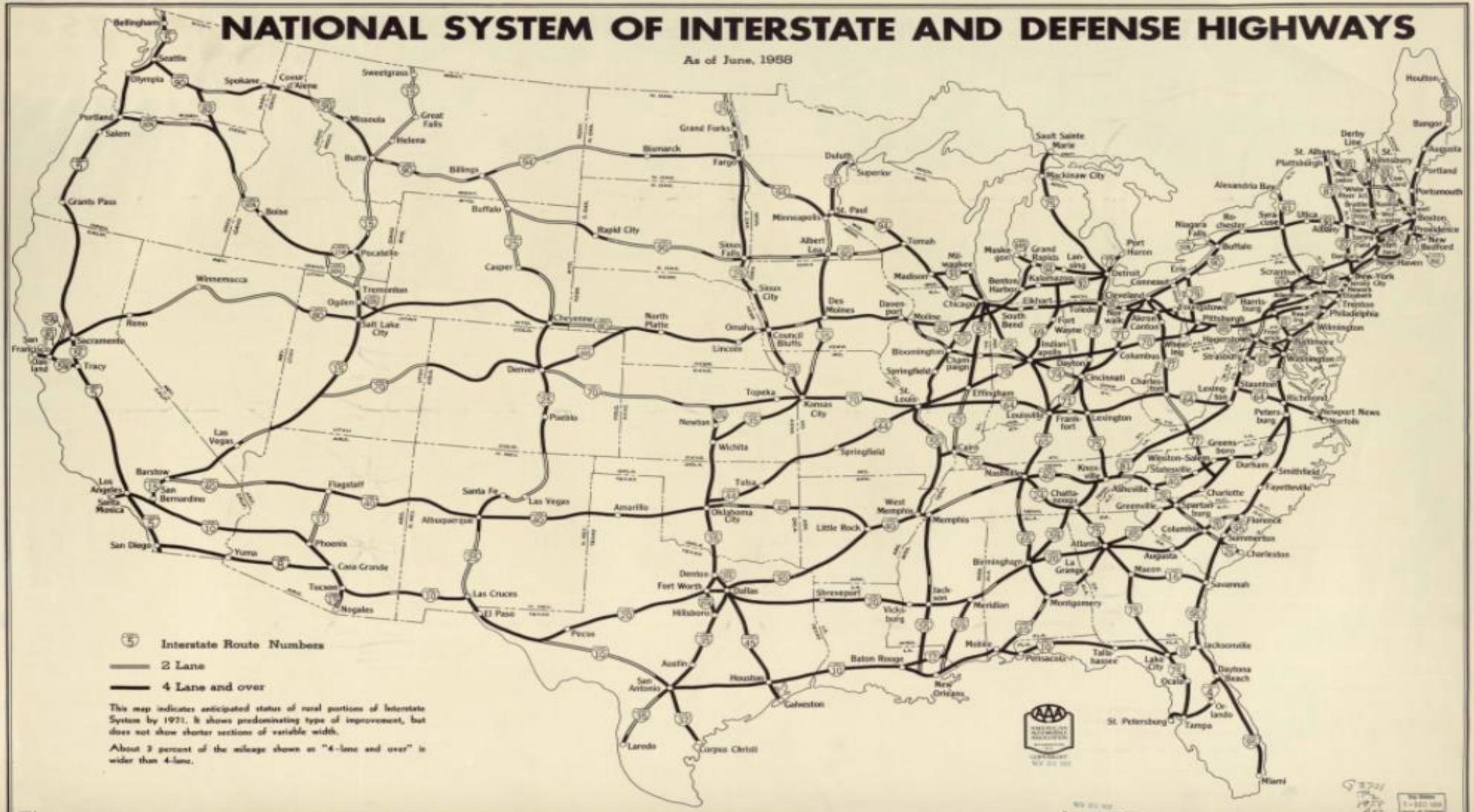
What was the result of the boom?

- 40 million Americans move to the suburbs. (1940-60)
- Interstate Highway System is developed to respond to reach the suburbs and respond to Cold War military needs.
- Car ownership more than doubles:
  - 26 million in 1945;
  - 60 million in 1960
- Suburban malls proliferate
- GNP doubles between 1945-1960
- “The Good Life” is affordable for some.

Image of a Levittown circa 1959

NATIONAL SYSTEM OF INTERSTATE AND DEFENSE HIGHWAYS

As of June, 1958

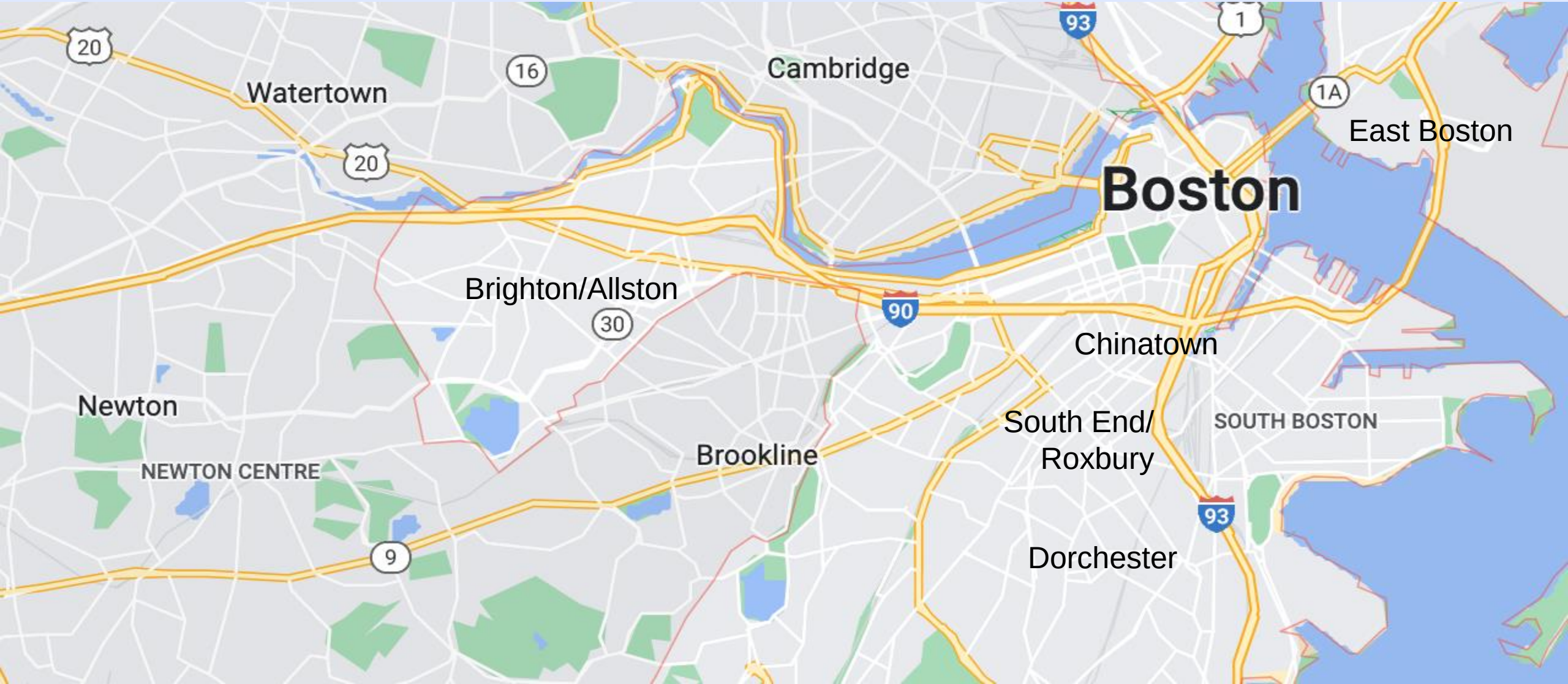


“Urban renewal” and highway building impacted communities of color and working class communities disproportionately

- Highway construction was often through communities of color.
- Urban renewal leveled some neighborhoods like the West End of Boston
- Melnea Cass Blvd. was originally planned as a highway before protests stopped it.

Image of the MA Pike being built through West Newton, MA

What neighborhoods did Interstate highways go through?



By the 1960's concerns about pollution and CO2 were growing

Members of the Highland Park Optimist Club in Northeast L.A. wear smog-gas masks at a banquet, circa 1954. Credit: Los Angeles Times photographic archive.

- Pollution in cities grew.
- 1965 President Johnson states: "Air pollution is no longer confined to isolated places. This generation has altered the composition of the atmosphere on a global scale through radioactive materials and a steady increase in carbon dioxide through the burning of fossil fuels."

Upcoming

Online course for educators

Climate Action and Education Conference April 2025

Climate Professional Development for teachers June 2025

Revisions for middle schools

cateprogram@mit.edu

ceepr.mit.edu/cate


Thanks to our speakers!

Additional NAAEE Resources

Sarah Bodor
Senior Director
Capacity Building
NAAEE

Join the eePRO group to stay engaged…

Climate Change Education

You are a member of this group (leave group)

Coalition for Climate Education Policy

Advancing climate literacy for a just and sustainable future

- Tracking what’s happening with climate change education at the state and local level
- Mapping the landscape of climate change education policy
- Case studies
- Making the case for education as a climate solution
- Creating tools for state and local advocacy

State Climate Education Policies in the U.S.

WASHINGTON

ClimeTime: Science Teacher Professional Development

OVERVIEW

SB 6032 Section 501

ENACTED SPRING, 2018

- ClimeTime is a grant program that supports professional development for teaching climate science that is aligned with the Next Generation Science Standards (NGSS).
- It is funded through a Washington State legislative proviso.
- The proviso requires that a minimum of one grade level in elementary, middle, and high school must ensure that teachers participate in this professional training.

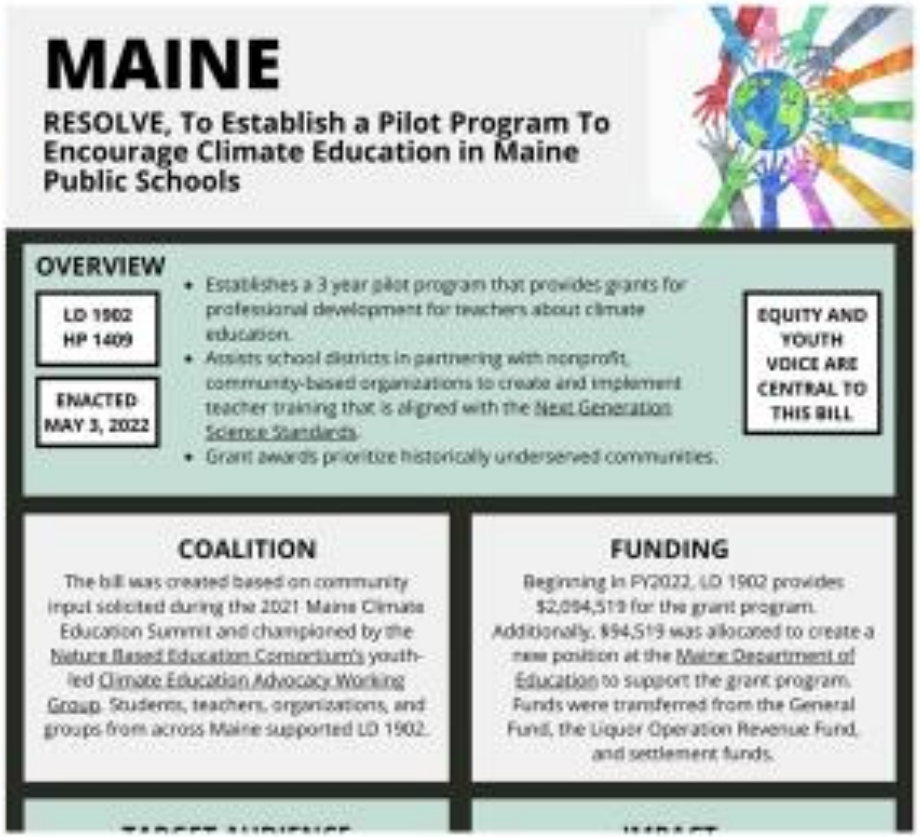
COMMUNITY ENGAGEMENT IS CENTRAL TO THIS BILL

COALITION

The leadership team for this bill consists of education leaders from the Washington Office of Superintendent of Public Instruction, learning scientists from the University of Washington, and members of the Association of Educational Service Districts. They assist network partners in accessing grants and professional learning resources.

FUNDING

In FY22 and FY23, three million dollars were appropriated for grants that support professional development for teaching climate science aligned with NGSS. Of this amount, one million dollars were appropriated each fiscal year exclusively for partnerships with community-based nonprofits.



MAINE

RESOLVE, To Establish a Pilot Program To Encourage Climate Education in Maine Public Schools

OVERVIEW

LD 1902 HP 1409

ENACTED MAY 3, 2022

- Establishes a 3 year pilot program that provides grants for professional development for teachers about climate education.
- Assists school districts in partnering with nonprofit, community-based organizations to create and implement teacher training that is aligned with the Next Generation Science Standards.
- Grant awards prioritize historically underserved communities.

EQUITY AND YOUTH VOICE ARE CENTRAL TO THIS BILL

COALITION

The bill was created based on community input solicited during the 2021 Maine Climate Education Summit and championed by the Nature Based Education Consortium's youth-led Climate Education Advocacy Working Group. Students, teachers, organizations, and groups from across Maine supported LD 1902.

FUNDING

Beginning in FY2022, LD 1902 provides $2,094,519 for the grant program. Additionally, $94,519 was allocated to create a new position at the Maine Department of Education to support the grant program. Funds were transferred from the General Fund, the Liquor Operation Revenue Fund, and settlement funds.

https://www.climateedpolicy.org/resources/state-climate-education-policies-us

NEW!

The Climate Education Policy Toolkit

Welcome to the Climate Education Policy Toolkit, your guide to navigating the dynamic landscape of state and local climate education policy. Whether you're a climate professional, legislator, educator, student, young adult, parent, or just a concerned individual, the resources within this Toolkit are designed to help you instigate change in a way that is tailored to suit your specific political landscape.

Home

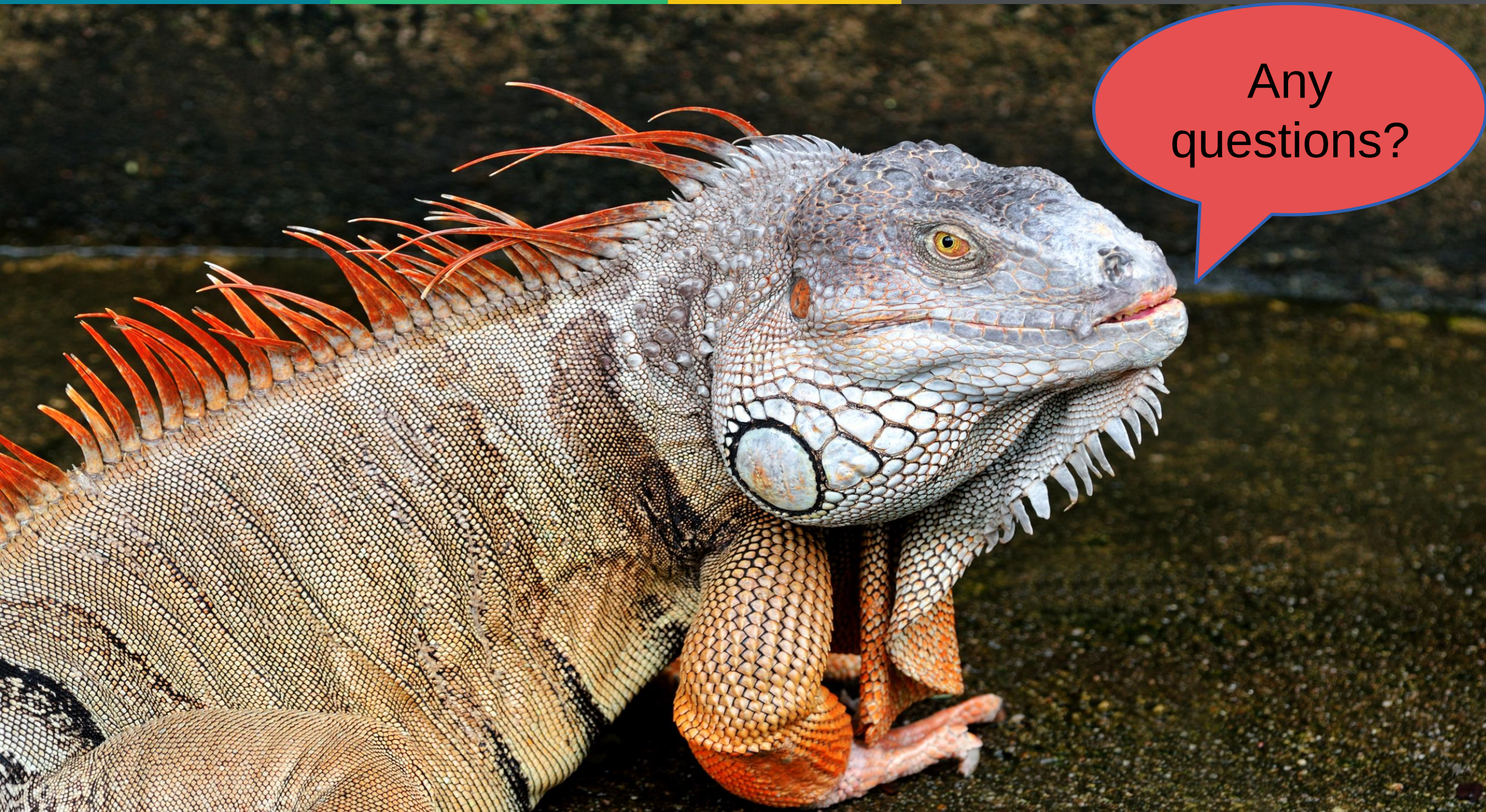
About

Understanding Your Context (Step 1)

Find Your Resources (Step 2)

FAQs & Contact

Thank you all for joining!


Any questions?