



Analysis of a Phase I Inventory of Federal Climate Education, Engagement, Workforce Development and Training Programs

Background

President Biden administration's executive orders on climate change, climate-related finance, and Justice40 call for a robust all-of-government response to multiple societal challenges. The NOAA Climate Program Office's Climate Education Program currently monitors climate education, engagement, and workforce development and training activities in the United States.

In the summer of 2021, the NOAA Climate Program Office undertook the first phase of a project to inventory relevant programs and FY22 plans across federal departments and agencies. The inventory focused specifically on federal programs designed to increase public knowledge and awareness and build the capacity of communities, organizations, and subnational and Tribal governments to mount effective community responses to the climate crisis in just and equitable ways.

The results of the Phase I effort are presented in two parts:

1. A report summarizing key findings in the inventory,
2. An inventory database of federal programs related to climate education, workforce development, and empowerment programs. Contact Frank Niepold, frank.niepold@noaa.gov, for access.

Initial findings, although preliminary, are highly instructive. The inventory and analysis reveal significant opportunities to increase the federal government's collective impact through shared learning, collaboration, and coordination among programs. The analysis also reveals areas of comparative strength, as well as gaps in coverage.

Expanding upon Phase I of this project will be invaluable. Analysis suggests that additional programs and program attributes have yet to be cataloged. Given the evolving nature of climate and justice challenges, an up-to-date inventory will provide a much-needed tool for strategic planning and implementation.

Writers: Tom Bowman & Deb L. Morrison

Including contributions from: Frank Niepold, Marlene Kaplan, and Bart Merrick (NOAA); Haley Crim, Isatis Cintron-Rodriguez, and Chris Cameron (contractors); and Quinn Bustos, Lauren Crane, and Nicole Hilton (NOAA Lapenta interns)

Suggested Citation:

NOAA. (2021). Analysis of a Phase I Inventory of Federal Climate Education, Engagement, Workforce Development and Training Programs. Report of the Climate Education Program, Climate Program Office, NOAA, February 1, 2022.

Context

Federal policy priorities regarding climate change, equity, energy, public health, and the economy are rapidly changing. The Biden-Harris administration's Justice40 initiatives and recommendations by the White House Environmental Justice Advisory Council (WHEJAC) are also changing the policy implementation landscape across federal agencies.

In numerous ways, U.S. federal departments and agencies already work to increase the public's capacity to meet and manage the climate crisis and broader environmental justice challenges and opportunities. Much of this work serves the needs of non-federal partners and communities at regional and local levels across the nation. Federal agencies have developed a great many programs over many years to help segments of our society act skillfully, equitably, and in diverse and regionally appropriate ways to mitigate the causes and risks of climate change. Each department and agency brings its own capabilities, expertise, and context to this work according to the agency's overarching mission.

In 2021, President Biden recast these individual programs in light of a more comprehensive "whole of government" climate response strategy. The President's strategy raises crucial questions for executive branch planners and program managers. What, for example, can program managers learn from their peers in other agencies? How can collaborative partnerships across agencies and communities be designed to increase program effectiveness and public capacity to equitably mitigate climate change and adapt all of society to a changing climate? Similarly, how can collaborative infrastructure and cooperative planning increase the collective impact of numerous programs? What gaps exist in federal efforts to increase awareness and build capacity across various social sectors and geographies with regard to issues such as human health, food security, community resilience, carbon pollution, economic development and stability, hazard risk reduction, and their intersections with environmental and climate justice?

The results of this inventory show a large number and diversity of federal public awareness, learning, and capacity-building programs centered on climate and environmental justice that pose significant opportunities to address such questions. Developing answers could greatly enhance the Executive Branch's implementation of the just and equitable whole-of-government strategy called for in President Biden's climate change and justice-related executive orders ("Tackling the Climate Crisis at Home and Abroad" (EO 148008), "Climate-Related Financial Risk" (EO 14030), "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" (EO 13985), and others). Answering such questions will also improve implementation of the WHEJAC

recommendations on Justice40 and similar environmental justice policies. Federal leaders seeking to identify current areas of strength, as well as opportunities to increase collective impact through collaboration and strategic landscape analysis, would benefit from a clear picture of current programs and plans for FY22.

Purpose

Throughout the summer of 2021, NOAA's Climate Program Office conducted a Phase I inventory of climate and climate-justice related federal public awareness, learning, and capacity building programs and plans. The resulting catalog, although preliminary, is the first product of its kind to look across the entire federal government.

NOAA's initiative focused on federal programs and plans designed to build capacity and increase knowledge across federal and non-federal government agencies and broadly across civil society.¹

The greatest potential for increasing effectiveness and resource utilization, therefore, lies in identifying intersecting activities, objectives, target audiences, resources, and programs that can be improved through increased coordination and collaboration. The value of and potential for intersectional collaboration and strategic alignment of resources and programs are particularly evident in the United States, where many federal departments and agencies, plus highly diverse non-federal communities, organizations, governments, and sectors work on climate change mitigation, adaptation, and climate justice.

The federal government cannot solve climate change or any other interlinked crises on its own. This project was undertaken to create a database of existing and proposed federal programs that support, catalyze, or otherwise empower communities, institutions, companies, and individuals to engage in these issues. The Phase 1 inventory is intended to support and expand connections between program managers, sharing of best practices and learning between programs, and identification of gaps in federal climate program coverage. Additionally, the inventory can help policymakers identify and remove obstacles to collaboration.

¹ Linkage to the UNFCCC and related international agreements help connect domestic activity to Annex I Party requirements (the United States is an Annex I country) when submitting National Communications to the UNFCCC. Parties included in Annex I to the Convention—including those that are also Parties to the Kyoto Protocol—have committed to submit their National Communications to the secretariat every four years ([decision 2/CP.17](#)).

The government's many diverse program missions are undertaken to address the needs of specific and varied target audiences and, therefore, are not duplicative. The Phase I inventory does not provide any insights into potentially improving fiscal efficiencies. Further work needs to be done to optimize programs through collaboration, resource sharing, and cross-sector learning.

Methodology

The inventory development process involved a desktop review of programs and plans across the eleven cabinet level departments, eight independent federal agencies, and one interagency program. The desktop review included identifying program leaders in multiple departments and agencies using publicly available information, some of whom subsequently participated in semi-formal interviews that revealed additional information, perspectives, and concerns that merit consideration going forward. A more detailed description of the methodology can be found in Appendix A and a detailed list of data collected in Appendix C.

Desktop Review

The desktop review team included two NOAA contractors and three NOAA Lapenta interns who worked under the supervision of NOAA employees. Reviewers identified potentially relevant programs using keyword searches of existing federal department and agency websites and the President's FY22 budget proposal. Programs were identified as either base or proposed and flagged according to the relevant terms that applied, noting whether the application appeared to be direct, indirect, or potential. Program names, leaders, and verbatim descriptive language responsive to relevant provisions were captured in a spreadsheet. The inventory further provides initial assessments of whether and how a program or plan is responsive to gender, considers intergenerational issues, and/or advances equity and justice, such as identifying beneficiaries from Black, Indigenous, and Communities of Color and Tribal governments.

- Keyword search terms included: climate, education, jobs, training, workforce, outreach, access to information, international.
- Cross-cutting keyword search terms included: youth, gender, justice, equity, 14008 (referencing "Tackling the Climate Crisis at Home and Abroad," EO 148008²).

² White House. (2021). *Executive Order 14008 of January 27, 2021, Executive Order on Tackling the Climate Crisis at Home and Abroad*. <https://www.whitehouse.gov/briefing-room/presidential-act>

Semi-Formal Interviews

Nine interviews were conducted by NOAA personnel and documented in written summaries. Interviewees were selected to provide a sample of diverse programs in this Phase I effort. The interviews were conducted to validate the findings in the desktop review. Full validation of the current inventory will require a larger number of interviews and/or requests for internal data, but the Phase I process provides initial insights. Even though the number of interviews was limited, they did expose additional element alignments that were not found in the desktop review.

Interviews were typically conducted over 90 minutes according to a predetermined protocol and explored programs or groups of programs in greater depth. Interviewers sought to better understand program design, limitations, successes and public responses, opportunities for and obstacles to greater collaboration, and other relevant issues. The written summaries, along with the desktop inventory, provided the basis for this report.

Working Definitions

Program alignment with various selected elements was based on the following working definitions (Table 1). These were derived from relevant UNFCCC and UNESCO reports³ and were further informed by published works by the diverse community of professionals and community-level actors working in the United States. These definitions, therefore, reflect U.S. domestic circumstances and understandings as opposed to verbatim language provided by the international guidance documents. A comparison of the working definitions with international definitions can be found in Appendix B.

Definitions for other criteria used in the inventory were recorded at the end of the desktop review process (Table 2).

<https://www.whitehouse.gov/briefing-room/presidential-act>
[ions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/](https://www.whitehouse.gov/briefing-room/presidential-act)

³ UNESCO and UNFCCC. (2016). *Action for Empowerment: Guidelines for Accelerating Solutions Through Education, Training and Public Awareness*. Paris, France: United Nations Educational, Scientific and Cultural Organization (UNESCO). https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/action_for_climate_empowerment_guidelines.pdf

Table 1. Climate empowerment elements as defined within the United States.

Element Objective	Definition	Examples
<p>Education <i>Change habits in the long term</i></p>	<p>Education seeks to enhance and develop individuals' understanding, skills and motivation to build just climate solutions. Education related to climate encompasses both teaching and learning that seeks to achieve profound sustainable changes in individual and community understanding, including cultural knowledge, place-based knowledge, and other non-curricular methods of knowledge transmission. The results of a successful program would be a population and workforce whose deep-seated understanding and appreciation for climate science, climate impacts, and civic action leads to greater climate action and commitment at all levels of society.</p>	<p>Higher education, K-12 education, vocational education, climate learning curricula, socio-emotional and behavioral learning, cultural knowledge sharing, interdisciplinary climate learning, etc.</p>
<p>Training <i>Develop practical skills</i></p>	<p>Training programs seek to develop specific skills that have a practical application that build capacity or the workforce to address climate impacts. Training can include the ability to gather, interpret, and communicate climate information; conduct inventories of emissions; and identify and deploy climate-friendly solutions. Training is about learning by doing.</p>	<p>Non-formal training through engagement, professional development programs, workforce development, technical assistance, etc.</p>
<p>Public Awareness <i>Reach people of all ages and all walks of life</i></p>	<p>Public awareness involves outreach programs that improve climate understanding and promote cultural and behavioral changes through targeted, relevant, dynamic, and systematic messaging.</p>	<p>Communication in news outlets, outreach campaigns and programs, etc.</p>
<p>Public Access to Information <i>Make information freely available</i></p>	<p>Access to information seeks to make climate information freely accessible and usable to individuals, communities and organizations. It encompasses databases and websites that provide climate information, data, and statistics, and programs and tools that make that information more accessible to laypeople.</p>	<p>Full disclosure of information, making climate information accessible and usable, reporting in appropriate languages and formats, etc.</p>
<p>Public Participation <i>Involve all in decision-making and implementation</i></p>	<p>Public participation provides the opportunity to gather input from non-climate-focused audiences and integrates varied perspectives, including those in underrepresented communities, in climate change decision-making and implementation of projects related to climate mitigation and adaptation. It is a process that directly engages communities affected by the project or solution in decision-making.</p>	<p>Multi-community and sector advisory committees, citizen consultation, co-development of programs with impacted communities, etc.</p>
<p>International Focused <i>Programs and knowledge exchange and capacity building</i></p>	<p>International focused programs aim to enhance collaboration and educational and training efforts through a range of strategies to build knowledge, institutional capacity, share lessons learned, and develop best practices. It addresses programs in which the US provides or receives access to expertise, financial, and technical resources.</p>	<p>International exchange and capacity-building, technology transfer, funding, international research and technical assistance programs, etc.</p>

Table 2. Additional terms used in the desktop review.

Term	Definition
Climate Action	Concrete steps taken at a variety of scales to reduce GHG emissions, increase resilience to climate change, and adapt to climate impacts.
Direct	Programs that include provisions that directly work to empower members of society to engage in climate action. Individual programs may work towards empowering specific sectors of the public, such as land managers, workers in a specific field, youth, or local government.
Indirect	Programs that increase climate/science literacy or quality or access to climate/scientific knowledge without empowering people to take concrete actions.
Could	Programs that do not currently explicitly focus on climate or empowerment towards climate action but whose program descriptions appear to have the potential to focus on empowering the public towards climate action with a relatively small shift in program focus.
Base	Programs that were funded in the FY2021 budget and were operating at the time of the desktop review.
Proposed	Programs that were proposed in the President's Budget for FY2022.

Strengths and Limitations

The results of this Phase I inventory process demonstrate the federal government's substantial investments in building awareness and public capacity to respond to climate and environmental justice challenges in both direct and indirect ways. This work lays the groundwork for further and sustained iteration over time.

- The desktop analysis relied on publicly available program descriptions that might not be comprehensive or up-to-date and might not accurately reflect current program design. Additional programs might also exist that have yet to be discovered and cataloged.
 - Text from federal websites and the President's FY22 budget proposal was used verbatim. Such text does not always capture important characteristics of programs or the nature of interactions between federal and non-federal partners. Semi-formal interviews provided evidence of more target elements in some programs than were listed in their public documentation. This suggests that the inventory may have undercounted the number of relevant programs and program elements.
 - Programs described in the President's FY22 budget are likely to be changed before the final budget is passed.
 - The FY22 budget justifications do not include programs resourced through discretionary funding, which makes them much harder to find. Some of these programs are included in the inventory but there are undoubtedly more.
 - Program websites varied widely in terms of content availability and specificity of descriptions, which impacted the ability of reviewers to categorize programs.
 - Budgetary information was not always available to the reviewers, so quantitative analysis of relevant investments was not possible.
 - Program descriptions do not identify the extent, design, or nature of community engagement. Since community engagement is fundamental to the goals of this inventory, additional analysis will be needed.
- The desktop review was conducted by a team of trained analysts who coded programs for the categories listed above. All coding was reviewed by multiple members of the inventory team. Where disagreements occurred,

team members discussed the issues and came to consensus.

- Federal employees were interviewed by other federal employees. The results, while instructive in many ways, are potentially impacted by insider assumptions or interagency dynamics.
- Given the methodological choices made in Phase I work, there are limitations to how inferences and visualizations can be made.
 - For the reasons noted above, a quantitative analysis of existing or proposed relevant programs and plans would provide only a partial view.
 - Visual representations of the inventory are not included in this report because the data are not yet fully validated with the program managers.
 - Readers should note that neither the desktop review nor the interviews were designed to evaluate program effectiveness.

None of these caveats and limitations undermine the core value of the inventory or the conclusions drawn elsewhere in this report. They point, instead, to the value of building upon this Phase I process to provide a more comprehensive view of relevant activities across the federal government.

Findings of the Inventory

The findings of the inventory include specifics about what was found in the on-going USG work.

- **The Landscape of Climate and Climate-Justice Related Federal Public Awareness, Learning, and Capacity Building Programs.** Perhaps the most important outcome is the creation of an inventory of relevant programs and plans across the federal government (Tables 3, 4, and 5). No such comprehensive inventory of such diverse program categories has ever existed before. Although preliminary, this inventory provides a snapshot with which to begin building collaborative communities of practice across federal departments and agencies to increase the government's collective impact and

increase society's awareness and capacity to respond to the climate challenge.

- The results of the inventory and interviews provide guidance for doing a deeper dive to fully understand the landscape of relevant activities in the federal government. The interviews conducted to date expanded the number of selected elements that apply to programs (see Appendix E for an example). Conducting additional interviews with program managers will flesh out and potentially expand upon the elements identified in this inventory.
- The results show a strong base of programs for FY22 that work directly or indirectly towards all-of-society climate action (Table 4). Additionally, there are a large number of programs whose descriptions suggest that they could be refocused to support climate action (Table 3).
- The results show that almost all programs inherently span multiple categories because their missions involve meeting societal needs that are inherently cross-cutting and multi-dimensional.
- The results suggest that departments and federal agencies have different levels of focus on and expertise in the various elements selected, suggesting potential avenues for inter-agency collaboration (Table 5).
- The results can aid implementation of the President's call for a whole-of-government strategy. The inventory, moreover, provides a valuable tool for program managers to find and collaborate with like-minded programs and program managers across agencies.
- Additionally, the results are timely, as they informed the "Climate Education, Engagement, Workforce Development and Training" chapter of the 2021 U.S. National Communication to the UNFCCC.

Table 3. Number of base and proposed programs that directly, indirectly, or could potentially support selected USG programs/priorities. “Could” programs are not included in other tables because they have not focused on climate yet.

Department or Independent Agency	Could	Indirect	Direct	Total Programs
Department of Agriculture	15	7	15	37
Department of Commerce	8	11	26	45
Department of Education	16	1	1	18
Department of Energy	15	22	6	43
Department of Health and Human Services	3	2	4	9
Department of Homeland Security	3	6	3	12
Department of Housing and Urban Development	14	3	0	17
Department of Justice	2	0	0	2
Department of the Interior	2	7	15	24
Department of Labor	24	1	2	27
Department of Transportation	20	6	2	28
Department of Veterans Affairs	6	1	0	7
AmeriCorps	1	3	0	4
Environmental Protection Agency	15	21	15	51
Institute of Library and Museum Services	4	3	0	7
National Aeronautics and Space Administration	12	12	9	33
National Endowment for the Humanities	4	4	0	8
National Science Foundation	23	9	0	32
Small Business Administration	1	0	2	3
Smithsonian Institution	0	8	3	11
U.S. Global Change Research Program (USGCRP)*	0	0	8	8
Total	188	127	111	426

*USGCRP is a federal program, not a department or agency. The program is mandated by Congress to coordinate federal research and investments in understanding the forces shaping the global environment, both human and natural, and their impacts on society.

Table 4. Number of direct and indirect programs by department or independent agency by status: base programs existed before the President's FY22 budget process and proposed programs were included in the President's FY22 budget.

Department or Independent Agency	Base	Proposed	Total Programs
Department of Agriculture	17	5	22
Department of Commerce	20	17	37
Department of Education	1	1	2
Department of Energy	24	4	28
Department of Health and Human Services	4	2	6
Department of Homeland Security	3	6	9
Department of Housing and Urban Development	2	1	3
Department of the Interior	12	10	22
Department of Labor	1	2	3
Department of Transportation	4	4	8
Department of Veterans Affairs	0	1	1
AmeriCorps	3	0	3
Environmental Protection Agency	24	12	36
Institute of Library and Museum Services	3	0	3
National Aeronautics and Space Administration	20	1	21
National Endowment for the Humanities	3	1	4
National Science Foundation	8	1	9
Small Business Administration	0	2	2
Smithsonian Institution	9	2	11
U.S. Global Change Research Program (USGCRP)*	8	0	8
Total	166	72	238

*USGCRP is a federal program, not a department or agency. The program is mandated by Congress to coordinate federal research and investments in understanding the forces shaping the global environment, both human and natural, and their impacts on society.

Table 5. Total elements identified in base and proposed programs that directly or indirectly support selected USG priorities by department or independent agency.

Department or Independent Agency	Total Programs	Education	Training	Public Awareness	Public Access	Public Participation	International Focused
Department of Agriculture	22	12	13	8	14	13	1
Department of Commerce	37	20	24	13	24	14	1
Department of Education	2	1	1	2	2	1	0
Department of Energy	28	15	20	6	8	5	1
Department of Health and Human Services	6	2	3	3	6	1	0
Department of Homeland Security	9	4	7	4	5	3	0
Department of Housing and Urban Development	3	0	3	0	1	1	0
Department of the Interior	22	8	14	5	7	12	1
Department of Labor	3	1	3	0	0	1	0
Department of Transportation	8	1	3	2	6	1	0
Department of Veterans Affairs	1	1	1	0	0	0	0
AmeriCorps	3	1	3	0	0	2	0
Environmental Protection Agency	36	10	20	11	18	14	1
Institute of Library and Museum Services	3	3	3	1	0	2	0
National Aeronautics and Space Administration	21	8	9	1	13	10	6
National Endowment for the Humanities	4	3	0	1	3	2	1
National Science Foundation	9	6	4	0	1	4	3
Small Business Administration	2	2	0	2	0	0	0
Smithsonian Institution	11	8	5	5	4	4	5
U.S. Global Change Research Program (USGCRP)*	8	4	3	5	7	6	4
Total	238	110	139	69	119	96	24

*USGCRP is a federal program, not a department or agency. The program is mandated by Congress to coordinate federal research and investments in understanding the forces shaping the global environment, both human and natural, and their impacts on society.

- **Climate and Environmental Justice.** Capacity-building efforts regarding climate and environmental justice across the federal government might be extensive and robust (Table 6), but their scope and reach are difficult to assess. The methodology used in this project lacks the kinds of independent review, program evaluation based on interviews with served communities, and budgetary analysis required to validate this statement. The inventory, however, does reveal centers of effort for addressing certain justice and equity issues.
 - The apparent extent and reach of this work makes a strong case for creating strategic alignment and opportunities to collaborate across the federal government and between the federal government and non-federal partners.
 - Federal programs are often challenged to meet emergent needs and provide resources for neighborhood- and community-scale climate justice, mitigation, and resilience work. Program managers are experimenting with a number of different ways to be more responsive to local community needs.
 - The largest center of effort for environmental justice appears to reside within the Environmental Protection Agency. Hands-on practice and relationship building with diverse front line communities through EPA programs suggest that the Office of Environmental Justice might serve as a resource to other federal departments and agencies.

Table 6. Intersectional issues of justice in base and proposed programs that directly or indirectly support the selected USG priorities.

Type of Program	Total Number of Programs	Programs that are gender-sensitive	Programs with a focus on equity and justice	Programs that are intergenerational	Programs with at least one cross-cutting theme
Base	166	7	60	9	37%
Proposed	72	0	50	0	69%
Total	238	7	110	9	46%

- **Criteria for Justice.** Federal programs define participant criteria, target audiences, and program beneficiaries in various ways in order to address perceived inequities.
 - The review found significantly less reference to gender and intergenerational equity than to racial, economic, ability, or Indigenous equity. Validating this finding through more comprehensive survey and interview methods will be important in future iterations of the inventory.
 - Program descriptions rarely address intersectional issues of equity.
 - A few programs attempt to overcome this challenge. For example, a grant program designed within the Agriculture department states that the “purpose of this program is to support research, education/teaching, and extension projects that increase participation by women and underrepresented minorities from rural areas in STEM” (Women and Minorities in Science, Technology, Engineering and Mathematics Field Grant Program; WAMS).
 - In this example, the program identifies the intersection of women, minorities, and rural settings in the context of STEM education and careers.
 - Additional work will be needed to determine how intersectional issues might be addressed by other programs.
 - It is possible that additional federal programs have justice goals. Naming justice goals within programs might be challenging for managers in the absence of clear mandates from political leaders. Readers should note that program-specific justice goals were included in the inventory, not overarching departmental statements about justice.
 - Programs that address environmental justice appear to be created on an ad hoc basis within the boundaries and missions of various federal offices and agencies. As the WAMS example demonstrates, increasing strategic collaboration across program designers and grantmakers might

make federal government services more coherent.

- **Categorizations.** The identified categories can be problematic.
 - Categorizations, in general, tend to reinforce existing professional silos, inhibiting multi-sectoral communication and collaboration.
 - The terms used in the inventory can lead to a narrowing of program design. The term “education,” for example, tends to be thought of as formal K-16 education rather than lifelong learning, though both fit under the definition.
 - Any such definitions are inherently cultural in nature and the meaning of the terms shifts across different professional, geographic, ethnic, and other communities.
 - Federal programs are largely designed around the perceived needs of sectors and communities. A large number of programs identified in the inventory span multiple categories and definitions. Some categorizations might be shifted with further analysis.
- **Collaboration Instead of Transmission.** Some federal programs and plans have a history of transmitting information to communities; however, many programs appear to be transitioning toward community-informed models that collaboratively generate knowledge. The validity and extent of co-development of knowledge needs to be verified, documented, and shared.
 - The inventory identifies programs that are designed to foster collaboration between federal agency personnel, scientists, decision makers, and communities.
 - Programs such as NOAA Regional Integrated Science Assessments and the NASA Applied Science Office may provide useful models for engagement and lessons learned.
- **Potentials for Cross-Department and Agency Collaboration.** Interviews revealed some key opportunities for program enhancement through collaboration across agencies.
 - In multiple cases, interviewees made strong cases that their work would be improved through collaboration. Some spoke of institutional barriers to collaboration within their agencies and across multiple departments and agencies. Those who
- participate in cross-agency programs reported that doing so improved their offerings.
- Some agencies are developing funding models that provide more sustained support for community-based activities or to move programs from innovation to scale. Agencies could share models for taking successful pilot programs to scale in order to maximize impact.
- Collaborative sharing across programs will help agencies learn about and adopt funding and engagement models. Agencies could share innovative models for providing lasting support rather than one-off and short term engagement.
- **Strategic Design for User Experience.** There appears to be substantial opportunities to create more coherent engagement with a variety of communities through strategic collaboration across federal agencies and in collaboration with user communities.
 - There appears to be an ad hoc nature to program development without coordination across multiple agencies or other offices within an agency. A more strategic approach to program funding and design might increase program efficiencies and collective impact.
 - Much of federal grantmaking appears to lack strategic alignment and planning to maximize collective impact. This is a case where greater strategic collaborations across agencies and in collaborative relationships with community partners might reveal opportunities to better align federal investments.
- **Additional Phases of Work.** An expansion of the inventory process is needed.
 - The desktop review of website text and the President’s FY22 budget proposal does not reveal the size and scope of programs, how they are designed, how specific communities are engaged in co-creation of knowledge and climate action, or how effective programs might be.
 - Proposed program budgets could not be determined using the President’s FY22 budget proposal because the budget has not yet been enacted. Additionally, the reviewers were unable to find budget information about all of the existing programs.
 - Programs will shift in scope and focus over the next few years as congressional, executive, and

departmental guidance around climate and justice take effect. A continuing inventory will map programs as they shift from “could”, to “indirectly” and “directly” supporting all-of-society climate action, providing evidence for the efficacy of federal climate and coordination strategies in real time.

Conclusions

The value of this Phase I inventory is significant. Decision-makers and program managers can see how federal efforts might fit together to serve the public in building awareness and capacity to address the climate crisis, where gaps exist (such as programs that promote gender and intergenerational equity), and where opportunities for greater coordination, coherence, and collective impact might be found. The preliminary nature of this inventory, however, strongly suggests that further work is needed to further refine the results and create a more robust view of such programs across the federal government.

This project also reveals an interest across agencies in more collaboration and strategic alignment. As the Phase I inventory and interviews suggest, there is significant potential for the federal government to increase its collective impact in building and mobilizing society’s capacity to respond equitably and effectively to the climate crisis. Increasing multi-partner collaboration and more strategic design of programs may require new collaborative incentives, professional learning, agency guidelines, and supporting infrastructure. Increasing coherence between related climate empowerment programs tends to amplify synergistic benefits for all involved.⁴

A coherent whole-of-government effort to support whole-of-society responses to the climate and justice crises requires innovations in strategic collaboration across the government. The Phase 1 Inventory is a first step towards mapping out a whole-of-government strategy, yet there is much work to be done to fully validate its findings with the identified Department and Agency programs and to include additional programs and program attributes that have yet to be documented.

⁴ Penuel, W. R., Bell, P., Pierre, S. D., Hopkins, M., & Farrell, C. C. (2018). Building a networked improvement community to promote equitable, coherent systems of science education: How a state-level team can support district-level change efforts. *Editorial Review Board*, 13(1), 30-38.

Appendices

Appendix A: Detailed Methodology

This inventory includes policies, programs, and plans across the 12 cabinet level departments and 9 independent federal agencies identified by Frank Niepold, an Action for Climate Empowerment (ACE) National Focal Point for the United States. Federal partners, interns, and contractors worked together to develop and implement this methodology. The 9 departments and agencies identified by federal partners as most likely to include ACE related work were inventoried by a research team consisting of three 2021 William M. Lapenta NOAA Student Internship Program interns from the NOAA Climate Program Office. The remaining departments were inventoried by a contractor. This process was guided by the report by UNESCO and UNFCCC which shares recommendations for accelerating solutions through education, training and public awareness.⁵

The federal Climate Education, Engagement, Workforce Development and Training Programs inventory includes federal program details, whether the program includes selected elements: education, training, public awareness, public access to information, public participation, or international cooperation, and whether it includes cross-cutting themes identified as critical to just climate action by the Biden Administration: gender sensitivity, intergenerational equity, and equity and justice for marginalized people.

This methodology is designed to be iterative, as the inventory will need to be updated either annually or on a rolling basis as new relevant programs are added and existing programs pivot to include more elements and themes.

This methodology will not be able to cover the full breadth and diversity of climate education, engagement, and coordination programs across the U.S. government. Data collection relies on publicly available program language; programs may well be engaging on selected elements but use different language than the methodology called for or simply neglect to mention them in how they describe themselves and their work on websites or other accessible information. The main source of information is the 2022

⁵ UNESCO and UNFCCC. (2016). *Action for Empowerment: Guidelines for Accelerating Solutions Through Education, Training and Public Awareness*. Paris, France: United Nations Educational, Scientific and Cultural Organization (UNESCO). https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/action_for_climate_empowerment_guidelines.pdf.

President's Budget, which does not include the many programs run by Departments and agencies funded by discretionary or appropriated funds. The budget will also be amended by Congress, potentially cutting, adding, or re-focusing programs, before being passed into law. The main supplementary data source, program websites, may not have been fully updated since the last administration, which discouraged programs and language related to climate and public engagement in certain agencies and departments.

As the inventory is updated, climate empowerment language becomes more standardized, and program leads start working more collaboratively, blind spots will be more comprehensively addressed. The gaps in this methodology make it imperative that the inventory is regularly updated and well maintained.

Inventory Methodology

- Create Inventory Spreadsheet.** The federal leads and contractors set up the inventory spreadsheet using Google Sheets. The spreadsheet was collaboratively created at the beginning of the process and elements were added at the beginning of the research to better fit the data and scope of the project. When a column or designation was added, the research team and contractor ensured that previously inventoried departments and agencies were re-evaluated using the new criteria.
- Collaboratively set definitions of selected elements.** Definitions were developed by the entire team at the beginning of the inventory to guide identification of selected elements and categorization of programs. The definitions were based on definitions from the UNFCCC and adapted to the national context in the United States by including language from definitions used by federal agencies as well as academic work around climate communication, training, and life-long learning. At the end of the inventory process, definitions were updated to better reflect U.S. priorities in practice in the U.S. context. First and final definitions are available in Appendix B.
- Identify Department and Independent Agency Candidates and Develop Schedule for Analysis.** Federal partners identified the departments and independent agencies that were most likely to contain climate capacity building and engagement programs and created an agenda to guide research, review, and analysis of the departments.

- **Identify programs that may contain relevant elements.** To begin research on a Department or Agency, potentially relevant programs were first identified by searching through each agency’s section of the President’s Budget for Fiscal Year 2022 using the keyword search function. Additional programs were identified using the same keywords to search through the department or agency’s websites.
 - Keyword search terms: Climate, education, jobs, training, workforce, outreach, access to information, international, youth, gender, justice, equity, 14008 (referencing E.O. 14008)
- **Desktop Research.** After programs were identified, they were divided between researchers. The primary researcher for each program started with either the budget description or program website to gain an understanding of the program as a whole. If both a budget description and program website were available, both were used to identify elements and themes of the program. When the presence of an element or theme was confirmed, text supporting the determination was copied and pasted into the spreadsheet with a link to the source of the information. This kept decisions transparent, reproducible, and as objective as possible. Audience, focus, and cross-cutting themes were noted, and program managers were included if available. Particularly relevant or unique programs were marked for follow-up interviews. A more in-depth description of the spreadsheet and types of data collected can be found in Appendix C.
 - Occasionally, when a budget noted robust proposed changes to a base program, the program was recorded in two rows: one for the base program and one for the proposed changes to the program. When only the proposed portion of the program was focused on climate or included relevant elements, only the proposed portion was included, and justifying language was exclusively pulled from the budget proposal to ensure justifications were up-to-date.
 - At times, program language was unclear or did not exactly match the element or theme definitions. In these cases, the primary researcher would mark the cell with a “maybe” tag and describe their questions in the “Reviewer(s)” column for discussion.
- **Program Review.** After a researcher finished their primary programs, they reviewed other researchers’ programs. After they completed the review, they would record their name, opinions or answers to questions, and justifications for any changes in the “Reviewer(s)” column, marking that the program had been reviewed.
- **Department-level Review.** At the end of research and review on a department or agency, the research team came together in a virtual meeting to review and make determinations on any outstanding questions or “maybe” tagged elements and themes. If the team couldn’t come to consensus, they left all notes related to the question for the Quality Control process.
- **Quality Control and Proofreading.** After the research team finished the Department-level review, a contractor who was not involved in the research went through all of the programs, resolving any remaining questions or “maybe” tags alone or with the input of the full team including federal partners if the problem was complex. Once consensus was reached around all questions and tags, the contractor proofread inventory entries, deleted all reviewer comments, and standardized formatting across the entire spreadsheet.
- **Interviews.** Potential programs of interest for interviews were determined at a meeting of contractors and federal staff and during the desktop research phase by the research team. Information about the programs of interest to interview was copied in abbreviated form into another sheet of the Inventory Spreadsheet. Decisions on which programs to interview were made based on this sheet, ensuring that the programs selected for interviews covered a wide range of relevant elements, cross-cutting themes, audiences, departments, and agencies. The semi-structured interview protocol is included in Appendix D.

Appendix B: Element Definitions

Definitions of each selected element were collaboratively developed by the entire team at the beginning of the inventory to guide identification of relevant elements and categorization of programs. The first definitions were based on definitions from a report by UNESCO and the UNFCCC⁶ which shares recommendations *for accelerating solutions through education, training and public awareness* and adapted to the U.S. federal context by including language from definitions used by federal agencies as well as new academic work around climate communication, training, and life-long learning. At the end of the inventory, the final definitions were created by the research team to better reflect U.S. priorities in practice in the U.S. context. These definitions will continue to be refined as relevant work in the U.S. advances. Differences between definitions are **bolded**.

Education

First Definition: Education seeks to achieve profound, long-term changes in understanding, particularly among young people. It involves developing educational curricula, training of trainers and teachers and adequate pedagogies. The results of a successful programme would ultimately be a population whose deep-seated appreciation of the climate challenge leads to greater national action and commitment.

Final Definition: Education seeks to **enhance and develop individuals' understanding, skills and motivation to build just climate solutions. Education related to climate encompasses both teaching and learning that seeks to achieve profound sustainable changes in individual and community understanding, including cultural knowledge, place-based knowledge, and other non-curricular methods of knowledge transmission.** The results of a successful program would ultimately be a population **and workforce** whose deep-seated **understanding and appreciation for climate science, climate impacts, and civic action** leads to greater **climate action and commitment at all levels of society.**

Training

First Definition: Training programmes seek to spread specific practical skills that can have an immediate practical application. Examples include the ability to gather and interpret climate data, conduct inventories of national emissions, and identify climate-friendly technologies.

⁶ UNESCO and UNFCCC. (2016). *Action for Empowerment: Guidelines for Accelerating Solutions Through Education, Training and Public Awareness*. Paris, France: United Nations Educational, Scientific and Cultural Organization (UNESCO). https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/action_for_climate_empowerment_guidelines.pdf.

Training is about learning by doing – individuals, communities and organizations can all benefit from ongoing learning.

Final Definition: Training programs seek to **develop** specific skills that have a **practical application that build capacity or the workforce to address climate impacts.** Examples include the ability to gather, interpret, **and communicate** climate information; conduct inventories of emissions; and identify and deploy climate-friendly **solutions.** Training is about learning by doing.

Public Awareness

First Definition: Many governments and non-governmental organizations (NGOs), intergovernmental organizations and UN agencies have already launched major public awareness programmes. But there remains an enormous unmet need for more outreach. Creating a successful outreach programme that truly changes behaviour involves targeted and systematic communications.

Final Definition: **Public awareness involves outreach programs that improve climate understanding and promote cultural and behavioral changes through targeted, relevant, dynamic, and systematic messaging.**

Public Access to Information

First Definition: Programmes to engage citizens and CSOs in addressing climate change can be improved by ensuring that information is freely available. This is crucial in order to develop and implement effective policies and to engage people actively in implementing these policies. Technologies such as databases and the internet facilitate the provision of climate information, data and statistics to all citizens.

Final Definition: **Access to information seeks to make climate information freely accessible and usable to individuals, communities and organizations. It encompasses databases and websites that provide climate information, data, and statistics, and programs and tools that make that information more accessible to laypeople.**

Public Participation

First Definition: By ensuring that people can participate effectively in climate change decision-making and implement climate mitigation and adaptation activities, governments should seek to integrate civil society perspectives and mobilize the general public. In some places, this will prompt profound changes to how political leaders and civil servants are accustomed to working and encourage people to be more attentive to policy-making.

Final Definition: **Public participation provides the opportunity to gather input from non-climate-focused**

audiences and integrates varied perspectives, including those in underrepresented communities, in climate change decision-making and implementation of projects related to climate mitigation and adaptation. It is a process that directly engages communities affected by the project or solution in decision-making.

International Focused

First Definition: International cooperation and exchange can play a major role in strengthening ACE efforts. Many governments and relevant stakeholders need access to expertise and financial and technical resources so they can develop their own climate change programmes. All countries can benefit from sharing success stories, exchanging personnel and strengthening institutional capacity.

Final Definition: International focused programs aim to enhance collaboration and educational and training efforts through a range of strategies to build knowledge, institutional capacity, share lessons learned, and develop best practices. It addresses programs in which the U.S. provides or receives access to expertise, financial, and technical resources.

Appendix C: Description of the Inventory Spreadsheet

Column	Description and Notes
Primary Researcher	The name of the person who carried out the first round of research on the program.
Reviewer(s)	The name(s) of the people who reviewed the program after the primary researcher, if applicable.
Department	The federal department, if applicable.
Agency	The independent agency or agency of the department, which can also be called office, directorate, administration, or other names depending on the department.
Office Name	The name of the office that houses the program, if available.
Program Name	The name of the program, including the acronym if applicable.
Program Description	A description of the program, copied and pasted from the budget or program website, with a link to the source of the information.
Proposed (P) or Base (B)	The status of the program. <i>Base:</i> the program is currently running (i.e. existed before the 2022 budget was written). <i>Proposed:</i> a new program in the FY22 budget or a major expansion to an existing program proposed in the 2022 budget. Programs with significant relevant expansions in the 2022 budget may be included on 2 separate lines describing their base and proposed aspects, or only the proposed aspect may be included if the program was not previously related.
Directly supports Goals(D), Indirectly supports Goals(I), or Could support Goals(C)	How the program contributes to selected goals. <i>Direct:</i> Programs that directly serve the overarching goals identified by including provisions that directly work to empower members of society to engage in climate action. Individual programs may work towards empowering specific sectors of the public, such as land managers, workers in a specific field, youth, or local government. <i>Indirect:</i> Programs that indirectly serve the overarching goals identified, e.g. programs that increase climate/science literacy or quality or access to climate/scientific knowledge without empowering people to take concrete actions <i>Could:</i> Programs that do not currently explicitly focus on climate or empowerment towards climate action but or whose program descriptions either lend themselves to empowering the public towards climate action in the future or work towards STEM or climate more broadly.
Program Lead (Name)	The name of the program manager or closest available director, identified via program websites, department staff directories, or department organization charts.
Program Lead (Title)	The title of the program lead.
Program Lead (Email)	The email of the program lead, if available.

Program Website	A link to the program website.
Selected Element: X	Describes if the element is present. Options: Yes/No/Maybe.
Selected Element X Justification	Copy and pasted language from the budget or program website that supports the presence of a selected element (a Yes) or may support the presence of selected element (a Maybe).
Audience	The audience(s) of the program. Options (can be multiple): Youth, K-12, Higher ed, BIPOC, Women and girls, Private sector, Community, Government, Adult, Nonprofit, or Cultural institutions.
Focus	The scope(s) of the program. Options (can be multiple): International, National, Regional, State, Coastal, Rural, Urban, or Federally Recognized Indian Tribal Governments.
Cross-cutting theme: Gender-sensitive	Language that supports the designation that the program is designed to promote gender equality and women’s representation in climate issues and solutions.
Cross-cutting theme: Equity and justice	Language that supports the designation that the program has a focus on equity for underrepresented audiences and communities.
Cross-cutting theme: Intergenerational	Language that supports the designation that the program is designed to enhance collaboration between different age groups and/or promote young people’s involvement in climate advocacy and solutions.
Potential Interviewee	Designates programs of interest for interviews.

Requests for access to the Inventory of Federal Climate Education, Engagement, Workforce Development and Training Programs contact Frank Niepold, frank.niepold@noaa.gov.

Appendix D: Semi-Structured Interview Protocol

Confirm you have this information accurate:

Department or Agency:

Program:

Interviewed Person's Name:

Interviewed Person's Title:

Date of Interview:

Interviewer:

Prior to Interview Meeting

- Email these documents to the interviewee
 - Definitions of climate and climate-justice related federal public awareness, learning, and capacity building programs Elements⁷
 - Row from the Inventory Spreadsheet about their program
 - Google form⁸ about which elements to focus on

Points to touch on during introductory remarks

- Thank you for making yourself available for this conversation to help inform this work.
- This summer, we are reviewing all federal programs as part of the work towards understanding the federal education, training, public awareness, public participation and public access to information supporting climate mitigation, adaptation, and climate justice activities. This will help us accelerate progress by better aligning federal efforts.
- This inventory is being conducted:
 - To support the CAR report
 - To facilitate awareness and collaborative opportunities
- The purpose of these interviews is to:
 - Validate the inventory - both what we collected and the accuracy of the process
 - Explore program challenges and current and future plans
 - Explore interest in wider strategic coordinations, alignment and impact
 - Explore additional programs that should be part of this inventory
- A comprehensive review of relevant programs from all federal agencies is being compiled into an initial inventory.
- We are interviewing selected programs to provide more detailed examples of what this work looks like.
- This interview will take up to 90 minutes and we may ask for an additional hour to follow up on further questions.
- This interview is being recorded for additional note taking detail. This recording will not be publicly available. It is only for use in the short term as we compile our inventory and recordings will be destroyed after the report is finalized. We also have a note taker here to try to capture detail as we talk. Do you consent to being recorded?
- We will generalize overarching themes and thoughts in our reporting. We might also specifically name some things about your agency/program in our reporting. If we use a direct quote in our reporting, we'll loop back with you for your permission.

[START RECORDING]

Can you please confirm the information we have about your program and agency? [see above]

U.S. Climate Efforts

Here is a document of the six elements focused on in the inventory of climate focused programs: education, training, public participation, public awareness, public access to information, and international focus. The element definitions are used in the

⁷ See Appendix B first definitions.

⁸ This contained a link to a Google Form that asked the interviewee what element definitions applied to their program.

federal Climate Education, Engagement, Workforce Development and Training Programs Inventory⁹ to organize analysis of US domestic climate efforts.

- Do you need any overall clarifications before we start?
- Given these climate resources, which of the following elements do you think are present in your program? (Answers are based on external review of publicly available information. See link to the findings here.¹⁰)
 - education
 - training
 - public awareness
 - public access to information
 - public participation
 - international focus

Promote and Facilitate Capacity

- Background
 - Federal Climate Education, Engagement, Workforce Development and Training Programs Inventory definitions for education, training, public awareness, public access to information, and public participation.
- How do you think your program promotes and facilitates capacity to engage in climate action?
 - Please describe any climate capacity building activity your program is engaged in. [prompt from desk review notes if nothing is named]
 - Who in your program is involved in this work?
 - For whom is this work designed?
 - What challenges or opportunities do you think your program faces with climate capacity building work?
 - How does your work connect to justice as laid out in Executive Order 14008?¹¹
- Brightspot:
 - Tell us about a bright spot/effective practice use case related to your program/approach, who, what, when and how...and why it is uniquely situated to illustrate the impact/importance of your program. (Innovation, Audience Partnering)
- Future Work
 - Is there climate capacity building activity that you think your program should be engaged in but is not currently doing?
 - Has your agency/program or congress proposed any new work related to climate capacity building?
 - Do you see your work aligning with or improving through coordination with other federal or non-federal related work?

International Cooperation

- Background
 - Federal Climate Education, Engagement, Workforce Development and Training Programs Inventory definition for international cooperation¹²
- Does your program engage in any internationally focused work around education, training and public awareness?
 - [prompt from desk review notes if nothing is named]
 - What is the activity?
 - Who in your program is involved in it?
 - For whom is this work designed?
 - Why do you think it is an international cooperation around education, training and public awareness activity?

⁹ See Appendix B’s first definitions.

¹⁰ This was linked to a copy of their program’s row in the Inventory Spreadsheet.

¹¹ White House. (2021). *Executive Order 14008 of January 27, 2021, Executive Order on Tackling the Climate Crisis at Home and Abroad*. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>

¹² See International Cooperation’s first definition in Appendix B.

- What challenges or opportunities do you think your program faces with international cooperation around education, training and public awareness?
- How does your work connect to justice as laid out in Executive Order 14008?
- Future Work
 - Is there international cooperation around education, training and public awareness that you think your program should be engaged in but is not currently doing?
 - Has your program proposed any new work related to international cooperation around education, training and public awareness or other climate capacity building activity?
 - Do you see your work aligning with or improving through coordination with other federal or non-federal related work?

Last Thoughts

- Do you have any questions you would like to ask us?
- Are there any additional thoughts or information you'd like to tell us about?
- What other programs do you think are strong examples of promoting and facilitating capacity to engage in climate action?

This concludes our interview.

- We will be synthesizing all of the work on the Federal Climate Education, Engagement, Workforce Development and Training Programs Inventory, including these interviews, into a report that will be available in the fall. We will plan to send that around to all those interviewed.
- Thank you for your time to participate in this part of the federal Climate Education, Engagement, Workforce Development and Training Programs Inventory.
- If you have any remaining questions, please feel free to reach out to Frank Niepold, NOAA Senior Climate Education Program Manager and Coordinator

[STOP RECORDING]

Appendix E: Example Impact of Interviews on Program Classification

This table shows how an interview with the director of the National Climate Assessment confirmed and added to the findings from the desktop research. Columns with changes are colored light gray. Notably, every interview validated the desktop research and several added the presence of elements, audiences, or cross-cutting themes. No interview showed that any incorrect elements were identified during the desktop research and only additional elements were added or validated.

Spreadsheet Column	Desktop Research Results	Interview Refinement and Validation
Department	Department of Commerce	
Agency	National Oceanic and Atmospheric Administration	U.S. Global Change Research Program (USGCRP)
Office	Climate Program Office	
Program Name	National Climate Assessment	National Climate Assessment
Program Description	"The National Climate Assessment (NCA) assesses the science of climate change and variability and its impacts across the United States, now and throughout this century." (source: https://nca2018.globalchange.gov/)	"The National Climate Assessment (NCA) assesses the science of climate change and variability and its impacts across the United States, now and throughout this century." (source: https://nca2018.globalchange.gov/)
Directly/Indirectly supports Goal/Could support Goal	Direct	Direct
Proposed/Base (P or B)	Base	Base
Selected Element: Education	No	Yes
Selected Element: Education		NCA 5 is intended to be created for educators to use. Teachers have said that they use the report and associated documents to teach classes from middle school to college. (Interview)
Selected Element: Training	No	Yes
Selected Element: Training		The NCA team is starting to work with other countries (Canada and the UK) to share best practices and Latin American and Caribbean countries to train their federal staff on conducting regular national climate assessments. (Interview)
Selected Element: Public Awareness	No	Yes
Selected Element: Public Awareness		In the congressional mandate. NCAs are intended to inform the nation and the world. (Interview)
Selected Element: Public Access	Yes	Yes

Selected Element: Public Access	"This assessment was written to help inform decision-makers, utility and natural resource managers, public health officials, emergency planners, and other stakeholders by providing a thorough examination of the effects of climate change on the United States. " (source: https://nca2018.globalchange.gov/chapter/front-matter-about)	"This assessment was written to help inform decision-makers, utility and natural resource managers, public health officials, emergency planners, and other stakeholders by providing a thorough examination of the effects of climate change on the United States. " (source: https://nca2018.globalchange.gov/chapter/front-matter-about)
Selected Element: Public Participation	Yes	Yes
Selected Element: Public Participation	"A team of more than 300 federal and non-federal experts —including individuals from federal, state, and local governments, tribes and Indigenous communities, national laboratories, universities, and the private sector—volunteered their time to produce the assessment, with input from external stakeholders at each stage of the process. A series of regional engagement workshops reached more than 1,000 individuals in over 40 cities, while listening sessions, webinars, and public comment periods provided valuable input to the authors. Participants included decision-makers from the public and private sectors, resource and environmental managers, scientists, educators, representatives from businesses and nongovernmental organizations, and the interested public." (source: https://nca2018.globalchange.gov/chapter/front-matter-about/)	"A team of more than 300 federal and non-federal experts —including individuals from federal, state, and local governments, tribes and Indigenous communities, national laboratories, universities, and the private sector—volunteered their time to produce the assessment, with input from external stakeholders at each stage of the process. A series of regional engagement workshops reached more than 1,000 individuals in over 40 cities, while listening sessions, webinars, and public comment periods provided valuable input to the authors. Participants included decision-makers from the public and private sectors, resource and environmental managers, scientists, educators, representatives from businesses and nongovernmental organizations, and the interested public." (source: https://nca2018.globalchange.gov/chapter/front-matter-about/)
Selected Element: International Coordination	No	Yes
Selected Element: International Coordination		The NCA team is starting to work with Canada and the UK to share best practices and Latin American and Caribbean countries to train their federal staff on conducting regular national climate assessments. (Interview)
Audience	Private Sector; Adult; Nonprofit; Government	Private Sector; Adult; Nonprofit; Government, K-12, Higher-ed
Focus	Urban; Rural; State; US Territories; Regional	Urban; Rural; State; US Territories; Regional
Gender-sensitive	No	Yes (Interview)
Equity and justice	No	Yes (Interview)
Intergenerational	No	Yes (Interview)

