

# MEASURING WHAT MATTERS

TOWARDS A MORE COMPREHENSIVE AND  
EQUITABLE EVALUATION OF BENEFITS

*November 2022 Summit Proceedings*



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Sears Point, a wetlands restoration project  
featuring nature-based solutions  
Photo by Stephen Joseph



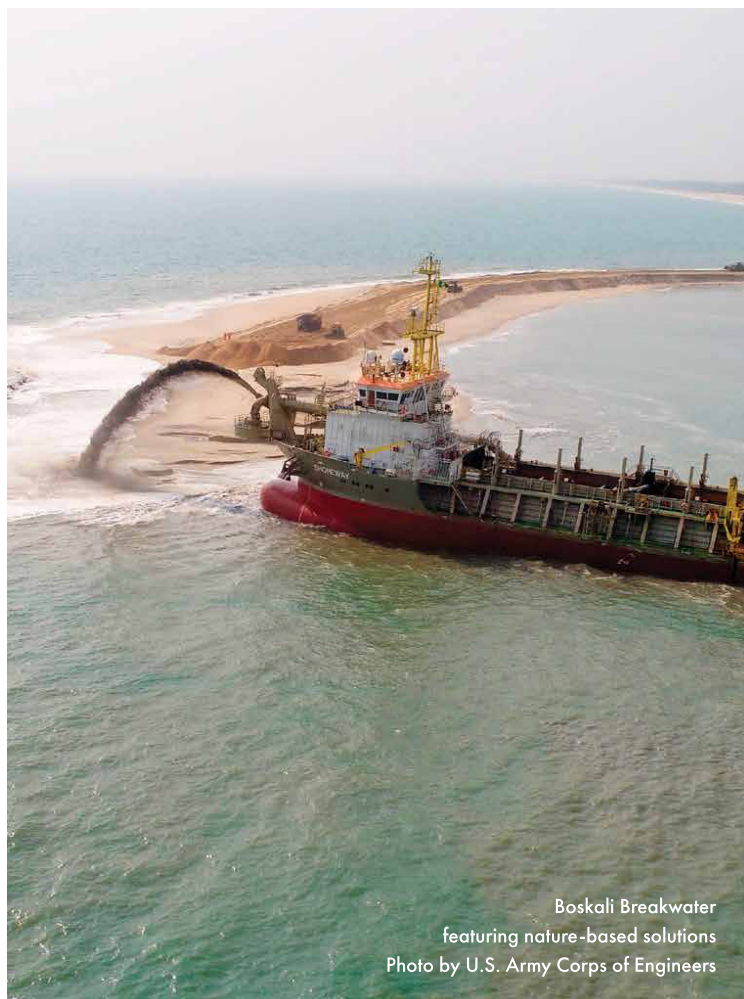
# MEASURING WHAT MATTERS

## TOWARDS A MORE COMPREHENSIVE AND EQUITABLE EVALUATION OF BENEFITS

Ongoing work to incorporate nature-based solutions into civil works and resiliency projects is gaining momentum according to a diverse group of participants at the “Measuring What Matters” Summit held on Nov. 30, 2022, in Washington, D.C.

More than 1,000 people attended the Summit, either virtually or in person, bringing together government, nonprofit, academic, and private sector collaborators to share recent progress and identify key next steps for the comprehensive evaluation and planning of civil works projects. The Summit was the culmination of a two-year applied policy research led by the U.S. Army Corps of Engineers (USACE) Engineering With Nature (EWN) program and carried out by The Water Institute.

Currently, benefit-cost analysis (BCA), as applied by the USACE, is tuned to evaluating the national economic value of projects. However, the science of quantifying and comparing the economic, environmental, and social benefits and costs of water resources projects has advanced significantly in recent years. Further, the Water Resources Development Act of 2020 § 110 directs USACE to implement the Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies (PR&G), which govern how federal agencies evaluate proposed water resource development projects. With the updated PR&G, studies will need to consider a broader suite of variables that lead to sustainable, resilient, and enduring investments, including economic, social, and environmental factors.



Boskalis Breakwater  
featuring nature-based solutions  
Photo by U.S. Army Corps of Engineers

The Summit focused on how balancing across multiple goals and applying improved methods, may lead to a more comprehensive and equitable assessment of how integrated water resources projects – including projects that integrate conventional engineering and nature-based solutions – add value to communities across the nation in ways that create resilience. The Summit and this larger body of work reflect commitments set forth by the President in his “Earth Day Executive Order” (EO 14072) regarding the integration of nature-based solutions and which specifically tasks federal agencies to develop methods and policies leading to greater use of nature-based solutions across the federal government. Furthermore, a variety of Summit participants underscored the importance of modernizing the BCA in support of the President’s Justice40 initiative which requires that 40 percent of federal investments benefit disadvantaged communities.

The Summit follows and builds on a workshop held earlier in the year, “Benefits, Applications and Opportunities of Natural Infrastructure,” organized and conducted by the National Academies of Science, Engineering and Medicine and held at the University of Georgia.

# OPENING AND KEYNOTE REMARKS

Opening remarks from Marcia McNutt, President, National Academy of Sciences (NAS); Michael L. Connor, Assistant Secretary, U.S. Army (Civil Works); Richard Spinrad, Administrator, National Oceanic and Atmospheric Administration (NOAA); and Brenda Mallory, Chair, White House Council on Environmental Quality (CEQ), underscored the federal perspective and commitment to better measuring and integrating nature-based solutions into civil works projects.

“We know that nature-based solutions not only make our infrastructure more resilient to natural hazards, but by being more resilient, natural infrastructure can also lessen financial burdens from incredibly thorny problems such as climate change,” said Marcia McNutt, President, National Academy of Sciences.



Marcia McNutt  
Photo by Risdon Photography

“We all believe economically there is an efficiency to integrate nature-based features, the replenishment of nature itself can help alleviate long-term operation and maintenance and we’ve got to demonstrate that and take the next steps,” said Michael L. Connor, Assistant Secretary, U.S. Army (Civil Works).

***“Looking more broadly at the work we do in the natural resources field, trying to advance from an economic perspective, a social perspective, and an environmental perspective the value of the projects that we undertake and the programs we undertake, that’s incredibly powerful.”***

Michael L. Connor, Assistant Secretary,  
U.S. Army (Civil Works)



Photo by Risdon Photography





Richard Spinrad  
Photo by Risdon Photography

Another overarching Summit theme reflected the manner in which nature-based solutions can be used to increase equity.

“We at NOAA have put a high premium on equity, both in terms of the internal focus and external focus of the agency,” said Richard Spinrad, Administrator, NOAA. “For us, equity means a lot of things. It means, for example, expanding our network of partners to ensure that vulnerable and underserved communities

are getting the products and services that they need. It also means co-design. All too often in the past, government has come in and said, ‘here, we’ve found what you need.’”

Opening remarks underlined the policy and financial commitment of the White House and across federal agencies to better measure and apply nature-based solutions in civil works, infrastructure, and other projects across the country.

“What we’re trying to achieve here is not just to have a set of policies that are in effect for the next four years or eight years, but really a set of policies that get imbedded in the way we think about how we do this work,” said Brenda Mallory, Chair, White House Council on Environmental Quality.

Online comments ranged from asking about the significance of discount rates in evaluating benefits of nature-based solutions, how benefits are weighed in relation to each other, and how environmental justice principals will be incorporated into project evaluations.



Left to Right, Brenda Mallory, Michael L. Connor, and Justin Ehrenwerth  
Photo by Risdon Photography



# BENEFITS EVALUATION RESEARCH

USACE Brigadier General Gerald Galloway (NAE), U.S. Army (Retired), presented a brief history of how USACE has been charged with evaluating projects over time leading to the current methods on broad costs and benefits.

From the early 1900s to the most recent 2020 Water Resources Development Act (WRDA), there have been multiple policies, rules, and regulations trying to determine the best way to evaluate civil works projects in the United States. Over the years, consideration of the economy and navigation were joined with a recognition that social and environmental benefits needed to be valued as well. In the most recent iteration of this evolution, the 2020 WRDA reinforces and highlights the need for a broader benefit analysis.

“We’re not there yet, but from what you’ve heard today on the stage from Chairman Mallory and Assistant Secretary Connor, they are moving in that direction,” Galloway said.

The science of monetizing environmental and social benefits has advanced to the point that these approaches can directly inform federal policy and practice. Although not every benefit can be measured in every instance, tools like social return on investment employ well-established economic, accounting, and social science research allow for a more robust benefit calculation beyond property values.

“I’m feeling quite positive about our collective ability to innovate in this important area of work of advancing nature-based solutions to deliver successful projects that our communities both need and deserve,” said Todd Bridges, Senior Research Scientist for Environmental Science & National Lead for EWN, USACE. “I would suggest that we first recognize that projects, particularly nature-based solutions, can provide a diversity of engineering, economic, environmental, and social benefits.”



Jordan Fischbach, Director of Planning and Policy Research with The Water Institute, gave a presentation on the two-year policy research their team has been doing around improving the evaluation of nature-based solutions in USACE programs. The work started by looking at how projects have previously been evaluated in USACE planning studies and then examined what steps could be taken to better consider economic, environmental, and social benefits.

Working in collaboration with senior USACE personnel, The Water Institute team presented its work which included identifying and evaluating a number of completed planning studies to determine opportunities, ways, and means for further quantifying the environmental and social costs and benefits of proposed nature-based solutions. This work includes factors that may have contributed to prioritization of conventional over natural infrastructure as well as benefits that may not have been fully captured by the current approach.

The team identified 150 projects to screen for more detailed study. The study team found that, very often, the process of study scoping within specific mission areas (for example, focused only on the authorized purpose) can limit the consideration of nature-based solutions. In many cases, NBS options tend to be excluded early in the planning process.

***“When it comes to nature-based solutions, they’re critical for reducing risk for many types of hazards, whether it’s flooding, extreme heat, drought. So for us at FEMA it’s been something we’ve been investing a lot of energy in and working with partners (federal and others).”***

**Victoria Salinas, Assistant Administrator for Resilience,  
Federal Emergency Management Agency (FEMA)**



Photo from FEMA.gov

The study team worked with Corps experts to identify six case studies that considered NBS during alternative formulation or evaluation, carried NBS through a significant portion of the process, and had strong local sponsor interest in implementing NBS. Updated evaluation methods were then applied to each of these six projects to look for a wider range of benefits: environmental, economic development, floodplain management, public safety, environmental justice, and a watershed approach.

“We are in the final stages of this initial study,” Fischbach said. “Our study team will be conducting additional analysis using the same set of six case studies to specifically consider social outcomes and equity as part of the overall study and BCA analysis.” Building off this work, The Water Institute has also been tasked to develop a practical implementation guidance for USACE.

Online comments included questions about how benefit standards translate from federal to state application and how environmental justice principals will be incorporated into project evaluations.

## PRELIMINARY RECOMMENDATIONS FROM POLICY RESEARCH AND FUTURE DIRECTIONS OF NATURE-BASED SOLUTIONS FOR USACE PROGRAMS



Use integrated, multi-objective approach to scope planning studies



Formulate integrated alternatives to provide benefits or co-benefits across all PR&G guiding principles and to different communities of interest



Evaluate alternatives with metrics from across all PR&G guiding principles and communities of interest



Develop USACE guidance, resources, and tools for monetizing a broader range of benefits



Apply transparent multi-criteria decision analysis as the primary approach for alternative ranking and selection



# FEDERAL AGENCIES PANEL

The federal agency panel included Robyn Colosimo, Director for Policy and Legislation to the Assistant Secretary of the Army Civil Works; Victoria Salinas, Assistant Administrator for Resilience, Federal Emergency Management Agency (FEMA); Michael Brain, Deputy Commissioner, Bureau of Reclamation (USBR); Deborah Loomis, Senior Advisor for Climate Change to the Secretary, Department of the Navy; Nicole LeBoeuf, Assistant Administrator, National Ocean Service, NOAA; and Zach Schafer, Senior Advisor, Office of Water, Environmental Protection Agency (EPA).

Speakers discussed how they are building capacity internally and externally as well as creating policy and rule changes that will make nature-based solutions easier and more equitable to develop and implement.

“When it comes to nature-based solutions, they’re critical for reducing risk for many types of hazards, whether it’s flooding, extreme heat, drought. So, for us at FEMA it’s been something we’ve been investing a lot of energy in and working with partners (federal and others),” Salinas said. While there is a demand for nature-based projects, FEMA found that the way they were conducting the BCA made projects ineligible for funding. As a result, the agency worked with the White House Office of Management and Budget to change guidance for some of FEMA’s biggest programs to allow more nature-based projects to be eligible for funding.

Challenges have existed across federal agencies, especially for USACE, in having policies in place that allow for a more holistic consideration of project benefits. However, it was announced at the Summit that USACE will begin a rule-making process in 2023 to foundationally change the manner in which USACE evaluates and justifies projects, including nature-based solutions, moving forward.

"We now have this great policy window before us to actually get across the finish line this idea of a multi-attribute shift away from maximizing net economic benefits and shifting to the public benefits where we strive to maximize multiple attributes: economic, environmental, and social," Colosimo said. The rulemaking would incorporate the Updated Principles, Requirements, and Guidelines (PR&G) as required by the 2020 Water Resources Development Act.

Online comments submitted during the summit included questions about how new ways of BCA would be adopted, how they could be implemented post disaster for better adaptation, and how will cross-agency adoption of nature-based solution strategies move forward.



Jeckyll, Georgia  
featuring nature-based solutions  
Photo by U.S. Army Corps of Engineers

## STATE & LOCAL PANEL

The state and local panelists included Dale Morris, Chief Resilience Officer, City of Charleston, South Carolina; Laura Hollender, Executive Policy Advisor and Attorney, California Department of Water Resources; Jennifer Shanahan, Senior Planner, City of Fort Collins, Colorado; Karen Bishop, Senior Supervisor, San Antonio River Authority; and Lakesha Hart, Director of State Planning, State of Louisiana.

***"California is very supportive of nature-based solutions all the way to our Governor who two years ago issued an executive order encouraging the use of nature-based solutions as a climate resiliency tool."***

Laura Hollender, Executive Policy Advisor and Attorney, California Department of Water



The challenges faced by local communities include multiple hazards and the solution to these challenges often involve the need for a federal/local partnership through a non-federal sponsorship. Within these partnerships, many communities are asking for, and in some cases demanding, nature-based solutions that can work in concert with traditional infrastructure. For example, in Charleston, S.C. the city faces multiple flood threats from river, storm surge, and tidal floods, but balked at the idea of having a wall built around the city for protection. Instead, the city is working with private, public, and other partners to design hybrid infrastructure that include nature-based features that can help address flooding challenges while still maintaining community identity.



"We have spaces for nature-based features and for a hybrid solution," Morris said. "There is no doubt in my mind that gray infrastructure in some of these places is not going to work, it won't pass the BCA, so we need hybrid, and we think we can do a lot of good things. We in Charleston need and want to innovate and we need a federal partner to innovate with us and we want that to be the Army Corps of Engineers."

Away from the coast, in the City of Fort Collins, Colorado the bigger challenges are water management and a need for river restoration.

"We're working more and more to ensure a multitude of benefits for our community with this landscape," Shanahan said. In order to achieve multiple benefits from a project, it is necessary to work across departments and disciplines that help to bring together the gray and nature-based features for a more resilient project.

Online comments included questions about how equity is blended into project design, how private sector can support nature-based solution objectives, and what federal or state laws needed to be changed to enable more nature-based solution investment.



# PRIVATE SECTOR/NGO PERSPECTIVES PANEL

The private sector/NGO perspective panel included Rebecca Powers, Program Officer, Walton Family Foundation; Sarah Murdock, Director, U.S. Climate Resilience and Water Policy, the Nature Conservancy; Kari Mavian, Director of Senior Government Affairs, Dow;

“There is a strong business case for investing in nature-based solutions. Since 2015, Dow realized more than \$200 million in net present value in nature-based solutions projects compared to traditional solutions,” Kari Mavian, Director of Senior Government Affairs, Dow.

***“In many cases, NBS options tend to be excluded early in the planning process... Ultimately, separate missions produced separate outcomes.”***

**Dr. Jordan R. Fischbach, Director of Planning and Policy Research, The Water Institute**



“We see natural infrastructure and nature-based solutions as critical tools. One of the values of these tools is that they are inherently connective, whether it’s connecting rivers to their floodplains, connecting plants and animals to their habitats, connecting people to each other,” Rebecca Powers, Program Officer, Walton Family Foundation.

Online comments asked how to ensure ongoing funding for nature-based solutions, what could encourage private and nonprofit

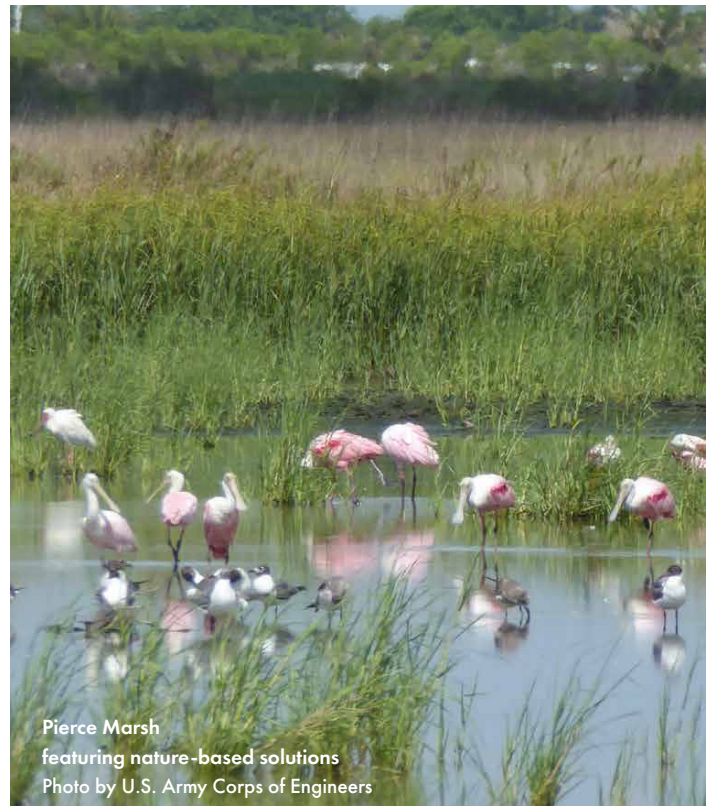
J. Scott Pippin, Community Resilience Manager, University of Georgia Carl Vinson Institute of Government and Institute for Resilient Infrastructure Systems; Niels Holm-Nielsen, Project Manager, Global Facility for Disaster Reduction and Recovery, the World Bank; and Brett Stewart, Manager, Loss Prevention and Education, AXA. Private and NGO representatives outlined how their thinking has evolved over the years to now seeing nature-based features as essential to provide multiple benefits.

Murdock outlined a number of studies the Nature Conservancy has done valuing the economic benefits of wetlands for shoreline protection, the value of mangroves in Florida, and floodplain values to prevent future damages.

“Sometimes we just need to think about conserving what we have and protecting nature that exists now. We don’t need to engineer something necessarily,” Murdock said.

Other partners in the efforts around nature-based solutions include academic, industry and private sector, all of which have a mission that either focuses on the environment, societal benefits, or economic development that these solutions can provide.

investment into nature-based solutions, and what does the private sector see as advantages to nature-based solutions.



Pierce Marsh  
featuring nature-based solutions  
Photo by U.S. Army Corps of Engineers



# SMALL GROUP DISCUSSIONS

Small groups discussions, including online input, were organized to discuss the following questions:

## **What one action would you recommend that we should take to make progress?**

### Small group discussion report out samples

- To create more conscious and collaborative structures to implement projects.
- Create better communication horizontally between federal agencies and vertically between federal agencies and local communities.
- Create better methods to implement an integration between nature-based and gray infrastructure.
- Additional summits and forums to bring together decision-makers and stakeholders to discuss the issue.

### Online audience comments samples

- Better listening to local people and connecting to local communities.
- Improve organization and funding to focus on watersheds.
- Develop a virtual hub to coordinate local, state, federal, and private entities for project planning.



Jamaica Bay, New York  
featuring nature-based solutions  
Photo by U.S. Army Corps of Engineers



## What action is your organization taking to make progress?

### Small group discussion report out samples

- Supporting urban communities through a Nature-Based Climate Solutions Consortium and Accelerator to help urban planners and municipal decisionmakers access federal and state funding quickly and leverage their community partnerships for maximum climate mitigation impact that is aligned with Justice40.
- Focus less on BCA and more on a European method of focusing on the community and local support around a project before deciding to move forward.
- Developing a Social Environmental Open Knowledge Network to improve access to data, people, programs, information, and resources in support of transparently understanding the values and trade-offs in any given decision space. This includes open simulation modeling platforms and more.

### Online audience comments samples

- U.S. EPA created a Green Infrastructure Federal Collaborative to share across the agency's efforts on NBS to accelerate planning and implementation.
- Working directly with state governments to assist those governments in developing plans and projects that are more likely to be "shovel ready" for federal programs.
- California made some decisions to not use federal funds because of the BCA, and they move forward with their own planning and local support.



An aerial photograph of a river with a concrete weir, surrounded by lush green trees and a paved bike trail. The river flows from the top left towards the bottom right. The background shows a dry, brown field and some distant buildings.

# CLOSING COMMENTS & CONCLUSION

The Measuring What Matters Summit brought together more than 1,000 people representing federal, state, and local governments, NGOs, private companies, and stakeholders from around the country.

The work supports the President's priorities including the Justice40 Initiative and Executive Order 14072 as well as long-standing efforts among federal, state, and local level organizations to better incorporate nature-based solutions into infrastructure and other resilience projects.

The Summit illustrated the wide-ranging work that is already being done to better incorporate nature-based features into projects, the challenges organizations currently face in implementing those nature-based features, and optimism for the future of better integration of nature-based features with traditional infrastructure measures.

"If you just consider the diversity of organizations and perspectives represented in the dialogue today, from my point of view it was very significant. Beyond that, the substance and the depth of the contributions was impressive," Bridges said.

A capstone report, summarizing the EWN and The Water Institute's policy research effort, will be released in early 2023 and will reflect the study team's findings and recommendations.



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