MOVING FORWARD:

Future Directions for EPA and Environmental Protection

December 22, 2020

In 2018-19, the EPA Alumni Association and the American University Center for Environmental Policy partnered to identify our greatest environmental challenges and to suggest "future directions" for EPA and environmental protection. Sixty EPA alumni participated in five focus groups, almost 400 alumni completed a survey, and 300 people attended a conference on this subject. The final report was published in December 2019.

The leaders of the five focus groups and the principal author of the final report will speak at a Zoom program hosted by the Association and the University on January 13, 2021. This document contains a summary of each report and is intended to demonstrate the breadth of the project while enabling the program speakers to focus on a relatively small number of topics.

The views expressed, including priorities and recommendations, are those of the authors and do not necessarily reflect the views of the EPA Alumni Association or its Board of Directors.

Focus Group #1

FUTURE ENVIRONMENTAL CHALLENGES

Authors: Stan Laskowski (leader), Mike Cook, Walter DeRieux, Harlan Green, Alan Hecht, Jamie Heller, Vic Kimm, Roger Martella, Norine Noonan, Frank Princiotta, and Michael Shapiro

Environmental and Sustainability Challenges

- **Challenge #1 Climate Change:** On the emission mitigation side, EPA should regulate key GHG sources as soon as possible. EPA should assess low C technologies and CO2 capture activities whose utilization could accelerate the phase out of fossil fuels. On the impact response side, EPA should study the science and relevant projections to attempt to quantify and put timelines around key climate environmental impacts such as rises in sea levels.
- **Challenge #2 Energy**: EPA will need to work collaboratively with Congress, other federal agencies, and other partners to institute policies that will accelerate the phase out of coal, oil and natural gas in favor of low- carbon- emitting and end-use technologies.
- **Challenge #3 Water Resources**: The nexus between energy, food and fresh water will increasingly be a major focus in the future, both in the US and globally. EPA, the states and local governments, and the private sector will need to work collaboratively to find integrated solutions.
- **Challenge #4 Protection of biodiversity and ecosystems**: The protection of ecosystems will take on added importance as we continue to learn about the importance

of these systems and biodiversity. Economic valuation of ecosystem services is an ongoing and robust field of research and the evidence is increasingly compelling that environmental services of high value, particularly in the built environment.

- **Challenge #5 Sustainable Materials Management:** How society uses materials and the products made from them over their life cycles is a key challenge to our environmental and economic future. Finding ways to use and reuse materials more productively over their life cycles is a major opportunity to improve environmental quality and to make the economy more robust in the coming decades.
- **Challenge #6 The human health and environment connection:** The public will continue to want to understand the degree to which the ambient environment may be a cause of the most widespread health issues (e.g., emerging infectious diseases, Alzheimer's), and what methods can be developed to control or mitigate such issues.
- **Challenge #7 Protecting urban residents from environmental impacts:** EPA will be required to continue to refine their partnerships with local and state governments to ensure the maximum effective use of limited funds and promote smart cities by using integrated systems, social media, artificial intelligence, and emerging technologies to address any inequities in the allocation of resources.
- **Challenge #8 Protecting the public from new and extreme events, both natural and manmade**: Although EPA will most likely be one of many agencies responding to extreme events, it will surely have a significant role in monitoring, assessing threats, and responding to attacks related to air, water and waste.

Systems Challenges

- **Challenge #1 Protecting Science and Procedures that have been the Foundation of EPA's Success to date; No "Backsliding":** This Focus Group believes that EPA and Congress will need to guard against any "backsliding" of environmental gains made to date by protecting science and administrative procedures that have been at the foundation of EPA's success.
- **Challenge #2 Demonstrating that Environmental Protection and a Robust Economy are Mutually Supportive:** Ideas that consider the value of ecosystem services, incorporate negative externalities such as environmental degradation, and consider the cost of not protecting the environment should be seriously considered by Congress and EPA.
- **Challenge #3 Being Leaders in Effective Communications**: With the expansion of social media and the growing difficulty of identifying sources of valid information on the internet, members of the public need more "trusted portals" to assist in their understanding of the reasons behind environmental policies and actions, and to help inform them about personal decisions that may impact their local environment.
- **Challenge #4 Supporting EPA Leadership on Global Environmental Issues:** EPA and Congress should take actions that will result in EPA continuing to be recognized as a world leader in environmentally related science and policy.

- **Challenge #5 Forecasting Future Environmental Threats**: Congress and EPA should consider a system for early identification of environmental/health issues, actions to address them, and periodic reports to the public.
- **Challenge #6 Ensuring Equal Environmental Protection for All:** EPA will need to continue to develop demographics and political perspectives to ensure equity and environmental justice. Equity issues include the allocation of resources, location of polluting facilities, access to information, and inclusion in decision-making processes.
- **Challenge #7 Maintaining Organizational and Management Excellence:** EPA is expected to be challenged by the ongoing federal deficits and a rapidly changing world. It will also need to ensure that it has an agile organization capable of responding to emerging environmental and health issues.

Focus Group #2

THE ENVIRONMENTAL PROTECTION ENTERPRISE

Authors: Bob Perciasepe (leader), Joe Cascio, Walter DeRieux, Barbara Elkus, Bonnie Gitlin, Mark Greenwood, Bill Hirzy, Dale Medearis, Philip Metzger, Rob Wolcott, and George Wyeth

Suggested characteristics for Environmental Protection Enterprise 3.0

- **Resilience and sustainability through holistic, integrated approaches that generate clear public health and environmental benefits/outcomes**
    a. Encourage resilience and sustainability
    b. Use holistic approaches.
    c. Encourage technologically-driven innovation and incorporate evolving scientific understanding in environmental problem-solving.
    d. Incorporate more market/price approaches, economic incentives and explicit price signals to boost the economic efficiency of protection and expand political support for the system.
    e. Firmly ground 3.0 in a clear, highly transparent "outcomes" framework.

- **Structural engagement of government partners and private participants**
    a. Frame the EPA/state/tribal relationship under a modernized model, along the lines of "mutual task allocation and agenda setting," not defined by past roles and mindsets.
    b. Provide for more collaborative relationships and revise allocation of responsibilities among all governmental partners, making best use of the key strengths of each, as a part of a larger legislative efforts to modernize environmental statutes.
    c. Collaborate flexibly to advance global sustainability.
    d. Structure 3.0 to provide more flexible and adaptable approaches with the private sector.
    e. Promote integrity in decision-making.

Prioritization of Actions towards Environmental Protection Enterprise 3.0

- *Near- to Mid-Term Actions*: Both practicality and effectiveness call strongly for a focus on ideas that can build on innovative practices now in place or recently used that have been embraced by states and regulated industries.
- *Longer Term Actions (Federal Legislation):* Legislative action will be needed to achieve Environmental Protection Enterprise 3.0, whether through enactment of a connecting tissue between existing laws or more extensive modernization of individual, media specific statutes. An Organic Act is not essential to achieve most aspects of Environmental Protection Enterprise 3.0.

Focus Group #3

EPA'S RELATIONSHIPS WITH STATES AND OTHER PUBLIC AND PRIVATE ACTORS

Authors: David Ullrich (leader), Mark Charles, Steve Chester, Kerrigan Clough, Ed Hanley, Judy Katz, Walt Kovalick, Maury Kruth, Stanley Laskowski, Philip Metzger, William Muno, Armina Nolan and John Whitescarver

Relationships with the States

Starting 2020, EPA headquarters and regions engage directly at the highest levels with the representative state organizations such as the Environmental Council of States to define responsibilities and streamline processes and oversight.

a. Each Region should jointly plan, evaluate and prioritize key environmental issues in full partnership with its state environmental department directors and other key state departments such as the agriculture, public health, commerce, and natural resource departments.
b. Update and streamline the Performance Partnership system.
c. With state participation, direct EPA state program oversight at priority environmental problems.
d. Use EPA compliance and enforcement resources directly or jointly with states where state action has not returned sources to compliance.
e. Cut the overlap of program delivery provided by EPA, states and tribes.
f. EPA inventories and communicates effectively what it can and will bring to the table to make states and multi-state priorities successful.
g. EPA, working with states, develops and implements a program certification process to reduce or eliminate oversight based on state performance.
h. EPA and partners from professional and non-profit organizations should develop training programs and technical and scientific delivery processes to complement the work of the states.
i. Access the successes of past collaborations where EPA has been a significant player.

Relationships with Tribes

EPA should continue to help Tribes build capacity to enable increased self-determination in the future, consistent with EPA's trust responsibility.

a. EPA will assess risks in Indian country and work with tribes and other Federal agencies to prioritize and address these risks.
b. EPA will streamline the process for authorization of tribal programs.
c. EPA will increase the efficiency of tribal grant programs, especially GAP programs, by directing funds to the most pressing problems and to the tribes with the greatest interest and capacity for assuming direct program responsibility.
d. EPA will play a convenor role to resolve program disputes between tribes and states and collaborate with other Federal agencies to resolve these disputes.

Relationships with Local Governments

Local governments are both regulated and are regulators.

a. Make local governments essential partners in a "national enterprise for environmental protection."
b. Design a collaborative mechanism with states for EPA to assist local governments directly.
c. Regional and geographic environmental initiatives include local governments as full partners along with the states.
d. With climate change affecting local governments the most, EPA works with other Federal agencies to develop effective assistance for adaptation, resilience, and mitigation efforts.

International Relations

The US, and EPA in particular, will need to be a major player on the international stage relative to climate change and other future globally significant challenges, as well as bi-nationally with Mexico and Canada on a whole range of issues.

a. EPA strengthens its partnerships with NOAA, NASA, and other Federal agencies to collaborate on climate mitigation and adaptation strategies.
b. EPA strengthens relationships with the UN, the OECD, the European Union and other relevant international organizations and develops long term plans of action related to climate, toxic substances, oceans and water quality issues of the future.
c. EPA strengthens relationships with the Canadian and Mexican environmental agencies to address cross border environmental problems.

Relationships with the Private Sector

EPA should focus on helping the private sector to protect the environment, in addition to its role as a regulator and enforcer.

a. Improve communication and understanding among all levels of government and the private sector through initiatives like E-Enterprise, permit portals, and electronic submittal of compliance data.
b. EPA focuses on continuing dialogue with industry to develop productive working relationships prior to embarking on specific efforts to write new rules.

c. EPA encourages and convenes industry partnerships with states, local governments and NGOs to assist companies of all sizes with compliance problems and moves many small companies out of the regulatory loop altogether
d. EPA reinvigorates the voluntary 33/50% program to reduce toxic releases by those percentages over baseline levels and increases the goals to 75/90% working with industry.

Relationships with Non-Government Organizations

The Agency must always maintain an arms-length relationship with the NGO's and the private sector but must recognize how the counter veiling forces might best be used to enhance environmental protection.

a. EPA expands transparency, data availability, open communications, and regular dialogues with NGOs in keeping with the Records Act and the Administrative Procedures Act, to reduce the perceived need for litigation between the parties.
b. EPA convenes seminars with industry and NGOs to flag emerging issues.
c. EPA invites NGOs to the table as an observer and in some instances as an active participant especially in multi-governmental problem-solving settings.
d. EPA actively cultivates citizen science.

Relationships with the Public

EPA must strive constantly to get timely, understandable information to the public using communication techniques to make information to those who wish to know and understand what is going on in the environment. The public must also have an opportunity to participate in proceedings that will affect their wellbeing.

a. EPA strengthens the public's trust by opening its deliberations and records more and meeting FOIA timelines.
b. EPA greatly increases access by the public and news media to career experts and direct contact with knowledgeable staff and reduces reliance on its public affairs staff.
c. EPA expands its reputation as a science and fact-based Agency by presenting objectively the significant data, information, knowledge, risk and proposed solutions.

Focus Group #4

SCIENCE, TECHNOLOGY, AND INFORMATION

Authors: Penelope Fenner-Crisp (leader), Dave Friedman, Ed Hanley, Barry Nussbaum, George Schewe, Glenn Schweitzer, Mark Segal, William Sonntag, and Steve Young

Challenges Facing Science, Technology and Information

Current and Persistent Challenges

a. The exposures and risks arising from complex interactions among "the chemical, biological and physical characteristics of an agent, the genetic and biological attribute of a host, and the physical and social characteristics of the environment…"

b. Poorly understood toxicity characteristics of many of the more than 700,000 chemicals that currently can be produced for commercial purposes, and when some of these chemicals are in mixtures.
c. The pressures of population growth and climate change on America's aging wastewater and water supply infrastructure, coupled with the unsolved problems of lead (Pb) exposure and the undefined exposures and risks of trace pollutants originating from prescription medicines and other biologically active substances.
d. Health effects of a large number of air pollutants attributable to human activity and disturbances of the land/atmosphere interface.
e. The still unresolved challenges of nutrient pollution and the impacts of the agricultural sector on water quality.
f. The unaddressed exposures and risks from industrial discharges and other point and non-point sources.
g. The advances in monitoring, biology, molecular science, and genetics that make it possible to identify pollutants in previously undetectable amounts.
h. Continuing and increasing leakage into the environment from waste disposal sites that were believed to have been adequately sealed and capped, along with new types of disposal challenges.

Emerging and Future Challenges

a. Climate Change. EPA must be an effective participant in what will be ongoing national and global processes for anticipating and responding to threats to the environment and human health arising from climate change.
b. The "BioEconomy." EPA will face a series of decisions on new chemicals, new industrial processes, and the systemic risks and exposures arising from the BioEconomy.
c. The "-omics." The revolution in molecular science, genetics, and bioinformatics and the "-omics" (genomics, proteomics, etc.).
d. Urban sustainability. The challenge for EPA Science, Technology and Information will be to expand its focus beyond pollution control to the broader mission of ensuring the overall, long term environmental, economic and social sustainability of these urban areas.
e. Increasing sensitive and affordable sensing technology of many types. The challenge is to anticipate this development, master the technology, and devise strategies to guide this development in useful and responsible directions.
f. Continuing explosive growth in computational and communications technology. The challenge is to stay abreast of technological developments or risk becoming a less capable regulator.
g. Other groups may list different future challenges than this focus group; they may call for:
    a. More robust approaches to data gathering, combining datasets, analyzing data, modeling and knowledge development including cross program and cross discipline approaches.
    b. A commitment to staying at the leading edge of science.
    c. Systems-level tools and expertise which NAS defined as a capacity to analyze "complex scenarios, including life cycle assessment; cumulative risk assessments; social, economic, behavioral, and decisions sciences; and synthesis research."

d. Synthesizing scientific research information, characterizing uncertainties, and integrating methods for tracking and assessing the outcomes of actions into the decision-making process from the outset.
e. Greatly increased computational resources readily available to EPA scientists and technologists across the Agency.

Recommendations for Meeting Those Challenges

Recommendation 1 – Establish strong, accountable, leadership for the science, technology and information functions and capabilities at a higher level at EPA.

a. Lead an EPA-wide process for setting priorities in Agency STI, planning investments in these functions, and assessing their performance.
b. Review the recommendations made by outside Advisory groups and assist agency leadership in making decisions about actions to respond to recommendations.
c. Consult, where appropriate, with international entities on STI research and technological solutions.
d. Assess progress annually and speak for the STI functions in the annual budget process.
e. Conduct annual "scanning sessions" to detect emerging developments and consider which deserve EPA's attention.
f. Initiate and oversee agency-wide training and technical assistance to ensure the acquisition and quality control of essential skills, forecasting and social sciences that must be present at EPA.
g. Promote the establishment of a federal government-wide process for setting priorities for environmental STI.

Recommendation 2 – Build forecasting and modeling capabilities at two levels in EPA – a central capacity and at lower levels to deal with specialized needs.

Recommendation 3 – Prioritize information provision as a risk reduction strategy.

Recommendation 4 – Invest in the computational resources necessary to support high level and widespread use of monitoring, forecasting, and modeling tools.

Recommendation 5 – Invest in tools development and propagation of technology.

Recommendation 6 – Expand the capacity to deliver technical assistance including providing scientific knowledge and methods, technology and tools, training, and at times, hands on application assistance.

Recommendation 7 – EPA should champion and participate in the creation of comprehensive environmental monitoring systems that provide long-term and real-time data about environmental conditions at all feasible spatial and temporal scales.

Recommendation 8 – Enhance EPA's human resources in STI. The Agency should:

a. Build staff capacity in central science and information offices and in all programs and regions.

b. Reinvigorate EPA's core science skills.
c. Build and maintain a community of people throughout EPA who are skilled at and committed to systems methods of problem definition and solution.
d. Strengthen the agency's social science capabilities in the science and operating program offices by hiring more behavioral and decision scientists.
e. Obtain the compensation authority needed to attract and keep national and international experts in essential disciplines in STI.

Recommendation 9 – Establish "mid-course" milestones for meeting the challenges facing environmental STI with 2030 as a target date.

Focus Group #5

TOOLS, PROCESSES, CULTURE AND RESOURCES

Authors: Stan Meiburg (leader), Rob Brenner, Arden Calvert, Greg Fabian, Odelia Funke, Noha Gaber, J. William Hirzy, Joel Mintz, Bill Shapiro, Stephen Weil, and George Wyeth

Policy Themes

1. Alternatives to media-based approaches –

a. Sector-based approaches
b. Integrated permitting
c. Community approaches
d. Watershed approaches

2. Maintaining a Strong Enforcement Program – Effective environmental enforcement requires both strong States and a strong EPA.

3. Promoting Citizen Empowerment and Citizen Science – The point of promoting citizen science is not to just collect more data, but to empower citizens to become more active, knowledgeable participants in decisions that affect their community.

4. An Organic Statute – It is worth considering whether an overarching "organic" statute would be more effective and would provide other benefits as well. It was also recognized that a full overhaul of all of EPA's existing authorities is likely beyond the foreseeable capacity of both the legislative and executive branches.

Management and Performance Themes

1. Strengthening Strategic Planning and Performance Management – EPA can make a stronger commitment to measurement of results and regular evaluation of programs' strengths and weaknesses to inform an ongoing process of improvement.

2. Staff/Management Coordination and Empowerment – Staff will be active participants with management in identifying problems to be addressed and in planning how to address them.

3. Attracting, Retaining and Deploying a Talented Workforce – EPA's people should be managed as an Agency asset and deployed where they can best contribute to the mission of the Agency as a whole.

4. Strengthening Internal Communication, Coordination and Collaboration – EPA boost its ability to operate in a manning that encourages and supports cross-organizational information and knowledge sharing, coordination and collaboration.

5. Building an Organization that Acts Quickly and Responds to Changing Needs – Effort must be made to develop a nimbler culture, responsive to technological change and to new information.

6. Enhancing Data Availability, Interoperability and Management – Access to reliable, high quality and up to date data is critical to EPA's ability to use robust scientific evidence to inform its decision making.

Executive Summary of the Final Report

MOVING FORWARD: FUTURE DIRECTIONS FOR EPA AND ENVIRONMENTAL PROTECTION

Author: John Reeder

1. **Pursue State of the Art Science Capability**. EPA's ability to lead in a future landscape involving many entities pursuing the goals of sustainability and environmental protection starts with its own credibility and demands a solid foundation in state-of-the-art science.
2. **Renew the U.S. "Environmental Protection Enterprise."** The integrated systems of state/tribal and EPA programs – the foundation for 50 years of environmental progress – must be renewed with fresh energy and shared governance, and be broadened to include a role for NGOs, industry, local government, tribal governments, and others who can bring resources, expertise and ideas.
3. **Strengthen International Cooperation**. EPA and its partner should embrace international cooperation as part of the future environmental protection enterprise because climate change and other complex challenges call for a worldwide response, and the benefits of exchanging technical expertise accrue globally.
4. **Harness Markets and Consumer Choice in Concert with Regulations**. EPA should accelerate the use of market approaches that are already proven and give the public/consumers information on the sustainability of products and processes.
5. **Advance a Forward-Looking Regulatory System**. Regulations will remain critical for meeting future challenges but should be designed to embrace technological innovation and the best new models for achieving outcomes and rewarding sustainability.
6. **Engage the Public to Raise Awareness About the Environment**. Public confidence in EPA and support for its mission are critical. EPA and partners need to redouble efforts to engage the public – both to listen and to educate – about critical public health and environmental threats and clearly communicate necessary actions.