

BOSC REVIEW OF ENVIRONMENTAL JUSTICE ROADMAP FY16 ANNUAL REPORT

List of Acronyms

ACE	Air, Climate, and Energy
BOSC	Board of Scientific Counselors
EC	Executive Committee
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
FACA	Federal Advisory Committee Act
FY	Fiscal Year
ORD	Office of Research and Development
RARE	Regional Applied Research Effort
RESES	Regional Sustainability and Environmental Research
RFA	Request for Application
SHC	Sustainable and Healthy Communities
SSWR	Safe and Sustainable Water Resources
STAR	Science to Achieve Results

Background

This report was drafted by the following members of the BOSC Executive Committee (EC) (with input from the committee as a whole):

Courtney Flint, Ph.D. <i>Utah State University</i>	Joseph Rodricks, Ph.D., DABT <i>Environ</i>	John Tharakan, Ph.D. <i>Howard University</i>
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Charge Questions

Charge Question 1. Comment on areas of successful integration and implementation as articulated in the related Roadmap. This may include, but is not limited to, the following:

- Levels of commitment to Roadmap recommendations as incorporated into the ORD StRAPs;
- Coordination across ORD's six National Research Programs;
- Communication and outreach to partners and stakeholders; and
- Areas of innovation

Charge Question 2. Provide suggestions for improving implementation of the roadmaps and research integration across the National Research Programs.

- Are there additional opportunities for implementation or integration not highlighted in the annual report?
- Does "The Year Ahead section" adequately describe the next steps and short-term research areas and commitment?

General Comments

The Environmental Justice (EJ) Roadmap underwent substantial editing in the past year, framing a comprehensive approach to addressing environmental and health inequalities in populations and communities. As discussed in the November 2016 BOSC EC meeting, the EJ Roadmap is truly an excellent articulation of the array of research objectives and focal areas across ORD. ORD should be strongly commended for its extraordinary effort to address EJ issues in its research efforts.

The EJ Roadmap Annual Report focuses on progress and accomplishments from Fiscal Years (FY) 15 and 16 (and some prior to FY15). In general, this report highlights the substantial attention, across ORD efforts in recent years, to EJ issues. Assuming resources and objectives to support EJ are maintained within EPA, we anticipate an even stronger trajectory in coming years, given the additional depth and breadth articulated in the final EJ Roadmap.

Levels of Commitment

Although the Annual Report demonstrates the existence of an impressive array of research efforts having substantial EJ content, it provides little information about actual research findings and accomplishments. Most of the report focuses on research goals and objectives, and not on actual research findings and their possible utility in improving environmental justice. We recognize that this is the first report on the EJ program, and that much of the relevant research is incomplete, but it will be important in future reports to begin to describe more fully research findings and whether and how they can contribute to the goals of EJ. This will provide a basis for evaluating the success of the ORD efforts, their possible utilities, and also a systematic way to identify remaining research gaps.

Recommendations

- 1. Technical Recommendation 1:** In future annual reports, summarize specific and representative research findings that are responsive to the key science questions posed in the EJ Roadmap.

Coordination across National Research Programs

The EJ Roadmap Annual Report shows commitment to EJ coming from across ORD endeavors. As stated in the annual report, a good deal of the incorporation of EJ issues in ORD's research is found in the funding of extramural research through the Science to Achieve Results (STAR) grant program. The 16 grants highlighted in Appendix A include previously and newly awarded research projects that come from three of the six National Research Programs (Air, Climate, and Energy [ACE], Sustainable and Healthy Communities [SHC], Safe and Sustainable Water Resources [SSWR]). The annual report Appendix E lists 31 intramural products from ORD research across all six National Research Programs that have addressed EJ issues. Appendices B-D highlight EJ related efforts in Making a Visible Difference projects led by ORD laboratories and centers as well as the Regional Applied Research Effort (RARE) and Regional Sustainability and Environmental Research (RESES) projects. These projects and products collectively represent a strong commitment to addressing environmental justice and overburdened communities in EPA ORD. While each of the National Research Programs have EJ related research, there is little information in the annual report about whether and how coordination has occurred across the programs. Clarifying coordination of EJ research across National Research Programs will be useful information to see in future annual reports. Moving forward, it will be valuable to look systematically across funded research efforts in recent years to strategically focus new requests for applications (RFAs) towards gaps in addressing EJ issues or one's

that are under-emphasized. It is also important to evaluate and make explicit links to the other cross-cutting roadmaps, particularly those on climate change and children's health.

Recommendations

1. **Technical Recommendation 2:** In future annual reports, include information about coordination efforts across National Research Programs regarding EJ research.
2. **Science Recommendation 1:** Using the Final EJ Roadmap as a guide, undertake a synthetic review of EPA research efforts, including EPA funded research outside the Agency, to identify any gaps or under-emphasized areas that might be targets for future RFAs regarding EJ.
3. **Science Recommendation 2:** Evaluate and make explicit links to other cross-cutting roadmaps, particularly regarding climate change and children's health.

Communication and Outreach

Research deemed relevant to EJ coming from intramural laboratory and center-based efforts is shown in Appendix E as having made its way to published projects that help to communicate important information, though it is often not entirely clear by the titles how these efforts relate to EJ. In future annual reports, it would be helpful to have more information about the EJ relevancy in identified outputs (R5).

Many, though not all, of the laboratory, center, RARE, and RESES efforts described in the annual report include decision support tools, training efforts, and other efforts to provide information and collaboration. Given the multiple facets of environmental justice recognized in the EJ Roadmap, it is clear that ORD recognizes the need to enhance information access through communication and outreach efforts to make sure EJ communities are getting important information. Furthermore, given the acknowledged diversity in community capacity to address EJ issues, it is essential that ORD tools be differentiated to account for varying needs and abilities. Making these communication efforts more explicit will be valuable moving forward to ensure EJ-related information reaches communities in a way that matches their needs and capacities. The four facets of environmental justice highlighted in the EJ Roadmap (procedural, distributional, recognitional justice and justice of capabilities) are key organizing principles to help guide communication and outreach efforts.

Recommendations

1. **Technical Recommendation 3:** Effort should be made in future annual reports to include information about how products listed in appendices relate to EJ.
2. **Science Recommendation 3:** Encourage ORD EJ efforts to emphasize multi-faceted communication and outreach components that recognize various justice dimensions (procedural, distributional, recognitional, and justice of capabilities) to ensure research information reaches communities in ways that match up with varying needs and capacities.

Areas of Innovation

The "Emerging Issues" section of the EJ Roadmap, while brief and only focusing on lead and the Zika virus, does show commitment to responding to emerging needs in environmental health that pose particular problems for overburdened communities. Innovations such as the probabilistic multimedia exposure modeling linked to pharmacokinetic models and the vector-habitat interaction research are essential research responses to these kinds of emerging risks. Maintaining capacity to target resources and

attention to emergent issues is essential to meeting EJ objectives to reduce inequities faced by overburdened communities, taking into consideration that often the most overburdened are also the least able to respond.

Opportunities for Implementation and Integration

Moving forward, ORD's EJ Roadmap efforts might consider expanding emphasis beyond race, indigeneity, and income to more deeply investigate the intersectionality of socio-demographic and spatial aspects of exposure that lead to overburdened populations and communities. Issues of gender, rural-urban difference, age, and employment are increasingly recognized in environmental justice research as interacting with the more conventional focal variables of race and income/poverty. EPA's increasing capacities in geographic information and spatial measurement will allow for greater integration of multiple risk factors as well as tools to implement EJ concerns into a broader array of ORD research efforts. Furthermore, through intramural and extramural research, ORD has the capacity to clarify best measurement practices and improve rigor in EJ research through composite indices rather than singular metrics.

Recommendations

1. **Science Recommendation 4:** Investigate the intersectionality of socio-demographic and spatial factors leading to inequities in environmental risk and overburdened communities.

Next Steps and Short Term Research Areas and Commitment

The "Looking Ahead" sections in the EJ Roadmap annual report show commitment to providing decision support tools. The RFAs anticipated in late FY16 and FY17 will also help to address continuing research needs. It is essential that resources and research capacity be maintained or enhanced to address the objectives as well as the gaps identified in the final EJ Roadmap. Furthermore, it will be important to make sure that decision support tools not only be developed, but also disseminated to those who need it most along with any necessary training in utilization of these tools.

Recommendations

1. **Science Recommendation 5:** Ensure that new decision support tools to address objectives are not only developed, but also disseminated to those who need them most, including utilization training.

Summary List of Recommendations

The BOSC applauds the accomplishments to date as highlighted in the EJ Roadmap Annual Report. We summarize here our five priority science recommendations.

- **Science Recommendation 1:** Using the Final EJ Roadmap as a guide, undertake a synthetic review of EPA research efforts, including EPA funded research outside the Agency, to identify any gaps or under-emphasized areas that might be targets for future RFAs regarding EJ.
- **Science Recommendation 2:** Evaluate and make explicit links to other cross-cutting roadmaps, particularly regarding climate change and children's health.
- **Science Recommendation 3:** Encourage ORD EJ efforts to emphasize multi-faceted communication and outreach components that recognize various justice dimensions (procedural, distributional,

recognitional, and justice of capabilities) to ensure research information reaches communities in ways that match up with varying needs and capacities.

- **Science Recommendation 4:** Investigate the intersectionality of socio-demographic and spatial factors leading to inequities in environmental risk and overburdened communities.
- **Science Recommendation 5:** Ensure that new decision support tools to address objectives are not only developed, but also disseminated to those who need them most, including utilization training.

Additionally, we highlight three technical recommendations related to future annual reports.

- **Technical Recommendation 1:** In future annual reports, summarize specific and representative research findings that are responsive to the key science questions posed in the EJ Roadmap.
- **Technical Recommendation 2:** In future annual reports, include information about coordination efforts across National Research Programs regarding EJ research.
- **Technical Recommendation 3:** Effort should be made in future annual reports to include information about how products listed in appendices relate to EJ.