

UC San Diego

UC San Diego Previously Published Works

Title

The International Society for Childrens Health and the Environment Commits to Reduce Its Carbon Footprint to Safeguard Childrens Health.

Permalink

<https://escholarship.org/uc/item/78j7z424>

Journal

Environmental Health Perspectives, 128(1)

Authors

Etzel, Ruth

Sripada, Kam

Cairns, Maryann

et al.

Publication Date

2020

DOI

10.1289/EHP6578

Peer reviewed

The International Society for Children’s Health and the Environment Commits to Reduce Its Carbon Footprint to Safeguard Children’s Health

Brenda Eskenazi,^{1,*} Ruth A. Etzel,^{2,*} Kam Sripada,^{3,*} Maryann R. Cairns,⁴ Irva Hertz-Picciotto,⁵ Katarzyna Kordas,⁶ João Paulo Machado Torres,⁷ Howard W. Mielke,⁸ Youssef Oulhote,⁹ Lesliam Quirós-Alcalá,¹⁰ José R. Suárez-López,¹¹ and Marya G. Zlatnik¹²

¹Center for Environmental Research & Children’s Health, School of Public Health, University of California, Berkeley, Berkeley, California, USA

²Milken Institute School of Public Health, George Washington University, Washington, DC, USA

³Centre for Global Health Inequalities Research, Norwegian University of Science and Technology, Trondheim, Norway

⁴Department of Anthropology, Southern Methodist University, Dallas, Texas, USA

⁵Department of Public Health Sciences, University of California, Davis, Davis, California, USA

⁶School of Public Health and Health Professions, University of Buffalo, Buffalo, New York, USA

⁷Instituto de Biofísica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

⁸School of Medicine, Tulane University, New Orleans, Louisiana, USA

⁹School of Public Health & Health Sciences, University of Massachusetts Amherst, Amherst, Massachusetts, USA

¹⁰Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland, USA

¹¹Department of Family Medicine and Public Health, University of California, San Diego, San Diego, California, USA

¹²Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco, San Francisco, California, USA

The Lancet Countdown and the 2018 Intergovernmental Panel on Climate Change declared that the worst impacts of climate change are and will continue to be felt disproportionately by children. Children are uniquely vulnerable to the consequences of climate change, including heat stress, food scarcity, increases in pollution and vector-borne diseases, lost family income, displacement, and the trauma of living through a climate-related disaster. These stressors can result in long-lasting physical and mental health sequelae. Based upon these concerns associated with climate change, the International Society for Children’s Health and the Environment developed a statement about ways in which the Society could take action to reduce its contribution of greenhouse gas emissions. The objective of this article is to report our Society’s plans in hopes that we may stimulate other scientific societies to take action. <https://doi.org/10.1289/EHP6578>

Introduction

The changing climate presents an immediate and existential threat, not only to our children now but for generations to come (Ahdoot et al. 2015; Ebi and Paulson 2010; Lloyd et al. 2018; National Academy of Sciences 2019; Philipsborn and Chan 2018; Salas et al. 2019; Stanberry et al. 2018; U.S. EPA 2016; Watt and Chamberlain 2011). In 2018, the Intergovernmental Panel on Climate Change (IPCC) declared that the worst impacts of climate change are and will continue to be felt disproportionately by children and the elderly, among other vulnerable populations (Masson-Delmotte et al. 2018). The 2019 report of the Lancet Countdown on Health and Climate Change reiterated that position, concluding that across the world children are among the most affected today and in the future (Salas et al. 2018; Watts et al. 2019).

Children are particularly vulnerable because they are less able to adapt to heat stress and other consequences of climate change. Adverse effects of altered environments during fetal or child developmental stages can result in irreversible and long-lasting health sequelae. Furthermore, children in low- and middle-income countries may be at the highest risk of suffering ill effects from the

floods (Mallett and Etzel 2018), heat, and storms (Haines et al. 2006) that are predicted to increase in frequency and magnitude as temperatures continue to rise. Climate change is expected to impact the availability of food and water supplies, and pollution is likely to increase. If unchecked, it follows that these trends will result in higher rates of childhood undernutrition, diarrheal diseases with dehydration, and childhood mortality (Sheffield and Landrigan 2011). Changes in climate can also contribute to increases in vector-borne diseases, to which children are particularly vulnerable (Bennett and Friel 2014; Caminade et al. 2019). Children who survive such diseases tend to suffer from stunted physical development and poorer adult health (Dewey and Begum 2011, Victora et al. 2008). The greatest loss in disability-adjusted life years is expected in Asia, Africa, and small island developing states (Masson-Delmotte et al. 2018).

The effects of climate change on children are more than just physical (Kar 2009). As families’ livelihoods are threatened by extreme weather, there may be pressure to transfer children to the labor market to make up for lost income (Cohen and Garrett 2010; Adger et al. 2014; UNDP 2007), decreasing their opportunity for education. Natural disasters resulting from climate change may result in mental health problems in children. Children who experienced Hurricane Katrina, for example, suffered long-lasting mental health effects, including depression, anxiety, adjustment disorders, posttraumatic stress disorder, and interpersonal or academic difficulties (Madrid et al. 2006). Even when not confronted with a natural disaster, children are showing increased anxiety and other mental health issues because of fear of an uncertain future (Burke et al. 2018). Researchers have called for identification of “ways to fortify the societal structures necessary for mental health that climate change threatens to erode” (Burke et al. 2018; Majeed and Lee 2017).

Climate change endangers the stability of communities as well as the health of individuals. For instance, a recent study of the global population exposure to coastal water levels estimated that 250 million people live no more than 1 m above current high-tide lines (Kulp and Strauss 2019), and more than half a

*These authors contributed equally to this work.

Address correspondence to Brenda Eskenazi, Center for Environmental Research & Children’s Health, School of Public Health, University of California, 1995 University Ave., Suite 265, Berkeley, CA 94720 USA. Telephone: 510-642-3496. Fax: 510-642-9083. Email: Eskenazi@berkeley.edu

The authors declare they have no actual or potential competing financial interests.

Received 22 November 2019; Revised 9 December 2019; Accepted 10 December 2019; Published 7 January 2020.

Note to readers with disabilities: *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to 508 standards due to the complexity of the information being presented. If you need assistance accessing journal content, please contact ehponline@niehs.nih.gov. Our staff will work with you to assess and meet your accessibility needs within 3 working days.

billion children are estimated to live in extremely high flood risk areas (UNICEF 2015). The IPCC states that climate change will, over time, become an “increasingly important driver of human insecurity” including both temporary and permanent displacement, as communities respond not just to sea level rise and coastal erosion but also environmental degradation and reduced agricultural productivity (Adger et al. 2014).

Migration as an emergency response is costly, disruptive, and apt to worsen social inequalities by creating debt and increasing vulnerability among the already disadvantaged (Hunter and David 2011; McLeman 2009; Warner and Afifi 2014). This has corresponding consequences for children’s survival and well-being. The changing climate and severe weather can also interact with other complex drivers to lead to societal unrest (Burrows and Kinney 2016; Sellers et al. 2019). The IPCC notes (Adger et al. 2014) that in cases where violent conflict emerges, the ability of affected populations to adapt to climate change is reduced (Barnett 2006; Blattman and Miguel 2010; Stewart and Fitzgerald 2001).

Efforts of the International Society for Children’s Health and the Environment

Combatting the climate crisis requires action by all of us. In addition to governmental and corporate actions, widespread adoption of individual actions (such as consumption of plant-based diets, choosing energy-efficient means of transportation, and other energy-conserving measures) can help to mitigate greenhouse gas emissions (Wynes and Nicholas 2017).

However, we believe it is incumbent on scientists to do more. The mission of the International Society for Children’s Health and the Environment (ISCHE) (<https://ische.ca/>) is to protect children and future generations from harmful exposures through research, policy, and service (Bellinger et al. 2011). As an international organization dedicated to the health of children and the environment, ISCHE recognizes that our scientific organization has an added responsibility to rise to the challenge of climate change. Accordingly, the Society has committed to take actions to reduce its carbon footprint.

One main focus of the Society’s efforts is to decrease our collective greenhouse gas emissions attributable to travel to scientific meetings. We find it disturbing that the transportation sector is the top source of U.S. greenhouse gas emissions, accounting for 28.9% in 2017 (U.S. EPA 2019). The IPCC estimates that globally, 14% of greenhouse gas emissions are produced by the transportation sector (Edenhofer et al. 2014)—primarily from the burning of fossil fuels from our cars, trucks, ships, trains, and planes. The European Commission’s Joint Research Centre 2019 report on global emissions showed U.S. greenhouse gas output increased an estimated 2.9% between 2017 and 2018, driven in part by surges in transportation (Crippa et al. 2019). Although high-income countries currently produce the lion’s share of emissions, increases in urbanization and industrialization worldwide mean that contributions from low- and middle-income countries are expected to increase and further expand the global carbon footprint as these countries approach peak travel trends (Sims et al. 2014).

Reducing transport that relies on fossil fuels can reduce greenhouse gas emissions and associated air pollutants (Wynes and Nicholas 2017). As a result, the “fly less” movement has been gaining traction among scientists, specifically those in environmental science (for instance, see <https://noflyclimatesci.org>). Many scientists are frequent flyers due to our travel to conferences, meetings, lectures, research, and other engagements. Thus, a major step that professional societies can take is to reduce the need for unnecessary flying. Accordingly, the Society will take immediate steps to address flying, as well as longer-term actions to minimize its carbon footprint (<https://ische.ca/green-action/>).

Immediate Actions

1. Explore alternatives to in-person meetings such as teleconferencing, streaming, or regional meetings.
2. Consider the impact of air travel on selection of sites for meetings, preferentially selecting sites that a majority of attendees can reach by public transportation.
3. Consider lengthening the time between meetings and coordinating joint meetings of societies with similar interests.
4. Critically examine the carbon footprint of members’ individual travel to professional meetings, and commit to reducing air travel by 20% to set an example for other organizations.
5. Make our professional meetings as carbon neutral as possible, for example, by:
 - carefully vetting carbon offsets and incorporating those into registration fees;
 - serving primarily plant-based meals at society events;
 - using reusable or compostable materials for badges and other conference handouts;
 - providing conference materials electronically;
 - hosting meetings in Leadership in Energy and Environmental Design (LEED)–certified centers when possible and during times of the year when minimal heating and cooling are needed.

Longer-Term Actions

1. Create a forum for members to share ways we can reduce our carbon footprint.
2. Establish a climate action committee to implement and monitor our progress towards carbon neutrality.
3. Work with our own institutions to enact climate planning (such as the travel policy implemented at the UK’s Bloomsbury Colleges, <https://www.bloomsburygreening.com/>) and to reach carbon neutrality (such as the initiative recently announced by the University of California, <https://www.universityofcalifornia.edu/initiative/carbon-neutrality-initiative>).
4. Act on our responsibility as scientists to inform policy makers and industry leaders of the importance of mitigating greenhouse gas emissions as codified in the Paris Agreement, Sustainable Development Goals, and other international treaties.

We acknowledge that these steps are challenging as our nascent organization looks to grow in size and reach a more international membership. However, by taking these steps to do our part to mitigate greenhouse gas emissions, our organization is committed to stimulating actions by our membership, other scientists, and scientific organizations who, because of their frequent travel, may have larger carbon footprints than those in other professions.

As the developmental psychologist Erik Erikson said, “The only thing that can save us as a species is seeing how we’re not thinking about future generations in the way we live” (Goleman 1998). A multisector approach is clearly necessary to protect human health as we face the climate crisis, and we urge other scientific organizations and their members to consider climate protection policies for the sake of the planet and our children.

References

- Adger WN, Pulhin JM, Barnett J, Dabelko GD, Hovelsrud GK, Levy M. 2014. Human security. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Field CB, Barros VR, Dokken DJ, Mach KM, Mastrandrea MD, Bilir TE, et al., eds. New York, NY: Cambridge University Press, 755–791.

- Ahdoot S, Pacheco SE, Council on Environmental Health. 2015. Global climate change and children's health. *Pediatrics* 136(5):e1468–e1484, PMID: 26504134, <https://doi.org/10.1542/peds.2015-3233>.
- Barnett J. 2006. Climate change, insecurity, and injustice. In: *Fairness in Adaptation to Climate Change*. Adger WN, Paavola J, Huq S, Mace MJ, eds. Cambridge, MA: MIT Press, 115–130.
- Bellinger DC, Goldman LR, Lanphear BP, Eskenazi B, Jacobs DE, Miller M. 2011. The launch of the International Society for Children's Environmental Health and the Environment (ISCHE). *Environ Health Perspect* 119:A420–A421, PMID: 21967750, <https://doi.org/10.1289/ehp.1104435>.
- Bennett CM, Friel S. 2014. Impacts of climate change on inequities in child health. *Children (Basel)* 1(3):461–473, PMID: 27417491, <https://doi.org/10.3390/children1030461>.
- Blattman C, Miguel E. 2010. Civil war. *J Econ Lit* 48(1):3–57, <https://doi.org/10.1257/jel.48.1.3>.
- Burke SEL, Sanson AV, Van Hoorn J. 2018. The psychological effects of climate change on children. *Curr Psychiatry Rep* 20(5):35, PMID: 29637319, <https://doi.org/10.1007/s11920-018-0896-9>.
- Burrows K, Kinney PL. 2016. Exploring the climate change, migration and conflict nexus. *Int J Environ Res Public Health* 13(4):443, PMID: 27110806, <https://doi.org/10.3390/ijerph13040443>.
- Caminade C, McIntyre KM, Jones AE. 2019. Impact of recent and future climate change on vector-borne diseases. *Ann NY Acad Sci* 1436(1):157–173, PMID: 30120891, <https://doi.org/10.1111/nyas.13950>.
- Cohen MJ, Garrett JL. 2010. The food price crisis and urban food (in)security. *Environ Urban* 22(2):467–482, <https://doi.org/10.1177/0956247810380375>.
- Crippa MO, Oreggioni G, Guizzardi D, Muntean M, Schaaf E, Lo Vullo E, et al. 2019. *Fossil CO2 and GHG Emissions of All World Countries: 2019 Report*. Luxembourg: Publications Office of the European Union.
- Dewey KG, Begum K. 2011. Long-term consequences of stunting in early life. *Matern Child Nutr* 7(suppl 3):5–18, PMID: 21929633, <https://doi.org/10.1111/j.1740-8709.2011.00349.x>.
- Ebi K, Paulson JA. 2010. Climate change and child health in the United States. *Curr Probl Pediatr Adolesc Health Care* 40(1):2–18, PMID: 20114000, <https://doi.org/10.1016/j.cppeds.2009.12.001>.
- Edenhofer O, Pichs-Madruga R, Sokona Y, Minx JC, Farahani E, Kadner S, et al., eds. 2014. *Climate Change 2014: Mitigation of Climate Change. Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. New York, NY: Cambridge University Press.
- Goleman D. 1998. Erikson, in his own old age, expands his view of life. *New York Times*, Science section, online edition. <https://www.nytimes.com/1988/06/14/science/erikson-in-his-own-old-age-expands-his-view-of-life.html> [accessed 2 December 2019].
- Haines A, Kovats RS, Campbell-Lendrum D, Corvalan C. 2006. Climate change and human health: impacts, vulnerability, and mitigation. *Lancet* 367(9528):2101–2109, PMID: 16798393, [https://doi.org/10.1016/S0140-6736\(06\)68933-2](https://doi.org/10.1016/S0140-6736(06)68933-2).
- Hunter LM, David E. 2011. Displacement, climate change and gender. In: *Migration and Climate Change*. Piguet E, Pécoud A, de Guchteneire P, eds. Cambridge, UK and New York, NY: Cambridge University Press, 306–330.
- Kar N. 2009. Psychological impact of disasters on children: review of assessment and interventions. *World J Pediatr* 5(1):5–11, PMID: 19172325, <https://doi.org/10.1007/s12519-009-0001-x>.
- Kulp SA, Strauss BH. 2019. New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding. *Nat Commun* 10(1):4844, PMID: 31664024, <https://doi.org/10.1038/s41467-019-12808-z>.
- Lloyd SJ, Bangalore M, Chalabi Z, Kovats RS, Hallegatte S, Rozenberg J, et al. 2018. A global-level model of the potential impacts of climate change on child stunting via income and food price in 2030. *Environ Health Perspect* 126(9):97007, PMID: 30256154, <https://doi.org/10.1289/EHP2916>.
- Madrid PA, Grant R, Reilly MJ, Redlener NB. 2006. Challenges in meeting immediate emotional needs: short-term impact of a major disaster on children's mental health: building resiliency in the aftermath of Hurricane Katrina. *Pediatr* 117(5 Pt 3):S448–S453, PMID: 16735282, <https://doi.org/10.1542/peds.2006-0099U>.
- Majeed H, Lee J. 2017. The impact of climate change on youth depression and mental health. *Lancet Planet Health* 1(3):e94–e95, PMID: 29851616, [https://doi.org/10.1016/S2542-5196\(17\)30045-1](https://doi.org/10.1016/S2542-5196(17)30045-1).
- Mallett LH, Etzel RA. 2018. Flooding: what is the impact on pregnancy and child health? *Disasters* 42(3):432–458, PMID: 29057549, <https://doi.org/10.1111/disa.12256>.
- Masson-Delmotte V, Zhai P, Pörtner HO, Roberts D, Skea J, Shukla PR, et al., eds. 2018. *Global warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*. Geneva, Switzerland: Intergovernmental Panel on Climate Change.
- McLeman R. 2009. Climate change and adaptive human migration: lessons from rural North America. In: *Adapting to Climate Change: Thresholds, Values, Governance*. Adger WN, Lorenzoni I, O'Brien KL, eds. Cambridge, UK: Cambridge University Press, 296–310.
- National Academy of Sciences. 2019. *Climate Change and Ecosystems*. Washington, DC: The National Academies Press, <https://doi.org/10.17226/25504>.
- Philipsborn RP, Chan K. 2018. Climate change and global child health. *Pediatrics* 141:e20173774, PMID: 29739824, <https://doi.org/10.1542/peds.2017-3774>.
- Salas RN, Jacobs W, Perera F. 2019. The Case of Juliana v. U.S. - children and the health burdens of climate change. *N Engl J Med* 380(22):2085–2087, PMID: 31141628, <https://doi.org/10.1056/NEJMp1905504>.
- Salas RN, Knappenberger P, Hess JJ. 2018. *Lancet Countdown, 2019: 2019 Lancet Countdown on Health and Climate Change Policy Brief for the United States of America*. London, UK: Lancet.
- Sellers S, Ebi KL, Hess J. 2019. Climate change, human health, and social stability: addressing interlinkages. *Environ Health Perspect* 127(4):45002, PMID: 30986089, <https://doi.org/10.1289/EHP4534>.
- Sheffield PE, Landrigan PJ. 2011. Global climate change and children's health: threats and strategies for prevention. *Environ Health Perspect* 119(3):291–298, PMID: 20947468, <https://doi.org/10.1289/ehp.1002233>.
- Sims REH, R Schaeffer, Creutzig F, Cruz-Núñez X, D'Agosto M, Dimitriu D, et al. 2014. Transport. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Edenhofer O, R Pichs-Madruga, Y Sokona, E Farahani, S Kadner, K Seyboth, et al., eds. Cambridge, UK and New York, NY, USA: Cambridge University Press.
- Stanberry LR, Thomson MC, James W. 2018. Prioritizing the needs of children in a changing climate. *PLoS Med* 15(7):e1002627, PMID: 30063709, <https://doi.org/10.1371/journal.pmed.1002627>.
- Stewart F, Fitzgerald V. 2001. War and underdevelopment. In: *The Economic and Social Consequences of Conflict*, vol. 1. Oxford, UK: Oxford University Press.
- U.S. EPA (U.S. Environmental Protection Agency). 2016. *Climate Change and the Health of Children*. Washington, DC: U.S. Environmental Protection Agency.
- U.S. EPA. 2019. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017*. Washington, DC: U.S. Environmental Protection Agency.
- UNDP (United Nations Development Programme). 2007. *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World*. New York, NY: United Nations Development Programme.
- UNICEF (United Nations Children's Fund). 2015. *Unless We Act Now: The Impact of Climate Change on Children*. New York, NY: UNICEF.
- Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L, et al. 2008. Maternal and child undernutrition: consequences for adult health and human capital. *Lancet* 371(9609):340–357, PMID: 18206223, [https://doi.org/10.1016/S01406736\(07\)61692-4](https://doi.org/10.1016/S01406736(07)61692-4).
- Warner K, Afifi T. 2014. Where the rain falls: evidence from 8 countries on how vulnerable households use migration to manage the risk of rainfall variability and food insecurity. *Clim Dev* 6(1):1–17, <https://doi.org/10.1080/17565529.2013.835707>.
- Watt S, Chamberlain J. 2011. Water, climate change, and maternal and newborn health. *Curr Opin Environ Sustain* 3(6):491–496, <https://doi.org/10.1016/j.cosust.2011.10.008>.
- Watts N, Amann M, Arnell N, Ayeb-Karlsson S, Belesova K, Boykoff M, et al. 2019. The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. *Lancet* 394(10211):1836–1878, PMID: 31733928, [https://doi.org/10.1016/S0140-6736\(19\)32596-6](https://doi.org/10.1016/S0140-6736(19)32596-6).
- Wynes S, Nicholas KA. 2017. The climate mitigation gap: education and government recommendations miss the most effective individual actions. *Environ Res Lett* 12(7):074024, <https://doi.org/10.1088/1748-9326/aa7541>.