Planetary health: an introduction
Planetary health is an emerging field that focuses on the human health impacts of global environmental change. It looks at how humans are altering the natural world -- how our expanding population, changes in technology, and patterns of consumption and production are fundamentally changing our land, atmosphere, and oceans. It assesses how global pollution, climate change, biodiversity loss, altered biogeochemical cycles, changes in land use, and resource scarcity are decreasing the quality of the air that we breathe, the water we drink, the food that we grow; exposing us to new diseases; decreasing our access to fresh water and other resources; and increasing the incidence of severe natural disasters, like the massive hurricanes we’ve been seeing across the Caribbean and southern United States. All of this can have negative consequences for our nutrition, mental health, and susceptibility to injury and disease.

Humanity has made tremendous gains in public health -- by almost any measure, the health of much of the world is better now than at any time in history. Since the 1950s, life expectancy has increased by more than 30 years, and death rates in children younger than 5 have decreased from about 20% of live births to about 6%.

Yet at the same time, we have disrupted Earth’s natural systems.
- Every year, we appropriate about 40% of Earth’s land surface for pastures and croplands.
- We use about half of the planet’s accessible fresh water to irrigate our crops.
- We exploit 90% of global fisheries at or beyond their maximum sustainable limits.
- We have cut down half of the world’s forests and dammed more than 60% of its rivers.
- Since the 1950s, the human population has increased by nearly 200%; fossil fuel consumption by over 550%; and marine fish capture by over 350%.

Our environment is changing.
- CO2 levels are rising at a record pace -- the current levels having increased by about 24% since the 1950s.
- 2016 was Earth’s warmest year on record.
- 2018 was the warmest year on record for our oceans, which are not only becoming warmer, but also acidifying -- they’ve experienced a 30% increase in pH since the Industrial Revolution.
- Pollinators, which are needed for plants and crops to grow, are disappearing worldwide.
- Biodiversity loss is now about 1000 times the natural background rate of extinction. Every hour, we lose three species. Every day, we lose 150. Every year, between 18,000 and 55,000 species go extinct. In the past 45 years, the numbers of individual mammals, fishes, birds, reptiles, and amphibians have fallen by half.

“We have mortgaged the health of future generations to realise economic and development gains in the present.”
Environmental changes are now having a tangible effect on our health and are jeopardizing decades of public health gains.

- Climate change, biodiversity loss, deforestation, and other factors affect where, when, and how intensely infectious diseases emerge. We’re seeing expanded geographic ranges and seasonality of infectious diseases, including malaria, Dengue, Zika, yellow fever, Lyme, Ebola, and chikungunya.
- Increased drought, declining pollinators, and extreme storms make it harder to grow food, and some crops are also becoming less nutritious because of atmospheric changes, making people more susceptible to malnutrition and disease. Increasing CO2 concentrations in the atmosphere, for example, are decreasing protein, iron, and zinc content key staple crops like rice and are decreasing medicinal compounds in other plants.
- Industrial emissions and smoke from fires -- whether wildfires or human-made fires created to clear forests for agricultural use -- can lead to cardiorespiratory illnesses and other diseases.
- Hurricanes and other major storms put people’s lives at risk. Globally, as the WHO reports, the number of reported weather-related natural disasters has more than tripled since the 1960s. Every year, these disasters result in over 60,000 deaths, mainly in developing countries.
- Finally, witnessing the degradation of our world; contending with the health, economic, and sociopolitical stressors of environmental change; and having decreasing contact with nature can have severe consequences for our mental health. This puts people around the world at greater risk for mental illnesses like depression, post-traumatic stress disorder, and anxiety, as well as for suicide.
- One of the most striking things is the component of justice -- most of these environmental changes are caused by high-income countries, but it’s the world’s poorest who are feeling most of the effects. [For high-income countries: What we’re doing here in the rich countries (like the U.S.) is causing tremendous damage in low-income countries, small island states, indigenous lands, and other vulnerable populations -- and most of this damage is totally unseen (or ignored) by us.]

In short: Everything is connected -- what we do to our environment comes back to affect us, and not always in ways that we would expect. And to understand and act on these challenges, we need to collaborate across disciplines, across sectors, across countries, and across generations.

That's what we'll focus on in today's session. We’re going to split you up into groups based on a planetary health challenge -- changing infectious disease dynamics, changing food systems and nutrition, and declining mental health.

We’ll give you some time to read some of the introductory materials we’ve put together for you to learn about your topic. All of this is merely an overview -- each of these areas has a huge wealth of research, so you’re only skimming the surface to get a sense of the scope of your
planetary health challenge. As a group, come up with 5 key bullet points about your planetary health challenge -- what are the major relevant environmental changes that are contributing to your specific health outcome? Since you only have a relatively short amount of time, you'll have to figure out amongst yourselves how to best split up and summarize the readings. Don't focus on the details -- look at the abstracts, graphs and figures, the general conclusions drawn by the authors, and their recommendations for action.

After this, you're going to brainstorm about how to solve some of these issues through specific lenses. You'll be looking at these issues from one of three angles: civil society (like NGOs or non-profits), the private sector (like businesses), and government. You'll find more information about your roles on the sheets provided, which identify some key questions to help you orient your brainstorming.

You’re then going to come together as a topic group and discuss -- you’ll share initial ideas about how you’re going to try to address your planetary health challenge through your role as an NGO, business, or government entity and then talk together about how you can support one another. What are the limitations you’re encountering in your sector? What do you need from other sectors?

We’re then going to come back together as an entire group for you to summarize what you came up with. What did you learn about your planetary health challenge, and how are you going to address it? We’ll also use this time for questions and general discussion.

Please know that within the time we have, we don’t expect you to fully understand all of the details of the research behind your planetary health challenge and how to solve it -- this is supposed to be a learning experience for you to start considering questions about how we’re impacting our environment and how this is impacting our health and to start brainstorming about how we can collectively think about solving these issues.

AGENDA FOR 90-MINUTE WORKSHOP:

- 10 min introduction
- 20 min read introductory materials + come up with five bullet points
- 20 min brainstorm by role about solutions
- 20 min planetary health challenge groups discuss intersectoral collaboration
- 20 min group-wide discussion-buffer space

Workshop leaders ask each group to summarize their major findings from reading the provided literature, their proposed solutions, and any opportunities for intersectoral collaboration. Participants and workshop leaders are encouraged to ask each group further questions about their topics and potential solutions. Workshop leaders can conclude with a group-wide discussion of major challenges and opportunities in understanding and addressing planetary health issues, the importance of intersectoral + international collaboration, real-world applications, and any other general questions.
AGENDA FOR 120-MINUTE WORKSHOP:

- 10 min introduction
- 30 min read introductory materials + come up with five bullet points
- 30 min brainstorm by role about solutions
- 20 min planetary health challenge groups discuss intersectoral collaboration
- 30 min group-wide discussion(buffer space

Workshop leaders ask each group to summarize their major findings from reading the provided literature, their proposed solutions, and any opportunities for intersectoral collaboration. Participants and workshop leaders are encouraged to ask each group further questions about their topics and potential solutions. Workshop leaders can conclude with a group-wide discussion of major challenges and opportunities in understanding and addressing planetary health issues, the importance of intersectoral + international collaboration, real-world applications, and any other general questions.