

# 10th Annual One Health Symposium

## Student Case Competition

### **Together, Student Leaders Face the Climate Crisis**

#### **Writing Team Members**

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The climate change challenges included are intricate and may not have a singular, definitive solution. Instead, they encourage a thoughtful blend of creative and perceptive approaches. The writing team has provided factual information and references to aid participating student teams. The information provided is sourced independently and is cited, allowing teams the opportunity to review or contest the findings as necessary. Teams are responsible for validating the accuracy and reliability of all data information used in their presentations, as well as defending their assertions in front of a panel of knowledgeable contest judges.

## **Introduction**

The One Health approach champions collaborative and transdisciplinary solutions to addressing crises our world faces. Climate change is one of the greatest threats of our time and has wide impacts on climate extremes, infectious disease transmission, and biodiversity loss. Enhancing multi-sector collaboration is critical for addressing these global challenges. In this competition, we are seeking real world examples of collaborative solutions to climate change-related emergency situations that have previously impacted your region/country.

Collaborative, interdisciplinary efforts are essential to mitigate its impacts and adapt to the changes already in motion. This competition challenges participants to grapple with real-world climate change-related emergencies, encouraging you to apply the principles of One Health to find innovative and cooperative solutions that advance the health and resilience of humans, animals, and the environment. By fostering a deeper understanding of the intricate connections between climate change and health, we aim to inspire the next generation of leaders to champion the One Health approach and work collectively towards a healthier, more sustainable future for us all.

## **Background: One Health and Climate Change**

Climate change refers to the long-term alteration in Earth's climate patterns, primarily driven by human activities, including the release of greenhouse gasses and deforestation. This phenomenon results in rising global temperatures, shifts in weather patterns, and an array of environmental consequences. Historically, the recognition of climate change dates back to the late 19th century, but it gained significant scientific consensus in the late 20th century. The Industrial Revolution marked the onset of substantial human-induced emissions, intensifying the problem.

The scale of climate change is global and multifaceted. It encompasses a range of interconnected issues, such as rising sea levels, more frequent and severe weather events, biodiversity loss, and disruptions to ecosystems. Its impacts touch nearly every facet of human society, from agriculture and food security to public health, water resources, and global geopolitics. The significance of our changing climates lie in the far-reaching and potentially catastrophic consequences. Shifts in climate threaten food production, exacerbate extreme weather events, and pose risks to both human and ecosystem health. Addressing climate change is not only an environmental imperative but also a societal and economic one, requiring international cooperation and concerted efforts to mitigate its effects and adapt to the changes already underway.

One Health represents a paradigm shift in the way we address complex global challenges at the intersection of human, animal, and environmental health. It recognizes the intricate interconnectedness of these domains and emphasizes the necessity of a collaborative, transdisciplinary approach. Central to this approach is the acknowledgment that the health of all three sectors listed below are intrinsically linked, and any alteration in one sector may have consequences for the others.

Today, one of the most pressing and pervasive global challenges we face is climate change. Its consequences extend far beyond the rising temperatures that grab headlines, encompassing a complex web of effects with significant implications for overall health and well-being. Examples of how sectors are involved:

1. **Human health:** Climate change poses direct threats to human health through an increase in the frequency and intensity of extreme weather events such as hurricanes, floods, drought, wildfire, and heat waves<sup>1</sup>. These events result in injuries, displacement, and the rapid spread of waterborne diseases<sup>2</sup>. Increased temperatures and extreme precipitation events can create climate suitability that support the movement of vector-borne diseases such as malaria, dengue fever, chikungunya, and Zika fever<sup>3,4</sup>.
2. **Animal health:** Animals, both domestic and wild, are profoundly affected by climate change. Altered habitats, shifting food availability and the spread of infectious diseases threaten animal populations<sup>5,6</sup>. In response to shifting environmental conditions, certain animals may exhibit adaptive behaviors, including the exploration of alternative or novel food sources<sup>7</sup> and acute stress response<sup>8</sup>. Some animals may alter their foraging patterns, seeking cooler habitats to mitigate heat-related stress<sup>9</sup>. In agriculture, extreme weather events can disrupt food production, affecting livestock and crop yields, thereby compromising food systems stability<sup>10</sup>.
3. **Environment health:** The multifaceted effects of climate change, such as rising temperatures, altered precipitation, and sea-level rise, can have intricate, sometimes opposing effects on species, which complicate their responses to climate change<sup>11,12</sup>. Coupled with non-climate stressors, like land-use changes and resource extraction, these challenges can lead to maladaptive behaviors of both terrestrial and aquatic species, such as plants<sup>13</sup>, bees<sup>14</sup>, salmon<sup>15</sup>, birds<sup>16</sup>, increasing the risk for local extinctions<sup>17</sup>. Loss of biodiversity poses substantial risk to particular ecosystems and the essential services they offer to ecosystems and society<sup>18, 19</sup>.

## Case competition guidelines

There are many climate-related issues, many with unique health impacts. The background provided above is a brief summary of multifaceted problems related to the climate change phenomenon that is affecting our world. As a student team, you have to first select one climate change-related event from the news. Then you work as a student team to develop a possible solution that is rooted in the One Health approach, focusing on the interconnectedness of human, animal, and environmental health. The case solution should address the following aspects:

- **Climate change health impact:** Each team must summarize how human, animal, and environmental health is specifically impacted by the chosen climate change event. This includes identifying vulnerabilities or health risks that are directly linked to the climate event.
- **Priority areas and issues:** Each team must identify and select at least one of the priority areas within the domains of human health, animal health, and environmental health as a basis for proposing a solution. For example, vector-borne diseases, zoonotic diseases, food and water quality/security, biodiversity loss, vector control, etc.
- **Interdisciplinary collaboration:** Each team must incorporate a One Health approach when designing a solution to their case. Given the complex nature of climate change challenges, emphasize that each discipline represented should contribute unique insights and strategies that directly address the climate change-related event chosen for the competition.
- **Community engagement:** Each team should give a careful thought on how they will engage with and involve affected communities in their response. Additionally, emphasize the importance of effectively conveying the One Health message within the context of climate change, fostering community understanding and collaboration in the face of these challenges.
- **Policy considerations:** Each team should highlight the significance of considering climate change policy and legal frameworks in their response. Each team is encouraged to analyze how existing policies and regulations may impact their response strategy.

### In summary, your solution proposal must:

- Describe the case problem by summarizing specific impacts on human, animal, and environmental health resulting from your chosen event.
- Select at least one of the priority areas/issues (see section above) affected by your selected event to propose a solution along with an implementation timeline.

- Summarize the historical context, scale, and significance of the issues.
- Illustrate how a One Health approach will effectively tackle the issues.
- Address stakeholder/community engagement and sustainability.
- Provide a monitoring and evaluation plan for impact measurement.

## **Additional considerations**

- Explain why you chose the local news event and how your solution and innovations could be implemented in that city/region/country. Consider the following: the feasibility, the relationship to population, the political context, key infrastructure, and the climate-related vulnerabilities.
- Identify weakness in your location's preparation for and management of human, animal, and environmental health crises and develop new approaches to programs, services, and/or technologies to ensure public health.
- Identify weakness within your location's infrastructure (communication, transportation, housing, health care system, etc.) and create solutions to ensure the best delivery of health care during a climate crisis.
- Address how a climate change effect upon the environment impacts the population's health outcomes. What are ways to mitigate these environmental impacts and health risks?
- Propose solution plans that are acceptable to the local population and stakeholders, executable, and adaptable to other locations in your country.
- Consider socioeconomic factors that include education, income, demographics, and exposure to hazards.
- Consider any established organizations with which your country has not yet collaborated with in delivering services related to your proposal.

## Submission guidelines

### First round submission requirements include:

- Submit your team member names, country, and professional background
- One-page executive summary: (11 point Arial, single-spaced, 1 inch margins) detailing an event in your region/country related to the impact of climate change and your team's solution proposal to responding to this event.
- Presentation: 10 minute recorded presentation of the climate crisis and your team's solution for addressing the issue identified in your news event. Please include all required components of the solution proposal mentioned above.

### Final round submission requirements include:

- Teams selected to present at the Symposium will be notified via email on Friday, October 27th, 11:59 pm PST.
- Presentations will take place live, over Zoom on **Tuesday, October 31st 6:00-9:00 am PST**.
- Each team will have 10 minutes to present their case solution, followed by 5 minutes of question and answer session with the judges.

## Judging Criteria

0 Not addressed      1 Inadequate      2 Adequate      3 Impressive

<b>Problem description</b>	Does the team's proposal focus on one specific problem? Does the team comprehensively present relevant context, research, and scale of the issue?
<b>Stakeholders consideration</b>	Does the proposal include stakeholders from varied fields including (but not limited to) healthcare, community, social work, and government, recognizing how social determinants of health impact the problem?
<b>One Health relevance and approach</b>	Is the solution proposed backed by evidence? Does the approach orient around practical, logical, and balanced solutions while clearly illustrating how a One Health approach will effectively tackle the identified problem?
<b>Impact</b>	Does the proposal describe which specific measures the project targets? All measures for which data will be collected should be justified in relation to the solution's goal.
<b>Timeline</b>	Has the team offered an appropriate timeline depicting all components of the proposed solution?
<b>Sustainability justification</b>	Is the solution community-based and build local capacity? Proposals that leverage and build upon local strengths and resources are favorable.
<b>Presentation quality</b>	Did the team present its proposal in a clear, concise, and compelling manner? Was the team able to answer the judges' questions effectively and provide relevant data when requested?

## Competition Schedule

Date	Activity
Friday October 6th	<p><b>Case release</b></p> <p>The case will be released on the UC Davis website and social media platforms. Teams who are interested are responsible for gathering the team members according to the requirements and disseminating all information to their team members.</p>
Thursday October 12th	<p><b>Optional information session</b></p> <p>The organizing team will host a 1-hour live information session (recording available) to introduce the case competition and answer any inquiries from the teams.</p>
Monday October 16th  Friday October 20th	<p><b>Virtual case advising session</b></p> <p>Teams can sign up for a virtual 2-hour case advising session either on Monday October 16th OR Friday October 20th to provide an opportunity to present and discuss their case solutions with a public health professional prior to submitting their proposal. <i>Teams should have a rough draft of a case presentation ready to discuss.</i></p>
Monday October 23rd	<p><b>Team submission deadline</b></p> <p>A team captain will need to submit an application via google form by this date. In this form, the team captain will need information of all team members including their names and major (school) or field of study.</p> <p><b>Case solution submission deadline</b></p> <p>Every team must submit a case solution synopsis and a 10-minute recorded presentation to the designated folder. Full submission guidelines and instructions will be provided on the competition website.</p>
Friday October 27th	<p><b>Announcement of Finalists</b></p> <p>The captains of each team will receive an email regarding whether their team has been selected as finalists. Teams that are not selected will receive feedback from judges about their case solution.</p>
Tuesday October 31st	<p><b>Final Presentations</b></p> <p>Finalist teams will do a 10-minute virtual live presentation with a 5-minute question and answer session with the judges. The presentation day schedule will be shared with the team captains.</p> <hr/> <p><b>Awards Ceremony</b></p>



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