



Nature-Based Solutions for Combating Heat Waves and Protecting Regional Health

Table of Contents

Letter from the Chair.....	3
Key terms.....	7
I. Overview.....	8
II. Topic Background.....	9
III. Past United Nations Action.....	12
IV. Current Issues.....	14
V. Questions to Consider.....	15
VI. Countries List.....	16
Works Cited.....	20

Letter from the Chair

Vanessa Huang



Hello Delegates!

My name is Vanessa, and I am a Junior at Amador Valley High School. I've been doing Model UN for 3 years now, and this is my first time chairing. I joined MUN after two horrible years of Speech & Debate, and the freedom behind unmoderated caucuses and resolution writing was a breath of fresh air compared to debate's evidence-heavy approach. My biggest advice for MUN is to be yourself! While it is important to professionally represent your country, letting a little personality shine through (like using creative hooks) is a great way to give captivating speeches, form blocs, and combat anxiety. Outside of MUN, I love playing video games and watching TV shows (if you are a JJBA fan, please email me!! I'd love to yap about it).

I'm super grateful for this opportunity and I look forward to hearing everyone's ideas in debate!

If you have any questions at all, feel free to contact me: vanessadhuang@gmail.com

Erin Spratt



Hello!

My name is Erin Spratt and I am a Senior at Bella Vista High School. I've been doing MUN since my freshman year and have only chaired a mock conference, so I'm excited to have the chance to watch over all of you. I joined MUN to gain confidence and improve my public speaking, but at each conference I fell more in love with using my knowledge on a niche topic to advocate for my country. I think conferences are the most fun when you are well prepared, and dedicated to doing the best you can for the country you're pretending to represent. For me, an illusion of a greater cause takes pressure off of your own performance and the dynamics of those around you, and lets you focus freely on productive collaboration. A little bit about me is that I do throwing in Track and Field, my favorite event is the hammer, and I like to golf and play pickleball!

You can reach me at erinsprattd.i.y@gmail.com if you need anything!

Arnav Rastogi



Hey everyone!

My name is Arnav and I am a Senior at American High School. I have been into Model UN since my sophomore year! I have been to many conferences and I am really excited to chair at my first one. A fun fact about me is that I have a Duolingo streak of over 1600 days! My favorite kind of delegates are the ones that lock in during moderated caucus and have fun hooks! I am also a part of my school's mock trial team, student council, and speech team (DI/Impromptu stan).

Public speaking is definitely a passion of mine and something that I wanted to improve since my freshman year. I used to be nervous going up to every mod, but MUN gave me the confidence to be myself and say what I want. I hope everyone in our committee gets to have the kind of experience that allows them to feel a bit more confident than they came in. Excited to meet you!

Reach out to me at arny.rastogi@gmail.com.

Archita Khandelwal



Hi!

My name is Archita and I'm a Senior at American High school. I have been in Model UN since sophomore year and participated in around 8 conferences throughout the past 3 years. I've only ever been a backroom staff, so I'm excited to chair! I'm so excited to see everyone's different perspectives on this committee; just remember to be confident, be diplomatic, and align with country policy. I know you will all do great! Outside of MUN, I love painting, ceramics, and basically all things art. I'm also very interested in space, cosmology, and astrophysics.

If you have any questions, feel free to email me: archita.khandelwal@gmail.com.

Key terms

Heat wave: A period of abnormally hot weather that lasts more than two days, defined by the build-up of excess heat over successive days and nights.

Wet Bulb Temperatures: The lowest temperature that can be reached through evaporative cooling.

Dry Bulb Temperatures: Also known as air temperature. It refers to the ambient air temperature as indicated by a thermometer.

Proactive response: To take intentional steps to reach a goal.

Nature Based Solutions: Solutions that use nature and the power of ecosystems to address and solve current challenges.

Gray Infrastructure: Traditional engineered constructions. This includes roads, sewers, and bridges.

I. Overview

With the rise in climate change, many previously habitable areas have experienced periods of extreme heat that the region's infrastructure isn't equipped to handle. Even developed areas with air conditioning access have been suffering as electrical grids strain under collective demand and cooling systems fail when they are needed most.

Rather than relying on the use of electric cooling, which only perpetuates global warming through electrical consumption and refrigerant pollution, nature-based solutions must be considered as an alternative in the long term. Nature-based solutions have the potential to transform regional climates by regulating dry bulb temperatures and lowering humidity, all while strengthening the ecosystems degraded by climate change. This approach aligns with UNEP's mission of improving quality of life without compromising future generations, where environmental infrastructure is the defense against extreme temperatures in increasingly unstable climates.

This committee should be focused around the following core objectives, keeping in mind the focus of UNEP is to address the root causes of extreme climates through environmental policy, land use, and infrastructure. Delegates should avoid solutions focusing solely on heatwave response and public health policy, which concerns WHO, as well as broader climate change efforts which stray from the mitigating objective of this conference.

II. Topic Background

The World Meteorological Organization (WMO) describes heat waves as “periods of unusually hot (...) weather (...) [with] a duration of at least two to three days and a discernible impact on human activities (...) [defined by] the build-up of excess heat over successive days and nights” (WMO and WHO, 2015). The effects of heat-related natural disasters are often not immediately clear, thus leading to a neglect in attention compared to hazards like tornadoes and hurricanes. From 2000–2019, almost 500,000 heat-related deaths occurred each year. However, rising temperatures are proliferating both heat wave frequency and exposure. The World Health Organization (WHO) notes that “between 2000 and 2016, the number of people exposed to heat waves increased by around 125 million.”

The 2026 European heat waves were “the most severe and widespread ever [in Europe],” with over 100 million people expected to endure temperatures that soared above 35°C. On June 25th, 2026, the United Kingdom (UK) recorded a new provisional high of 36.7°C, its hottest June temperature since 1947 (Carrington, 2026 and Carrington et al. 2026). The extreme temperatures defining these events also contribute to a high death toll. Notably, the heatwaves of 2003 and 2022 were linked to the deaths of 70,000 and 61,600 Europeans, respectively (Robine et al. 2008 and Treisman 2023). This phenomenon, however, is not restricted to Europe. In June 2015, India and Pakistan endured a heat wave that recorded highs of 44.8°C, but with heat indexes of up to 66.1°C due to humidity. These temperatures were reported to be the highest since 1979. The event killed 1,200 people alone in Karachi, Pakistan’s largest city (Chaudhry et al. 2015).

Climate change plays a huge role in the rising temperatures observed during heat waves. An analysis by the World Weather Attribution (WWA) showed that “a heatwave like the current

one in Europe would have been 2C cooler [in 2003] (...) In 1976 (...) it would have been 3.5C cooler.” Additionally, research associate Dr. Theodore Keeping explained in June, ““We found that in the last 50 years, during which time the planet has warmed by 1.1°C, the chance of a heatwave like this has changed immensely. This event would not have been possible in June without climate change”” (Carrington 2026). Climate change will also increase the frequency of heat-related events. A study in 2025 predicted that heat waves in equatorial Africa that last more than 35 days would happen 60 times more often in the near future compared to the past few decades (Hewitt 2025).

Heat waves have widespread impacts that affect more than just human health. It can also increase demand for water and energy, damage crops, stress infrastructure (like buildings and roads), and increase risk for outdoor activities (Chaudhry et al. 2015). Additionally, low income communities are more susceptible to heat wave effects, and the potential lack of technology like air conditioners is not the only problem (Abunyewah et al. 2025). Poorer neighborhoods or those with worse infrastructure are more likely to have hard, dark surfaces (like concrete) that absorb heat, rather than vegetation and tree cover. This is called the urban heat island effect, defined as when “cities experience more heat than rural areas because man-made infrastructure such as buildings, streets and sidewalks often retain more heat than natural surfaces.” In fact, an analysis conducted in India revealed a direct relationship between higher vegetation cover and lower land temperatures, concluding a 5.5°C difference in land surface temperature between the hottest and coldest neighborhoods (Mackres et al. 2024). Trees and vegetation are essential heat mitigants, cooling the air and providing shade, and they are crucial for a world with rapidly rising temperatures and increased risk of heat (EPA). However, without adequate action to implement

local, nature-based solutions into member States, the damage caused by deadly heat waves will only continue to increase.

III. Past United Nations Action

The United Nations has taken many measures to curb heat wave damage and promote nature-based solutions. UNEP/EA.5/Res.5, passed in 2022, recognizes the importance of nature-based solutions as a whole and acknowledges the need for a universal definition. In July 2024, the UN Secretary-General issued a Call to Action on Extreme Heat, which pressed for international cooperation and an expansion on passive cooling (including natural solutions and designs) that could protect 3.5 billion people by 2050 (UN 2024). Additionally, the Global Heat Health Information Network launched an Extreme Heat Decision-Support Package that aims to improve heat risk governance. Heat Action Profiles were also implemented; it displays current action on heat across 16 international organizations and is soon to include UNEP (Global Heat Health Information Network). In 2025, UNEP partnered with India's National Disaster Management Authority to co-host the International Workshop on Heatwaves. Held in New Delhi, the workshop addressed the need for better infrastructure, action plans, and collaboration (Harmon 2025). UNEP's initiatives, like the Climate & Clean Air Coalition and the Cool Coalition, also strive for sustainable cooling. It is especially worth noting Cool Coalition's Nature for Cooling Challenge, a three-year initiative that aims to reduce heat exposure by establishing frameworks for nature-based cooling and financing urban nature projects. Individual countries are also working to implement nature into their cities. For example, a collaboration between Europe and Latin America planted flower beds and trees in Buenos Aires, Argentina's capital (UNU-EHS 2025). Non-governmental organizations (NGOs) are important, too. HERA is an NGO that finds women-centered solutions for battling extreme heat, like providing heat-pregnancy insurance. Earth.Org is an environmental news website that provides information about climate change, including heat events and issues. However, despite all these actions, it is

important to note that there is still a significant lack of international action and enforcement on this topic.

IV. Current Issues

Despite initiatives from UN bodies and NGOs, the lack of action on heat waves (especially nature-based solutions and urban greenery) remains a significant issue. This is largely due to the problem being localized; individual State governments must take proactive measures to initiate and oversee change. Infrastructure is a huge issue; in the instance of the 2026 European heat waves, British homes still lack air conditioning, and the government spends large amounts of money on infrastructure that only worsens the issue, even though protective infrastructure would be financially beneficial (Harvey 2026). Low-income areas or developing countries are also affected disproportionately, as they are more likely to have more heat-absorbing surfaces and less greenery. It is essential that member States find a solution that includes those with insufficient funding. Additionally, as UNEP/EA.5/Res.5 points out, there is a need for a universal definition for nature-based solutions (UNEP/EA.5/Res.5). Without one, disagreements could arise and further discourage cooperation. But ultimately, this is a problem defined by the lack of enforcement. Many countries who are capable of investing in nature-based solutions are hesitant to do so; it is up to member States to take the first step into solving this issue.

V. Questions to Consider

1. How should nature-based solutions be formally defined?
2. How can member states implement nature-based solutions into local, regional communities, as opposed to international climate control?
3. What can member states do to ensure that local infrastructure is adequately prepared to withstand heat-related disasters?
4. How can the committee prevent symbolic commitments and ensure member participation?
5. How can we make sure these solutions are properly implemented and enforced, especially in low-income areas or developing countries?

VI. Countries List

Kenya - Strong advocate for international funding, emphasizes climate resilience in developing nations

Nigeria - Urges Western nations to follow through with climate finance commitments, focuses on urban greening initiatives

South Africa - Supports nature-based solution integration into municipal spatial planning, balances sustainability with urgent economic development

Egypt - Promotes greening arid urban corridors along Nile, advocates for global support to address desertification

Ghana - Argues for binding finance provisions to help developing African nations build green infrastructure

Ethiopia - Supports large-scale afforestation programs, seeks bilateral funding

United Arab Emirates - Supports hybrid models combining gray infrastructure with drought-tolerant native vegetation & sustainable urban infrastructure

Saudi Arabia - Supports the Saudi Green initiative, maintains state sovereignty over national energy transition

Morocco - Promotes traditional oasis preservation and sustainable urban green spaces

Iraq - Advocates for urgent UNEP support and funding to combat desertification and wet-bulb heatwaves

Qatar - Fights for national flexibility over energy transition, advocates for voluntary environmental programs

India - Highly vulnerable to severe heat waves, insists developed nations fund transition and implementation costs

Pakistan - Prioritizes urban tree-plantation and nature-based cooling following heatwaves, advocates for global loss and damage support

China - Promotes its large-scale “Sponge Cities” model and massive afforestation program, prefers national flexibility over binding mandates

Japan - Focuses on high-tech integration including urban green spaces and cool roofs to counter urban heat islands in urban areas

Bangladesh - Stresses nature-based coastal and rural ecosystem protection, prioritizes financial aid for regions experiencing dangerous wet-bulb heat climates

Vietnam - Advocates for UNEP technical assistance programs targeting urban heat island mitigation in developing coastal cities

Philippines - Promotes UN funding mechanisms for coastal nature-based solutions, prioritizes vulnerable developing nations in resolutions

Singapore - Leads advocacy for biophilic urban architecture, green roofs, and passive cooling models

South Korea - Co-sponsors clauses integrating smart technology and environmental monitoring into forestry resolutions

United Kingdom - Supports nature-based solutions but cautions against excessive UN administrative expenses

France - Pushes for legally binding resolutions and mandatory urban canopy targets

Germany - Sets high environmental standards and advocates for gray-to-green infrastructure transitions globally

Poland - Supports gradual urban greening initiatives, advocates for flexible timelines to protect domestic energy stability and industrial output

Spain - Supports UNEP initiatives targeting Mediterranean desertification and demands international co-financing for urban cooling

Italy - Supports UNEP frameworks for urban greening and water management without overburdening agricultural sectors

Netherlands - Supports hybrid gray-green infrastructure, encourages collaboration internationally in flood-heat mitigation

Sweden - Sponsors ambitious resolutions with strict UN standards, mandatory green canopy targets & climate financing

Switzerland - Focuses on science-based initiatives for urban greening and supports international funding

Russia - Opposes binding UNEP mandates, prioritizes resolutions that respect national land-use sovereignty

United States - Favors market-based approaches and NGO partnerships, rejects binding UN regulatory or financial mandates

Brazil - Advocates for international financial compensation for global ecosystem cooling services

Mexico - Targets urban heat islands in high-density areas, environmental justice for low-income neighborhoods

Argentina - Expands urban agriculture, advocate for international technical partnerships

Colombia -Advocates for bio-cities and urban green corridors to lower ambient temperatures in vulnerable communities

Chile - Mandates heat-resilient native vegetation, focuses on central regions that experience extreme climate

Peru - Looks to integrate indigenous land knowledge and mountain ecosystems for cooling purposes

Venezuela - Advocates for financial support for developing nations but emphasizes national sovereignty over domestic policy

Australia - Focuses on drought-resilient native vegetation and urban forestry to protect communities from heat

Works Cited

- Abunyewah, Matthew, et al. "The Multidimensional Impacts of Heatwaves on Human Ecosystems: A Systematic Literature Review and Future Research Direction." *Environmental Science & Policy*, 2025, <https://www.sciencedirect.com/science/article/pii/S1462901125000401>.
- Carrington, Damian. "European Heatwave Is Worst Ever and Impossible Without Climate Crisis, Scientists Say." *The Guardian*, 26 June 2026, <https://www.theguardian.com/environment/2026/jun/26/europe-heatwave-impossible-without-climate-crisis-scientists>.
- Carrington, Damian, et al. "Climate Action Falls Far Short, MPs Say as Europe Gripped by Worst Heatwave on Record." *The Guardian*, 27 June 2026, <https://www.theguardian.com/environment/2026/jun/25/highest-june-minimum-temperature-record-broken-cardiff-savage-heatwave-continues>.
- Chaudhry, Qamar-uz-Zaman, et al. *Technical Report on Karachi Heat Wave June 2015*. Government of Pakistan, Ministry of Climate Change, 2015, <https://mocc.gov.pk/SiteImage/Misc/files/Final%20Heat%20Wave%20Report%203%20August%202015.pdf>.
- Cool Coalition. "Nature for Cooling Challenge." *Cool Coalition*, UN Environment Programme, <https://coolcoalition.org/projects/nature-cooling-challenge>.
- Earth.Org*, <https://earth.org/>.
- Global Heat Health Information Network. "Supporting Extreme Heat Risk Governance." *GHHIN*, <https://heathealth.info/supporting-extreme-heat-risk-governance/>.
- Harvey, Fiona. "England Risks Building New 'Death Traps' as Experts Warn of Overheating Crisis." *The Guardian*, 16 July 2026, <https://www.theguardian.com/environment/2026/may/20/uk-built-for-climate-that-no-longer-exists-and-needs-urgent-changes-to-survive-global-heating-report-warns>.
- HERA. "Protecting Women from Extreme Heat." *HERA*, <https://heranow.org/our-work/>.
- Hewitt, Alison. "Heat Wave Duration Is Accelerating Faster than Global Warming, Researchers Find." *UCLA Newsroom*, 8 July 2025, <https://newsroom.ucla.edu/releases/duration-of-heat-waves-accelerating-faster-than-global-warming>.

Mackres, Eric, Gorka Zubicaray, and Bina Shetty. "As the Earth Gets Hotter, Can Our Cities Get Cooler?" *World Resources Institute*, 2024, <https://thecityfix.com/blog/as-the-earth-gets-hotter-can-our-cities-get-cooler/>.

Robine, Jean-Marie, et al. "Death Toll Exceeded 70,000 in Europe during the Summer of 2003." *Comptes Rendus Biologies*, vol. 331, no. 2, 2008, pp. 171–178, <https://doi.org/10.1016/j.crvi.2007.12.001>.

Treisman, Rachel. "Heat Waves in Europe Killed More than 61,600 People Last Summer, a Study Estimates." *NPR*, 12 July 2023, <https://www.npr.org/2023/07/12/1187068731/heat-waves-europe-deaths-study>.

United Nations. "Secretary-General's Call to Action on Extreme Heat." *United Nations Climate Action*, 25 July 2024, <https://www.un.org/en/climatechange/extreme-heat>.

United Nations Environment Assembly. *Resolution 5/5: Nature-Based Solutions for Supporting Sustainable Development*. UNEP/EA.5/Res.5, 2 Mar. 2022, <https://digitallibrary.un.org/record/3999268>.

United States Environmental Protection Agency. "Using Trees and Vegetation to Reduce Heat Islands." *EPA*, <https://www.epa.gov/heatislands/using-trees-and-vegetation-reduce-heat-islands>.

United Nations University Institute for Environment and Human Security. "Flávia Guerra Featured in El País on How Green Spaces Can Transform Marginalized Neighbourhoods in Buenos Aires." *United Nations University*, 2025, <https://unu.edu/ehs/media-coverage/flavia-guerra-featured-el-pais-how-green-spaces-can-transform-marginalized>.

World Health Organization. "Heatwaves." *WHO*, <https://www.who.int/health-topics/heatwaves>.

World Meteorological Organization and World Health Organization. *Heatwaves and Health: Guidance on Warning-System Development*. WMO-No. 1142, 2015, <https://library.wmo.int/idurl/4/54600>.