

King's Christian Collegiate Model United Nations Environment Programme (UNEP)



Angelina Guzman

December 13, 2024

Table of contents

Welcome letter	
What is the UN and their purpose?	3
What is the UNEP?	4
Topic 1: Environmental Impact of AI.....	5
Carbon Footprint of AI Algorithms.....	6
Topic 2: What are EDCs and EPPP?	8
Impacts towards welling being of animals and humans.....	9
Works cited	16

Welcome letter

Dear King'sMUN 2025 delegates,

As this year's Co-Secretary Generals of King'sMUN, we are truly honoured to welcome you to our 11th annual conference. The Secretariat has been working hard throughout this school year to deliver you an incredible, in-person conference with various unique committees, experienced chairs, and a successful day of debate.

Model United Nations, a reenactment of the function of the United Nations, is designed for students to come together to debate, discuss, and develop creative resolutions to various pressing issues that plague our current world. In most committees, students take on the positions of multiple countries, characters, or political figures to create solutions for real and fictional issues and crises. We provide distinctive committees that delve into historical events, future scenarios, and fictional topics.

In our personal experience with MUN, we have developed many valuable skills that we will take with us throughout our lives, such as confidence in public speaking, leadership, and creative problem-solving. Furthermore, MUN promotes lifelong connections, as we meet delegates who share similar passions in committee sessions. We genuinely believe that your participation in MUN will guide you throughout your high school journey and beyond.

At King'sMUN, we provide a variety of committees to ensure that we have something of interest for everyone. From very current pressing issues (i.e. UNSC and the ICJ) and issues in sports (i.e. English Premier League and International Olympic Committee) to fictional committees, yet applicable issues (i.e. Pokémon) and issues set in our very own communities (i.e. Government of Ontario). We strive to ensure that there is appeal for a variety of delegates. Whether you have no experience or have attended many conferences, there is a place at King'sMUN for you!

Once again, we are thrilled to welcome all delegates, new or returning, back to King'sMUN. We hope you will engage in fruitful debate and have a fantastic time at King'sMUN 2025.

Sincerely,

Aryan Suri and Luciana Ilic

Co-Secretary Generals

What is the UN and its purpose?

The UN stands for the United Nations, an international organization established in 1945 after the Second World War by 51 founding countries. Today, the UN comprises 193 Member States and serves as a platform where the world's nations can gather to address global challenges, foster unity, and create shared solutions that benefit humanity. The UN's core mission includes maintaining international peace and security, fostering cooperation to improve the quality of life for the world's poorest populations, eradicating hunger and disease, promoting education, and advocating for the respect of human rights and freedoms.

One of the most significant annual events is the General Assembly session, held every September in New York. During this event, representatives from all Member States convene in the General Assembly Hall to debate critical global issues, with many heads of state delivering addresses. Additionally, the UN collaborates with specialized agencies such as the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) to achieve its goals. These efforts establish the UN as a cornerstone for promoting sustainable development, global peace, and international cooperation.

What is the UNEP?

The United Nations Environment Programme (UNEP) was founded on June 5, 1972, during the Stockholm Conference on the Human Environment, to lead global efforts in addressing environmental challenges. Headquartered in Nairobi, Kenya, UNEP serves as the UN's principal authority on environmental issues, empowering nations and individuals to improve quality of life while ensuring sustainability for future generations.

UNEP's mission includes providing leadership, fostering partnerships, and enabling informed decision-making for ecological sustainability. UNEP focuses on six key areas: Climate Change, Post-Conflict and Disaster Management, Ecosystem Management, Environmental Governance, Harmful Substances, and Resource Efficiency/Sustainable Consumption and Production. Each area addresses pressing environmental challenges to promote a more sustainable and resilient future.

UNEP plays a pivotal role in supporting nations through initiatives like climate change mitigation, where efforts include promoting low-carbon economies, renewable energy adoption, and raising awareness of climate science. In post-conflict regions, UNEP conducts environmental assessments, such as those in Afghanistan and Sudan, to guide recovery and sustainable development. Through its Global Programme of Action, UNEP works to reduce pollution from land-based activities, protecting marine ecosystems from

degradation. UNEP also advocates for the safe management of harmful substances, negotiating global treaties like the Minamata Convention on Mercury and advancing the Strategic Approach to International Chemicals Management (SAICM).

By focusing on these areas, UNEP mobilizes global action to safeguard the planet and address the environmental challenges that threaten the well-being of humanity and ecosystems.

Topic 1: Environmental Impact of AI

Artificial Intelligence (AI) is a broad term that refers to various technologies capable of processing information and mimicking human thought processes. While basic forms of AI have existed since the 1950s, the technology has rapidly advanced in recent years (UNEP). The extensive data now available is crucial for training AI models. United Nations members emphasize the importance of considering the environmental dimensions of digital technologies and assessing their potential to promote ecological sustainability. However, these technologies can also have a significant environmental impact. AI's ability to detect patterns and predict outcomes makes it valuable for monitoring the environment and supporting sustainable choices. Despite its potential benefits in addressing environmental issues, there is concern about the ecological costs associated with AI. Data centers that support large-scale AI deployments can produce considerable negative effects on the environment. These centers require vast amounts of raw materials, including rare earth elements, which can lead to hazardous e-waste accumulation. Additionally, they consume significant quantities of water for cooling systems and rely heavily on fossil fuels for energy, contributing to greenhouse gas emissions. For instance, a single AI request consumes ten times the electricity of a Google search. The number of data centers has grown dramatically, from 500,000 in 2012 to 8 million today, and their environmental impact is anticipated to continue increasing (UNEP). With these challenges, AI has the potential to foster a healthier environment by contributing to reduced emissions and waste in the atmosphere.

Carbon Footprint of AI Algorithms

AI models significantly contribute to greenhouse gas emissions and climate change. Since 2012, the computing power required to train advanced AI models has doubled approximately every 3.4 months. By 2040, emissions from the Information and Communications Technology (ICT) industry are expected to account for 14% of global emissions, primarily due to data centers and communication networks. A study by the University of Massachusetts found that training a large AI model can produce about

626,000 pounds of CO₂, which is equivalent to nearly 300 round-trip flights between New York and San Francisco, or almost five times the lifetime emissions of an average car (Kanungo). This highlights the urgent need to address the carbon footprint associated with AI. Additionally, e-waste contains hazardous chemicals, such as lead, mercury, and cadmium, which can contaminate soil and water supplies, posing risks to human health and the environment. Establishing ethical AI design standards is critical, along with minimizing unnecessary data collection and considering the environmental impact throughout the system's life cycle. Transparency and accountability are essential. Stakeholders should prioritize the sharing of relevant data on AI models and their sources to assess their environmental impact. Efforts on trying to decrease the emissions have been looked at as Governments and regulatory bodies must establish standards for the ethical development, use, and disposal of AI technologies.

Further questions

1. What would a carbon-neutral AI ecosystem look like, and what steps would be required to achieve that?
2. Can AI hardware be designed to be more sustainable and recyclable, reducing waste and resource consumption?
3. Are there alternatives to the current centralized data center model that could reduce environmental impacts?
4. How can AI help make data centers more energy-efficient without sacrificing performance?

Photos and graphics

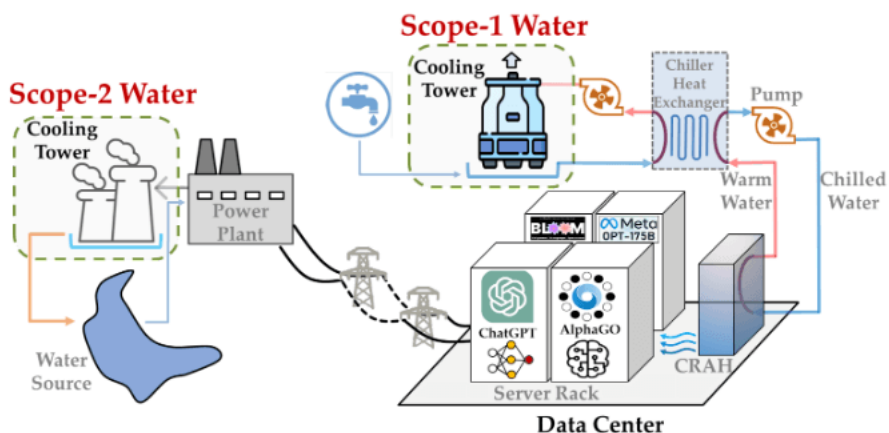


Figure 1: An example of a data centre's operational water usage: on-site scope-1 water for server cooling (via cooling towers in the example) and off-site scope-2 water usage for electricity generation. The icons for AI models are only for illustration purposes.

Figure 1. Water usage from AI

<https://planbe.eco/en/blog/ais-carbon-footprint-how-does-the-popularity-of-artificial-intelligence-affect-the-climate/>

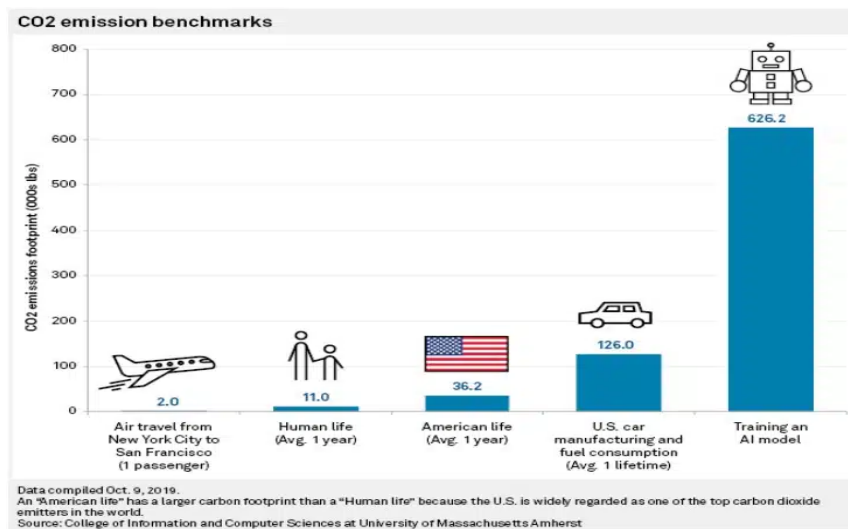


Figure 2.Co2 emission from AI

<https://earth.org/the-green-dilemma-can-ai-fulfil-its-potential-without-harming-the-environment/>

Topic 2: What are EDCs and EPPP?

EDCs (Endocrine Disrupting Chemicals) and EPPPs (Environmentally Persistent Pharmaceutical Pollutants) are the main issue here. EDCs are man-made chemicals, pollutants that may interfere with the developmental processes of both humans and wildlife. An overview of what is that it is an external substance or mixture that alters the functions of the endocrine system, leading to adverse health effects in an organism to its offspring, or subpopulations. The endocrine is part of your body that contributes to the complex network of glands and organs. It uses hormones to control and coordinate the body's metabolism, energy level, reproduction, growth and development, and response to injury, stress, and mood (John Hopkins Medicine). It is the leading cause to adverse health effects in an organism as well in its offspring. On the other hand, EPPPs refer to the chemical and waste management perspective, the environmental and health concerns in this sector mainly relate to the release of pharmaceuticals into the environment. Residues of these substances are often discharged into rivers, lakes, and groundwater aquifers. Additionally, when veterinary pharmaceuticals are used in animal manure which is applied as fertilizer, these medications can contaminate the soil and the broader environment. This leads to soil pollution and the biomagnification of pharmaceuticals through the uptake of these substances into food crops. This affects the environment through including direct emissions from drug manufacturing, excretion by patients and animals (Environment, "Environmentally Persistent Pharmaceutical Pollutants (EPPPs). Pharmaceuticals enter the environment through various channels, including direct emissions from drug manufacturing, excretion by patients and animals, aquafarming, and the disposal of unused or expired medications.

Impacts towards welling being of animals and humans

This issue significantly impacts the environment, as global plastic production has increased from 50 million tons in the mid-1970s to nearly 300 million tons today. Its effects on human health can include reproductive issues, cancer development, obesity, and neurodevelopment disorders (Environment, "Endocrine Disrupting Chemicals"). Experts recommend making small changes in our daily routines to mitigate these risks. For instance, it is advisable to avoid microwaving food in plastic containers, as this can lead to the leaching of endocrine-disrupting chemicals (EDCs) into our food. Additionally, opting for unscented personal care products and cleaners, and replacing older non-stick pans with newer, ceramic-coated alternatives can be beneficial.

For example, Bisphenol A (BPA), an industrial chemical used in the production of certain plastics and resins since the 1950s, has been linked to liver damage in animals,

contributing to increased oxidative stress and inflammation (Leung). BPA is commonly found in polycarbonate plastics and epoxy resins, which contribute to endocrine-disrupting chemicals (EDCs) that impact the environment. Polycarbonate plastics, such as those used in water bottles, are frequently utilized in food and beverage containers (Bauer). This issue not only affects human health but also has significant consequences for animal life. EDCs can indirectly harm wildlife by weakening their immune systems. Research has linked these chemicals to immune suppression in species such as polar bears and seals. Additionally, EDCs may impair stress responses in animals, making them more vulnerable to environmental stressors. For example, kestrels and other birds exposed to artificial chemicals exhibited weakened stress responses. Chronic exposure to these substances in fish can also disrupt normal stress reactions. These findings underscore the extensive and often subtle impacts of endocrine disruption on various wildlife species. Animal studies have shown that BPA can cause liver injury, potentially through the disruption of hormone signaling, inflammation, and oxidative stress (Lyons). One study examined the effects of perinatal BPA exposure on pregnant rodents and their female offspring. The results revealed that BPA exposure led to increased oxidative stress and inflammation, prompting the body to eliminate unneeded or abnormal cells. Effects were observed in the livers of the offspring at both low and high doses. These pollutants pose significant risks to both wildlife and humans, impacting reproduction, development, and immune function (Lyons). The UNEP aims to protect human and environmental health, it is essential to address the sources of EDCs and EPPPS to develop safer alternatives for the future.

Graphics and photos

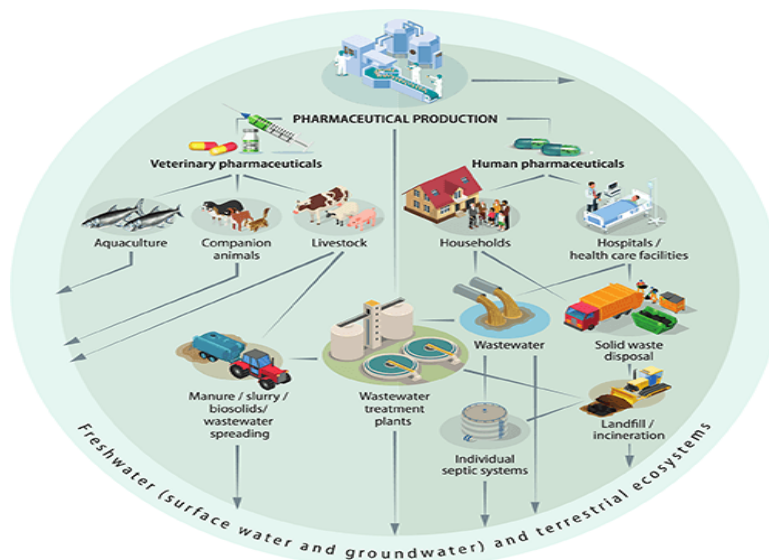


Figure 3. The effects of pharmaceutical production

Source: <https://www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/environmentally-persistent>

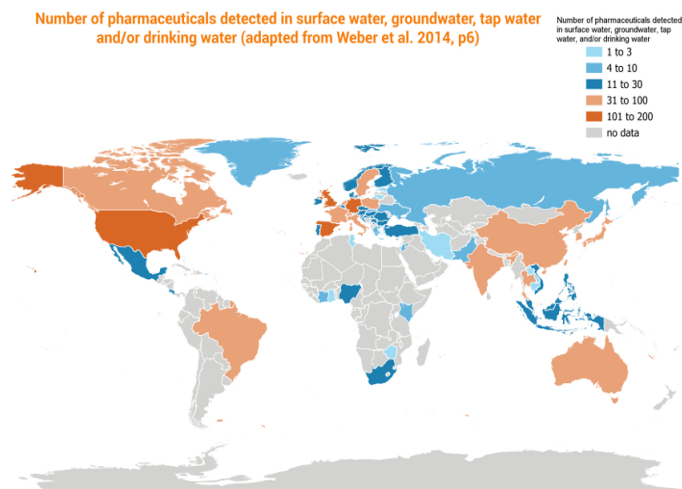


Figure 4. Pharmaceuticals detected in water globally

Source: <https://www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/environmentally-persistent>

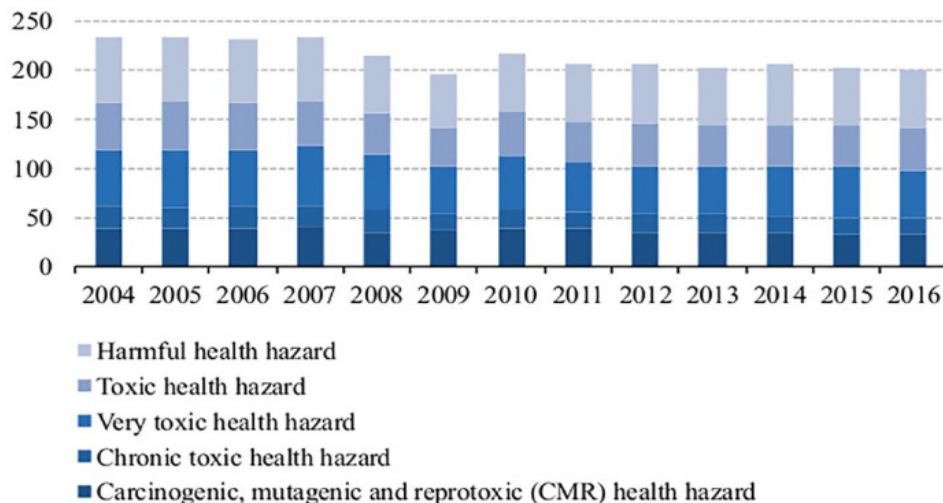


Figure 5. Production of chemicals considered hazardous to health in European Union 28 countries

<https://pmc.ncbi.nlm.nih.gov/articles/PMC10424550/>

Further Questions?

1. How do EDCs interact with other environmental pollutants, and what are the combined effects on health?
2. How do EDCs affect vulnerable populations, such as children, pregnant women, and people with pre-existing health conditions?
3. What are the challenges in identifying and eliminating EDCs from consumer products, and How can companies be incentivized to adopt safer alternatives?

Connections to the SDGs



SDG 6, specifically 6.3, relates to improving water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and substantially increasing recycling and safe reuse globally. The correlation is that the UNEP caters to the microplastics being put in the water, especially into the marine environment, which affects the health of the marine diversity. Chemicals like the EDC and EPPPs provide technical support, policy guidance, and advocacy for reducing water pollution and improving wastewater management. Through international collaboration and capacity-building, UNEP helps countries take practical steps toward achieving cleaner, safer water for all, which aligns with the global commitment to sustainable water management. Another target is SDG target 12.4, the environmentally sound management of chemicals and all wastes throughout their life cycle, per agreed international frameworks, and significantly reducing their release to air, water and soil to minimize their adverse impacts on human health and the environment. NEP also raises awareness about the risks posed by EDCs and EPPPs, supporting countries in developing safer chemical management policies. The work of UNEP focuses on reducing the release of harmful chemicals into the environment and ensuring their safe disposal, which directly supports the goals of Target 12.4. By promoting international collaboration, establishing regulations, and encouraging better chemical practices, UNEP helps mitigate the environmental and health risks associated with endocrine-disrupting chemicals (EDCs) and environmentally persistent pollutants (EPPPs). Target 13.2 emphasizes the integration of climate change measures into national policies, strategies, and planning. Additionally,

Target 14.1 highlights the importance of preventing and significantly reducing marine pollution from land-based activities, including marine debris and nutrient pollution. The pollution generated from human consumption and resource use contributes to waste production, leading to further issues for marine life, which aligns with Sustainable Development Goal (SDG) 15. This goal is closely related because it affects land ecosystems, including humans and other animals, ultimately impacting the ecosystem as a whole. Overall, these efforts are interconnected with SDG 3.9, which aims to substantially reduce the number of deaths and illnesses caused by hazardous chemicals, as well as air, water, and soil pollution and contamination. The synergy across all these SDGs shows the connection that UNEP has to various targets and the pressing issues that arise. By maintaining this focus, UNEP can positively impact the environment and make significant progress toward its goals through extensive research (United Nations, “Goal 15 | Department of Economic and Social Affairs”).

Works Cited

- Bauer, Brent A. "What Is BPA, and What Are the Concerns about BPA?" Mayo Clinic, 24 Mar. 2023, www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331. Accessed 12 Dec. 2024.
- Environment, U. N. "Endocrine Disrupting Chemicals." UNEP - UN Environment Programme, 13 Sept. 2017, www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/endocrine-disrupting-chemicals. Accessed 12 Dec. 2024.
- . "Environmentally Persistent Pharmaceutical Pollutants (EPPPs)." UNEP - UN Environment Programme, 17 Sept. 2020, www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/environmentally-persistent. Accessed 12 Dec. 2024.
- John Hopkins Medicine. "Anatomy of the Endocrine System." Johns Hopkins Medicine, 2019, www.hopkinsmedicine.org/health/wellness-and-prevention/anatomy-of-the-endocrine-system. Accessed 12 Dec. 2024.
- Kanungo, Alokya. "The Green Dilemma: Can AI Fulfil Its Potential without Harming the Environment?" Earth.org, 18 July 2023, earth.org/the-green-dilemma-can-ai-fulfil-its-potential-without-harming-the-environment/. Accessed 12 Dec. 2024.
- Kasia. "AI's Carbon Footprint - How Does the Popularity of Artificial Intelligence Affect the Climate?" Plan Be Eco, 8 May 2024, planbe.eco/en/blog/ais-carbon-footprint-how-does-the-popularity-of-artificial-intelligence-affect-the-climate/. Accessed 12 Dec. 2024.
- Leung, Yuet-Kin. "A Silent Threat: Exploring the Impact of Endocrine Disruption on Human Health." *International Journal of Molecular Sciences*, vol. 24, no. 12, Multidisciplinary Digital Publishing Institute, June 2023, pp. 9790–90, <https://doi.org/10.3390/ijms24129790>. Accessed 30 Sept. 2023.
- Lyons, Gwynne. "Viewpoint: Policy Requirements for Protecting Wildlife from Endocrine Disruptors." *Environmental Health Perspectives*, vol. 114, no. Suppl 1, Apr. 2006, pp. 142–46, <https://doi.org/10.1289/ehp.8070>.

- UNEP. "AI Has an Environmental Problem. Here's What the World Can Do about That." UNEP, 21 Sept. 2024, www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about. Accessed 12 Dec. 2024.
- . "How Artificial Intelligence Is Helping Tackle Environmental Challenges." UNEP, 7 Nov. 2022, www.unep.org/news-and-stories/story/how-artificial-intelligence-helping-tackle-environmental-challenges. Accessed 12 Dec. 2024.
- United Nations. "About Us." United Nations, 2024, www.un.org/en/about-us. Accessed 12 Dec. 2024.
- . "Goal 15 | Department of Economic and Social Affairs." Sdgs.un.org, 2023, sdgs.un.org/goals/goal15#targets_and_indicators. Accessed 12 Dec. 2024.
- . "The UN in General." United Nations : Information Service Vienna, 2023, unis.unvienna.org/unis/en/topics/the-un-in-general.html. Accessed 12 Dec. 2024.