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Global Bioethics Bulletin: dispatches on climate justice

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Welcome to the *Global Bioethics Bulletin*, a recurring series of concise, region-led dispatches on themes of global ethical importance. Each instalment brings together contributions from our international editor team, offering snapshots of how a selected issue is unfolding across different parts of the world. The aim is to broaden bioethics' geographical reach, highlight diverse perspectives and build a truly global readership consistent with the mission of the journal, as laid out in our inaugural editorial.[1] – Brian D Earp, Tsutomu Sawai and Tenzin Wangmo

CLIMATE CHANGE AND THE SCOPE OF BIOETHICS

The November 2025 'COP30,' in Belén do Pará, Brazil, was the thirtieth installment of a major annual summit in which world governments negotiate climate policy, assess progress and make commitments to address climate change. In the weeks leading up to this event, several extreme weather events occurred in different regions of the world. Hurricane Melissa devastated Jamaica; Vietnam suffered historically high rainfall that caused floods and landslides; storm Claudia hit the UK and Portugal with unexpected force.

These destructive events, some of them likely exacerbated by climate change (as well as political failures to adequately prepare for dangerous weather), served as a dramatic reminder of the need to mitigate further warming and adapt to its complex effects on diverse ecosystems. But how this mitigation and adaptation should be pursued requires careful attention to local circumstances, including the unequal effects that some such measures may have on different groups, as illustrated below.

Both climate change itself, and well-intended reactions to it, can cause harm that is often more acutely felt by those with the least say in laws and policies affecting them. Here, we suggest that vague rhetoric and top-down models of science communication and policy formation (whereby ostensibly passive publics are urged to 'listen to' climate scientists, activists and policy experts)[2] will not be as effective in addressing the risks of a warming planet as locally tailored policies grounded in community-specific needs, inputs and vulnerabilities.

Leading bioethics scholars have recently advocated for more attention to environmental ethics and the consequences of climate inaction (or counterproductive action).[3] But there is a deeper history here. V R Potter, the American biochemist who coined the term bioethics, initially conceived of environmental issues as central to bioethics. However, his ecosystemic approach was supplanted by the Georgetown/Kennedy 'biomedical ethics' agenda and the principlism framework focused largely on individual clinical encounters.[4] This underemphasis on environmental ethics within bioethics persists today.

Of course, there are numerous human health-related reasons to be deeply concerned about the environment, suggesting that a bridge between the two traditions can be built. Yet our environmental obligations arguably extend far beyond 'what's in it for us' as humans, with recent work stressing a less anthropocentric agenda.[5] The following dispatches from our regional editors sketch key climate-justice issues worldwide and reveal how they emerge from tightly linked ecological, social and political systems in which humans are only one part.

AFRICA: CLIMATE VULNERABILITY, EXTRACTIVE HARMS AND 'GREEN SACRIFICE ZONES'

Despite contributing least to global greenhouse emissions on a per-capita basis, Africa contains many of the most vulnerable regions to adverse climate impacts. For African bioethicists and counterparts elsewhere,

climate change constitutes a 'perfect moral storm',[6] whereby causes and effects are spread out, responsibilities are unclear and future consequences do not sufficiently incentivise present action. For example, there is a challenging need in many African communities to secure clean cooking energy while ideally 'leapfrogging' beyond fossil-fuel infrastructures. Meanwhile, green energy initiatives championed by global elites that fail (or make it harder) to address basic survival needs in resource-poor populations present problems of their own.

Africa has a unique position in global green-technology supply chains. The continent holds many of the minerals essential for renewable technologies yet often lacks access to those technologies itself, largely due to financial constraints (which are in turn related to issues of governance, both global and local). At the same time, countries such as Ghana and Nigeria have become major destinations for Europe's electronic waste,[7] adding further environmental and health burdens to communities already affected by extractive pressures.

These dynamics raise urgent questions about supply-chain justice, including dangerous mining conditions, child labour and conflict-related displacement—burdens that have led places such as the Democratic Republic of the Congo (DRC) to be described as 'green sacrifice zones', where communities absorb the social and environmental costs of global decarbonisation while reaping few of its benefits.[8]

Climate adaptation should not be premised on the loss of African lives. This loss is starkly illustrated by the recent collapse of a bridge in a copper-and-cobalt mine in the DRC, which resulted in multiple fatalities.[9] Such events highlight why climate deliberations must widen to include the ethical conditions under which adaptation and transition efforts proceed, so that these efforts do not deepen existing inequalities or leave already-vulnerable groups even worse off.

ASIA PACIFIC: EXTREME HEAT, AGEING SOCIETIES AND THE REGIONAL PUSH FOR DECARBONISATION

In East and Southeast Asia, Japan and Singapore provide two examples of how bioethics must now confront extreme heat, ageing societies and rapidly urbanising health systems. In Japan, these pressures have prompted the Climate Change Adaptation Act (2018), national health adaptation planning and youth-led climate litigation that frames continued fossil-fuel dependence as a violation of intergenerational rights.[10] Singapore faces rising heat, vector-borne diseases and sea-level threats while operating a densely populated, highly medicalised health system; here, ethical debates increasingly focus on healthcare's carbon footprint—around 5% of national emissions—and how to align clinical excellence with decarbonisation goals.[11]

China, as the region's largest emitter but also a major clean-energy producer, plays a pivotal but ambivalent role. Its 'dual-carbon' strategy—peaking emissions before 2030 and achieving neutrality before 2060—has driven massive expansion of solar, wind and hydropower, alongside the world's largest emissions trading scheme.[12] Yet across the broader region, climate action remains uneven. Wealthier or more technologically advanced states have made visible progress, while many others—including parts of mainland Southeast Asia such as Cambodia and Laos—face limited resources, continued dependence on coal and constrained access to climate finance.

Regional cooperation is expanding through Association of Southeast Asian Nations (ASEAN) mechanisms, the Asia–Pacific Adaptation Network and China–ASEAN green-development initiatives, alongside collaborative efforts in green technology and resilience planning.[13] However, persistent vulnerabilities—intensifying extreme weather, fragile health systems supporting ageing populations and deep inequalities in adaptation capacity—mean that the region's growing influence in global climate governance coexists with substantial gaps that remain unaddressed.

LATIN AMERICA AND THE CARIBBEAN: THE LANCET COUNTDOWN, COP30 AND CLIMATE COOLING

The 2025 *Lancet Countdown Latin America Report,* an overview of regional climate-health science and priorities, identifies dependence on fossil fuels and intense agriculture as ongoing concerns.[14] Although COP negotiations require diverse parties to reach consensus, this 'rainforest COP' saw more than 1600 fossil-fuel lobbyists—outnumbering every delegation except Brazil—and over 300 representatives from major food companies. Despite an increase in Indigenous presence, negotiations failed to secure actionable compromises to reduce dependence on fossil fuels, making the trade-offs between economic development, mitigation and adaptation increasingly acute in the region's near future.

Central America—another of the world's regions most exposed to cascading impacts of climate change—is also among the least prepared for the social, economic and political crises driven by extreme weather. A study published by the Central America Integration System (SICA) in 2021[15] shows that the increasingly destructive effects of climate change, lack of effective governmental policies and extreme poverty are creating a situation of climate displacement affecting millions of people, especially in Guatemala, Honduras and El Salvador.[16]

Meanwhile, research teams in Argentina, Brazil, Chile and Mexico are examining whether deliberate climate-cooling interventions—such as stratospheric aerosol injection and marine cloud brightening—might be ethically permissible if mitigation and adaptation fall short.[17] This is an important debate across high-income countries and, increasingly, the Global

South (or global majority)[i] that should be open to all sectors, while maintaining a critical attitude towards the risks of techno-optimism.

NORTH AMERICA: ENVIRONMENTAL INJUSTICE, POLICY RETREATS AND RIGHTS-BASED CLIMATE ACTIVISM

Climate change and exposure to toxins and carcinogens fall unevenly across North American populations, with people of colour, low-income communities, the very young and old and those with chronic illness disproportionately affected. Despite the region's overall wealth, deep income inequality maps onto unequal access to safe, healthy environments.[18]

Environmental threats across North America reinforce these disparities. In Canada, climate change has intensified natural disasters such as wildfires, while human-driven deforestation exacerbates their severity.[19] In Mexico, weak enforcement of environmental regulations has contributed to worsening water pollution and greater water scarcity.[20] In the USA, rollbacks of environmental standards through executive actions and regulatory proposals—along with the planned 2026 withdrawal from the Paris Agreement—further undermine efforts to secure healthy environments and will likely generate both local and global harms.[21 22]

Youth and community activists across North America are increasingly turning to legal and political action to contest climate inaction. Class-action and international lawsuits claim that disproportionate harms—especially to children—violate the 'right to an open future'.[18] In states such as Montana, where a right to a healthy environment is constitutionally protected, youth have sued governments for failing to act or to act responsibly. In Mexico, young activists frequently protest oil and gas companies.[23]

EUROPE: GREEN DEAL ASPIRATIONS, UNEVEN HEALTHCARE STRATEGIES AND NORDIC COOLING WORRIES

With the launch of the European Green Deal in 2019, Europe is still striving to become the 'first climate-neutral continent' (ie, to achieve net-zero greenhouse gas emissions across the EU by 2050). The EU aims to cut greenhouse gas emissions by at least 55% by 2030 (compared with 1990 levels) while making the 2050 neutrality goal legally binding through the European Climate Law. According to the European Environment Agency, greenhouse gas reductions are largely on track to meet those 2030 goals.[24]

One frequently overlooked contributor to emissions is the healthcare sector in Europe.[25] The success of national healthcare systems to adopt a climate-sensitive or carbon-neutral strategy significantly differs across the continent. The National Health Service in England, for example, has implemented a strategy for becoming net zero for its directly controlled emissions by 2040. Germany, by contrast, has not yet built a comprehensive strategy along similar lines.

Issues of climate justice arise from different exposures to environmental pollution depending on people's socioeconomic status and living conditions: as in North America, such inequities exist within a relatively wealthy part of the world such as Europe.[26] Different parts of Europe are also affected by climate change differently, with distinctive concerns facing the Nordic countries. In 2024, leading climate and ocean scientists issued an open letter to the Nordic Council of Ministers warning that the likelihood of a major tipping event[ii] this century has been systematically underestimated, with potentially catastrophic cooling effects for the region.[27]

WESTERN, CENTRAL AND SOUTHWEST ASIA:[iii] WATER SCARCITY, HUMANITARIAN PRESSURES AND FOSSIL-FUEL DILEMMAS

The Mediterranean basin is a recognised climate-change hotspot, with the southeastern region—including the Levant[iv] —confronting severe environmental and socioeconomic impacts.[28] Climate change is already straining healthcare systems and widening public-health vulnerabilities,[29] yet political structures and reliance on fossil-fuel exports continue to slow coordinated transitions to renewable energy.[30] Even so, environmental concerns such as the footprint of healthcare facilities are gaining visibility, reflected in emerging discussions of 'green hospitals' and sustainable health infrastructure.[31]

For bioethicists across Western and Central Asia and the Middle East, COP30 and the 2025 Lancet Countdown[32] highlight two urgent challenges. First, extreme heat and water scarcity are becoming predictable, unequal threats. The region is warming at nearly twice the global average, with >50°C (>122°F) summers now documented in Iran, Iraq, Kuwait, Saudi Arabia and the United Arab Emirates.[33] Central Asian countries (Uzbekistan,

[i]The UK Royal Society recently issued a rapid synthesis for policymakers of current evidence, ethics and governance on climate-cooling interventions, adding to ongoing work by the Nuffield Council on Bioethics and the European Commission's Directorate General for Research and Innovation. Ongoing international projects include the Exploring Climate Cooling programme by the UK Advanced Research and Invention Agency (ARIA) with ethics and governance projects from countries such as Pakistan, Argentina and the Philippines; and The Degrees Initiative, a UK-based non-governmental organisation which 'builds the capacity of developing countries to evaluate solar geoengineering (SRM).'

[ii]The so-called Atlantic Meridional Overturning Circulation is a major Atlantic current system that helps regulate Europe's and the North Atlantic's climate by moving warm water north and cold water south. A 'tipping event' here means a rapid, hard-to-reverse shift such as a sharp slowdown or collapse of this circulation after it is pushed beyond a critical threshold.

[iii]Southwest Asia covers what is sometimes called the 'Middle East' but does not include North Africa, which is represented in our Africa region.

[iv]An area that today includes Syria, Lebanon, Israel, Palestine, Jordan and sometimes parts of southern Turkey and Cyprus.

Box 1 Take-home points for bioethicists

- ⇒ **Climate harms replicate and magnify existing inequalities**. Across all regions, the greatest burdens fall on those already facing social, economic or political disadvantage. Bioethics should treat these unequal vulnerabilities as a core ethical issue.
- ⇒ **Health systems both suffer from and contribute to climate pressures**. Rising heat, air pollution, infectious disease and infrastructure damage expose weaknesses in health systems—while the healthcare sector itself contributes significantly to emissions. Ethical analysis should consider how to protect health systems from climate stress while also reducing the emissions they produce.
- ⇒ **Energy transitions come with moral responsibilities**. Countries differ sharply in their emissions history, as well as their current interest and ability to shift away from fossil fuels. Ensuring that transitions do not deepen inequality within or between countries is an essential ethical task.
- ⇒ **Gaps in finance and governance are widespread**. Many regions lack the resources or political stability needed to adapt to climate change. Where states cannot or will not protect populations, questions of international obligations to act responsibly come to the fore.
- ⇒ **Rights-based and intergenerational claims are rising**. Youth litigation and appeals to rights to health and a liveable environment highlight a potentially impactful pathway and the need for bioethics to engage seriously with cross-generational harms.
- ⇒ **Human and ecological systems are intertwined**. Extractive pressures, biodiversity loss and pollution reveal the limits of a narrow biomedical frame. Bioethicists should revisit the ecosystemic foundations envisioned by Potter and integrate environmental ethics into our core commitments.

Turkmenistan, Kazakhstan, Kyrgyzstan, Tajikistan) face accelerating drought and irrigation decline, deepening food and health insecurity. These burdens fall disproportionately on outdoor and migrant workers, people with chronic illness and communities dependent on fragile electricity and water systems. Dust-storm expansion is also worsening air quality across the Iraq–Syria–Iran corridor.[34]

Second, adaptation finance remains insufficient, especially where conflict has destroyed infrastructures required to withstand climate shocks. COP30's Belém Health Action Plan calls for climate-resilient health systems, yet funds often bypass Gaza, Yemen and Syria, where hospitals and clinics have been repeatedly damaged or destroyed in armed conflict, leaving health systems unable to cope with escalating climate shocks. Here, climate shocks do not just cause temporary environmental problems—they push already-fragile places into humanitarian crises. A just response requires linking the region's fossil-fuel wealth and high emissions to meaningful financing, and recognising that protecting healthcare facilities under international humanitarian law is increasingly inseparable from climate-health ethics.[35]

In this predominantly Muslim region, initiatives such as the Islamic Declaration on Global Climate Change[36] reflect growing engagement, though interpretations of the responsibilities implied by these initiatives vary and their impact on daily practice remains uncertain.[37]

CONCLUSIONS

These dispatches show that climate change is reshaping ethical landscapes across every region, exposing shared vulnerabilities and unequal burdens (see box 1 for a summary of take-home points). There are many possible objects and methods of inquiry available as bioethics reclaims its broader mandate, helping to steer climate responses toward fairer, more sustainable futures. For instance, there is a growing literature on the ethics of communication in climate change,[38] and bioethical reflection could offer important insights, for example, into the fatigue associated with the repeated 'urgency framing' of anthropogenic climate change. Relatedly, critical humanities approaches have suggested that climate change impacts are usefully framed in a bottom-up way in terms of its impact on local people and communities[39] by bringing together different actors such as scientists, local and Indigenous communities, and policymakers to formulate policy priorities.[40] These points can be read as a call for more participatory and context-sensitive approaches to climate research and governance, rather than distant or top-down messaging that may be more prone to contestation.

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