Still One Earth: environmental risks, nuclear threats and the 1972 Stockholm Conference

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Abstract

The 1972 Stockholm Conference on the Human Environment framed worsening environmental degradation and global nuclear threats as parallel dangers. Humanity's technological prowess had granted society previously unimaginable capacities to improve, but also annihilate, its existence. Many of the pressing environmental problems weighing on the world in 1972 persist. So does the nuclear threat, but nuclear risk reduction has since retreated from global environmental policy priorities. This disappearance reflects political dynamics that continue to shape international environmental relations, with potential insights for promoting effective global environmental governance. Mounting global challenges demand a transformation in international action and understanding, mobilizing collective efforts in the common interest.

Key messages

- Environmental and nuclear governance were linked at the Stockholm Conference but have since followed very different trajectories.

- Rising geopolitical tensions, the collapse of arms control regimes and growing environmental crises are spawning unprecedented planetary risks.

- New cooperative institutions and approaches are needed to address these new – and old – risks together.
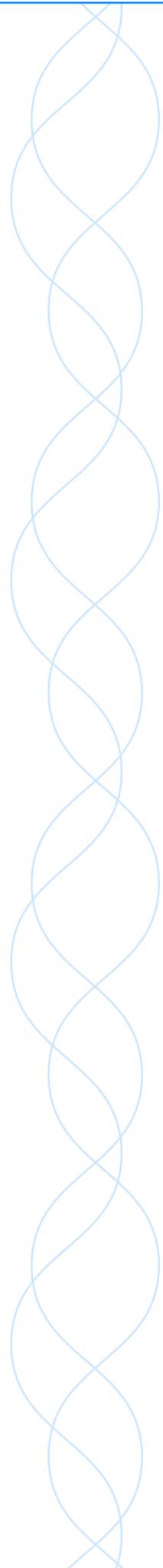
In 1972 the United Nations Conference on the Human Environment (UNCHE) gathered delegations from 113 states in Stockholm, Sweden, from 5 June to 16 June (United Nations, 1973). The Stockholm Conference signified a watershed in the global recognition of environmental degradation as a worldwide problem, giving new impetus and legitimacy to national and international environmental policy efforts. Fifty years later, the Stockholm Conference remains a foundational moment of global environmental politics.

For the policymakers and practitioners who prepared and participated in the UNCHE, humanity's technological prowess had come to grant modern society previously unimaginable powers to improve, and also destroy, the very conditions of its existence. In the depths of the Cold War, the perceived promise of civilian nuclear power and potential risks of nuclear weapons exemplified this dilemma. The Stockholm Conference understood the issues of worsening environmental degradation and global nuclear threats as parallel dangers confronting a planet in jeopardy. The UNCHE set both protecting the environment and preventing nuclear perils into the same frame of safeguarding human survival. Together with exhortations to preserve natural resources and halt hazardous levels of pollution, the Stockholm Declaration urged the total abolition of nuclear weapons. Yet among all the risks to the human environment that were raised in 1972, nuclear dangers now appear to have faded from the international environmental policy agenda.

Today, all too many of the pressing environmental problems and policy challenges weighing on the world in 1972 persist. The retreat of nuclear threat reduction and disarmament from global environmental policy priorities reflects political dynamics that continue to shape international environmental relations and carry potential insights for the prospects of promoting effective global environmental governance.

The nuclear origins of the UNCHE

The 1972 Stockholm Conference emerged from the initial plans for an international meeting on nuclear energy. In October 1967 the UN Scientific Advisory Committee called for the convening of a fourth international conference on the peaceful uses of atomic energy to follow previous events held in 1955, 1958 and 1964 (UN General Assembly, 1967). However, several Swedish diplomats in New York – including Inga Thorsson, director of the UN Social Development Division; Alva Myrdal, Sweden's delegate to the UN Conference on Disarmament; and Sverker Åström, Sweden's permanent UN representative – judged that yet another such assembly would serve little purpose beyond airing the interests of the nuclear industry and nuclear weapons states, and potentially exacerbating Cold War rifts between East and West (Engfeldt, 2009; Linner & Selin, 2021). At the same time, Swedish scientists had begun to trace the increasing acidification of Swedish lakes and soil to wind-borne pollutants emanating from sources across Europe (Oden, 1968). Seizing on the growing awareness of worldwide environmental degradation, the Swedish Ministry for Foreign Affairs and UN delegation embarked on a deft campaign advocating a major international conference devoted to the global environment (Paglia, 2021). 'Convinced of the need for intensified action … in order to limit and, where possible, eliminate

the impairment of the human environment', the UN General Assembly resolved in December 1968 to convene an international conference 'to focus the attention of Governments and public opinion on the importance and urgency of this question and also to identify those aspects of it that can only or best be solved through international co-operation and agreement' (UN General Assembly, 1968, p. 2).

Sweden's initiative to reframe the proposed international conference constituted less of a shift in focus and more of a comprehensive broadening of vision, from concentrating on atomic energy to encompassing the entire human environment. The 1967 report of the UN Scientific Advisory Committee had expressly emphasized 'man's concern with the environment' as a potential subject for future UN engagement and highlighted several topics linking nuclear applications to other resource issues, such as water desalination, fertilizer production, food preservation and waste management (UN General Assembly, 1967). So, too, the movement to limit or prevent the testing and use of atomic weapons was emerging as a pillar of incipient international environmental politics (Caldwell, 1991). Throughout the 1950s–1960s, scientists expressed rising unease about the risks posed by atmospheric nuclear tests (Comar, 1965; Commoner, 1958). Although the explosions occurred at remote sites, the fallout rapidly circled the globe and strontium 90, caesium 137 and iodine 131 were absorbed into the soil and taken up by plants. These isotopes then worked their way into crops, meat and milk consumed by humans. Mounting scientific concern led to public outcry and appeals to end atmospheric testing. Although mutual restraint between the superpowers seemed unlikely at that time, the 1959 Antarctic Treaty was successful in prohibiting nuclear testing and the dumping of nuclear waste in the Antarctic, effectively establishing the world's first nuclear-free zone. In 1963 the US and Soviet Union agreed the Partial Test Ban Treaty, barring nuclear testing above ground, in space and underwater (Krieger, 2007).

Concluded at the height of the Cold War, these accords constitute both arms control achievements and early successes in protecting the global environmental commons (Commoner, 1971, p. 56; Elliott, 1998, p. 9). Addressing the UN General Assembly following the signing of the Partial Test Ban Treaty, US President John F. Kennedy affirmed that this nuclear agreement should lay a collaborative foundation for much more international cooperation, including 'a worldwide program of conservation' to protect the forests and oceans 'and prevent the contamination of air and water by industrial as well as nuclear pollution' (Kennedy, 1963, p. 5). A decade later, many international observers hoped that successful collaboration to tackle environmental risks could incentivize further cooperation to reduce nuclear threats (Sohn, 1973, p. 511). Indeed, George Kennan, intellectual architect of the US Cold War containment strategy, argued that shared efforts to preserve the global environment could unite East and West in a common purpose and help 'relieve the great convulsions of anxiety and ingrained hostility that now rack international society' (Kennan, 1970, p. 413).
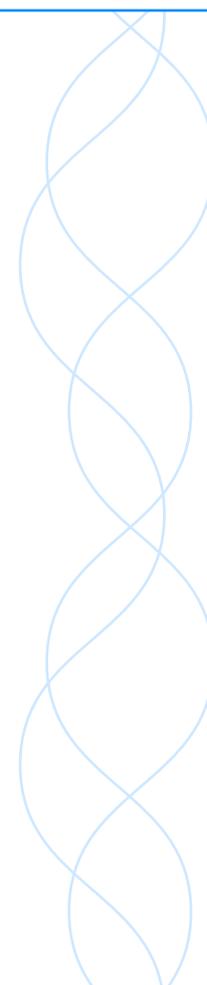
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Parallel environmental and nuclear perils

Many policymakers and practitioners who prepared and participated in the Stockholm Conference conceived worsening environmental degradation and global nuclear jeopardy as parallel dangers, in terms of both their physical processes and their underlying social and political roots (United Nations, 1973; Ward & Dubos, 1972). Radiation from testing fallout, potential power plant accidents and nuclear waste represented a hazardous contaminant generated by modern development, much like heavy metals and persistent pesticides. Interconnected ecological systems and cycles transported DDT and radioactive isotopes alike to the far corners of the Earth and spread them throughout the food chain (Woodwell, 1967). Scientists even discovered toxic chemicals and nuclear isotopes accumulating in Arctic snow and in children's teeth (Peterle, 1969; Riess, 1961). Pervasive pollution and despoilment of the natural world, like the ever-present spectre of nuclear war, had become existential threats to human survival.

A number of observers identified common drivers behind the environmental crisis and the nuclear threat. Humanity's technological prowess had granted society previously unimaginable capacities to improve, and also annihilate, the very conditions of its existence (Commoner, 1971; Falk, 1971; Sprout & Sprout, 1971). An international committee of experts commissioned by the UN Secretary-General to advise the Stockholm process invoked the Greek mythology of Promethean fire (Ward & Dubos, 1972, p. 129). 'Through the rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways on an unprecedented scale', affirm the opening lines of the 1972 Stockholm Declaration. 'If used wisely, [this power] can bring to all peoples the benefits of development and the opportunity to enhance the quality of life. Wrongly or heedlessly applied, the same power can do incalculable harm to human beings and the environment' (United Nations, 1973, p. 3).

Many analysts also recognized that common dynamics, pitting the national welfare against the global good, were pushing decision-makers down the second, perilous path. Both in the environmental and nuclear arenas, individual countries hesitate to compromise their own economic and security interests – whether by reducing their stocks of atomic weapons or reducing their consumption of shared natural resources – for fear that other states could then take advantage by declining to follow suit and shirking the collective burden (Falk, 1971, p. 53).

Nuclear power for civilian use posed particular challenges for policymakers navigating between providing the benefits of development and preventing environmental and human harm. Then, as today, much of humanity lacked access to adequate energy supplies. Given that some models at that time (incorrectly) projected that oil production would soon peak, fossil fuels seemed unable to meet the rising needs of growing populations (Grenon, 1979; Ward & Dubos, 1972, pp. 135–137). Expanding civilian nuclear power could bring modern energy services to millions, but at the prospective cost of heightened radiation risks. Eschewing or constraining nuclear power would correspondingly limit nuclear dangers, but possibly consigning large parts of the world to energy poverty would perpetuate under-development and potentially stoke social unrest. The resulting turmoil would not likely spare the developed countries and might well embroil the superpowers. At the same time, these same superpowers and the other nuclear weapons states devoted substantial financial and technical resources to building their atomic arsenals, dwarfing their budgets for assistance to developing countries (Ward & Dubos, 1972, pp. 210–211). In the years preceding Stockholm, several countries, including some nuclear weapons states, put
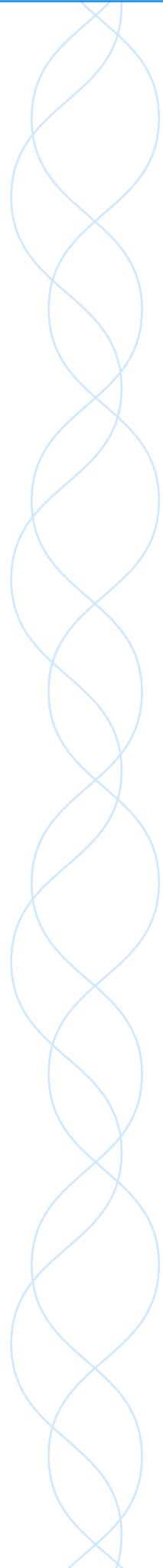
forward for discussion international disarmament for development plans to the UN, proposing to redirect savings from military spending cuts into pooled development funds. To no avail (Jolly, 2016, pp. 60–61).

For many of the delegations gathered in Stockholm, unprecedented global challenges demanded a transformation in global action and understanding that would thoroughly integrate care for the environment into the pursuit of human well-being. The conference declaration affirms, 'To defend and improve the human environment for present and future generations has become an imperative goal for mankind—a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of worldwide economic and social development' (United Nations, 1973, p. 3).

Defending and improving the shared environment would require collective efforts in the common interest. Crucially, the UNCHE called for extensive cooperation from individuals, communities, nations and organizations across all levels of society (United Nations, 1973, pp. 3–4).

Stockholm's holistic vision would place protecting the environment and preventing nuclear perils in the same frame of safeguarding human survival, but these two objectives took different paths into the conference's processes and outcomes (Engfeldt, 2009). Specifically, nuclear issues had not been mentioned in the UN resolution convening the UNCHE. Nuclear risks did feature importantly in Stockholm's conceptual charter, which was developed by an expert committee to elucidate the existential threats endangering the human environment (Ward & Dubos, 1972). In addition, when addressing preparations in the run-up to the conference, the UN General Assembly urged atomic weapons states to stop testing and to prohibit the production and use of nuclear arms 'in the context of measures to improve environmental conditions on a worldwide basis' (UN General Assembly, 1971). But underneath this overarching framework and exhortation, nuclear matters did not figure in Stockholm's Preparatory Committee meetings or in the working groups crafting the conference's operational recommendations. Rather, nuclear questions first emerged in the working group on the conference declaration, where Japan introduced a provision to end the testing and use of nuclear weapons. Alternative proposals from several other states followed, met by French and Chinese objections and reservations from many others. Unable to reach consensus, the working group forwarded a draft text to the plenary conference (Sohn, 1973; United Nations, 1973).

Ultimately, the conference announced 26 principles to guide global environmental engagement (United Nations, 1973). Together with appeals to preserve natural resources and halt hazardous levels of pollution, the Stockholm Declaration urged the total abolition of all arms of mass destruction. The declaration's concluding Principle 26 proclaims, 'man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction' and that 'States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons' (United Nations, 1973, p. 5). The question of nuclear testing was shifted to a stand-alone resolution, separately condemning the environmental impacts of nuclear weapons tests and calling for their cessation. In addition to the Stockholm Declaration, the UNCHE also notably elaborated a detailed Action Plan for the Human Environment (United Nations, 1973). But global nuclear dangers did not appear among the plan's 109 national and international recommendations (United Nations, 1973)[1].

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1.   Recommendation 86 on Marine Pollution touched on measures to control radioactive pollution from ships and submarines and potential waste heat from nuclear and other power stations.

Diverging policy trajectories

The UN Conference on the Human Environment marked a major milestone in world environmental politics. The Stockholm Conference built on and galvanized growing public awareness of global environmental degradation and spurred substantial national and international policy actions. One poll of the European Community conducted in early 1973 found that citizens at that time cited environmental pollution as the member states' single most important problem, above unemployment, poverty or inflation (Liberatore, 1991, p. 287). Worldwide, the number of governmental agencies with environmental responsibilities grew tenfold, from 10 to 100, in the decade following Stockholm (Egelston, 2013, p. 65). The establishment of national parks, state memberships in intergovernmental environmental organizations, and national laws and international agreements for environmental impact assessments similarly soared (Frank et al., 2000, p. 102).

Stockholm thus seeded many of the measures and debates that continue to shape global environmental politics. Yet among all the risks to the human environment raised in 1972, nuclear dangers appear to have faded from the international environmental policy agenda, and nuclear disarmament disappeared. By the 20th anniversary of Stockholm, the 1992 UN Conference on Environment and Development no longer debated the expansion of nuclear power, nor demanded the elimination of nuclear arsenals (United Nations, 1993). Agenda 21, the action programme for sustainable development adopted at the Rio Earth Summit, touched on civilian nuclear energy only in terms of preventing accidents, regulating nuclear fuels and ships at sea, and promoting the safe management of radioactive waste (United Nations, 1993, pp. 121, 248, 370–372). Ten years later, at the 2002 World Summit on Sustainable Development, nuclear questions arose peripherally in a separate roundtable discussion regarding safe power generation and measures to diversify energy supplies (United Nations, 2002). Rio+20, the UN Conference on Sustainable Development held in 2012, did not explicitly take up any nuclear issues (United Nations, 2012). None of these landmark environmental summits made any mention of nuclear disarmament. Avoiding nuclear energy risks and advancing nuclear disarmament are likewise absent from the Millennium Development Goals and the 2030 Agenda for Sustainable Development (UN General Assembly, 2001, 2015).

The seeming retreat of nuclear threats from global environmental policy efforts reflects, in part, the success of the UNCHE in pushing environmental issues up the international agenda. Prior to Stockholm, numerous analysts emphasized the need to forge new cooperative institutions and approaches suited to addressing the complex interdependencies embedded in transnational environmental challenges (Falk, 1971; Gardner, 1970; Kennan, 1970; Sprout & Sprout, 1971). The Stockholm Conference – in addition to sparking a surge in environmental legislation, agencies and agreements – also initiated the establishment of the UN Environment Programme as a coordinating platform for environmental engagement by the UN system. The conference action plan advanced dozens of policies and measures for environmental management, research and monitoring, financing, and technical cooperation. Through this catalytic role, the Stockholm Conference helped create the actors and institutional architectures that enabled an explosion of multilateral environmental diplomacy (Engfeldt, 2009; Sand, 2015). The practical statecraft of negotiating policies and measures to realize these principles and agendas was then carried forward in a myriad of other, more focused, international forums and organizations. Indeed, even as the UNCHE unfolded, attentive experts recognized that successfully answering global environmental
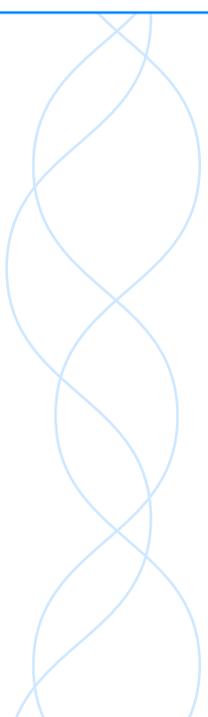
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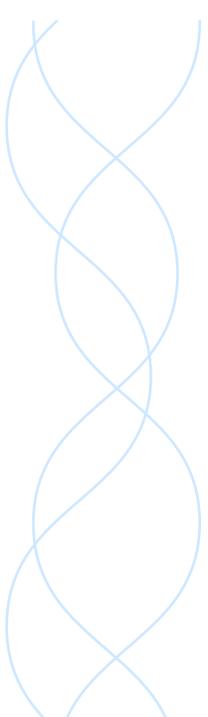
challenges would also demand tailored cooperation on targeted issues and effective actions at regional and bilateral levels (Slouka, 1972). In the decades after the 1972 conference, which was devoted to the human environment as a whole, a growing suite of dedicated UN and other international conferences took on many of the specific environmental problems that Stockholm highlighted, from transboundary air pollution and ocean conservation to land degradation and climate change (Chasek & Downie, 2021; Jabbour et al., 2012).

Nuclear disarmament diplomacy pursued a different and often bumpy trajectory. Even as preparations for the UNCHE were under way, the Soviet Union, UK and US concluded and opened to all states the 1968 Nuclear Non-Proliferation Treaty that sought to both prevent the spread of nuclear weapons and promote the peaceful development of atomic energy. In May 1972, just days before the Stockholm Conference opened, the Soviet Union and the US signed the first Strategic Arms Limitation Treaty and the Anti-Ballistic Missile Treaty. However, thereafter nuclear arms control stalled for 15 years until the 1987 Intermediate-Range Nuclear Forces Treaty. With the end of the Cold War, arms control accelerated dramatically. The 1990s witnessed the Presidential Nuclear Initiatives, two Strategic Arms Reduction Treaties (START) and the 1996 Comprehensive Test Ban Treaty. Since the New START agreement in 2010, however, arms control efforts have again descended into a troubled and uncertain period (Smith, 2020; Wolf et al., 2021).

The Stockholm 'mega-conference' served to provide leadership and set the agenda for global environmental policy, endorsing common principles and helping to legitimize global governance by facilitating integrative thinking and institutional capacity building (Seyfang, 2003). For nuclear disarmament and arms control, in contrast, the Stockholm Conference played far less of a foundational agenda-setting or capacity-building role. It prominently summoned all states to end nuclear testing and abolish weapons of mass destruction but largely borrowed the diplomatic momentum and language for pronouncing this objective from the Non-Proliferation Treaty, which, by the time of the Stockholm Conference, had been ratified by more than 60 states (International Atomic Energy Agency, 1970). Likewise, the UNCHE performed no significant institutional or policy groundwork for advancing atomic diplomacy. The conference's substantial Action Plan for the Human Environment made no mention of nuclear arms or testing, while the Stockholm Declaration simply called on the international community to pursue agreement on the elimination of such weapons 'in the relevant international organs' (United Nations, 1973, p. 5).
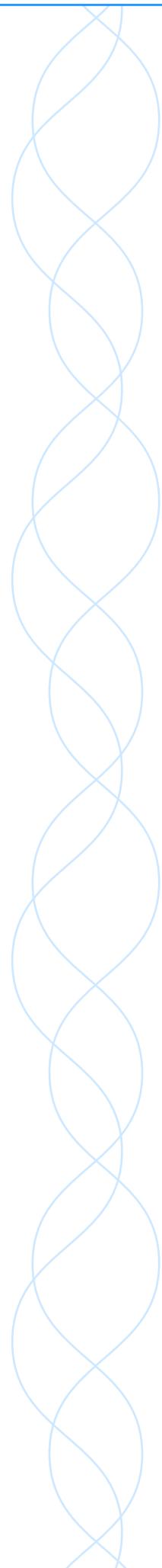
Legacy and lessons

The UNCHE represented an important moment of convergence in global policy agenda setting. The conference's signal aim and achievement was to elevate the planetary environmental crisis in terms of public awareness and international policy attention. However, in that endeavour, Stockholm's planners and participants also recognized that nuclear power must be included in any accounting of existential threats to the human environment. Surveying the ecological dangers and nuclear risks generated by modern technological society, the Stockholm Conference proclaimed that both protecting the environment and promoting nuclear safeguards are essential and partially interrelated components for ensuring human survival. Global environmental diplomacy and international arms control subsequently evolved along separate paths. But important political issue coalitions and policy concerns embodied by Stockholm (though not solely engendered there) have endured.

Nuclear accidents such as Three Mile Island in 1979, Chernobyl in 1986 and Fukushima in 2011 have continued to colour public awareness and apprehensions of environmental disaster risks (Böhmelt, 2020; Thomas, 1992, p. 33). Anti-nuclear activism, both in opposition to nuclear arms and in contestation of atomic energy, played a prominent part in the development of many environmental movements and green political parties (Andersen & Liefferink, 1997; Hsiao et al., 1999). So, too, have the concepts and concerns of environmental harms and atomic hazards continued to mutually influence public consciousness and policy advocacy in both spheres. The famous Doomsday Clock, for example, created by the Bulletin of the Atomic Scientists as a metaphor alerting the public to nuclear jeopardy, has since 2007 incorporated global climate change into its countdown to midnight (Board of Directors, 2007). Today many environmental campaigners advocate for a fossil fuel non-proliferation treaty to combat climate change by curbing the production and use of fossil fuels (Fossil Fuel Non-Proliferation Treaty Initiative, 2021).

By the same token, UN initiatives continued to fashion normative and conceptual links between environmental protection and nuclear threat reduction. The World Commission on Environment and Development, commonly known as the Brundtland Commission, now remembered for popularizing the notion of 'sustainable development', also bluntly denounced the dangers of nuclear war as 'perhaps the greatest threat to the Earth's environment, to sustainable human progress, and indeed to survival' (World Commission on Environment and Development, 1987, p. 33). Echoing arguments previously advanced by experts advising the Stockholm Conference, the Brundtland Commission urged the elimination of nuclear weapons. The arms race 'pre-empt[s] human resources and wealth that could be used to combat the collapse of environmental support systems, the poverty, and the underdevelopment that in combination contribute so much to contemporary insecurity' (World Commission on Environment and Development, 1987, pp. 33, 294). Likewise, the UN roadmap for implementing the Millennium Declaration, which would give rise to the Millennium Development Goals, explicitly conceived the international objectives of peace, security, disarmament, development and environmental protection to be inherently intertwined (UN General Assembly, 2001, p. 7).
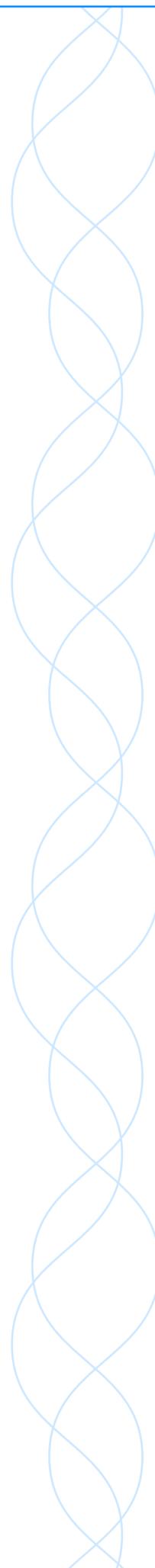
The Stockholm Conference's fundamental contribution to the emergence of global environmental governance was to help crystallize the growing public and policy consciousness that, in the words of the conference slogan, there is 'Only One Earth'. On this shared planet, the dynamics of global ecological degradation demonstrate modern society's collective reliance on the preservation of our common environmental systems. The dynamics of nuclear power and nuclear arsenals demonstrate humanity's collective vulnerability to potentially existential nuclear risks. The Stockholm delegates believed that responding to these perils required the recognition of international interdependence and realization of international cooperation.

One Earth, a single security space

Stockholm's holistic lens on problems of the human environment and its policy lessons remain relevant today. Declaring environmental protection an imperative goal to be pursued jointly with peace and development, the UNCHE marked an early milestone in the ongoing evolution of new concepts of human security. Traditional understandings of security classically centred on external, typically military, threats to a nation's physical territory, population or government, stemming from other states or non-state actors (Lipschutz, 1995). At the Stockholm Conference, the international community recognized that the very technologies and economic models that enable modern development are also driving unsustainable environmental degradation, compromising the vital natural systems on which human well-being and societal welfare depend.

Human strains on the environment have continued to escalate since the 1970s. Economic growth, resource use, population, urbanization and globalization have all dramatically increased in recent decades. Known as the 'Great Acceleration', this momentous expansion of human activity is propelling unprecedented environmental change (Steffen et al., 2015). Humanity has become a geophysical force, disrupting elemental Earth cycles and systems from the global oceans to the global climate, defining a new geological epoch, the 'Anthropocene' (Steffen et al., 2007). Mounting pressures on the world's increasingly interconnected social-ecological systems have spawned new potential for planetary risks. Disruptions emerging in one sphere can cascade across sectors, traverse physical and political boundaries and increase in scale, so that local problems can become global problems (Franzke et al., 2022; Keys et al., 2019). Myriad environmental stresses could contribute to compounding risks that may overwhelm the coping capacity of countries and communities, potentially stirring societal conflicts. For example, in 2007–2008 recurrent droughts decimated harvests in several major agricultural nations, helping fuel supply shocks that rippled through global grain markets to compromise food security and catalyse civil strife in dozens of vulnerable importing countries (Berazneva & Lee, 2013; Headey & Fan, 2010; Heslin, 2021). Violent conflict and instability can in turn degrade state and societal capabilities to address environment and development challenges, perpetuating vicious cycles of fragility and insecurity (Buhaug & von Uexkull, 2021; World Bank & United Nations, 2018).

The planetary scale and scope of the Anthropocene acceleration and its accompanying risks underscore the complex interdependencies between the environment and human security. Societal processes and objectives drive humans to put pressure on environmental systems. At the same time, societal contexts and capacities – socio-economic conditions, technical and material resources, governance structures and policies – mediate between environmental stresses and societal impacts, shaping (and reshaping) their evolving ramifications for development, peace

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and security (Kreienkamp & Pegram, 2021; Mach et al., 2019; Nuno et al., 2014; World Bank & United Nations, 2018).

The resulting constellations of reciprocal influences between environmental systems and human security create both opportunities and challenges for cooperative global governance. Since the Stockholm Declaration the international community has held environmental integrity, peace and development to be both mutually required and mutually reinforcing. The 1992 Rio Declaration adopted at the UN Conference on Environment and Development thus affirms that 'peace, development and environmental protection are interdependent and indivisible' (United Nations, 1993). As the world emerges from the Covid-19 pandemic, the international community has expressed the determination to pursue a 'green recovery', comprehensively integrating collaborative rebuilding strategies with the Sustainable Development Goals for a just and peaceful society (UN General Assembly, 2020; United Nations Environment Management Group, 2021).

Yet it is clear that national and international approaches intended to meet rising Anthropocene risks could also generate new potential insecurities. For example, the renewable energy technologies needed to counter climate change and power green economies require certain critical minerals (International Energy Agency, 2021). Crucial deposits for several key minerals are concentrated in a handful of countries, often in ecologically sensitive regions, and a number of these countries are conflict-affected states. Consequently, many analysts fear that the surging world demand to exploit these mineral reserves could spark geopolitical competition to secure supplies, fuel environmental degradation in vulnerable areas, and fan further instability in fragile countries (Church & Crawford, 2018; Lèbre et al., 2020; Nakano, 2021; Rehbein et al., 2020).

Similar prospective risks surround other environmental systems and natural resources. So, for example, efforts to stem and redress global biodiversity loss frequently call for establishing substantial protected areas for ecosystem conservation and restoration (Carroll & Noss, 2022; Dinerstein et al., 2017; Watson et al., 2020). Many governments endorse the goal, embodied in the draft Post-2020 Global Biodiversity Framework under the UN Convention on Biological Diversity, of protecting at least 30% of the global land and ocean area by 2030 (UN Environment Programme Open Ended Working Group on the post-2020 Global Biodiversity Framework, 2021). Nevertheless, regulating large areas for environmental conservation can significantly impact the populations living in and around the protected zones, potentially resulting in 'coercive' or 'fortress' conservation (Brockington, 2002; Peluso, 1993). Absent adequate safeguards, government measures to establish and control protected areas can result in the displacement of local populations from their land and their violent or militarized exclusion from the natural resources and ecosystem services on which they depend, in the name of preserving or reviving intact ecosystems (Büscher & Fletcher, 2018; Duffy et al., 2019).

Likewise, hundreds of millions of people worldwide face worsening water stress, as climate change, pollution and unsustainable consumption patterns exert mounting pressures on freshwater supplies (Mekonnen & Hoekstra, 2016; van Vliet et al., 2021). However, measures taken by one population to improve its own water resources – such as building dams for irrigation and increased water storage capacity – may undermine water availability for others by altering river flows downstream (Munia et al., 2016; Veldkamp et al., 2017). Where different countries or communities rely on shared waters, such shifts in resource access and control can spur collective conflicts between contending users (Michel, 2020). In closely interconnected social-ecological systems, interventions aiming to enhance resilience in one society or sector can

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Peace, human security and development are societal objectives pursued by social processes that are inextricably reliant on the natural environment and sustainable social-ecological systems. Realizing these objectives requires recognition of their essential interdependence. In the 21st century, Anthropocene risks to peace, environment and development, governance and social equity unfold in a 'single security space' of interlocking challenges (Smith, 2021). This security space is not uniform but unifying, incorporating the full range of diverse risks to human welfare and security. Nor is the single security space unique: It is not the only policy space relevant for human well-being but rather interacts with adjoining economic, social, cultural and other policy spaces in different settings. Like the lens of a kaleidoscope, the 'single security space' brings into focus the particular, but potentially variable, configurations of interdependent socio-economic, environmental, political and other factors comprising complex security problems in a given context. Constructing integrative approaches suited to tackle the multi-faceted risks framed by the single security space will in turn demand extensive cooperation across all sectors and levels of society (Smith, 2021, p. 81).
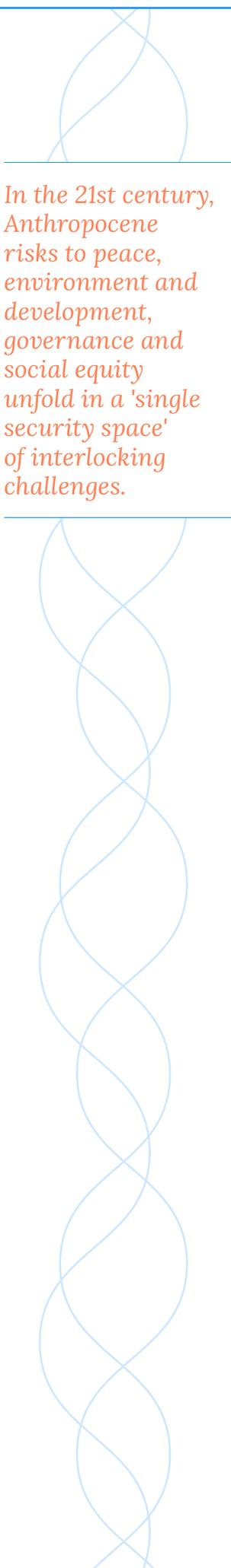
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Conclusions

The 1972 Stockholm Conference may offer insight to decision-makers worldwide as they strive to address today's Anthropocene risks and accordingly formulate effective policy strategies. The outcome and legacy of the UNCHE have successfully cast environmental degradation and nuclear dangers as dual threats to human survival. This result attests to the significant power of such mass international platforms to help set global agendas, promulgate integrative thinking and legitimize global governance. The diverging courses of global environmental diplomacy and global nuclear disarmament in the international arena after the Stockholm Conference, however, demonstrates the importance of pursuing ongoing practical diplomacy. Sustained dialogue and persistent multi-level institution and capacity building served to progressively strengthen and extend the scope of cooperative international environmental governance. The Stockholm Conference succeeded in promoting global environmental action and awareness to protect humanity's 'Only One Earth' by laying the groundwork to ensure that global policy cooperation and engagement endure beyond 'only one conference'.

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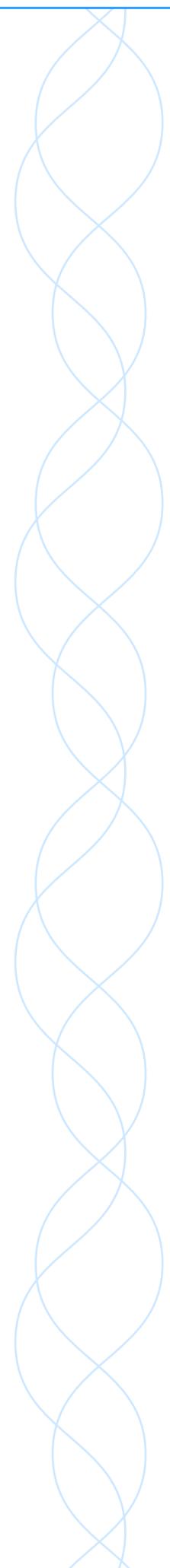
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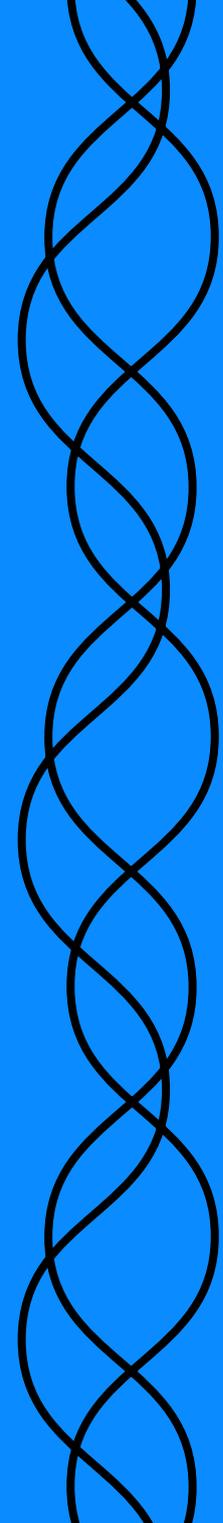
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