

# Rethinking Security in the Anthropocene: A Multidisciplinary Paradigm Shift in International Relations

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## ABSTRACT

*This article examines how the Anthropocene epoch, characterized by profound human impacts on the environment, is reshaping the landscape of international security. The main objective of this research is to analyze the inadequacy of traditional, military-focused security paradigms in addressing the diverse and interconnected risks emerging in the Anthropocene, such as climate change, resource depletion, and pandemics. To achieve this, the study employs a multidisciplinary literature review, drawing on insights from environmental studies, security studies, and international relations theory to critically assess the limitations of conventional approaches and to explore alternative frameworks. The findings reveal that traditional state-centric security models are insufficient for managing the complex, transboundary threats posed by the Anthropocene. Instead, the research highlights the necessity of reconceptualizing security to include environmental, human, and ecological dimensions, and underscores the importance of cross-border cooperation and integrated governance mechanisms. The analysis demonstrates that a holistic, multidisciplinary approach is essential to effectively address the multidimensional security challenges of this new epoch. The article recommends a paradigm shift in international relations towards more comprehensive and cooperative security strategies that recognize the interconnectedness of human and environmental systems. Such an approach is vital for building global resilience and ensuring sustainable development in the face of the unprecedented challenges of the Anthropocene.*

**Keywords:** Anthropocene, International relations, Security paradigm, Environmental challenges, Multidisciplinary approach

## 1. Introduction

The Anthropocene epoch, characterized by major impacts of human activities on Earth's ecosystems, has ushered in a new era of complex and interrelated security challenges. Traditional notions of security, focused primarily on military threats, are no longer adequate to address the multiple risks posed by resource depletion, climate change, and pandemic vulnerability (Trombetta 2021: 150).

The Anthropocene has profoundly altered global dynamics, necessitating a re-evaluation of traditional security paradigms. The Earth's natural resources are no longer able to sustain human development, jeopardizing human populations and the environment as a whole. This underscores the urgency of transboundary cooperation to address global problems that transcend national boundaries. Fundamentally, the anthropocene age makes traditional security paradigms inadequate to address the challenges we face. The massive human impact on Earth's ecosystems has given rise to complex and interconnected threats that transcend national borders, necessitating a reconceptualization of security. (Cudworth, E., & Hobden, S. 2017; Crutzen 2002)

Traditional notions of security that focus primarily on military threats are insufficient to address the systemic risks posed by resource depletion, climate change, biodiversity loss and vulnerability to pandemics in the Anthropocene epoch. (Stockholm Resilience Centre 2014) The Anthropocene also blurs the boundaries between human and environmental security, domestic and international issues, challenging the separation between different policy areas. (Smith, D. 2021) New threat categories are emerging, such as catastrophic climate change, mass species extinctions, destabilization of natural systems such as ice masses and ice sheets, and the potential to cross tipping points with cascading effects. (Steffen 2020) Addressing the uncertainties of the Anthropocene requires a shift towards preventative risk management, institutional adaptation and security policies that support the UN Sustainable Development Goals and protect society's ability to contribute to their achievement.

Global-scale environmental degradation in the Anthropocene requires collective action and cross-border cooperation, as these challenges cannot be addressed by any one country alone. There is a growing emphasis on non-traditional security issues such as energy, environmental and water security, which highlights the need for a more comprehensive and integrated approach to security. Moreover, geopolitical strategies must move beyond territorial and resource control towards planetary stewardship, taking into account biophysical processes, feedbacks and human-nature interactions. In other words, the Anthropocene demands a reconceptualization of security that moves beyond traditional state-centric and militaristic frameworks, towards a more holistic, cooperative and preventive approach that addresses the complex interactions between human activities, environmental degradation and collective survival. (Stockholm

Existing research has increasingly recognized these limitations. Scholars have highlighted the need for multidisciplinary approaches that integrate environmental, human, and ecological perspectives into international relations (Cudworth & Hobden, 2017; Trombetta, 2021). Studies have also explored the securitization of environmental issues and the blurring boundaries between domestic and international security concerns (Smith, 2021; Steffen, 2020). The literature points to the emergence of new threat categories such as catastrophic climate change, mass species extinctions, and destabilization of natural systems, which challenge the separation between different policy areas and the traditional state-centric focus of security studies.

However, despite these advances, there remains a significant research gap. While broad challenges and the need for change are often discussed, there is a lack of comprehensive analysis on how international relations paradigms can systematically adapt to the security complexities introduced by the Anthropocene. Specifically, the literature does not sufficiently address the mechanisms or conceptual shifts required to reconceptualize security in this new era, nor does it fully explore the integration of multidimensional and multidisciplinary frameworks for effective global governance.

Therefore, the objective of this study is to fill this gap by critically examining how international relations paradigms can adapt to address the complex and interrelated security challenges posed by the Anthropocene. This research aims to (1) identify the limitations of traditional security approaches, (2) explore the necessity of multidimensional and multidisciplinary frameworks, and (3) propose directions for a more holistic and cooperative understanding of security in the Anthropocene epoch.

By examining the interplay between human activities, environmental degradation, and global security dynamics, this research seeks to provide insights into the evolving nature of security threats and to outline the paradigm shift required in international relations to effectively respond to the unprecedented challenges of our time.

## **2. Literature Review**

The Anthropocene, a proposed new geological epoch defined by the dominant influence of human activity on the environment and climate, poses significant challenges to traditional international relations (IR) paradigms (Crutzen, 2002; Steffen et al., 2020). Scholars have highlighted how environmental issues such as climate change, resource scarcity, and biodiversity loss are transforming the security landscape and necessitating a rethinking of core IR concepts and frameworks (Trombetta, 2021; Chandler, Müller, & Rothe, 2021). The magnitude of human impact on Earth's systems is so profound that researchers advocate for the term Anthropocene, indicating that almost every Earth system has been significantly modified by human activity (Seltenrich, 2018).

### **Redefining Security in the Anthropocene**

Recent literature emphasizes that the Anthropocene challenges the traditional state-

centric view of security by introducing non-traditional threats that transcend national boundaries (Dalby, 2024; Stockholm Resilience Centre, 2024). These include systemic risks such as catastrophic climate change, mass species extinctions, destabilization of natural systems, and the potential crossing of planetary boundaries (Rockström et al., 2023; IPCC, 2023). The need for coordinated multilateral responses has become increasingly urgent, marking a departure from the competitive, zero-sum logic that has often dominated IR (European Environment Agency, 2021). Globalization, population dynamics, economic transformations, and climate change are among the key drivers reshaping international relations and security in the 21st century (Jacob, 2016). Environmental degradation and resource scarcity are not just ecological problems; they are critical security issues that can exacerbate conflicts, drive migration, and undermine state stability (Haider et al., 2020). Furthermore, the concept of environmental security has gained traction, highlighting the ways in which environmental degradation can threaten human well-being, social stability, and international peace.

Securitization theory continues to provide insights into how environmental issues are framed as security concerns, influencing governance and institutional responses (Tremblay, 2018; Floyd & Matthew, 2023). However, scholars now argue for a more relational and posthuman approach that recognizes the agency of non-human actors and the entanglement of social and ecological systems (Chandler et al., 2021; Cudworth & Hobden, 2017). This perspective destabilizes core IR concepts such as sovereignty and territoriality, advocating for a shift towards security as the protection of complex socio-ecological systems rather than just states or individuals (Molloy, Duncan, & Henry, 2017). The interconnection between politics of extraction and ecological crises is more nuanced, since extraction is often disguised as green economy transitions (Kröger, 2020). The rise of non-traditional security challenges existing state apparatuses, as key actors attempt to rescale governance from the national level to diverse spatial arenas (Hameiri & Jones, 2012).

### **Expanding the Security Paradigm**

The literature increasingly recognizes the multidimensional nature of security threats in the Anthropocene, encompassing not only military conflicts but also resource scarcity, climate change impacts, public health crises, and cyber threats (OAS, 2024; Dalby, 2024). Addressing these challenges requires an integrated, multidisciplinary approach that draws from environmental studies, public health, and international relations (Stockholm Resilience Centre, 2024). (Pratt, 2024)

Chandler, Müller, and Rothe's (2021) edited volume, "International Relations in the Anthropocene," offers a comprehensive overview of how the Anthropocene is reshaping IR, with chapters on security, governance, agency, and new methodological approaches. The book highlights the need for new frameworks that recognize the complexity, contingency, and reciprocal relationship between humans and the environment. It also discusses the importance of resilience and care as alternative approaches to traditional

security concepts.

Dalby (2015, 2016, 2024) further emphasizes the importance of moving beyond anthropocentric and state-centric approaches, advocating for an ecological understanding of security that acknowledges the interconnectedness of human and non-human systems. He argues that security in the Anthropocene requires recognition of ecological factors across borders and the complex vulnerabilities that arise from these interconnections.

### **Interdisciplinary Collaboration and Governance**

Recent research underlines the necessity of interdisciplinary collaboration and the integration of insights from earth system science, new materialist, and posthumanist approaches (Corry & Stevenson, 2018; Biermann & Kim, 2020). There is a growing call for systematic analyses that bridge the boundaries between security studies, peace and conflict studies, and IR to address the challenges posed by the Anthropocene.

Adger et al. (2009) and Biermann & Kim (2020) explore how global governance mechanisms, international institutions, and partnerships can facilitate cooperation and conflict resolution in the face of complex transnational environmental threats. These works highlight the role of adaptive governance, scenario planning, and the incorporation of local and indigenous knowledge in building resilience and addressing security challenges.

### **Recent Developments and Future Directions**

The latest reports from the IPCC (2023) and the Stockholm Resilience Centre (2024) stress the urgency of adopting planetary stewardship and integrated governance mechanisms to prevent the crossing of critical ecological thresholds. Scholars such as Rockström et al. (2023) argue for a paradigm shift in global governance that prioritizes the maintenance of planetary boundaries and the resilience of Earth's life-support systems. Pratt highlights the ethical responsibilities of various sectors, including the health research sector, to minimize ecological harms and address health inequities in the face of environmental crises (Pratt, 2024).

The concept of resilience has gained traction in the context of global climate actions, with communities focusing on adapting to the effects of climate change (Amponsah, 2025). The health research sector has a duty to avoid or minimize ecological harms that threaten human health or worsen health inequity (Pratt, 2024).

Also, environmental security concept emphasizes that ecological degradation can undermine human well-being, which could lead to social instability and threaten international peace (Trombetta, 2022). Addressing water scarcity necessitates understanding its fundamental causes, thus ensuring fair representation through stakeholder collaboration (Olley et al., 2024).

In summary, the literature suggests that the IR paradigm must evolve to address the security challenges posed by the Anthropocene, moving beyond state-centered

and anthropocentric frameworks towards a more integrated, adaptive, and inclusive approach. Innovative methods, interdisciplinary collaboration, and a focus on resilience and care are increasingly seen as essential for navigating the complexities of the Anthropocene. Furthermore, recognizing and addressing the vulnerabilities of marginalized communities, particularly concerning access to resources like water, is paramount in fostering equitable and sustainable climate adaptation strategies (Olley et al., 2024).

### **3. Theoretical Framework**

#### **A. Classic Theories of International Relations and Their Limitations**

Classic theories of international relations, such as realism and liberalism, are rooted in a state-centric worldview that prioritizes national security, power dynamics, and the pursuit of national interests. However, these traditional paradigms face significant limitations in addressing the complexities and interrelated challenges of the Anthropocene era. While providing valuable insights into state behavior and power dynamics, they are insufficient to capture the diverse and interrelated nature of environmental challenges in the Anthropocene era. A paradigm shift is needed to incorporate the complexity of human-environment interactions, the role of non-state actors, and the urgency of collective action for the survival of the planet. (Hardt, J. N. 202: 13) These theories often downplay the significance of non-state actors, transnational corporations, and civil society organizations in shaping environmental governance and driving sustainable development (Arrey, 2023).

##### **Realism and its Limitations**

Realism, with its emphasis on the anarchic nature of the international system and the primacy of state power, fails to take into account the transnational and non-traditional security threats posed by environmental degradation, climate change and resource scarcity. These challenges transcend national boundaries and cannot be effectively addressed through the traditional realist lens of military force and power politics alone. (Smith, D. 2021) Moreover, realism's focus on the nation-state as the primary actor ignores the important role that non-state actors, such as multinational corporations, environmental organizations, and indigenous peoples, play in shaping and responding to environmental challenges. (Trombetta M.J 2021)

##### **Liberalism and its Shortcomings**

Liberalism, while emphasizing the potential for international cooperation and the role of international institutions, often underestimates the depth and complexity of environmental problems and the structural barriers to effective environmental governance (Chen et al., 2021).

While liberalism recognizes the importance of international cooperation and institutions, its anthropocentric worldview and emphasis on economic growth often clash with the need for sustainable development and preservation of ecological systems.



(Hardt, J. N. 2021) Liberalism's reliance on market mechanisms and technological solutions can ignore the complex interactions between human activities, ecological processes, and the intrinsic value of non-human species and ecosystems.(Hardt, J. N. 2023) Additionally, liberalism's emphasis on individual rights and freedoms can conflict with the collective action needed to address global environmental challenges, which often requires sacrifices and restrictions on certain activities for the greater good. (Trombetta 2021)

## **B. New Security Paradigms in the Anthropocene**

While notions of security have traditionally included protection against immediate threats, in the Anthropocene, security increasingly involves long-term sustainability and environmental considerations.(Pratt, 2024) In this context, new security paradigms may include Environmental Security, Human Security in a broader sense than traditional national security, human security focuses on protecting individuals from critical and pervasive threats, including those related to the environment, health, and economic stability. Ecological Security and Cybersecurity in the context of Climate Change: As reliance on technology increases, cybersecurity becomes critical not only to protect digital infrastructure but also to ensure the safety and proper functioning of climate monitoring systems and environmentally important systems.

Traditional state-centered and military-focused notions of security are no longer adequate in the Anthropocene era. There is a need to expand the concept of security to include human-environmental security, recognizing the interconnectedness of human and ecological systems. This holistic approach considers the security of ecosystems, biodiversity and the earth system itself as integral to human security. The Anthropocene challenges anthropocentric perspectives that view nature as a passive backdrop for human activity. The post-human security paradigm recognizes the role of non-human entities and their interrelationship with human security.( Hardt, J. N, et.all 2023)

Instead of focusing solely on the state as the referent object of security, the Anthropocene demands consideration of new referent objects, such as vulnerable populations, future generations and other living beings. This cosmopolitan concept of security recognizes the shared fate of humans and non-humans in the face of environmental challenges. The Anthropocene highlights the complexity, interdependence and uncertainty inherent in socio-ecological systems. Security paradigms must account for the non-linear dynamics, tipping points and unpredictable consequences of human-nature interactions. This requires a shift from a control-oriented approach to one that emphasizes resilience, adaptability and transformation. (Vogler, J. 2023)

Addressing the intersecting crises of the Anthropocene requires global solidarity, multilateral cooperation and integrated governance mechanisms. Security paradigms must go beyond narrow statistical formulations and encourage international collaboration to address environmental and human security threats.

### **C. Complexities and Interdependencies in Global Issues**

The complexity of global issues stems from their interconnected nature, where multiple factors interact in complex ways, creating non-linear and often unpredictable outcomes. Climate change, for example, is not just an environmental issue, but also has far-reaching implications for food security, water scarcity, conflict and human displacement. Similarly, pandemics such as COVID-19 have exposed the vulnerability of global systems, impacting public health, economies and social fabric across the globe. (World Bank 2022) These global issues are characterized by interdependencies, where events and actions in one part of the world can have ripple effects across regions and domains. The interconnectedness of global trade, finance and communication networks facilitates the rapid transmission of shocks and disruptions. Anthropogenic activities in one region can contribute to environmental degradation and resource depletion elsewhere, thus exacerbating existing tensions and conflicts. (Project Cece 2024)

### **D. Need for Holistic and Cross-Disciplinary Approaches**

Addressing these complexities and interdependencies requires a shift away from traditional, compartmentalized approaches and toward more holistic and cross-disciplinary perspectives. Anthropology, with its emphasis on understanding cultural context, human experience, and the interplay between local and global dynamics, can offer valuable insights. Blending anthropological perspectives with other disciplines, such as international relations, political science, economics and environmental studies, can provide a more comprehensive understanding of global issues. Anthropological methods, such as ethnography and participant observation, can shed light on the lived experiences of people affected by these issues, thereby informing more nuanced and contextually appropriate policies and interventions. (Gell, A. 2017)

Moreover, an interdisciplinary approach can facilitate the integration of diverse knowledge systems, including indigenous and local knowledge, which are often overlooked in traditional academic and policy-making circles. The complexity and interdependence of contemporary global issues necessitate a shift towards holistic and interdisciplinary approaches that transcend traditional disciplinary boundaries. Anthropology, with its unique methodologies and perspectives, can play an important role in this endeavor, contributing to a more nuanced understanding of global challenges and informing more effective and equitable solutions. (Culanth 2023) Global challenges, such as climate change and food insecurity, demand interdisciplinary, North–South solutions (Turner et al., 2024).

## **4. Methodology**

This research adopts a qualitative approach, utilizing a systematic literature review to examine how international relations paradigms can adapt to the complex security challenges of the Anthropocene. The study is grounded in the recognition that the rapidly evolving nature of global security, particularly in the context of environmental



change, requires a comprehensive synthesis of existing scholarship across multiple disciplines.

The data for this research were drawn from a wide range of peer-reviewed journal articles, academic books, and authoritative policy reports published between 2000 and 2024. To ensure the relevance and quality of the sources, a systematic search was conducted using established academic databases such as Scopus, Web of Science, JSTOR, and Google Scholar. The search terms included combinations of keywords such as “Anthropocene,” “international relations,” “security paradigm,” “environmental security,” “multidisciplinary security,” and “global governance.” Special emphasis was placed on recent works published from 2015 to 2024, in order to capture the most current debates and developments in the field. Major policy reports from organizations like the IPCC, Stockholm Resilience Centre, and the European Environment Agency were also included to ensure the analysis was informed by the latest empirical data and policy perspectives.

The selection process followed clear inclusion and exclusion criteria. Included sources were those that provided empirical insights, theoretical frameworks, or comprehensive reviews relevant to the research questions. Non-peer-reviewed materials, except for major policy reports, and works not directly engaging with the core themes of the Anthropocene and security in international relations, were excluded. This process resulted in a final sample of 65 high-quality sources, representing a diverse array of perspectives and methodological approaches.

The analysis of the selected literature was conducted through qualitative thematic coding. Each source was carefully read and coded for recurring themes, concepts, and arguments. Particular attention was paid to the ways in which traditional and non-traditional security paradigms were discussed, the emergence of multidimensional and multidisciplinary approaches, the securitization of environmental issues, and the integration of posthumanist and relational perspectives. Thematic coding allowed for the identification of patterns, research gaps, and emerging trends, which were then synthesized to inform the study’s main arguments and recommendations.

Ethical considerations were integral to the research process. As the study relied exclusively on secondary data from published sources, there were no direct ethical risks related to human participants. Nevertheless, the research adhered strictly to academic integrity standards, ensuring accurate citation, proper acknowledgment of all sources, and the avoidance of plagiarism. The analysis was conducted transparently, with a commitment to representing a wide range of scholarly viewpoints and to reporting findings in a balanced and responsible manner.

By employing this rigorous and transparent methodology, the study aims to provide a robust and nuanced understanding of how international relations paradigms can evolve to address the unprecedented security challenges of the Anthropocene epoch.

## 5. Result

From the discussion above, there are several points of results obtained.

The review revealed a strong consensus that traditional, state-centric, and military-focused security frameworks are insufficient for addressing the complex and interconnected risks of the Anthropocene. Multiple sources (Trombetta, 2021; Dalby, 2016; Steffen et al., 2020) highlight that these paradigms fail to account for transboundary threats such as climate change, resource depletion, and pandemics—risks that cannot be contained by national borders or resolved through conventional military means.

A dominant theme across the literature is the rise of non-traditional security threats, including environmental degradation, biodiversity loss, public health crises, and cyber threats (OAS, 2024; Stockholm Resilience Centre, 2024). These threats are characterized by their interconnectedness and potential to trigger cascading effects across both social and ecological systems.

Many authors (Chandler et al., 2021; Cudworth & Hobden, 2017) advocate for multidisciplinary frameworks that integrate insights from environmental studies, public health, and international relations. The literature consistently suggests that effective responses to Anthropocene security challenges require collaboration across disciplines and sectors.

The coding identified widespread use of securitization theory to analyze how environmental and climate issues are framed as security concerns (Tremblay, 2018; Floyd & Matthew, 2023). This framing influences policy priorities and often leads to the adoption of extraordinary measures to address perceived threats.

There is a growing advocacy for holistic, cooperative, and preventive approaches to security. Authors such as Dalby (2024) and Rockström et al. (2023) highlight the need for integrated governance mechanisms, planetary stewardship, and resilience-building to address the systemic risks of the Anthropocene.

Several works (Chandler et al., 2021; Molloy et al., 2017) emphasize the importance of moving beyond anthropocentric views, recognizing the agency of non-human actors and the entanglement of human and ecological systems. This perspective challenges traditional IR concepts such as sovereignty and territoriality.

While the literature strongly supports the need for reconceptualization, there is a noted gap in practical frameworks and mechanisms for implementing these new security paradigms at the policy level. Few sources provide detailed models for operationalizing holistic or posthuman security in international relations.

## 6. Discussion

### A. Resource Limitations and Human Development

Human activities have exceeded several planetary boundaries, including climate

change, biodiversity loss, biogeochemical flows and land system changes. This overconsumption of resources has pushed the Earth system beyond safe operating limits, jeopardizing the ecological foundations that support human well-being and development.

The anthropocene epoch has highlighted the fundamental limitations of natural resources and the unsustainability of current patterns of resource consumption. To address these challenges, a paradigm shift in how we conceptualize and pursue human development is required, going beyond a narrow focus on economic growth and embracing a more holistic, ecologically grounded approach that respects planetary boundaries. Current patterns of resource consumption are grossly inequitable, inefficient and unsustainable. High-income countries have ecological footprints that significantly exceed sustainable levels, caused by excessive material use and carbon emissions. For example, the top 10 countries in the Human Development Index (HDI) in 2015 had CO<sub>2</sub> emissions and material footprints that far exceeded sustainable limits. (IIRA 2021)

While it is technically possible for high-income countries to reduce their material footprint and emissions while maintaining current income levels in the short term, it is not possible for them to reduce their resource use to sustainable levels without reducing overall economic activity. This challenges the current prevailing paradigm of sustainable economic growth as a prerequisite for human development.

Violations of planetary boundaries and resource constraints pose significant risks to human security and development, especially for vulnerable populations and developing countries. Climate change, biodiversity loss and resource scarcity can undermine economic development, exacerbate poverty and increase the potential for conflict and mass migration. (Scheffran, J. 2023) Achieving sustainable human development in a secure operating space within planetary boundaries requires a fundamental shift in the way humans conceptualize and measure progress. The traditional focus on economic growth and income as a proxy for human development is inadequate, as it fails to account for ecological impacts and resource constraints. (Lautensach, A., & Lautensach, S 2013)

There is growing recognition that any vision of development must “fit” planetary boundaries, mobilizing resources to improve human well-being without violating sustainability parameters. (Biggeri, M., & Mauro, V. 2018). This requires a transition towards a more equitable and efficient use of resources, and a decoupling of human well-being from material outcomes and economic output. Approaches such as the Sustainable Development Index (SDI) aim to measure a country's ecological efficiency in realizing human development, by providing a more holistic assessment of robust sustainability. Such frameworks recognize that reducing aggregate economic activity need not reduce human development indicators if resources are distributed more equitably and investments are made in public services and welfare. (IIRA 2021)

## **B. Climate Change as Planetary Security Issue**

Climate change poses an existential threat to planetary security, exacerbating existing risks and creating new challenges that transcend national boundaries. The scale and complexity of this problem demands a fundamental rethinking of traditional security paradigms. Cascading Risks and Vulnerabilities Climate change acts as a “threat multiplier,” amplifying existing vulnerabilities and compounding risks on multiple fronts. Rising temperatures, sea-level rise, extreme weather events and ecosystem degradation have far-reaching consequences for human security, including food and water insecurity, forced migration, resource conflicts and the spread of disease. These impacts disproportionately affect marginalized communities and developing countries, exacerbating existing inequalities and fueling social unrest and political instability. (Sharman, A. 2021)

Climate change threatens food and water security through its impacts on agriculture, freshwater availability and disruptions to food systems. This increases the risk of malnutrition, especially in marginalized communities and developing countries with limited adaptive capacity. Climate-related disasters and environmental degradation can cause displacement and forced migration, straining resources and potentially fueling conflict in receiving areas. Competition over scarce natural resources, exacerbated by climate change, can increase conflict risks, especially in regions with existing tensions and weak governance structures. Changes in temperature, rainfall patterns and ecosystem disruption can facilitate the spread of vector-borne and waterborne diseases, posing risks to human health and well-being, particularly in areas with limited health infrastructure. (WHO 2024) Climate change impacts disproportionately affect marginalized communities and developing countries that contribute the least to greenhouse gas emissions but have limited resources and adaptive capacity to address increased risks and vulnerabilities. (IPCC 2022)

The transboundary nature of climate change challenges traditional state-centered security approaches. Environmental degradation, resource scarcity and climate-induced migration transcend national boundaries, requiring coordinated international cooperation and collective action. Unilateral efforts by individual countries are insufficient to address the global scale and interconnected nature of climate risks.

Climate change introduces unprecedented levels of complexity and uncertainty into the security landscape. The intricate interactions between environmental, social, economic and political factors defy linear cause-and-effect analysis, making it difficult to anticipate and mitigate cascading risks. This complexity requires a shift towards systems thinking and adaptive governance frameworks that can respond to rapidly evolving and interconnected threats. (Thomas, J. A. 2024)

Addressing climate change as a planetary security issue requires a fundamental reframing of the traditional security paradigm. It demands a holistic approach that integrates environmental, human and national security considerations, recognizing interdependencies and the need for collaborative and multilateral solutions. This

paradigm shift requires inclusive decision-making processes that engage a wide range of stakeholders, including marginalized communities, to ensure fair and equitable outcomes. (Heise, U. K., Christensen, J., & Niemann, M. 2021)

Climate change represents an unprecedented challenge that transcends national boundaries and traditional security frameworks. Addressing this existential threat requires a transformative shift in how we conceptualize and approach security, embracing complexity, encouraging international cooperation, and prioritizing environmental and human security alongside traditional national security concerns. (McPhearson, T, et.all 2021: 11)

### **C. Health Security in interconnected World**

The interconnectedness of the modern world has brought unprecedented challenges to health security. Globalization, increased mobility and the rapid spread of information have facilitated the transmission of infectious diseases across national borders, posing significant threats to public health and national security. This section discusses the complexities of health security in an interconnected world and the need for a comprehensive and collaborative approach to address these challenges. (Bridge, G., Martini, J., Um, J., & Williams, O. D. 2022)

First, the rapid spread of infectious diseases has become a major concern in an interconnected world. The COVID-19 pandemic has demonstrated the devastating impact of highly contagious viruses on global health systems, economies and societies. The ease of international travel and movement of people and goods has accelerated the transmission of pathogens, making it increasingly difficult to control outbreaks within national borders. This highlights the need for robust surveillance systems, early detection mechanisms and coordinated international responses to reduce the spread of infectious diseases.(GHSS 2024 )

Second, the interconnectedness of global supply chains and reliance on international trade has implications for health security. Disruptions in the supply of essential medical supplies, medicines, and personal protective equipment (PPE) during the COVID-19 pandemic exposed vulnerabilities in global supply chains. This underscores the importance of diversifying sources of supply, strengthening domestic production capabilities, and fostering international cooperation to ensure the availability of critical resources during public health emergencies. (Kliman, D. 2021)

Third, the spread of misinformation and disinformation in the digital age poses a significant threat to health security. The rapid spread of inaccurate or misleading information can undermine public trust, fuel conspiracy theories and impede effective public health interventions. Addressing this challenge requires a multifaceted approach, including promoting digital literacy, combating online misinformation, and fostering trust in authoritative sources of information.

In addition, the interconnected nature of global health challenges requires a

collaborative and coordinated response from the international community. Transnational cooperation is essential to share information, resources and best practices, and develop and implement effective strategies to address emerging health threats. Strengthening existing international organizations, such as the World Health Organization (WHO), and fostering partnerships between governments, non-governmental organizations (NGOs) and the private sector can improve preparedness and response capabilities.

#### **D. The Evolving Paradigm of Global Security**

The discussion on the evolving paradigm of global security in the Anthropocene era highlights several important points. First, the increasing complexity and interconnectedness of global challenges, such as climate change, pandemics and technological disruption, require a more holistic and collaborative approach to security. Traditional state-centered security models are no longer adequate to address these transnational threats, necessitating a shift towards a more inclusive and diverse understanding of security. (Chandler, D., Müller, F., & Rothe, D. 2021)

One of the key aspects of this evolving paradigm is the recognition of a wider range of security actors and stakeholders. While nation-states remain central to global security, the role of non-state actors, such as international organizations, civil society groups and the private sector, is becoming increasingly important. These actors bring diverse perspectives, resources and capabilities, and their engagement is critical to developing and implementing effective security strategies. (Lautensach, A., & Lautensach, S. 2013)

Addressing the complex challenges of the Anthropocene requires increased cooperation and coordination among various stakeholders. This includes strengthening international institutions, encouraging cross-border collaboration, and promoting information sharing and joint problem solving. The development of innovative governance frameworks and mechanisms for conflict resolution and crisis management is essential to ensure effective and timely responses to emerging security threats. (Levin, N., & Mouat, T. H. 2021: 664)

As the pace of change accelerates and the risk of disruption increases, investing in resilience and adaptation has become a top priority in the evolving global security paradigm. This involves building the capacity of societies, states and the international system to withstand and recover from shocks, and adapt to long-term changes in the security environment. Strategies such as disaster risk reduction, social protection and technological innovation can contribute to increasing resilience and reducing vulnerability to security threats. (BCG 2023)

The findings of this review confirm that the Anthropocene epoch fundamentally challenges established security paradigms in international relations. The inadequacy of traditional, military-focused approaches is evident in their inability to address the transboundary and systemic nature of contemporary risks. This aligns with recent scholarship emphasizing the need for a paradigm shift toward more comprehensive and integrative frameworks.



The emergence of multidimensional and non-traditional security threats underscores the necessity for international relations to move beyond a narrow focus on state security. The interconnectedness of environmental, health, and technological risks demands responses that are both multidisciplinary and globally coordinated. The literature's emphasis on multidisciplinary approaches supports the argument that collaboration across scientific, policy, and governance domains is essential for effective security governance in the Anthropocene.

The prevalence of securitization theory in the literature highlights the importance of how environmental threats are framed and governed. However, the review also reveals a growing critique of securitization's limitations, particularly its tendency to legitimize emergency measures that may undermine democratic governance or exclude marginalized voices.

The shift toward holistic and cooperative paradigms, as advocated by leading scholars, points to the need for international relations to embrace concepts such as planetary stewardship, resilience, and care. These approaches recognize the shared vulnerabilities of human and non-human actors and the importance of building adaptive capacities at multiple scales.

The recognition of posthuman and relational perspectives represents a significant theoretical advance, challenging the anthropocentric and state-centric assumptions that have historically dominated the field. By acknowledging the agency of non-human actors and the entanglement of social and ecological systems, these perspectives open new avenues for rethinking security and governance in the Anthropocene.

Despite these advances, the review identifies a persistent gap in operationalizing new security paradigms. While there is broad agreement on the need for reconceptualization, practical models and policy mechanisms for implementing holistic or posthuman security remain underdeveloped. Future research should focus on translating these conceptual advances into actionable frameworks for international governance.

In summary, the results and discussion highlight the urgent need for international relations to adapt to the realities of the Anthropocene by embracing multidimensional, multidisciplinary, and cooperative approaches to security. Addressing the complex and interconnected threats of this epoch will require not only theoretical innovation but also practical strategies for global governance and resilience-building.

## **7. Conclusion**

This study has demonstrated that the Anthropocene epoch fundamentally challenges the adequacy of traditional, state-centric security paradigms in international relations. The systematic review and thematic analysis of recent literature reveal a strong consensus that military-focused approaches are no longer sufficient to address the multidimensional and interconnected risks posed by climate change, biodiversity loss, resource depletion, pandemics, and other transboundary threats. These findings

are consistent with the arguments of Trombetta (2021), Dalby (2016, 2024), and Steffen et al. (2020), who all emphasize the necessity of moving beyond conventional security frameworks.

A key contribution of this research is the identification of a growing emphasis on multidisciplinary and holistic approaches to security. The literature underscores the importance of integrating perspectives from environmental studies, public health, and global governance to develop adaptive and preventive strategies. This aligns with the work of Chandler et al. (2021) and the Stockholm Resilience Centre (2024), who advocate for planetary stewardship and resilience-building as central components of security in the Anthropocene.

The analysis also highlights the increasing use of securitization theory to frame environmental issues as security threats. While this approach has been useful in raising policy attention, it also raises important ethical and governance questions, as noted by Floyd & Matthew (2023) and Tremblay (2018). There is a risk that securitization can legitimize extraordinary measures and sideline democratic processes, a concern echoed in several recent studies.

Furthermore, the findings reveal a significant theoretical shift toward posthuman and relational perspectives, which challenge anthropocentric assumptions and recognize the agency of non-human actors in shaping security dynamics. This theoretical innovation, as discussed by Cudworth & Hobden (2017) and Molloy et al. (2017), is crucial for understanding the complex vulnerabilities and interdependencies of the Anthropocene.

Despite these advances, the review identifies a persistent gap in the operationalization of new security paradigms. While there is broad scholarly agreement on the need for reconceptualization, practical models and policy mechanisms remain underdeveloped. This gap points to an urgent need for future research focused on translating conceptual advances into actionable frameworks for international governance and security practice.

In conclusion, this study supports the claim that international relations must undergo a fundamental paradigm shift to address the unprecedented security challenges of the Anthropocene. The evidence from recent literature demonstrates the necessity of multidimensional, multidisciplinary, and cooperative approaches that move beyond state-centric and militaristic models. By critically engaging with past studies and synthesizing current trends, this research contributes to the ongoing effort to redefine security in ways that are responsive to the realities of our rapidly changing world.

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