



# **Governing the Anthropocene Complex Crises and Transitions to Sustainable Peace**

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**The Anthropocene denotes the current geological age, in which human activity has had a significant impact on climate and the environment. The pressing issue of this epoch is whether the global consequences of these interactions between humans and the environment can be governed on a global scale.**

The 1972 report to the Club of Rome on “[The Limits to Growth](#)” demonstrated the natural boundaries to human expansion which began in the Holocene era, following the end of the last glacial period around 12,000 years ago. The continued growth of human activities since the industrial revolution has become a driving force of reshaping the face of the planet into a new [geological epoch](#), the “Anthropocene”, associated with [multiple global consequences](#) such as climate change, land degradation, resource scarcity and biodiversity loss. The Anthropocene is seen as a new geologic epoch in which humankind has emerged as a [globally significant force](#) capable of reshaping the face of the planet. The underlying human-environment interactions raise fundamental questions for global governance: Can nature be controlled and shaped on a global scale? Are human interventions a disturbing or regulating global force, avoiding or creating disasters? What are the limits of human expansion in the Anthropocene?

### Human growth and complex crises

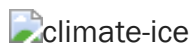


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In the course of its history, the human population has been growing by increasing birth rates and lowering death rates, leading to the expansion of the human sphere in terms of capital, investments, income, technology, energy and resource flows, political power and violent forces of destruction.

Despite Malthusian concerns about population growth causing scarcity of natural resources, intolerable pollution, mass starvation and other catastrophes, humans were able to overcome resource constraints and expand into new spaces through problem-solving capabilities, technical and social innovations that generated more wealth on a shrinking natural resource base. Continued pressure on natural resources and ecosystems challenge planetary boundaries in the Anthropocene, raising the question of whether a balance will be established by increased death rates or the reduction of birth rates. While the first pathway implies crisis, disaster and death, the second path may be associated with a sustainability transformation in demographic, economic and societal conditions within natural boundaries.

These pathways are part of the “complexity turn” in the Anthropocene which is characterized by globalized networks among people, markets and institutions, accelerated processes and flows in transportation and communication, and manifold micro-macro interactions between natural and social systems. While complex systems are often robust against disturbances in the core region of stability, on the edge of critical thresholds between stability and instability, small variations and uncertainties can make a big difference and decide whether systems break down or create new ones, as symbolized by the famous “butterfly effect” in chaos theory.

Beyond thresholds and tipping points chain reactions and risk cascades may be triggered which propagate in space and time and induce qualitative system

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changes. These include **complex events** such as natural disasters, stock market crashes, revolutions, mass exodus or violent conflicts. A world of ever growing complexity where responsibilities and solutions of crises are hidden behind smokescreens, may provoke over-simplifications, religious, populist and nationalist fundamentalisms, rhetoric against science and intellectuals, or resistance against globalized structures.

With the chaotic breakdown of the East-West conflict in 1989, actions of individuals and groups triggered a chain reaction that within weeks led to the fall of the Berlin Wall and the breakup of the Eastern Block. A new world (dis-)order emerged in which multiple crises interacted in fractal and fragile international landscapes that continue to be unstable and full of surprises (see [van Creveld 1991](#), [Kaldor 1998](#), [Münkler 2005](#), [Scheffran 2008](#)).

Numerous factors and actors are interrelated, involving national, subnational and transnational actors in complex networks, crises and conflicts. Tight couplings lead to cascading crises that spiral out of control, including September 11, global economic crises, the Arab Spring, the wars in Iraq, Afghanistan, Libya and Syria, the civil war in Ukraine, the Greek debt crisis, the European refugee crisis and terror attacks in many countries. These events are interconnected through multiple channels that are often invisible.

### **Climate change as a risk multiplier**

In this complex chain of crises, environmental change is connected with other problem areas through multiple linkages from local to global levels. More tipping points may emerge in the nexus of environmental degradation, climate change, poverty, and hunger which affect the living conditions in many parts of the world and could turn into severe security threats. Climate change is considered a **risk multiplier**, which disturbs the balance between natural and

social systems and amplifies the **consequences** through complex impact chains. Among key pathways, climate change **can affect** the functioning of critical infrastructures and supply networks; intensify the nexus of water, energy and food; lead to production losses, price increases and financial crises in other regions through global markets; undermine human security, social living conditions and political stability; and induce or aggravate migration movements and conflict situations.

In the most affected regions the erosion of social order and state failure may trigger a spiral of corruption, crime and violence. Particularly critical is the situation in fragile and failing states with social fragmentation, weak governance structures and inadequate management capacities. Human insecurity and personal instability interacts with social and political instability. The impact of environmental change could undermine the ability to solve problems and further dissolve state structures, possibly leading to their collapse.

The Darfur conflict in Sudan has served as a prominent case where climate change is suggested as a threat multiplier in the complex nexus of population pressure, exploitation of land and forests, declining agricultural productivity, food insecurity, and the spread of diseases. While in **some studies** drought and desertification exacerbate the competition for resources between herders and sedentary farmers, others point to the long-term political roots of instability and violent conflicts, reinforced by national power games, regional struggles and global geopolitics that marginalized the Darfur region and fueled a spiral of violence.

Similarly, **several authors** found **devastating droughts** in the years before the Syrian rebellion that hit the main growing areas of the country and forced many

people to move to the cities. These changes combined with many other conflict drivers rooted in the country's economic, social and demographic conditions, political failures of the Assad regime as well as the events following the US invasion of 2003, the Arab Spring of 2011 and the emergence of the Islamic State which [question the role](#) of climate change as a dominant factor.

## **Limits to the Anthropocene**

In this complex nexus of overlapping crises and interconnected problem areas, the world may continue on a slippery slope of escalation, running full speed into natural boundaries and their forces. The challenge is to anticipate and avoid risky pathways by counteracting forces that slow down and change course towards a more sustainable, peaceful and viable world which avoids dangerous pathways and interventions (such as [risky climate engineering](#)), allowing for a timely and self-organized system transformation that takes the limits of the Anthropocene [into consideration](#). These include finite natural resources and limits to growth; ethical, social, political and legal constraints; limits of scientific knowledge and uncertainty. In an increasingly interconnected world, stabilization of human–environment interactions under conditions of climate change needs an integrative and interdisciplinary understanding of human–environment interaction to assess destabilizing developments that threaten survival and adapt to changing circumstances to ensure their viability.

Social systems are not determined to aggravate crises situations but also have the ability to cope with problems like climate change and develop alternative pathways. To succeed, human responses and actions need to be timely and adequate compared to the speed, intensity and complexity of change. Concepts of anticipative and adaptive governance are needed to influence critical decision points and adjust actions along multiple causal chains to protect

human security, strengthen societal resilience and sustainable livelihoods, and to develop collective adaptive strategies driving the planet through the complex and foggy landscapes of the future where information is limited and uncertain, but continuously updated. A lack of agreement on the underlying causes, on the risks to be expected and on the actions required is impeding progress.

### **Governing transformations to sustainable peace**

Concepts of resilience, security, viability and sustainable peace can strengthen people's social and economic capabilities in their effective, creative and collective efforts to handle the challenges of the Anthropocene. In a resilient social environment, actors are able to cope with and withstand the disturbances caused by climate change in a dynamic way that will enable them to preserve, rebuild, or transform their livelihood.

Sustainable development seeks to balance economic, social and ecological issues for present and future generations and integrate the human sphere (socio-sphere) into the boundaries of the natural environment (eco-sphere), making conflicting objectives compatible:

1. Sustain refers to preservation and upholding of natural resources as the life-enabling base of society and precondition for human existence.
2. Development means the unfolding of opportunities and abilities to improve human well-being and promote societal progress.

Peace rests on similar principles regarding the existence and development of human rights:

1. Preservation and protection of the existence, integrity and identity of each individual by excluding violence.

## 2. Self-fulfillment and unfolding of the individual through equal distribution of development opportunities.

Thus, upholding and unfolding of humans and nature are common principles of sustainable peace, which addresses both the negative interactions between armed conflict, environmental destruction and low levels of development (vicious cycle) as well as positive linkages between human development, environmental protection and peace-building (virtuous cycle).

In addition to preservation and development (upholding and unfolding), a third task includes the shaping of a viable world, aiming for its “conformation” to fit the current state into a proper shape, form or design, creating a balanced relationship between the real and the desired world, between human society and nature. In the triangular relationship between sustainability, development and peace, upholding current abilities serves as a basis for unfolding enabling opportunities to facilitate the conformation of human–environment interaction pathways towards a viable world. This approach is compatible with [the multi-level-perspective](#) of socio-technical transformations that describe micro-macro transitions between regimes, niches and landscapes.

Key viability strategies, supporting a “[new climate for peace](#)”, include climate mitigation and adaptation; the building of networks, the cultivation of diversity, flexibility and justice; migrant networks that facilitate the exchange of knowledge, income and other resources; new capabilities to manage disasters; arms control, non-proliferation and disarmament; regional security concepts, crisis prevention, conflict resolution and confidence-building; as well as innovative institutional frameworks and legal mechanisms.



The 2015 Paris Agreement offers a first **framework of opportunities** through setting boundaries of global warming and national commitments of emission reductions as well as instruments for financial and technology transfer between industrial and developing countries. While the scope and effectiveness of these measures may not yet be sufficient to prevent dangerous climate change, they could lay the foundations and attract political support from local to global levels for a sustainable and peaceful transformation towards governing the Anthropocene.

### **Further readings by the author**

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**(agent-based modelling, social network analysis, field research). He was a Visiting Professor at the University of Paris (Sorbonne), consultant to the United Nations, the Technology Assessment Office of the German Parliament, the Federal Environmental Agency, and the German delegation to the climate negotiations.**

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