The Security Implications of Climate Change

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Prologue

The Author, who is a prolific writer on contemporary issues like global warming, disaster management, etc., brings out that the perception of the international community towards climate change issues has changed significantly during the last three decades. Earlier, it was seen as an environmental problem or an energy challenge but has now come to be perceived as a core development challenge that carries potentially serious implications for international peace and security. This, as can be imagined, will significantly impact government policies.

She further brings out that during the past decades, a series of environmental drivers of human conflict have been identified: land degradation, drought, desertification, failing water supplies, deforestation and fisheries depletion, etc. Climate change has the potential to not only aggravate the negative impacts of many of these factors but is also becoming the “mother of most environmental security problems.” By redrawing the maps of water availability, food security, disease prevalence, coastal boundaries and population distribution, it could intensify existing tensions and trigger new conflicts. It is now being increasingly forecast that water would be the most likely cause of any future global conflict.

A frightening scenario indeed!

- Editor

Introduction

When scientists began to uncover worrying evidence of human induced climate change in the 1970s and 1980s, the emerging problem of “global warming” was seen by policy-makers, when not ignored altogether, as an environmental issue of peripheral concern. By the 1990s, as climate modelling became more sophisticated, it became clear that reducing greenhouse gas emissions would have dramatic impacts on the way we produce power and transport ourselves. Since, doing so, would necessitate drastic changes in our use of fossil fuels, climate change became an economic and energy policy issue. More recently, analysts and campaigners have begun to view climate change as a major threat to international security.
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Linkages between Climate Change and Security

It is now becoming increasingly clear that future climate change threatens to undermine development and to aggravate existing drivers of conflict. These can be best understood by first looking at the direct impacts of climate change and then arrive at the potential effect of these on national and international policies. Analysts have outlined five main dimensions of the link between climate change and conflict (Dupont and Pearman, 2006):

Climate-induced Conflict Constellations

Conflict constellations are defined as typical causal linkages at the interface of environment and society, whose dynamics can lead to social destabilisation and, in the end, to violence. German Advisory Council on Global Change (WBGU) identifies conflict constellations in which critical developments can be anticipated as a result of climate change and which may occur with similar characteristics in different regions of the world. Volatile weather patterns, coupled with changes in rainfall and temperature, have the capacity to reshape the productive landscape of entire regions and exacerbate water, food and energy scarcities.

i. Conflict Constellation “Climate-induced degradation of freshwater resources”

1.1 thousand million people are currently without access to safe drinking water. The situation could worsen for hundreds of millions of people as climate change alters the variability of precipitation and the quantity of available water. Ceres/Pacific Institute report concludes that climate change will worsen these water risks, especially as the world population grows by 50 million a year. The most recent report by the Intergovernmental Panel on Climate Change (IPCC) states that global warming will lead to “changes in all components of the freshwater system,” and concludes that “water and its availability and quality will be the main pressures on, and issues for, societies and the environment under climate change. Nestlé’s Chairman Peter Brabeck-Letmathe puts it more bluntly, calling water availability a bigger challenge than energy security. “I am convinced that, under present conditions and with the way water is being managed, we will run out of water long before we run out of fuel.” Already, China and India are seeing growth limited by reduced water supplies from depleted groundwater and shrinking glaciers that sustain key rivers. California is limiting agricultural water withdrawals due to drought. France, Germany and Spain were forced to shut down dozens of nuclear plants due to low water levels.

Impact on agriculture and business: Roughly 70 percent of the water used globally is for agriculture, with as much as 90 percent in developing countries where populations are growing fastest. Reduced water availability is already impacting food commodity prices, as shown by last year’s sharp increase in global rice prices triggered
by a drought-induced collapse of rice production in Australia. Water is crucial for the economy. Virtually every industry from agriculture, electric power and industrial manufacturing to beverage, apparel, biotechnology/pharmaceutical, forest products, metals/mining firms and tourism relies on it to grow and ultimately sustain their business. Businesses and investors who have traditionally taken clean, reliable and inexpensive water for granted are now facing significant challenges affecting productivity, costs, revenues, public goodwill and reputation.

This dynamics triggers distributional conflicts and poses major challenges to water management systems in the countries concerned. For example, regions which depend on melt water from mountain glaciers – which are at risk from climate change – will require new water management strategies and infrastructures, as well as political efforts to avert national or even transboundary conflicts over the distribution of increasingly scarce water resources.

ii. Conflict Constellation “Climate-induced decline in food production”

The Food and Agriculture Organization (FAO) in its report *World Agriculture Toward 2015/2030* (7), estimated that 776 million people located in 98 countries were food insecure during 1997/99, mostly concentrated in South Asia and Sub-Saharan Africa. With global warming of 2-4°C, a drop in agricultural productivity is anticipated worldwide. This trend will be substantially reinforced by desertification, soil salinisation or water scarcity. This may well trigger regional food crises and further undermine the economic performance of weak and unstable states, thereby encouraging or exacerbating destabilization, the collapse of social systems, and violent conflicts.

iii. Conflict Constellation “Climate-induced increase in storm and flood disasters”

Climate change is likely to result in further sea-level rise and more intensive storms and heavy precipitation. This will greatly increase the risk of natural disasters occurring in many cities and industrial regions in coastal zones. Those risks will be further amplified by deforestation along the upper reaches of rivers, land subsidence in large urban areas and the ever greater spatial concentration of populations and assets. More frequent and intense natural disasters coupled with a greater burden of diseases such as malaria could stretch the coping capacity of developing countries. This could, in turn, tip poor countries into fragile states and fragile states into failed states. Storm and flood disasters have already contributed to conflict in the past, especially during phases of domestic political tension, e.g. in Central America and China. Conflicts are likely to occur more frequently in future, firstly because regions especially at risk from storm and flood disasters, such as Central America and Southern Africa, generally have weak economic and political capacities, making adaptation and crisis management much more difficult. Secondly, frequent storm and flood disasters along the densely populated east coasts of India and China could cause major damage and trigger and/or intensify migration processes that are difficult to control.
iv. Conflict Constellation “Environmentally induced migration”

Natural disasters and a changing landscape could contribute to destabilizing and unregulated population movements (so called “climate refugees”). Experience has shown that migration can greatly increase the likelihood of conflict in transit and target regions as this would bring previously separate groups in competition for the same dwindling resources. In developing countries in particular, the increase in drought, soil degradation and growing water scarcity in combination with high population growth, unstable institutions, poverty or a high level of dependency on agriculture means that there is a particularly significant risk of environmental migration occurring and increasing in scale. Most environmental migration is initially likely to occur within national borders. Transboundary environmental migration will mainly take the form of south-south migration, but Europe and North America must also expect substantially increased migratory pressure from regions most at risk from climate change. The question as to which states will have to bear the costs of environmentally induced migration in future also contains conflict potential.

v. Climate Induced Access to Oil and Gas

Rising global temperatures are resulting in receding sea and land ice uncovering the oil and gas supplies previously under the ice and changing the strategic balance in the Arctic by opening up new shipping and transit routes like the North-West Passage, enabling access to previously inaccessible resources such as oil and gas supplies. This could trigger dispute over their ownership and control.

vi. Threat to existence of OASIS countries

Salinisation, rising sea levels and mega droughts could make entire areas uninhabitable. In the case of some small island states, this presents perhaps the ultimate security threat, jeopardizing the very existence of small low-lying countries.

Thus, climate change will redraw our coastlines, expose us to fiercer storms or more severe droughts and force large numbers of people to move from their homelands, thereby altering the maps of water availability, food security, disease prevalence, and population distribution. This will undermine the economic and agricultural base of many countries, particularly the most vulnerable developing countries. This will in turn stress existing mechanisms for sharing resources like transboundary rivers and migratory fish stocks, exacerbate existing tensions and trigger new conflicts.

Climate Change Amplifies Mechanisms Which Lead to Insecurity and Violence: War and Conflict Research

The main question to be addressed is whether global climate change and its consequences can lead to security problems and, if so, under what circumstances.
More specifically: when do climate change and environmental change lead to violent conflict within and between states and societies? In order to be able to determine the potential for conflict entailed by environmental change more precisely, the major factors that are generally considered to be decisive in the escalation or de-escalation of conflict are presented below.

i. Political instability and conflicts: In conflict research it is widely agreed that a link exists between the type of regimes and their vulnerability to armed conflict and war: democracies and autocracies are far less prone to internal violent conflict than ‘anocratic’, that is, partially democratic states (Muller and Weede, 1990; Hegre et al., 2001). Societies in transition from authoritarian to democratic systems are especially vulnerable to crises and conflicts. Climate change will affect many of these countries, putting them under additional pressure to adapt their societies during such phases of transition. This linkage could be significant for many African countries for example, as well as for China.

ii. Weak governance structures and conflicts: Regardless of political constitution, states with weakly developed governance structures are considered to be fundamentally more vulnerable to conflict in comparison with states that have strong governance structures and consolidated forms of government (Fearon and Laitin, 2003; Lacina, 2004). This has to do, above all, with the effective maintenance of the state monopoly on violence. Violent conflicts are a very frequent feature of weak and fragile states, of which there are currently about 30, and which are characterized by the permanent weakening or even the dissolution of their state structures. The impacts of climate change will particularly affect those regions of the world in which states with weak steering and problem-solving capacities already predominate. Climate change could thus lead to the further proliferation of weak and fragile statehood and increase the probability of violent conflicts occurring.

iii. Economic performance and tendency to violence: Empirical studies show that poor countries are far more prone to conflict than affluent societies. Climate change will result in tangible economic costs for developing countries in particular: a drop in agricultural yields, extreme weather events and migratory movements, and all these impede economic development. Climate change can thus reinforce obstacles to development and heighten poverty, thereby increasing the risk of conflicts occurring in these societies.

iv. Demographics and conflict: Wherever high population growth and density, resource scarcity and a low level of economic development occur in tandem, there is an increased risk of conflict. In many countries and regions which are already affected by high population growth and density as well as poverty, climate change will intensify resource scarcity and thus heighten the risk of conflict.

v. Spillover risk in conflict regions: Conflicts which are initially limited to local or national level often destabilize neighboring countries, e.g. through refugee flows,
arms trafficking or combatant withdrawal. Conflicts thus have a spillover effect. The social impacts of climate change can transcend borders, thereby swiftly expanding the geographical extent of crisis and conflict regions.

**Six Threats to International Stability and Security**

In light of current knowledge about the social impacts of climate change, the following six key threats to international security and stability have been identified.

1. **Possible increase in the number of weak and fragile states as a result of climate change**: Weak and fragile states have inadequate capacities to guarantee the core functions of the state, notably the state’s monopoly on the use of force, and therefore already pose a major challenge for the international community. Conflict constellations may also be mutually reinforcing, e.g. if they extend beyond the directly affected region through environmental migration and thus destabilize other neighbouring states. This could ultimately lead to the emergence of “failing subregions” consisting of several simultaneously overstretched states, creating “black holes” in world politics that are characterized by the collapse of law and public order, i.e. the pillars of security and stability.

2. **Risks for global economic development**: Climate change will alter the conditions for regional production processes and supply infrastructures. Regional water scarcity will impede the development of irrigated agriculture and other water-intensive sectors. Drought and soil degradation will result in a drop in agricultural yields. More frequent extreme events such as storms and flooding put industrial sites and transport, supply and production infrastructures in coastal regions at risk, forcing companies to relocate or close production sites. Depending on the type and intensity of the climate impacts, this could have a significant and adverse effect on the global economy. Unabated climate change is likely to result in substantially reduced rates of growth. This will increasingly limit the economic scope, at national and international level, to address the urgent challenges associated with the Millennium Development Goals.

3. **Risks of growing international distributional conflicts between the main drivers of climate change and those most affected**: Climate change is mainly caused by the industrialized and newly industrialising countries. The major differences in the per capita emissions of industrialized and developing/ newly industrializing countries are increasingly regarded as an “equity gap”, especially as the rising costs of climate change are mainly being borne by the developing countries. The greater the damage and the burden of adaptation in the South, the more intensive the distributional conflicts between the main drivers of
climate change and those most affected will become. The worst affected countries are likely to invoke the “polluter pays” principle, so international controversy over a global compensation regime for climate change will probably intensify. A key line of conflict in global politics in the 21st century would therefore divide the industrialized and the developing countries. The international community is ill-prepared at present for this type of distributional conflict.

4. The risk to human rights and the industrialized countries’ legitimacy as global governance actors:

Unabated climate change could threaten livelihoods, erode human security and thus contribute to the violation of human rights. Against the backdrop of rising temperatures, growing awareness of social climate impacts and inadequate climate change mitigation efforts, the CO₂-emitting industrialised countries and, in future, buoyant economies such as China could increasingly be accused of knowingly causing human rights violations, or at least doing so in de facto terms. The international human rights discourse in the United Nations is therefore also likely to focus in future on the threat that climate impacts pose to human rights. Unabated climate change could thus plunge the industrialised countries in particular into crises of legitimacy and limit their international scope for action.

5. Triggering and intensification of migration:

Migration is already a major and largely unresolved international policy challenge. Climate change and its social impacts will affect growing numbers of people, so the number of migration hotspots around the world will increase. The associated conflict potential is considerable, especially as “environmental migrants” are currently not provided for in international law. Disputes over compensation payments and the financing of systems to manage refugee crises will increase. In line with the “polluter pays” principle, the industrialized countries will have to face up to their responsibilities. If global temperatures continue to rise unabated, migration could become one of the major fields of conflict in international politics in future.

6. Overstretching of classic security policy:
The future social impacts of unabated climate change are unlikely to trigger “classic” interstate wars; instead, they will probably lead to an increase in destabilization processes and state failure with diffuse conflict structures and security threats in politically and economically overstretched states and societies. The specific conflict constellations, the failure of disaster management systems after extreme weather events and increasing environmental migration will be almost impossible to manage without support from police and military capacities, and therefore pose a challenge to classic security policy. In this context, a well-functioning cooperation between development and security policy will be crucial, as civilian conflict management and reconstruction assistance are reliant on a minimum level of security. A climate induced increase in the number of weak and fragile states or even the destabilization of entire sub-regions would therefore overstretch conventional security policy.
International Concerns and Initiatives

The security implications of climate change have become the subject of unprecedented international attention. It was the focus of a UN Security Council debate in April 2007, wherein Margaret Beckett, the U.K. Foreign Secretary, stated - “Recent scientific evidence has given us a picture of the physical impacts on our world that we can expect as our climate changes. And those impacts go far beyond the environmental. Their consequences reach to the very heart of the security agenda.” At the same debate, the Namibian representative Kaire Mbuende called greenhouse gas emissions tantamount to “low intensity biological or chemical warfare” (UNSCDPI, 2007).

At an African Union debate in early 2007, while assessing the security implications of climate change for West Africa, President Yoweri Museveni of Uganda called greenhouse gas emissions an “act of aggression” by the developed world against the developing world. In April 2007, a group of retired U.S. generals released a widely-circulated report arguing that climate change will act as a “threat multiplier” that will make existing concerns such as water scarcity and food insecurity more intractable (NPR, 2007).

A June 2007 report by the United Nations Environment Programme (UNEP) suggested that the conflict in Darfur has been in part driven by climate change and environmental degradation (UNEP, 2007). Over the past 40 years, rainfall in the region has decreased by 30 per cent and the Sahara has advanced by more than a mile every year. The report argues that the resulting tension between farmers and herders over disappearing pasture and declining water-holes partly explains the Darfur conflict (UNEP, 2007). The UNEP report warned of a succession of new wars across Africa unless more is done to contain the damage of climate change, concluding that “Darfur… holds grim lessons for other countries at risk.” In short, the security implications of climate change have caught the political imagination, generating a perceptible shift in the way decision-makers discuss the subject.  

“Securitization” of “Climate Change”

Campaigners have attempted to invest the climate negotiations with a greater sense of urgency, to raise climate change to the realm of high politics and to create the political space for serious concessions on greenhouse gas emissions. Advocates hope it will help unite countries towards strong action on future mitigation and adaptation. As Jon Barnett pointed out in 2001, “security communicates a certain gravitas that is arguably necessary in climate change policy”.

Focal Areas of Research

The once-distinct research areas of security and climate change need to be clearly analysed. Past research in this area has been largely confined to construction
of scenarios of the security implications of climate change at a global scale by academics and politicians from the Northern hemisphere, without much emphasis on the country-level security impacts of climate change or in the way of consultation or discussion with local experts in the subject countries supposedly affected. The International Institute for Sustainable Development (IISD), created in 1990, has considered three future climate scenarios (a best case, a medium case and a worst case) based on the emissions scenarios of the Intergovernmental Panel on Climate Change (4th Assessment report, 2007) and the Stern Review (2006). The implications of each scenario, across six different sectors has been studied, based on interactions with local experts: (1) agriculture and food security; (2) productive systems and exports; (3) water; (4) natural disasters and risk management; (5) migration; and (6) health.

**Case Studies**

**Africa:** As per the Fourth Assessment Report of the IPCC, Africa, though least responsible for greenhouse gas emissions, is one of the most vulnerable continents to climate change and climate variability, a situation aggravated by the interaction of ‘multiple stresses’, occurring at various levels, and low adaptive capacity (IPCC, 2007a:13). Africa is often portrayed as the “canary in the mine” of climate security, the first continent to fully feel the effects of climate change on political and economic stability. Whether or not sub-Saharan countries sign-up to a post-Kyoto deal will have little impact on global emissions. The average Ghanaian produces a third of a tonne of CO₂ per year and a Burkinabe one third of that as compared to the average Dane’s emissions of 9.8 tonnes and the North American’s 20.6 tonnes (UNDP, 2007). African nations are thus not the intended audience of the post-Kyoto debate, but are part of the evidence being used to make it.

**US:** The national security community have in the recent past warned that global climate change threatens American security. The security implications of climate change can be parsed into three broad categories:

*The changing foreign policy landscape:* America faces a shifting strategic landscape in which rising demand for natural resources (e.g., fossil energy, water, food) increasingly drives national priorities and shapes international relationships. Since climate change affects the distribution and availability of critical natural resources, it can act as a “threat multiplier” by causing mass migrations and exacerbating conditions that can lead to social unrest and armed conflict. As the world’s largest historical emitter of heat-trapping greenhouse gases, the United States is likely to be the chief target of resentment. For example, Al-Qaeda leaders have cited global warming repeatedly in propaganda intended to foment anti-American sentiment.

*U.S. military missions and operations:* Climate change will influence where, when, why, and how the U.S. military operates.

First, military facilities and personnel will be directly impacted: Sea level rise and taller storm surges will encroach on important coastal installations around the...
world. Increasing land area under drought will affect how and where U.S. forces acquire and transport water to support operations. Weather conditions will become more extreme in places where the local climate already presents serious operational challenges.

Second, climate change portends a rise in the frequency of natural disasters. U.S. Navy ships provided critical logistical assistance in the aftermaths of Hurricane Katrina and the 2004 Indonesian tsunami, and calls for such assistance are likely to increase, both at home and abroad.

Third, climate change will create new theatres of operation. For instance, the opening of the Arctic, which is rapidly losing sea ice, will force the U.S. military to deploy significant assets to this newly accessible, resource-rich area, where Russia's military is already established and well equipped.

National security as a driver of solutions: The Department of Defense (DoD) is the nation's single largest emitter of carbon dioxide. Moreover, the DoD is very concerned about energy security, the solutions to which are, inexorably linked to climate change. As the world's largest oil importer, the United States is economically vulnerable to supply disruptions and the military is charged, for instance, with ensuring that foreign oil fields and overseas shipping lanes remain secure. American troops guarding and transporting fuel for combat operations have become favourite targets of insurgents' roadside bombs. To shield the United States from the security threats of unabated climate change, the national security community will have to develop strategies and technologies that will benefit society at large in its efforts to reduce carbon dioxide emissions and adapt to unavoidable change, while enhancing energy security and overall economic security.

India Case Study

India's key vulnerabilities: Future projections of surface warming over India indicate that the annual mean area averaged surface warming is likely to be between 2 degrees and 3 degrees Celsius and 3.5 and 5.5 degrees Celsius by the middle and end of 21st century respectively. Trends in sea level rise indicate a possible rise between 1.06 to 2.75 mm per year. Every 1.0 degree rise in temperature would reduce wheat production by 4 to 5 million tonnes. Water scarcity will threaten food supplies in India. A quarter of our biodiversity could be lost.

Climate change cannot be delinked from the overall energy security and economic growth. The IDSA Working Group on Security Implications of Climate Change for India felt that while it would be proper to oppose the securitisation of climate change, it would be prudent not to ignore its likely security dimensions. The National Action Plan on Climate Change is a good beginning but its time-bound implementation needs to be ensured. India needs to improve energy efficiency in the industrial, household and transport sectors. India should use climate change as an opportunity
to make socio-economic development more sustainable. The possible adverse impact on the strategy and tactics of Indian armed forces needs to be considered.

**Uncertainties in Prediction**

The predicted impact of climate change on societies is one step *more uncertain* than the projected climate change itself, being a projection based on a projection. The question is further complicated by linking it with “security,” a term while loaded, is still loosely defined. Consequently, it would be advisable to study the impact of climate change on *economic* and *political stability*, rather than on outright violent conflict.

It is easy to see how climate change might be a (somewhat amorphous) *contributory* factor that aggravates a number of existing problems. Under specific external conditions (poor governance, recession, ethnic tensions and so on) these problems could undermine economic and political stability. But, it was not until the worst case scenarios occurred, that impacts of climate change could themselves present *deterministic* factors in serious future economic and political instability, or indeed in violent conflict.

**Initiatives for the mitigation of destabilization and conflict risks associated with climate change**

[Source: German Advisory Council on Global Change (WBGU)]

### Relevant Policy Area Initiatives – Fostering a Cooperative Setting for a Multipolar World

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### Climate policy as security policy I: Preventing conflict by avoiding dangerous climate change.

### Environmental and foreign policy Initiative 3 – Ambitiously pursuing international climate policy:
- Stipulating the 2 °C guard rail as an international standard;
- Further developing the Kyoto Protocol;
- Adopting ambitious reduction targets for industrialized countries (including the USA), and integrating the newly industrializing and developing countries;
- Conserving natural carbon stocks.

### Environmental, energy, economic and research policy Initiative 4 – Transforming energy systems in the EU:
- Strengthening the EU’s leading role;
- Improving and implementing the Energy Policy for Europe;
- Triggering an efficiency revolution; expanding renewables;
- Environmental, development, research and economic policy.

### Initiative 5 – Developing mitigation strategies through partnerships:
- Establishing climate protection as a cross-cutting theme in development cooperation;
- Agreeing decarbonization partnerships with newly industrializing countries (especially China and India);
- Agreeing an innovation pact within the framework of G8+5.

### Climate policy as security policy II: Preventing conflict by implementing adaptation strategies

### Development and research policy Initiative 6 – Supporting adaptation strategies for developing countries:
- Industrialized countries must assist developing countries on adaptation and mitigation of climate impacts;
- Priorities: devising specific strategies for developing regions particularly at risk (e.g. Africa);
- Mitigating water crises;
- Gearing the agricultural sector to climate change;
- Strengthening disaster prevention.
Security and development policy Initiative 7 – Stabilizing fragile states and weak states that are additionally threatened by climate change: Stabilization of weak and fragile states to be taken into account to a greater extent in the German Action Plan ‘Civilian Crisis Prevention, Conflict Resolution and Post-Conflict Peace-Building’; supporting and implementing the OECD’s working principles; expanding the ‘Whole-of-Government’ approach to encompass the environmental dimension; boosting the civil society potential of weak states in international forums and networks.

Foreign, Domestic and Development Policy

Managing migration through cooperation and further developing international law- Initiative 8: Developing comprehensive international strategies for migration; integrating migration policy into development cooperation; including environmentally induced migration in international cooperation; enshrining the protection of environmental migrants in international law; permitting no weakening of the existing protection regime; adopting measures supplementary to the existing refugee regime.

Development and research policy Initiative 9 – Expanding global information and early warning systems: Actively supporting the development of a comprehensive global early warning system to provide information about all types of natural hazard, epidemics and technological risks, regional climate change and impacts, and environmental problems; improving the implementation of early warning information at national and local level.

Overview of the Instruments Proposed by WBGU to Fund the Initiatives [Source: WBGU]

Financing the initiatives: The prevention of environmentally induced security risks not only requires resolute political action by the relevant national and international actors, but also adequate financial resources to implement the measures.

Avoiding dangerous climate change: Climate protection is worthwhile: The global costs of effective climate protection are far lower than the costs of inaction. What is required now is international coordination in order to ensure that the financial resources are channelled into efficient mitigation measures.

Transforming energy systems worldwide In order to initiate the necessary transformation of energy systems in the developing countries, the existing multilateral funds (e.g. Global Environment Facility, Carbon Finance Unit) should be boosted by better and more reliable financing. Additional sources of funding can be harnessed through new financing instruments such as the introduction of emission dependent user charges for aviation and shipping, unless these emissions are already covered by other regulatory schemes. In the longer term, a system of internationally tradable quotas for renewable energies can also generate revenue. Financial resources can also be mobilized by restructuring existing budgets: subsidies for fossil fuels can be
progressively reduced, freeing up funds which can then be channeled into the promotion and global deployment of renewable energies.

Conserving terrestrial carbon stocks: The protection of terrestrial carbon stocks, especially the tropical forests, should be a further funding priority. A large proportion of this forest stock is located in developing countries, but is under threat from overexploitation and deforestation. The industrialized countries should actively promote the conservation of these forests. The UNFCCC process to reduce deforestation in developing countries offers a good starting point and should be pursued as a matter of urgency.

Adaptation to unavoidable climate change

Adaptation is essential to address some of the key natural resource issues that could become contentious as a result of climate change such as food security and water allocation. Adaptation to climate change needs to be integrated within wider plans for development assistance, and the additional costs should not undercut development priorities elsewhere. Developing countries generally contribute very little to anthropogenic climate change, but they still have to adopt comprehensive adaptation measures which they often cannot afford due to a lack of capital. Adaptation measures in these countries should therefore be co-financed by the international community. The Funds so far established under the UNFCCC and the Kyoto Protocol are inadequate to meet the challenges, both in terms of their volume and their institutional structures. The financial contributions made by individual states to this strategy should be based on their contribution to global warming and their economic capacities. UN set a target of 0.7 % of gross national income of donor countries’ for development aid by 2015, to be funded through the Official Development Assistance (ODA). This timetable must be rigorously adhered to. In the short term, more resources should be made available to the Least Developed Countries Fund and the adaptation “window” of the Special Climate Change Fund.

Micro-financing institutions and instruments (e.g. micro-credits or micro-insurance) should be strengthened and expanded with resources from international development cooperation. Micro-financing cannot replace but at best can only supplement international financial assistance.

An international environmental migration fund should be created to provide the financial basis for measures to deal with environmental migrants. The International Dialogue on Migration launched by the International Organization for Migration in 2001 offers an appropriate platform for this purpose. Fair and efficient burden-sharing between those countries which are affected by environmental migration and those which are not should satisfy the “polluter pays” principle, and the “ability-to-pay” principle by linking contributions to the Fund to the level of country-specific greenhouse gas emissions and other indicators such as gross domestic product.
Financing international conflict prevention

An integrated approach to the financing of crisis prevention, development cooperation and military spending should be adopted. Security spending be critically reviewed, especially as regards its effectiveness for international peace-building, and adjusted accordingly. Military budgets should be restructured in favour of preventive measures in the field of development cooperation. As military spending is realigned towards preventive security policy, the need for funding in the “classic” areas of military spending will be reduced. The financial institutions and the mechanisms to finance international crisis prevention and peace-building regimes in the UN system should be strengthened.

If Climate Protection Fails: Strategies in the Event of Destabilization and Conflict

A pro-active climate protection policy must remain in place to mitigate greenhouse gas emissions, with the aim of keeping global warming as close to the 2°C guard rail as possible. However, if mitigation efforts fail and the 2°C guard rail is breached, climate-induced security risks will begin to manifest themselves in various regions of the world from around 2025–2040. The world must prepare itself to deal with climate-induced conflicts by adopting appropriate strategies:

- Economic policy: Strategies should be developed to avert the possible destabilization of the global economy due to the anticipated high costs of mitigation and adaptation and the increase in migration worldwide, which would absorb considerable political and economic capacities.

- Development policy: The need to manage water and food crises and storm and flood disasters would also substantially increase. Development cooperation would be called upon to prevent human development from dropping back in view of the growing number of weak and fragile states and an increasingly degraded natural environment.

- Pooling of Crisis management potential of the world’s leading powers to avert destabilization and the escalation of conflicts.

- Strengthening of the multilateral institutional architecture and substantial additional resources mobilized.

If climate protection policy fails and these efforts are not made, climate-induced security risks will begin to manifest themselves in various regions of the world from around 2025–2040. The key challenge is to take resolute climate policy action within the next 10–15 years, in order to avert the socio-economic distortions and implications for international security that will otherwise intensify in subsequent decades.
Conclusion

Unabated climate change is likely to become a major challenge for the international system in the coming decades. It heightens the interdependencies between all the world’s societies and creates global risk potentials which can only be countered by policies that aim to manage global change. The interaction between the six threats to international stability and security, outlined in the article, intensifies the associated challenges and risks for international politics. It is almost inconceivable that in the coming years, a global governance system could emerge with the capacity to respond effectively to these global dynamics of conflict and instability from 2020 onwards. It is more likely that with ongoing climate change, distributional conflicts between the drivers and the victims will become increasingly urgent, as will the crises of legitimacy faced by the major CO₂ emitters.

Growing tensions, conflicts and confrontations along the dividing line between the main drivers of climate change and the worst affected countries would steadily erode the prospects of establishing a global governance system based on cooperation, which is essential to master the world’s problems. Against the backdrop of globalization, climate change is likely to further overstretch a still insufficient global governance system. The world could thus become a highly insecure place unless climate change can be controlled effectively.

The climate-induced security risks of the 21st century are almost impossible to mitigate through military spending and interventions. Instead, an intelligent and well-crafted global governance strategy to mitigate these new security risks would initially consist of an effective climate policy, which would then evolve into a core element of preventive security policy in the coming decades. The more climate change advances, the more important adaptation strategies in the affected countries will become, and these must be supported by international development policy, e.g. strengthening states’ governance capacities, agricultural policies, water management policies, food security programmes, reinforcement of disaster prevention mechanisms, etc.

At international level, the focus will be on global diplomacy to contain climate-induced conflicts, as well as on the development of compensation mechanisms for those affected by climate change, global migration policy, and measures to stabilize the world economy. The opportunities to establish a well-functioning global governance architecture will narrow as global temperatures rise, revealing a vicious circle: climate change can only be combated effectively through international cooperation, but with advancing climate change, the basis for constructive multilateralism will diminish. Climate change thus poses a challenge to international security, but classic, military-based security policy will be unable to make any major contributions to resolving the impending climate crises.
References


All across the world, in every kind of environment and region known to man, increasingly dangerous weather patterns and devastating storms are abruptly putting an end to the long-running debate over whether or not climate change is real. Not only is it real, it’s here, and its effects are giving rise to a frighteningly new global phenomenon: the man-made natural disaster.

- Barack Obama