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Humanitarian debate: Law, policy, action
Environment



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EDITORIAL

The evolution of humankind is largely dependent on the quality of the environment and the resources it provides, and the natural environment plays a vital role in ensuring the survival of present and future generations. The earth and its environment are potentially under threat because of numerous human-induced factors, and climate change may drastically alter the conditions of human sustainability.

The consequences of climate change on communities are increasingly being felt in many parts of the planet. Climate change is not merely an environmental, scientific, or economic issue; it has become a humanitarian issue too. Increased climate variability and greater intensity and frequency of extreme weather events aggravate humanitarian needs in emergencies and lead to water and food stress, as well as to changing patterns in the geographical spread of diseases. Over the last two decades the number of recorded disasters has doubled from approximately 200 to over 400 per year, while over the last decade the number of people affected has tripled.

The effects of climate change will most likely have a major impact on population movement and settlement, whether within countries or across borders. While migration may be a form of adaptation for some, the many millions of people forcibly displaced by sudden or slow-onset disasters will be particularly vulnerable and will require substantial humanitarian assistance and protection.

The scale of the potential humanitarian challenge that climate change may present is indeed staggering. The heads of organizations of the Inter-Agency Standing Committee and its Task Force on Climate Change, which is co-chaired by the International Federation of Red Cross and Red Crescent Societies and the Office for the Coordination of Humanitarian Affairs, have therefore alerted the international community to it. Although the response of the international community to the challenges of climate change needs to be structural and systemic, the humanitarian response should not be overlooked. Efforts to mitigate climate change must be supplemented by adaptation to its consequences in order to improve the resilience of communities vis-à-vis its unavoidable effects.

Environmental degradation may also become an accelerator or even a trigger for conflict. Nevertheless, care must be taken not to draw direct causal links between climate change and armed conflict, for they are poor predictors that fail to capture

the complexity of the interlinkages between the physical consequences of climate change and effects such as migration or conflict. Many conditions – economic, social, political – are required before the consequences of climate change metamorphose into an armed conflict, and drawing simplistic causal links may ultimately lead to inappropriate responses.

However, observations clearly indicate that the less developed countries – which have contributed the least to climate change – and the most destitute communities within any given society are those that are affected the most, as their adaptive capacities are the lowest. This discrepancy has led some to coin the expression ‘climate justice’ conveying the moral and economic necessity to develop a system of response to climate change whereby the polluters pay. It also gives a hint as to what may, in the next few decades, become a defining element in the relationship between the ‘North’ and the ‘South’.

Discussions over environmental degradation have tended to focus essentially on climate change. It is, however, important not to lose sight of the broader perspective: climate change is not the only cause of environmental degradation, though it is a massive one. Other causes such as deforestation, water, air, or soil pollution, overuse of natural resources, demographic pressure, and urbanization trigger the same set of social and humanitarian consequences as climate change but tend to be ignored these days in the public debate.

The environment has also regularly been a casualty of war. The serious harm done to the natural environment during a number of armed conflicts has only added to the vulnerability of those affected by the fighting. The International Committee of the Red Cross (ICRC) accordingly believes that the need to clarify and expand international humanitarian law on environmental protection should be addressed by the states.

As a first step, it intends to update its 1994 *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*. But the law protecting the environment during armed conflict is not always clear, nor is it sufficiently developed. There are basic deficiencies in the existing body of international humanitarian law relating to protection of the environment during hostilities. The definition of impermissible environmental damage is both restrictive and unclear; there are legal uncertainties regarding the protection of elements of the environment as civilian objects; and application of the principle of proportionality where harm to the environment constitutes incidental damage is equally problematic. In addition, treaty law does not contain any specific requirement to protect and preserve the environment during non-international armed conflict. In the ICRC *Study on the Current State of International Humanitarian Law*, published in this edition of the *Review*, preventive action, a reinforced protection regime, and the need to address the immediate and long-term consequences of damage to the environment have been identified as areas of particular concern.

The ICRC is also aware of its own responsibilities with regard to environmental degradation. As a leading humanitarian organization, it has a key role to play in issuing a clear message calling for environmental issues that affect the victims of armed conflict to be taken into account, while ensuring that the victims themselves remain central to its programmes. Its *Framework for Environmental Management in Assistance Programmes* is a first practical move towards formalizing an ICRC approach to environmental issues and fits into the broader environmental concern of the organization as a whole. It encourages field operations personnel to systematically assess, identify, and understand the potential environmental impacts and implications of their activities, and to take initiatives to reduce negative impacts and to enhance the efficiency, appropriateness, and quality of the ICRC's programmes.

Toni Pfanner
Editor-in-Chief

Interview with Achim Steiner*

Achim Steiner is United Nations Under-Secretary-General and Executive Director of the United Nations Environment Programme (UNEP). Effective as of 1 March 2009, Mr Steiner was also appointed Director-General of the United Nations Office at Nairobi (UNON). Before joining UNEP, he served as Director-General of the International Union for Conservation of Nature (IUCN) from 2001 to 2006. His professional career has included assignments with governmental, non-governmental, and international organizations in various parts of the world. In Washington, where he had previously been Senior Policy Advisor of IUCN's Global Policy Unit, he spearheaded the development of new partnerships between the environmental community, the World Bank, and the United Nations system. In South-East Asia he worked as Chief Technical Advisor on a programme for sustainable management of Mekong River watersheds and community-based natural resources management. In 1998 he was appointed Secretary-General of the World Commission on Dams, based in South Africa, where he directed a worldwide programme of work to bring together the public sector, civil society, and the private sector in a global policy-making process on dams and development.

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From the very early days of UNEP, in 1972, to today, what would you say are the fundamental changes in terms of the way the environment is perceived or managed by the international community?

That is a big question to start with. In many ways environmental change was perceived throughout the fifties, sixties, seventies, eighties, and even into the nineties, as essentially a pollution-oriented issue. Much of the environmental awareness grew on the back of air pollution, pollution of rivers, and impacts on,

* The interview was conducted on 5 October 2010 by Claude Voillat, Economic Adviser to the International Committee of the Red Cross, and Michael Siegrist, Assistant Editor of the *International Review of the Red Cross*.

for example, human health. It also often focused on local solutions. You could close a factory, stop a sewage system, and restore maybe a forest ecosystem.

To address these issues was initially perceived as a luxury, a prerogative of the developed countries. But today, having gone through a phase of intense economic development, we find ourselves in a world confronted first of all with phenomenal environmental changes that are becoming increasingly global in nature – they are beginning to fundamentally affect the life-support systems across our planet. They are also causing ever greater economic costs to society and are driving a rethink of how we view both depletion and degradation of natural resources.

There is also the pollution footprint of the six and a half billion people on the planet today. And here is perhaps another dimension that is not so new, which calls for a much clearer focus: in just forty years' time we will be nine billion people on this planet. Where is the water going to come from to keep us alive? Where is the food going to come from? How will our natural systems function and fare, particularly the ecosystems on which we rely as human beings for lives and livelihoods, in a world that, if it does not change course, will continue to undermine the natural capital of our economies? We are at a point where it is clear that the costs of ecological destruction are increasingly translating into economic costs that society is incurring.

Conversely, in addressing those environmental drivers we can also, from a different perspective, look towards a green economy – an economy in which there is less pollution and more resource efficiency. Indeed we are starting to see how we might create a different pathway for development, be it within a market economy or a state-led economic system. So we are moving from issue-based and location-based issues to a growing understanding of the systemic nature of environmental change, from the atmosphere to the biosphere. On land and in the world's oceans there is essentially a fairly continuous and significant degradation of the earth's vital support systems right now. It is also increasingly driving the environmental agenda in the year 2010.

Does this increasing understanding of the systemic nature of environmental change drive the agenda in a way that makes solutions more likely, or does it complicate matters? Coming back to your explanation, the solution to the pollution issue was initially fairly simple. Now that environmental change is experienced as a systemic phenomenon, solutions are rather complex. Does this shift in the understanding of the problem bring us closer to the solution, or does it just make everything more fuzzy?

I think it brings us closer to the point where we are willing to discuss fundamental changes. They do indeed, as you point out, relate to a more complex set of issues that need to be addressed. We are in one sense trying to develop an agenda for transformation of our economies. At the heart of the environmental impact lies a set of economic principles and paradigms that have treated the environment as either inexhaustible or a luxury commodity or, as often referred to in economics, an externality.

In that sense, yes, we are facing greater complexity because we are talking about transforming our energy systems, our transport and mobility systems and our agricultural systems. But as a result there is also, perhaps surprisingly, a greater probability of change because people have begun to realize that it is an imperative to act, and not simply a choice or an option. So in that sense change has become more likely because we are starting to face up to the magnitude of the problems.

Considering the current economic downturn, do you believe this necessary change is likely to occur any time soon?

Well, the change has already begun. Let's not overlook the fact that significant efforts have already been initiated and that there is also an acceleration in addressing issues of resource management, partly driven by the spectre of scarcity. These are a couple of interesting economic drivers. We increasingly have a population in the north and the south that is highly aware of the price it is paying for environmental destruction. This is no longer a north–south issue alone; people have become much more aware, they have more information at their fingertips and on their desks. They can therefore act in a more informed manner.

We have also seen, in the context of climate change, an explosion in terms of energy and economic policies shifting our economies towards new developments on the renewable energy frontier. Last year, UNEP published the Sustainable Energy Finance Initiative report and for the first time in the history of the modern energy economy, total investments in renewable energy exceeded those in oil, gas, coal and nuclear combined. So we are already seeing, in selective parts of the world and in selective sectors, a response that is indicative of what, over the course of the coming decades, may translate into a universal phenomenon.

But you mentioned the financial crisis. Yes, we face two challenges at the moment: first, societies are heavily indebted as a result of economic mismanagement, which means that the resources for investing in these transformation processes are scarce and extremely tight. Secondly, it is also an excuse for those who essentially argue for the status quo to be maintained. They often have a vested interest in it, to threaten – or frighten – people in some way with an economic downturn, the prospect of no economic growth and the loss of jobs. The environmental agenda must engage in the public debate so that the economic rationale strengthens the ecological, scientific rationale for acting and changing.

There was a piece of good news in what you've told us, namely the high investments being made in renewable energy. Do you think that the externalities you mentioned, the ecological costs, are likely to be taken into account in the near future, resulting in a rise in prices for products that we shall be paying? Would you see this as part of a solution?

It is an essential step. It is not – and I always sound this cautionary note – it is not about the monetization of nature as the all-defining criterion. But it is a fact that whether you are a farmer and a customer who buys from the farmer, or whether you are an exporting nation and an importing nation, we all transact through the currency of monetary value. In the marketplace, as is often the case in public policy

when governments allocate budgets to infrastructure, education, decent environment, and so on, one of the greatest tragedies of the twentieth century was that the value of nature's services to society was, economically speaking, largely invisible. And therefore many decisions led to a misallocation of resources or, in the long term, to unsustainable economic strategies.

At the heart of much of what we do in the United Nations Environment Programme today in that regard is to try to answer the question as to the value of the environment to people and to economies by giving an economic valuation. A project that is really changing the discourse is The Economics of Ecosystems and Biodiversity (TEEB), which is the first attempt to bring together the latest economic and ecological analyses and attribute values to services that nature provides.

Very simply put: a forest ecosystem is not just the sum of the value of the trees measured in terms of timber prices. Its value far exceeds the value of the tree being cut down if you start looking at the watershed services, air purification, and, for example, carbon sequestration. To give you a very specific example, which prompted a transformative debate in Kenya, there is the Mau Forest ecosystem. It is referred to as the water tower of the nation. The value to the country of just this one forest ecosystem is estimated at roughly US\$1.5 billion a year for the Kenyan economy, and it has become the flagship of a national policy to re-establish the forest infrastructure of the nation. In its latest constitution – you may know that the country voted on a new constitution a few months ago – Kenya has enshrined the restoration of its forest cover to 10% of the territory. Today, there is only about 2% of what was once there.

Trying to give a visible value to what nature represents to us in terms of our economies and societies is a critical basis for changing this enduring perception that somehow nature is an add-on that we can choose to be worried about or not.

Your Kenyan example reminds of Ecuador in Latin America, where oil deposits sit in the Amazon Forest, prompting the government to seek ways of preserving the forest by negotiating financial compensation for not extracting the oil. It seems that the government was disappointed by the international community's lack of interest or reaction. Do you think that governments are ready to take this different approach to the value of things?

Absolutely. We have seen a dramatic change in the last five to ten years, particularly as regards political leadership in countries. Significantly, two factors have contributed to this. One is that climate change has increasingly been understood as a problem that may have largely originated in the developed and industrialized world, but the consequences of global warming and climate change are most visible in many developing countries. So, first of all, there has been the perception of environmental change as being primarily a concern for well-off societies.

But when you talk, for instance, to African leaders today you have presidents of African nations putting climate change at the top of their agenda. The question of environmentally sustainable development has become one in which the loss of natural resources is placing growing constraints on the development paths of developing economies. That's the first driver. Secondly, we are seeing many

leaders of developing nations recognize that a transition towards the green economy is also an opportunity to escape some of the very heavy costs that industrialized countries have paid for their development paths.

We had an event – a UN review summit – in New York in September 2010 on the Millennium Development Goals (MDGs) and the green economy. There was the Planning Minister of Indonesia, speaking on behalf of the President, who has declared that the transition towards the green economy is now a central objective of Indonesia's development policy. There was the Foreign Minister of Barbados, who presented a number of major shifts in its economic and development policy that have clearly put a small island nation on a green economy development path. And there was also the Minister of Ecuador. These are remarkable examples, illustrating once again the realization that the debate on environmental change and sustainable development is no longer centred in the global north.

To me, Ecuador is a fascinating phenomenon: for the first time, a country has taken the decision not to drill the oil reserves it possesses, in a very sensitive ecological part of the Amazon Forest and in an area that also happens to be inhabited by an indigenous people's community. Ecuador is saying to the world: 'We are prepared to leave that oil in the ground if you, the international community, are willing to share the cost to our economy of doing so'. And the scheme has moved on. Ecuador has now developed its proposal and is going to issue bonds; it will bear half of the cost, in the sense of income forgone by not extracting the oil, and it is inviting the international community to share the other half of the costs by buying bonds and providing guarantees. Its proposal is taking off.

It is striking that we have a Latin American country, an impoverished developing nation with many needs, willing to take a very far-reaching decision, while in the global north the countries with access rights to the Arctic region are expanding the frontier of oil exploration as the ice melts away. So it's a fascinating moment in history.

A very good picture, from the Amazon Forest to the Arctic. Now, we are two-thirds of the way to the MDG target date of 2015. How far have we gone and how far do we still have to go to reach the MDG goals related to environmental sustainability?

Overall, the MDGs have proved to be a very useful framework within which to focus both national action and international co-operation. Those who argue that 'Well, maybe we will not reach all the targets and therefore the MDGs did not offer any added value' are wrong. Sometimes, if you set yourselves a target of running one kilometre and you only reach 900 metres, it means that you have actually managed to run 90% of the distance. In many ways, the recent MDG Review in New York and these ten years into the MDG assessment have shown an uneven but nevertheless, in principle, a positive movement as regards virtually all of the indicators and targets.

But it is uneven in terms of individual countries and of the different targets or goals. As far as MDG 7 is concerned, which deals with environmental

sustainability in the broader sense, you remember that there is a sanitation- and water-supply-related target where we clearly have made some significant progress, even though there is some way to go. In terms of an overall sustainability criterion and goal, we do not capture the full spectrum of what we refer to in terms of sustainability of development when referring to the environment.

So the goal itself has some limitations, but below that level we do see significant progress and again across a very diverse group of countries – progress, for example, in terms of legislation, in changed policies, or in what one might call the proxy indicator of protected areas. Globally we have today succeeded in placing roughly 12% of the terrestrial surface, the land surface of the planet, under some form of protected areas regime. That is not an insignificant achievement. Moreover, in the last twenty years, three-quarters of all new protected areas in the world have in fact been designated in developing nations.

Again, the issues transcending the traditional notion of north and south are coming into play, and we are increasingly seeing policies put in place and perhaps culminating in a more systematic and systemic approach that one translates into what one may now call a transition towards the green economy. More and more countries are taking up that challenge as a political and development challenge.

A lot has obviously been achieved recently. From your perspective, what humanitarian consequences of climate change worry you most today?

We have learned, particularly through the work of the Intergovernmental Panel on Climate Change, that in many ways the consequences and the impact of global warming are a fatal combination. They affect first of all, most directly and immediately, many of the developing nations of this world that have made the least contribution or been least responsible for global warming. The consequences are beginning to affect these countries at a time when they are still dealing with many of the basic needs agendas of development. There is a necessity to invest in adapting to climate change and coping with the consequences at a time when many of these nations want to invest in developing the basic services and infrastructure of their countries.

Secondly, it is also becoming more and more obvious that most of the people least prepared and able to cope with climate change are going to be the victims of it, namely the poorest of this world. Their ability to cope with global warming is very limited. It therefore exposes them to higher risks of very disruptive consequences, be it flooding events, sea-level rise, changes in weather patterns and rainfall, or changes in the ecological systems in which they have developed their pastoral or agricultural economies. As a result of these changes, they will first of all face disruption, then displacement, then loss of economic assets, and finally also the potential danger of being forced into competition with others over an increasingly scarce resource base.

The risk curve that is rapidly emerging and unfolding indicates and signals that the consequences of global warming will affect an ever-growing number of people who are already vulnerable and least able to cope. These people will possibly

become refugees in their own countries or at least impoverished as a result of these changes unless urgent action is taken.

In terms of the response to these challenges, there has been the long-standing debate between disaster response and development work. How do you see climate change in this regard? Do you consider this whole debate is simply swept away by the challenges raised for us by climate change?

We are confronted with a somewhat contradictory set of scenarios. On the one hand, the consequences of global warming clearly indicate that we will be confronted with a greater potential for and greater numbers of humanitarian crises. The flooding events in Pakistan, in China, in West Africa have not yet reached a point where we are able to link global warming and those events in a scientific sense of cause and effect. But clearly, what we do know from the scientific analysis of the potential consequences of global warming is that these kinds of events will increase in the coming years. In fact, the increase in natural catastrophes, as we often call them, already shows a visible pattern. Whether you look at it purely in terms of the number of events or in terms of the reinsurance industry and its statistics, there is no question that we will face more of these natural disasters which inevitably require a humanitarian response. The capacity of the international community and also of nation-states to respond to such emergencies is not only essential. Perhaps, tragically, it will have to grow.

On the other side of the equation, since we know that these adverse consequences are likely to become a reality, we must also look at prevention and adaptation measures. This is where the humanitarian communities, the disaster management communities, and the development communities – as one might call them – do have an urgent and immediate agenda of working more closely together in order to reduce exposure to the climate-change and climate-impact scenarios of the next ten to a hundred years.

You just mentioned that it is difficult to scientifically create direct links between climate change and humanitarian crises. And there has been an ongoing debate about the relationship between climate change and humanitarian crises, as well as between climate change and conflict. How do you see this relationship? Is climate change – or environmental degradation – an accelerator of conflict, or, as some others say, is it also on some occasions an opportunity for peace?

I don't believe that conflict is the inevitable outcome of societies being confronted with challenges such as climate change and environmental degradation. Nevertheless, it is difficult to argue that the risk of conflict will not increase as we face a change in population numbers from six and a half billion to nine billion people in just forty years. So there will be more people living in more stressed environments and regions of the world. The key variable here will not be that conflict becomes inevitable, but rather whether societies are prepared to manage the challenges that arise out of these trends. In societies where governance structures and conflict-resolution mechanisms are not in place, where people feel that

they have no choice but to fight for their survival, you may see more conflict emerge.

But on many occasions in the history of humanity we have also seen a heightened awareness of these emerging drivers of conflict leading to a much more focused attempt to try to put in place mechanisms to reduce tension. Transboundary water resources management may be a good example, even though it is always said that, as water becomes scarcer, water wars become inevitable. Again, there are many examples, ranging from the Indus Basin to the Nile Basin, where there have been tensions but they have also been managed. The Middle East is a case in point. In areas where there is great potential for conflict to arise from the sharing of increasingly scarce resources, there are transboundary water management agreements and conflict-resolution mechanisms put in place. It is difficult to assess the inevitability of conflict and climate change, but the risk is growing. In the case of Sudan, for example, changes in the natural environment, including weather patterns and the impact of growing livestock communities and human populations, were studied by UNEP through its Post-Conflict and Disaster Management Branch. It became clear that climate change was an accelerator of potential competition over resources. The question then is whether the state, traditional leadership, the institutions of a nation, are able to mediate and help people to find a more effective way of managing these issues.

In the years to come, we will see much greater attention given to local governance structures. That is the most likely point at which conflict can arise and quickly spread into a more political manifestation of conflict.

If an armed conflict breaks out, what are the most serious effects it has on the environment and what role does the environment play in armed conflict?

UNEP tried to answer that question about a year and a half ago in a review of the role of natural resources and the environment in relation to conflict and peace-building. The first, very interesting, finding was that, in conflict, the relationship between natural resources and the environment is both multidimensional and complex. However, there are three 'principal pathways', as we call them. One is that issues over the control of natural resources and, for example, grievances over inequitable wealth-sharing can contribute to the outbreak of conflict. Countries dependent on the export of a narrow range of primary commodities are also more vulnerable to conflict. This is a direct driver.

Secondly, the environment and natural resources have often emerged as a financing and sustaining factor of conflict – from blood diamonds, the high-value mineral resources that pay for armed forces and guerrilla armies, to the interest of certain parties in gaining strategic control over territory. In such cases, the duration of the conflict is actually directly linked to the availability of these resources to keep it going.

And the third phenomenon is that they can often undermine peace-making. The prospect of a peace agreement can be undermined by individuals or subgroups who could lose access to the revenues from those resources and their very high commercial value of exploitation. They have, in fact, no interest in

reaching a peace agreement, because it would shut down what is essentially an illegal extraction of those resources. These three converging perspectives must be taken into account to understand the relationship between environment, natural resources, and conflict.

In terms of the impact of conflict and war, the environment can again be affected in very diverse ways. There are some parts where conflict creates zones almost devoid of human industrial and development activity. You may find that the natural resource base remains more intact than if it had simply become part of the global and national economic development process. On the other hand, you have scope for illegal and very destructive activities to grow commensurately with conflict and the absence of government, law, control, and monitoring, leading to the decimation of the commercial value of species such as elephants in terms of ivory, rhino, and the illegal hunting of gorillas, for example in the Congo.

These are very direct consequences of conflict situations in which government no longer exercises control and criminal activity becomes a threat to the environment, right down to the sort of mining operations associated with diamonds or coltan.

In general, it is difficult to define a single outcome to these conflicts, whether highly damaging or just moderately damaging to the environment. It depends very much on circumstances. But the bottom line is that conflict ultimately compromises the governance institutions and processes of a society and the environment will suffer, for the natural resources of a country are then not extracted and used in a sustainable manner but in a survival and conflict mode.

And what is the importance and role of international environmental law and international humanitarian law? What is their relationship in general, and do you think that they can maybe complement each other?

Significant efforts were made in the eighties and nineties to try to bring international law, particularly with regard to the environment in times of conflict, into line with the normative standards that the international community would like to apply. Unfortunately, in times of conflict, national and domestic law, and certainly also international law, are the first victims of failing governance and accountability. We are still confronted with two phenomena. First, the international law regime in the context of conflict and environment is as yet very underdeveloped and weak. Secondly, the enforcement of law relating to the protection of the environment during conflict is a very challenging task and may very often be limited to acts exposed once conflicts are over and people and institutions can be held accountable.

One of the most direct consequences has been the destruction of certain environmental and infrastructure assets such as vital parts of water-supply systems, or the bombing of facilities that results in major pollution. Such acts are increasingly on the radar of that international regime, but we have a long way to go. I would welcome more attention by the international law community to this issue, because the consequences of destroying the fundamental environmental assets of a nation not only have an immediate effect upon it but often condemn it, sometimes

for years or even decades, to having to rebuild them or being deprived of access to them. So the costs and the consequences of destroying these natural assets in a country are of far greater impact than the immediate costs in terms of the event itself, or of their initial destruction.

More generally, what place does the concept of climate justice have?

This is a fundamental building block for agreeing what is the normative and also an ethical foundation for some of these necessary policy shifts and directional changes. One of the most fundamental ways you can capture this is through the per capita emissions on this planet. Is it fair that in one part of the world people will be able to emit ten, twenty, thirty times more carbon per person than in another part of the world? How will we ever be able to deal with global warming if we do not find a more just and fair basis for addressing this issue? And therefore the convergence of per capita emissions is one very interesting subject for debate.

But the debate goes deeper too. There is an element of intergenerational justice that, in my opinion, needs to be of growing concern to us. It is within the power, not only of our generation but also that of our parents and certainly the next generation, to fundamentally alter key elements of the earth's life-support systems. Some of them may be damaged irreversibly. Such a capability has a very significant ethical and moral dimension for a generation that has both the knowledge and the means to act to prevent that.

Climate justice, embedded within the broader context of environmental justice, is a concept that will increasingly become a foundation for international negotiations. The reason no agreement could be reached in Copenhagen on addressing climate change in a global partnership and in the context of a legally binding agreement was not the economics, nor the technology, nor the science. In the end, for all parties to come and work collectively on that issue came down to what is a fair deal.

This is also one of our interests with a view to the UN Conference on Sustainable Development (UNCSD) or Rio + 20 Summit in 2012, at which we will put forward the concept of environmental justice as a key subject for debate. We believe it is one of the issues that, at the end of the day, societies, political leaders, and civil societies have to address in a more intelligent and, yes, in a more just way than they have succeeded in doing over the last fifty to a hundred years.

How do you see the way forward?

Many of the current international negotiations concerning the environment, environmental change, and environmental degradation – whether on the subject of climate change, the issue of biodiversity and ecosystems, or that of chemicals and hazardous waste – are characterized by a sense of distrust and conflicting, competing, or contradictory interests. First of all, it is my hope that we shall be more and more able to move towards a shared interest in addressing these environmental change phenomena. Secondly, to understand that, in addressing what are now challenges and also costs to society, partnership among nations will open up a whole new horizon in terms of opportunities.

I sit in the headquarters of the United Nations Environment Programme here in Nairobi. Kenya is a country that, after fifty years of independence, still has only sufficient electricity-generating capacity to supply 20% of its population. Yet it is a country that has renewable energy resources – from wind to solar to geothermal – that could easily produce ten times that amount. Technology partnerships can enable a country like Kenya to literally leapfrog a whole fossil-fuel generation of electricity and power infrastructure. So climate change is also a chance and a major opportunity for technology transfer and technology support in terms of building the capacity of development partnerships on a continent like Africa. Let us not forget that today, even with around one billion people, satellite images taken at night still show a continent where hardly a light shines through.

This is just one example of how we need to understand that the concept of moving towards a green economy and the need to take action on these environmental phenomena are linked to a whole series of development opportunities and pathways that many countries will not be able to address on their own. Hence my belief that, despite the considerable scepticism voiced by some people about multilateral agreements and international platforms for action, a world community that must learn to live together on this planet in ever-growing numbers has a vital interest in changing its perception of the environmental agenda in the twenty-first century. This is not a cost to development. It is, to my mind, perhaps the most promising paradigm shift that will allow us to adopt a positive and even hopeful outlook in talking about development.

It makes me cautiously optimistic when one might have every reason to be a pessimist, given the sobering facts confronting every one of us today.

Climate change and its impacts: growing stress factors for human societies

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Abstract

The realization that human beings need to be concerned about the only 'life-support system' that the Earth and its environment provides stems perhaps in part from the fact that, until fairly recently, the evolution of humankind was largely dependent on the quality of the environment and the resources it provides in terms of water, food, and favourable health conditions. These are as vital as ever, despite current levels of technology and apparent resilience in the face of often degraded environments in many parts of the world. Today, the conditions for human sustainability (i.e. water quality and quantity, food security, and health) are potentially under threat as a result of numerous human-induced factors; among these, climate change is certainly one of the more durable aspects of anthropogenic disruptions to natural resources. This article will therefore focus on the possible evolution of climate in the course of the twenty-first century and on a number of key climate impacts that may determine the future course of human societies, as well as issues that may confront them such as rivalries over natural resources and possible environmentally driven conflicts and migrations.



Human activities in most parts of the world are transforming the global environment. Among the numerous factors that contribute to global environmental change, mention can be made of land-use change, desertification and deforestation, loss of biodiversity, air pollution, ozone depletion, and climate change. Changes in average and extreme patterns of weather and climate are capable of putting vital resources under pressure. Ecosystems become more susceptible to the

emergence, invasion, and spread of opportunistic species. Many of these environmental pressures act in a synergistic manner, thereby compounding the stress situation and the adverse effects that a degraded environment may have on human activities and the carrying capacity of a particular region.

Humans are not only the receptors of environmental change but are also in numerous instances the drivers of change. Over-exploitation of resources in the industrialized world and unsustainable economic policies have given rise to many of the factors generating global change. In less developed countries, high population growth is linked to environmental degradation because local inhabitants attempt to maintain or improve their resource base and economic level through the over-exploitation of their environment.¹ This takes place in general without any long-term environmental management strategy; resources can thus become rapidly depleted or ineffective.

Through technological advances and seemingly adequate resources, the industrialized world in particular lives under the impression that basic life-supporting resources (i.e. water, food, health, and shelter) are abundant and quasi-unlimited. There are, however, frequent acute reminders that famine and disease are still widespread in many parts of the world and that, at the end of the twentieth century, over 550 million people did not have access to clean drinking water.² Moreover, even in technologically advanced societies, water, food, and health all constitute basic, interrelated needs for human survival. These elements are all highly dependent on environmental factors such as climate, and are sensitive to shifts in existing environmental conditions. Such changes may upset the delicate balance even in those countries that enjoy reliable food security, water quality and quantity, and sanitary conditions.

Climate change in the twenty-first century

When the climate change debate began in the late 1980s, estimates of the amplitude of warming according to greenhouse-gas scenarios suggested that global average temperatures could rise by 1.5–5 °C by the end of the twenty-first century. Over two decades later, with climate models that have become much more detailed, the plausible range of global atmospheric temperature increase remains essentially unchanged: 1.5–5.8 °C according to the Intergovernmental Panel on Climate Change (IPCC).³ It is also remarkable to note that, as early as 1897, Svante Arrhenius, a distinguished Swedish physical chemist and Nobel Prize laureate,

1 Barry Commoner, 'Rapid population growth and environmental stress', in *International Journal of Health Services*, Vol. 21, No. 2, 1991, pp. 199–227; Anne R. Pebley, 'Demography and the environment', in *Demography*, Vol. 35, No. 4, 1998, pp. 377–389.

2 UNESCO, *International Conference on World Water Resources at the Beginning of the 21st Century*, Paris, 3–6 June 1998; United Nations, *Millennium Development Goals Report 2009*, New York, 2009, 60 pp.

3 Susan Solomon *et al.* (eds), *Climate Change 2007: The Physical Science Basis: Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press for the Intergovernmental Panel on Climate Change (IPCC), Cambridge, 2007, 996 pp.

made the first calculation of the possible effect of greenhouse gases on the temperature of the Earth and came to the conclusion that a doubling of CO₂ in the atmosphere would lead to a 4 °C warming, a figure that is still well within the bounds of the most sophisticated climate model results today.

In the various suites of IPCC reports published in 1996, 2001, and 2007, climate models of varying complexity have been applied to assess the response of the climate system to anthropogenic forcing in the twenty-first century. They include fully coupled ocean–atmosphere models, atmospheric general circulation models, and simpler models designed to investigate a particular element of the system such as the global carbon cycle, or to integrate much further ahead in time than the more computationally resource-intensive general circulation models. In order to capture the limits of uncertainty of the model results, and to investigate the variability inherent to the climate system, ‘ensemble simulations’ have been undertaken. These involve the use of a set of different models that employ the same forcing scenario but with slightly different initial conditions.⁴ Small perturbations of initial conditions result in an internally generated climate variability that produces different results for the different members of the ensemble simulations. These can be considered to reflect the natural variability of the system, upon which the strong anthropogenic signal is superimposed. The ensemble approach provides a more coherent strategy for climate simulations and has shown skill in reproducing the observed distributions of pressure, temperature, and precipitation under current climate conditions, as reported by Lambert and Boer.⁵

Figure 1 shows the possible range of global warming in response to a number of greenhouse-gas emission scenarios developed by Nakićenović *et al.* for the IPCC.⁶ The range illustrated in this figure is not simply a result of the uncertainty in climate model simulations, but reflects the spread of possible socioeconomic futures. These are based on subtle combinations of demography, economic growth, technological choice, and policy options that lead to varying levels of carbon in the atmosphere. The strength of the response of the climate system by 2100 will of course be directly related to the cumulative levels of atmospheric carbon between now and the end of this century.

Results from coupled ensemble ocean–atmosphere general circulation models allow the geographical distribution of change to be mapped. Results based on the IPCC SRES A2 scenario⁷ are shown here in order to emphasize what could

4 E.g. Cedo Branković and Tim N. Palmer, ‘Seasonal skill and predictability of ECMWF PROVOST ensemble’, in *Quarterly Journal of the Royal Meteorological Society*, Vol. 126(B), No. 567, 2000, pp. 2035–2067; Francisco J. Doblas-Reyes, Michel Déqué, and Jean-Philippe Pielikevire, ‘Model and multi-model spread and probabilistic seasonal forecasts in PROVOST’, in *Quarterly Journal of the Royal Meteorological Society*, Vol. 126(B), No. 567, 2000, pp. 2069–2089; Jacques Derome *et al.*, ‘Seasonal predictions based on two dynamical models’, in *Atmosphere-Ocean*, Vol. 39, No. 4, 2001, pp. 56–68.

5 Steven J. Lambert and George J. Boer, ‘CMIP1 evaluation and intercomparison of coupled climate models’, in *Climate Dynamics*, Vol. 17, No. 2–3, 2001, pp. 83–106.

6 Nebojsa Nakićenović *et al.*, *IPCC Special Report on Emissions Scenarios*, Cambridge University Press, Cambridge, 2000, 599 pp.

7 *Ibid.*

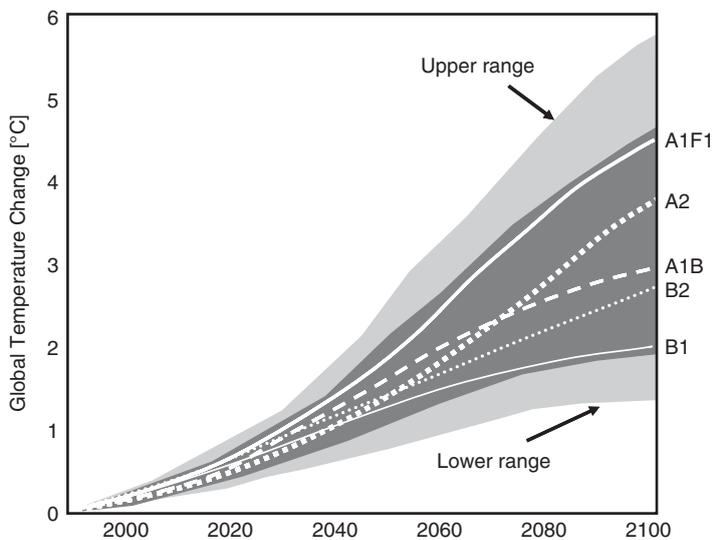


Figure 1. Global warming futures according to various greenhouse-gas emission scenarios developed by the Intergovernmental Panel on Climate Change (Source: IPCC, 2007).

be the response of the climate system to one of the strongest greenhouse-gas forcings. The A2 scenario assumes a high level of emissions in the course of the twenty-first century, resulting from low priorities on greenhouse-gas abatement strategies and high population growth in the developing world. The said scenario leads to atmospheric CO₂ levels of about 800 ppmv (parts per million by volume) by 2100 – that is, about three times their pre-industrial values – and provides an estimate of the upper bound of climate futures discussed by the IPCC (2007).

Figure 2 shows the difference in temperatures between the baseline climate (1980–1999) and the scenario climate (2080–2099). The shifts in temperature are greatest in the high latitudes; the changes that are expected in terms of snow cover and sea ice in the Arctic Ocean are likely to modify very substantially the energy balance at the surface, in terms of albedo (reflectivity), in particular. High-latitude regions would therefore exert a very much stronger positive feedback on the climate system than the tropics, where the essential characteristics of the surface are not expected to change quite as much. One exception to this are regions where tropical deforestation is widespread and where the albedo and the thermal and humidity characteristics of the ground are altered by the presence of managed crops and trees that replace the areas previously occupied by rainforests, thus modifying regional- and continental-scale climates. Temperature change is also of greater amplitude over the continents than over the oceans, because of the much higher heat capacity of water.

Precipitation changes broadly exhibit a dual mode. The distinctive features include the drier conditions on average over the mid-latitude ocean areas and the boundaries of the continents concerned, the drier inter-tropical zone, and the

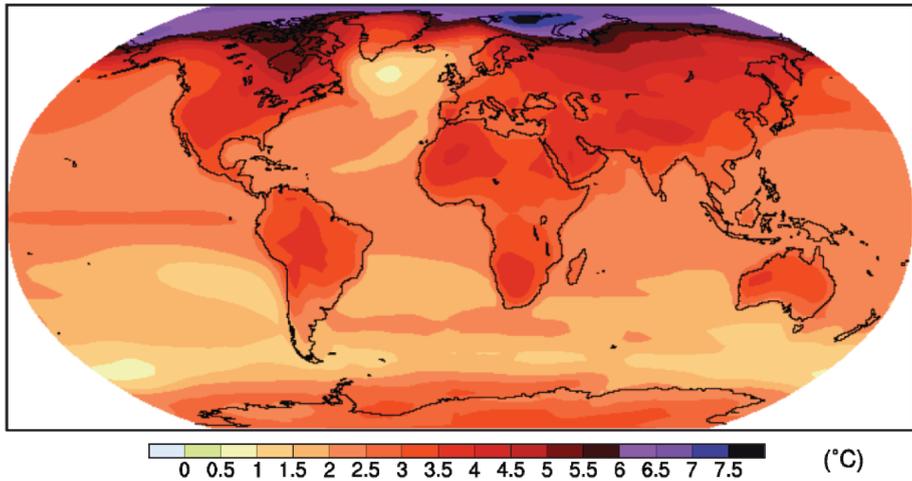


Figure 2. Changes in temperature between current (1980–1999) and future (2080–2099) climates based on ensemble model simulations (Source: IPCC, 2007).

enhanced precipitation in the mid- and high latitudes. The Mediterranean Basin experiences substantial reductions in average precipitation levels in the future climate, from North Africa into Central Europe and beyond to the Middle East. Because of the reduction of the equator-to-pole temperature difference, the activity of rain-bearing systems diminishes. The possibility remains, however, that short-lived but very intense systems may increase in the future.

At higher latitudes of the Northern Hemisphere, increases in precipitation are simulated by the models, in response to the enhancement of the hydrological cycle in a warmer climate and the shift in storm trajectories. Mountain regions, which are the source of over half the world's surface water, will also experience contrasting levels of change according to geographical location.⁸ In mid-latitudes, wintertime precipitation may occur more as rainfall than as snow, compared to today, with the potential for significantly changing runoff regimes in river basins originating in mountainous areas, in terms of both quantity and seasonality. These changes would, in turn, substantially modify the availability of water for the more populated lowlands located downstream of the mountain ranges.⁹ In other regions, for example in the tropical cloud forest regions, a sustained rise above the current condensation levels would have a devastating effect on the specific ecosystems that depend on clouds for their moisture, and in turn on other environmental regimes such as the quantity and quality of surface runoff.

8 Martin Beniston, 'Climatic change in mountain regions: a review of possible impacts', in *Climatic Change*, Vol. 59, No. 1–2, 2003, pp. 5–31.

9 Martin Beniston, *Climatic Change and Impacts: A Review Focusing on Switzerland*, Kluwer Academic Publishers, Dordrecht and Boston, 2004, 296 pp.

Impacts of climate change

One of the more visible and global consequences of climate change is sea-level rise, which is the result of the combined effects of thermal expansion of water and the additional influx of fresh water to the oceans from melting mountain glaciers and ice sheets. Depending on the amplitude of warming, estimates of sea-level rise by the end of the century are in the range of 50–100 cm. If the two largest planetary ice caps, Antarctica and Greenland, were to melt completely, the world's oceans would rise by over 120 m. Although recent observations suggest that ice-cap dynamics are faster today than hitherto anticipated (particularly in Greenland), a strong sea-level rise is not expected to take place in coming decades, because of the very long lag times involved in cryosphere–climate interactions, and especially because Antarctica is expected to expand in volume in coming decades – a warmer climate may trigger additional precipitation falling there in the form of snow, thus increasing the ice volume on that continent.

The consequences of sea-level rise for many low-lying coastlines may be one of the most important impacts of climate change for societies and economies. A large proportion of the world's population live on or close to a seashore and often within the critical metre above sea level, as in island states such as the Maldives in the Indian Ocean, the Marshall Islands in the Pacific, certain parts of Bangladesh in the Ganges delta, or Indonesia, to name but a few examples.

Water resources will most probably come under mounting pressure because of changing temperature and precipitation regimes, but also because of heterogeneous population trends around the globe. Significant shifts in climate conditions will affect demand, supply, and water quality. In countries that are currently sensitive to water stress, particularly in arid and semi-arid regions, any shortfalls in water supply will increase competition for water use for a wide range of economic, social, and environmental applications. In the future, such competition will be accentuated as a result of larger populations, which will lead to a heightened demand for irrigation and perhaps also industrialization, often at the expense of drinking water.

Projections of annual per capita water availability by the 2020s suggest a declining trend in all parts of the world, including those that are considered to have ample water resources.¹⁰ In many countries, shifting precipitation belts account for only a fraction of the projected reduction in water availability; rapid population growth, urbanization, and economic expansion place additional strain on water supply. In some regions, population pressures may have a greater impact on per capita water availability than climate change itself, while the reverse may be true elsewhere. The worst-case scenarios are projected to occur in some of the poorest countries of the world, in a context where population growth and climate change will act together to sharply diminish water availability. The sharing of water across international borders, which is already a source of rivalry and conflict in many

10 S. Solomon *et al.*, above note 3.

places today (e.g. the Nile, the Jordan, the Tigris, and the Euphrates), will certainly be exacerbated by climate change that will alter the balance of power between upstream and downstream neighbours of a given hydrological basin.

Food security is also threatened by climate change, both directly by changing temperature and precipitation patterns, and indirectly through losses of agricultural land due to sea-level rise, greater wind and water erosion, pests, and disease. In addition, human-induced land-use change linked to deforestation and desertification has already reduced the agricultural potential of many parts of the world.¹¹

The world food system involves a complex dynamic interaction of producers and consumers, interlinked through global markets. Although agricultural productivity has increased to keep pace with the growing world population over the last century, there are still close to one billion people who are undernourished. Furthermore, agriculture is probably the most vulnerable of all human activities to weather and climate variability; the chief controls on agricultural yields include temperature, precipitation, soil moisture, carbon dioxide levels, and disease and pests (themselves largely climate-dependent). Any changes in one or more of these controlling factors may have profound, non-linear effects on productivity. The Food and Agricultural Organization (FAO) has warned that by 2020 agricultural yields will need to almost double, compared to 1990 levels, in order to keep up with demographic trends and the diversification of consumption patterns.¹² It is unlikely that the 'green revolution' of the twentieth century will be repeated, even if new technologies such as genetic engineering are taken into account, because competition for land and climate change may negate all or part of the progress made in agricultural productivity.

Agricultural production will be affected by the severity and rate of climate change. If change is gradual, there will be time for political and social institutions to adjust. Slow change may also enable natural biota to adapt. Many untested assumptions lie behind attempted projections of the potential influence of climate change on crops. Besides the magnitude and rate of change, the stage of growth during which a crop is exposed to drought or heat is important. Moreover, temperature and seasonal rainfall patterns vary from year to year and region to region, regardless of long-term trends in climate. Temperature and rainfall changes induced by climate change will probably interact with carbon dioxide levels, fertilizers, insects, plant pathogens, weeds, and the soil's organic matter to produce unanticipated responses. In many parts of the world, generally warmer temperatures and longer hot periods will impose additional stress on certain crops. Corn, for example, has a stress limit of about 35 °C; temperatures above this for any length of time can do irreversible physiological damage to the plant. The United States Midwest, one of the world's principal cereal-producing regions, could be particularly vulnerable to prolonged heat, heightening the potential for crises in the

11 *Ibid.*

12 FAO, *The State of Food and Agriculture*, FAO Agriculture Series, Rome, 2000, 329 pp.

global food supply. The 1988 drought in the Midwest resulted in severe shortfalls in corn yields, and for the first time since World War II the US was a net importer of cereals rather than an exporter. A warmer and drier climate at critical times of the year could augment the frequency of crop failures.

Rainfall, however, remains the major limiting factor in the growth and production of crops worldwide. Adequate moisture is critical for plants, especially during germination and fruit development. Any changes in rainfall patterns will also reduce soil water content. In certain semi-arid and arid zones, the soil moisture often enables plants to survive a short drought period; a warmer climate, accompanied by more evaporation, lower precipitation, and associated reductions in soil moisture recharge, would spell disaster for regions where agriculture is only just viable today.

A wide range of extreme weather events, which may increase in frequency and severity in certain parts of the world, may compound the stress effects of a warming *average* climate. Drought, fire, and heat waves are one category of extremes that needs to be considered, while heavy precipitation and hail are another category that can adversely affect agricultural production. These events may be offset to some extent in colder regions by a lower frequency of spring frosts, which are often damaging to plants at the beginning of their growth cycles.

Vulnerability to climate factors is lower in regions where agriculture is well adapted to current climate variability, or where market and institutional factors allow a redistribution of agricultural surpluses to make up for shortfalls. In order to plan ahead and reduce the impacts of climate change on agriculture, long-term agricultural policy options should be implemented in parallel to addressing other concerns, such as erosion, loss of topsoil, salinization, and soil and water pollution. Furthermore, improved water management and irrigation practices should be put into effect to help reduce the adverse effects of droughts and heat waves that are likely to be on the increase in a warmer global climate.

Forecasting the impacts of climate change on a third determinant for human well-being, namely human health, is complex because populations have different vulnerabilities to change and susceptibility to disease. These depend on the general levels of hygiene practices, clothing, housing, and medical and agricultural traditions. Adaptation to the spread of disease is determined by the economic level of a given population, the quality and coverage of medical services, and the integrity of the environments.¹³ Thus human biological and psychological factors are primary determinants, but ecological and global systems are also involved, as are economics and access to health care, which shape the vulnerability of societies to disease. Shifts in environmental conditions, interacting with the biology of disease agents, can exert profound effects. Changes in how land is used affect the distribution of disease carriers, such as rodents or insects, while climate influences

13 Anthony J. McMichael and R. Sari Kovats, 'Climate change and climate variability: adaptations to reduce adverse climate change impacts', in *Environmental Monitoring and Assessment*, Vol. 61, No. 1, 2000, pp. 49–64.

their range and affects the timing and intensity of outbreaks. Changing social conditions, such as the growth of multimillion-inhabitant cities in the developing world and widespread ecological change, are today contributing to the spread of infectious diseases.

The occurrence of vector-borne diseases such as malaria is determined by the abundance of vectors and intermediate and reservoir hosts, the prevalence of disease-causing parasites and pathogens suitably adapted to the vectors, and the human or animal hosts and their resilience in the face of the disease.¹⁴ Local climate conditions, especially temperature and moisture, are also determinant factors for the establishment and reproduction of the *Anopheles* mosquito.¹⁵ The possible development of the disease in mountain regions thus has relevance, because populations in uplands where the disease is currently not endemic may face a new threat to their health and well-being as malaria progressively invades new regions under climate conditions favourable to its development.¹⁶

The occurrence of vector-borne diseases is widespread, ranging from the tropics and subtropics to the temperate climate zones. With few exceptions, they do not occur in the cold climates of the world, and are absent above certain altitudes even in mountain regions of the tropical and equatorial belt.¹⁷ At elevations above 1,300–1,500 m in Africa and tropical Asia, the *Anopheles* mosquito can currently neither breed nor survive; as a result, malaria is almost totally absent from many highlands of the tropical zone.¹⁸

Vectors require specific ecosystems for survival and reproduction. These are influenced by numerous factors, many of which are climatically controlled. Changes in one or more of these factors will affect the survival and hence the distribution of vectors.¹⁹ Projected climate change may thus have a considerable impact on the distribution of vector-borne diseases. A permanent change in one of the abiotic factors may alter the equilibrium of the ecosystem, resulting in the creation of either more or less favourable vector habitats. At the present limits of vector distribution, the projected increase in average temperature is likely to create more favourable conditions, in terms of both latitude and altitude, for the vectors, which may then breed in larger numbers and invade formerly inhospitable areas.

The infection rate for malaria is an exponential function of temperature;²⁰ small increases in temperature can lead to a sharp reduction in the number of days

14 Anthony J. McMichael and Andrew Haines, 'Global climate change: the potential effects on health', in *British Medical Journal*, Vol. 315, No. 7111, 1997, pp. 805–809.

15 Paul R. Epstein *et al.*, 'Biological and physical signs of climate change: focus on mosquito-borne diseases', in *Bulletin of the American Meteorological Society*, Vol. 79, No. 3, March 1998, pp. 409–417.

16 Pim Martens *et al.*, 'Climate change and future populations at risk of malaria', in *Global Environmental Change*, Vol. 9, Suppl. 1, 1999, pp. 89–107.

17 World Health Organization (WHO), *World Health Report 1999*, WHO, Geneva, 1999, 121 pp.

18 Marlies H. Craig, R.W. Snow, and David LeSueur, 'A climate-based distribution model of malaria transmission in Africa', in *Parasitology Today*, Vol. 15, No. 3, 1999, pp. 105–111.

19 Brian H. Kay *et al.*, 'Rearing temperature influences flavivirus vector competence of mosquitoes', in *Medical and Veterinary Entomology*, Vol. 3, No. 4, 1989, pp. 415–422.

20 WHO report, above note 17.

of incubation. Regions at higher altitudes or latitudes may thus become hospitable to the vectors; disease-free highlands that are found in parts of Ethiopia and Kenya today, for example, may be invaded by vectors as a result of an increase in annual temperature. If this were to occur, then the number of persons infected by malaria would rise sharply.

The response of malaria to changing climates is seen in the intensification of the disease observed in Colombia during episodes of El Niño, when temperatures increase and precipitation decreases in comparison to normal conditions.²¹ Such links between abrupt but significant changes in climate and the annual cycle of malaria development and transmission may help further our understanding of the relationships between environmental and epidemiological factors, both in the short term (ENSO cycles) and the longer term (climate change).

While Africa is often cited in terms of the incidence of malaria, it is not the only continent to be affected by the increase in vector-borne diseases; in certain countries where the disease had been eradicated in the course of the twentieth century, particular strains of malaria are reappearing. There are reports from various low- to medium-elevation upland sites in Turkey, the Middle East, and Central Asia that malaria is being transmitted in rural populations.²²

It is often difficult to associate any particular change in the incidence of a particular disease with a given change in a single environmental factor. The environment-related health hazards need to be placed in a population context, such as age, level of hygiene, socio-economic level, and health status.²³ These phenomena could contribute to migration from one rural region to another and from rural to urban areas, and thus to the spread of disease.²⁴ In addition, if climate change were to be accompanied by an increase in the intensity of certain forms of natural hazard, such as cyclones, floods, or drought, these would compound the effects on human health. Moreover, such catastrophes can generate large refugee and population movements, with a need for resettlement in what are often already densely populated areas.²⁵

Conclusions

Projections of population growth, increasing pressure on resources, and persistent inequalities in resource access in coming decades imply that scarcities will affect many environmentally sensitive regions on a scale and with a severity and speed

21 Germán Poveda *et al.*, 'Coupling between annual and ENSO timescales in the malaria-climate association in Colombia', in *Environmental Health Perspective*, Vol. 109, No. 5, 2001, pp. 489–493.

22 M.L. Wilson *et al.*, *Vector-borne Disease Associated with Irrigation, Agriculture, and Environmental Change in Southeastern Turkey: Application of Satellite Image Analysis*, Yale-New Haven Medical Center Report, 2001.

23 A.J. McMichael and R.S. Kovats, above note 13.

24 Norman Myers, 'Environmental refugees in a globally warmed world', in *BioScience*, Vol. 43, No. 11, 1993, pp. 752–761.

25 A.R. Pebley, above note 1.

unprecedented in history, largely because of a rapidly changing climate. Many countries lack the social institutions that are essential to provide the social and technical solutions needed to face up to problems of scarcity. Population displacement in response to significant external stress often indicates the breakdown of social resilience. In the context of food security, for example, displacement and coping strategies are an extreme manifestation of vulnerability. Coping strategies generally represent short-term adaptations to extreme events; they are usually involuntary, and rarely pave the way for reducing a population's vulnerability to future famine situations.

Dwindling resources in an uncertain political, economic, and social context are capable of generating conflict and instability, but the causal mechanisms are often indirect. Scarcities of cropland, fresh water, and forests constrain agricultural and economic productivity. Such situations are capable of generating population movements.²⁶ In extreme cases, these can contribute to local or regional conflicts, which may increase over time as environmental scarcities worsen. While such internal, resource-based conflicts may not be as conspicuous as wars at an international level, there is nevertheless a potential for significant repercussions upon the security interests of both the developing and the industrialized countries, for they can affect international trade relations, produce humanitarian disasters, and lead to growing numbers of refugee flows.²⁷

With regard to the complex issues that may result in the migration of populations in the twenty-first century, it will be increasingly necessary to distinguish between voluntary and forced migration. Voluntary migration can occur for a number of reasons, particularly economic and political or ideological. Forced migration, on the other hand, has several root causes also to be found in political and economic domains, in particular war and ethnic strife. In this context, environmental factors for migration can be considered an indirect consequence of decisions taken in the political and/or economic arenas. While sea-level rise is an obvious environmental driver that may significantly affect many low-lying coastal regions around the world and thus lead to population migrations, it is a consequence of a warming global climate, itself in part the result of economic and industrial policies leading to enhanced greenhouse-gas emissions.

In conclusion, there will be numerous interacting root causes, from politics and economics to profound changes in the environment (sea-level rise, deforestation, soil degradation, and climate change), that are likely to impact heavily upon the key determinants of human survival: water, food, and human health. The extent to which the reductions in water supply and shortfalls in agricultural yields, or changing patterns of disease, may actually force extensive out-migration is a matter of debate. Almost twenty years ago, Myers was already predicting that about 150 million 'environmental refugees' may constitute one

26 N. Myers, above note 24.

27 Michael J.G. Parnwell, *Population Movements and the Third World*, Routledge, London, 1993, 194 pp.

of the direct consequences in the ‘greenhouse world’ of the twenty-first century.²⁸ There is no certainty associated with this particular figure, and it may be an overstatement. But it helps to raise awareness of these issues and to stimulate thought and action in order to prepare, institutionally and legally, for refugees in larger numbers than those hitherto experienced.

28 N. Myers, above note 24.

International law protecting the environment during armed conflict: gaps and opportunities

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Abstract

There are three key deficiencies in the existing body of international humanitarian law (IHL) relating to protection of the environment during armed conflict. First, the definition of impermissible environmental damage is both too restrictive and unclear; second, there are legal uncertainties regarding the protection of elements of the environment as civilian objects; and third, the application of the principle of proportionality where harm to the environment constitutes 'collateral damage' is also problematic. These gaps present specific opportunities for clarifying and developing the existing framework. One approach to addressing some of the inadequacies of IHL could be application of international environmental law during armed conflict. The detailed norms, standards, approaches, and mechanisms found in international environmental

law might also help to clarify and extend basic principles of IHL to prevent, address, or assess liability for environmental damage incurred during armed conflict.



War and warfare cause not only human suffering and displacement, as well as damage to homes and infrastructure, but also extensive destruction and degradation of the environment. These impacts persist long after the conflict has ended. In this article, the authors explore the structural deficiencies and uncertainties of the existing international legal framework – specifically international humanitarian law (IHL) and international environmental law (IEL) – to address the environmental impacts of armed conflicts.

The direct and indirect protections that IHL offers for the environment during armed conflict are of problematic value. Few IHL provisions explicitly address environmental protection during armed conflict, and those that do are inadequate. Conversely, IEL is an extensive body of law protecting the environment and provides a growing body of standards and mechanisms for addressing environmental harm – and increasingly including issues of liability – during times of peace. Whether and to what extent IEL continues to apply and provide protection during armed conflict, however, is a matter of debate.

The authors highlight a few key gaps and deficiencies in IHL, and then consider opportunities that exist at the intersection of these two bodies of law. The article begins with an analysis of three key weaknesses in the existing body of IHL. First, Additional Protocol I to the 1949 Geneva Conventions defines the threshold of impermissible environmental damage (it must be ‘widespread, long-term and severe’)¹ in a way that is both excessively restrictive and unclear. Second, the provisions of IHL on the protection of civilian objects do not include a sufficient protection of elements of the environment from harm during armed conflict. Third, the proportionality of harm to the environment deemed ‘collateral damage’ is difficult to determine. For each of these gaps, specific opportunities of redressing the problem are presented.

The article then examines ways in which IEL may address some of the inadequacies of IHL in protecting the environment during armed conflict. Yet questions remain about the general applicability of IEL during hostilities and also the application of particular types of IEL provision. Some treaties expressly state whether they continue during armed conflict (e.g. certain provisions of the World Heritage Convention²), while others only indirectly address the issue (e.g. the Ramsar Convention³) or remain silent on it (e.g. the Convention on Biological

1 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) of 8 June 1977, Arts. 35(3) and 55(1).

2 Convention for the Protection of the World Cultural and Natural Heritage, 16 November 1972, 1037 UNTS 151.

3 Convention on Wetlands of International Importance especially as Waterfowl Habitat, 2 February 1971, 996 UNTS 245.

Diversity). Moreover, there are several theories regarding the appropriate method for determining whether IEL continues to apply during armed conflict, and whether the answer to these questions varies for multilateral environmental agreements, principles of IEL, and customary international environmental law. While diverse, these approaches highlight opportunities to complement the existing IHL provisions for protecting the environment during armed conflicts and to help answer the question whether and to what extent these IEL norms, standards, approaches, and mechanisms may be applied to prevent, address, or assess liability for environmental damage incurred during armed conflict.

International humanitarian law: gaps and opportunities

Armed conflict causes both direct and indirect environmental damage, which can endanger people's health, livelihoods, and security. To address these risks, IHL has incorporated fundamental environmental protections into the legal framework governing armed conflict.

A number of scholars have examined in great detail environmental protection under IHL.⁴ Without attempting to catalogue all the relevant IHL provisions, the following analysis highlights a number of gaps and opportunities in the existing IHL framework. This section includes a brief history of IHL lawmaking; threshold questions of Additional Protocol I; elements of the environment as civilian objects; and proportionality of environmental damage as collateral damage.

Armed conflict and environment: a brief history of lawmaking

In the early 1970s, two developments occurred: the international community began addressing environmental protection generally, and it also made a serious attempt to remedy the deficiencies of legal protection for victims of armed conflict. Both developments were prompted by a scandalization of public opinion triggered by a number of key events. In the international environmental realm, these were environmental disasters such as major oil spills, as well as a broad citizens' movement. As to the law of armed conflict, the developments were the Vietnam War, the protection of human rights in occupied territories (and specifically in Palestine), and the armed conflicts that occurred during decolonization. These two focal points of public opinion came together in a single event: the environmental

4 For a review of IHL governing the environment during armed conflict, see United Nations Environment Programme (UNEP), *Protecting the Environment During Armed Conflict: An Inventory and Analysis*, Nairobi, 2009; see also Daniel Bodansky, *Legal Regulation of the Effects of Military Activity on the Environment*, Berichte des Umweltbundesamts/Reports of the German Federal Environment Agency, Nr. 5/2003, Erich Schmidt Verlag, Berlin, 2003; Michael Bothe, 'The protection of the environment in times of armed conflict', in *German Yearbook of International Law*, Vol. 34, 1991, pp. 54–62; Jay E. Austin and Carl E. Bruch (eds), *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives*, Cambridge University Press, Cambridge, 2000.

and public health effects of defoliation associated with the use of herbicides (particularly Agent Orange) during the Vietnam War.

While lawmaking in the international environmental field left this problem at the margins, the issue was directly addressed by international conferences dealing with armed conflict – to the great dismay of those defending military interests. These conferences included the United Nations Committee of the Conference on Disarmament (CCD) and the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law (CDDH, Geneva, 1974–1977).

In 1976, the CCD adopted the Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques (ENMOD). This treaty regulates the use of environmental modification techniques as a means to cause harm to the enemy. ENMOD specifically prohibits ‘environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction’.⁵ The *travaux* of the CCD indicate how to interpret these key terms: ‘long-lasting’, for instance, signifies ‘lasting for a period of months, or approximately a season’.⁶

The more difficult questions were addressed by the CDDH when it discussed the adoption of two important provisions in what became Additional Protocol I. First, Article 35, paragraph 3, states that ‘[i]t is prohibited to employ methods and means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment’. Second, Article 55 of Additional Protocol I states that ‘[c]are shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage’. It further specifies that this protection ‘includes a prohibition of the use of methods and means of warfare which are intended or may be expected to cause such damage to the environment and thereby to prejudice the health or survival of the population’.

These provisions were negotiated and adopted with knowledge of the CCD text.⁷ Thus, the differences between the texts are not an oversight but intentional. The three conditions, or the threshold, of the prohibition in Additional Protocol I are cumulative (joined by ‘and’), while the conditions in ENMOD are alternatives (joined by ‘or’). Furthermore, the meaning of the three adjectives limiting the scope of prohibited damage differs (at least according to the negotiating history of the two provisions) depending on whether they are being interpreted in the context of Additional Protocol I or ENMOD. The competent Conference committee intensively discussed all three in the context of Additional Protocol I.

5 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD), 10 December 1976, 1108 UNTS 151, Art. 1.

6 Understanding annexed to the text of ENMOD, contained in the report of the UN Committee of the Conference on Disarmament to the General Assembly, Official Records of the General Assembly, 31st Session, Supplement No. 27 (A/31/27).

7 See Waldemar A. Solf, ‘Article 55: protection of the natural environment’, in Michael Bothe, Karl Josef Partsch, and Waldemar A. Solf, *New Rules for Victims of Armed Conflict: Commentaries on the Two 1977 Protocols Additional to the Geneva Conventions of 1949*, Nijhoff, The Hague, 1982, p. 347.

With regard to the time or duration element, the report of the committee states that the duration:

was considered by some to be measured in decades. Reference to twenty or thirty years were made by some representatives as being a minimum ... [I]t is impossible to say with certainty what period of time might be involved. It appeared to be a widely shared assumption that battlefield damage incidental to conventional warfare would not normally be proscribed by this provision.⁸

This definition radically differs from the one accepted in the *travaux* of ENMOD just quoted. As a consequence, negotiators assumed that, in practice, these provision would 'not impose any significant limitation on combatants waging conventional warfare'.⁹ It might leave room for application to biological and chemical warfare. As to nuclear warfare, however, most NATO countries claim that Additional Protocol I does not apply thereto,¹⁰ and at least the United States and the United Kingdom contest that these two provisions constitute customary law.¹¹ The environmental community has never considered this situation satisfactory.

As a result, a debate arose about further lawmaking. A number of events, primarily the oil spills caused by the 1980–1988 and 1990–1991 Gulf Wars, sustained public debate on the issue. There were, for example, far-reaching demands for new international law – a 'Fifth Geneva Convention'. Those efforts, however, met considerable resistance from important military powers. The only tangible result of the efforts to adopt new documents was a set of Guidelines on environmental protection during armed conflict, elaborated by the International Committee of the Red Cross (ICRC) and published in 1994.¹² These Guidelines, however, did not constitute any significant progress for better protection of the environment during armed conflict, and even this modest document received a somewhat hostile reception at the UN. The UN General Assembly politely buried it in 1994.¹³

The next step in lawmaking was the 1998 Rome Statute,¹⁴ establishing the International Criminal Court. In its definition of war crimes, the Rome Statute

8 Conference document CDDH/215/Rev. 1, para. 27.

9 W. A. Solf, above note 7, p. 348.

10 United States, declaration made on signature: 'It is the understanding of the United States of America that the rules established by this protocol were not intended to have any effect on and do not regulate or prohibit the use of nuclear weapons'. United Kingdom, declaration made on ratification: 'It continues to be the understanding of the United Kingdom that the rules introduced by the Protocol apply exclusively to conventional weapons without prejudice to any other rules of international law applicable to other types of weapons. In particular, the rules so introduced do not have any effect on and do not regulate or prohibit the use of nuclear weapons'.

11 For references, see Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, International Committee of the Red Cross and Cambridge University Press, Cambridge, 2005, Vol. I, pp. 153ff.

12 International Committee of the Red Cross (ICRC), *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, Geneva, 1994.

13 General Assembly resolution 49/50 of 9 December 1994; for a comment, see Michael Bothe, 'Military activities and the protection of the environment', in *Environmental Policy and Law*, Vol. 37, No. 2–3, 2007, p. 234.

14 Rome Statute of the International Criminal Court (ICC) of 17 July 1998, A/CONF.138/9.

contains a provision protecting the environment in times of international armed conflict:

Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.¹⁵

This provision is related, but not identical to, three provisions of Additional Protocol I. These include Article 51(5)(b), prohibiting attacks that cause ‘excessive’ collateral damage to civilians or civilian objects, and the two provisions concerning the environment quoted above (Articles 35(3) and 55).

To assess the significance of the Rome Statute provision, one has to bear in mind that criminal law contains secondary norms. They constitute means to enforce a primary obligation. As such, they need not be identical to those primary obligations. While a provision of international criminal law presupposes a primary norm prohibiting the behaviour that constitutes a crime, many primary obligations do not trigger criminal sanctions. Thus, a more narrow criminal provision on environmental damage during armed conflict (holding individuals personally and criminally liable) does not alter the underlying primary obligation of states, under existing international law, to prevent a broader range of environmental damage.

The lack of clarity surrounding the bounds of treaty obligations to avoid damaging the environment during armed conflict raises the question of environmental protection under customary humanitarian law and the treatment of the question by the Customary International Humanitarian Law Study published by the ICRC in 2005.¹⁶ The Study declares a simplified version of the provisions of Additional Protocol I and of ENMOD to constitute customary law, stating that the ‘use of methods and means of warfare that are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment is prohibited. Destruction of the natural environment may not be used as a weapon’.¹⁷

A real step forward was accomplished via another rule articulated in the Study. Rule 44 states that

[m]ethods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimise, incidental damage to the environment.¹⁸

15 *Ibid.*, Art. 8(2)(b)(iv).

16 J.-M. Henckaerts and L. Doswald-Beck, above note 11.

17 *Ibid.*, Rule 45.

18 *Ibid.*, Rule 44.

In addition, a '[l]ack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions'.¹⁹

The rule uses a variation of the general IHL rule that 'precautionary measures' must be taken to avoid damage to civilians and civilian objectives.²⁰ The last sentence of Rule 44, however, constitutes an application of the precautionary principle, well established in IEL, to the duty to take precaution in armed conflict, which in the latter context amounts to a revolution. The Study quotes limited state practice to support this rule. The majority of the support cited is the reading of two decisions of the International Court of Justice (ICJ), namely the 1995 Nuclear Tests case order and the 1996 Nuclear Weapons advisory opinion.²¹ The Study in effect argues that recognition of the precautionary principle as customary international environmental law must be reflected in the law of armed conflict.

The 'due regard' principle formulated in Rule 44 seems to be well accepted. This is elucidated by two private, yet semi-official, restatements of relevant rules. The San Remo Manual on International Law Applicable to Armed Conflict at Sea (1994) states that '[m]ethods and means of warfare should be employed with due regard for the natural environment ...'.²² The HPCR Manual on International Law Applicable to Air and Missile Warfare (2009) formulates rules along the same lines, stating that the 'destruction of the natural environment carried out wantonly is prohibited'.²³ It also urges that '[w]hen planning and conducting air and missile operations, due regard ought to be given to the natural environment'.²⁴

It is submitted that the prohibition of 'wanton' destruction of natural environment elements and the due regard principle are both more favourable for the environment and more flexible than the provisions of Additional Protocol I.

Additional Protocol I and the threshold question

As noted above, the crucial problem raised by Additional Protocol I is the meaning of the three conditions attached to the prohibition on 'long-term, widespread and severe' damage to the environment.²⁵ The narrow scope of the prohibition is due both to the cumulative character of the three conditions and to their interpretation, which effectively sets the threshold very high, but also with some ambiguity.

19 *Ibid.*

20 Additional Protocol I, Art. 57.

21 ICJ, *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case*, Order of 22 September 1995, ICJ Reports, 1995; ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, ICJ Reports, 1996.

22 San Remo Manual on International Law Applicable to Armed Conflict at Sea, reproduced in Dietrich Schindler and Jiri Toman (eds), *The Laws of Armed Conflict*, 4th edition, Leiden and Boston, 2004, p. 1153, Rule 44.

23 Harvard University, Program on Humanitarian Policy and Conflict Research (HPCR), *Manual on International Law Applicable to Air and Missile Warfare*, Bern, 2009, Rule 88.

24 *Ibid.*, Rule 89.

25 Additional Protocol I, Arts. 35(3) and 55(1).

At least if interpreted in the light of the negotiating history,²⁶ it seems next to impossible that the threshold could be reached by conventional warfare. Regarding chemical warfare, the only practical case thus far (the use of herbicides in Vietnam) raises some doubts. If the yardstick for ‘long-lasting’ is several decades, the threshold might not have been reached. Nature has recovered in many but not all places in Vietnam; however, damage to human health remains, and may last for generations.

The above interpretation is not necessarily generally accepted nowadays, but it is safe to state that the parties to the treaty intended to establish a very high threshold. Natural resources and the environment are essential to post-conflict peacebuilding,²⁷ and significant environmental damage can undermine efforts to provide for livelihoods, promote economic recovery, and allow society to return to a ‘normal’ peacetime way of life. A framework that is too permissive of environmental damage during armed conflict can thus undermine long-term peace.

One can ask whether this high threshold is still valid, or whether it has fallen into desuetude²⁸ in light of the continually increasing recognition of environmental concerns in international relations. This is arguable, but not certain.

This brings us to gap number one: for two reasons, the legal situation is highly unsatisfactory from an environmental point of view. First, the conditions attached to the prohibition of Articles 35 and 55 of Additional Protocol I are excessively restrictive, making the prohibition much too narrow from an environmental point of view. Second, the exact scope of this prohibition remains uncertain, and thus difficult to implement or enforce.

This gap presents an opportunity, however: an alternative form of legal protection for the environment in times of armed conflict appears in a number of documents purporting to reflect customary law – namely, the ‘due regard’ principle and the prohibition of ‘wanton’ destruction. Whether and how this can be clarified remains an open question.

Elements of the environment as civilian objects

Elements of the environment are most often civilian objects. As such, they are protected against attacks. To that extent, the restrictive conditions of Articles 35 and 55 of Additional Protocol I do not apply. This protection is, however, shaky, as environmental elements can easily become military objectives. Once armed forces are located in a protected area, the area may contribute effectively to military action and its neutralization may offer a definite military advantage. Thus, it becomes a military objective. In the case of herbicide use in Vietnam, the trees provided cover

26 See W. A. Solf, above note 7, p. 348; Conference document CDDH/215/Rev. 1, para. 27.

27 Carl E. Bruch *et al.*, ‘Post-conflict peace building and natural resources’, in Ole Kristian Fauchald, David Hunter, and Wang Xi (eds), *Yearbook of International Environmental Law*, Vol. 19, 2008, Oxford University Press, Oxford, 2009.

28 Desuetude is the legal rule that provides that a legal provision loses its binding force as the result of non-use for a sufficiently long time.

for the enemy. Their defoliation constituted a definite military advantage, and the trees – more precisely their leaves – became a military objective.

This brings us to the second gap in IHL: elements of the environment are all too likely to become military objectives, invalidating their protections as civilian objects. In theory, Articles 35 and 55 of Additional Protocol I could restrain environmental destruction, but this brings us back to gap number one.

Gap number two provides opportunity number two: the transformation of environmental elements into military objectives must be prevented. How can this be achieved? Articles 59 and 60 of Additional Protocol I (non-defended localities and demilitarized zones) may serve as a model. Because there is no military presence in these areas, they are not or are no longer military objectives, and therefore are immune from attack. In the same way, environmentally sensitive areas may be rendered immune against attacks by excluding any military presence. In the absence of a treaty to that effect, this cannot be achieved by a unilateral declaration. Whether a new treaty is possible is highly doubtful, at least in the near future. Nevertheless, the parties to a conflict can achieve the same result by mutual agreement, such as through mediation led by the ICRC, the UN, or a relevant environmental organization.²⁹ An international organization could call upon the parties to conclude such agreements. Finally, the UN Security Council, in the exercise of its powers under Chapter VII of the UN Charter, could designate such protected areas and oblige the parties to conclude such agreements.

Environmental damage as collateral damage: the question of proportionality

The environment may be damaged indirectly by attacks against military objectives. This is the case with oil spills (if the direct target is a military objective) or pollution caused by attacks against industrial installations. In this case, the elements of the environment that are affected constitute civilian objects. Damage to these environmental objects would then be ‘collateral damage’, which is permissible only to the extent that it is not excessive in relation to the concrete and direct military advantage anticipated as a result of the attack. This raises a number of difficult questions.

As a rule, there will be uncertainties regarding the environmental impacts of the collateral damage. Where damage occurs outside military objectives (for example, an oil spill caused by the attack against a power station situated near the coast), it is first necessary to assess the extent of the environmental damage, which can be quite difficult. To assess the damage caused by the attack, it is necessary to

29 Informal working groups of the International Union for Conservation of Nature (IUCN) have advanced this solution for a number of years. It is now contained in an official statement of the ICRC, *Strengthening Legal Protection for Victims of Armed Conflicts: The ICRC Study on the Current State of International Humanitarian Law*, Address by Dr Jakob Kellenberger, President of the ICRC, 21 September 2010, in this issue, also available at: <http://www.icrc.org/web/eng/siteeng0.nsf/htmlall/ihl-development-statement-210910> (last visited 18 October 2010).

determine not only the extent of pollution and the harm caused after the attack but also the amount of pre-existing pollution and its effects. There is also the uncertainty involved in predicting long-term damage.³⁰

Assuming it is possible to clarify the relevant facts regarding the damage, what is the legal yardstick of proportionality? This is already difficult in the case of simple physical damage. It becomes all the more difficult in the case of environmental damage, in particular long-term damage. Is the precautionary principle relevant in determining the relative weight of environmental values in the so-called proportionality equation? In other words, can an environmental damage be ‘excessive’ within the meaning of Article 51 of Additional Protocol I even if the full extent and nature of the damage are not certain?

If an element of the environment is lawfully attacked because it constitutes a military objective, there might be long-term environmental damage beyond the actual destruction. Are Articles 35 and 55 of Additional Protocol I *lex specialis* for determining the lawfulness of that long-term damage, and thus not subject to the principle of proportionality under IHL? Alternatively, is this long-term damage a form of ‘collateral’ damage that would then be subject to the yardstick of proportionality?

This brings us to the third gap: there is a lack of clarity about the practical issues of proportionality where environmental damage is collateral damage, caused by attacks against military objectives.

These issues of proportionality also provide the third opportunity, which is to clarify proportionality. A new treaty, even assuming it were politically possible, would be unlikely to resolve the issue, at least for the substantive problems involved. It seems problematic – if not impossible – to provide a general solution that applies to all possible situations of environmental collateral damage. However, general rules for assessing environmental damage could be helpful. They could be established by resolutions of relevant international organizations. As to the substantive issues, the best solution would probably be for expert groups to analyse typical scenarios and develop a set of criteria for determining proportionality.

Conclusions on international humanitarian law

IHL provisions that are relevant for environmental protection during armed conflict constitute a body of treaty and customary law with significant gaps and deficiencies.

First, the primary provisions that directly protect the environment during armed conflict – Articles 35 and 55 of Additional Protocol I – do not adequately achieve this aim because the ‘widespread, long-term and severe’ damage threshold is imprecise and difficult to meet, leaving much of the serious environmental harm

30 See, e.g., Asit Biswas, ‘Scientific assessment of the long-term environmental consequences of war’, in J. E. Austin and C. E. Bruch, above note 4.

arguably outside the scope of current protections. Thus, these terms require clear and more appropriate definitions.

Second, because few IHL norms explicitly address environmental protection, indirect means may provide more effective protection by regulating the means and methods of warfare or by protecting civilian persons and objects. However, the gap here is that elements of the environment are likely to become military objectives, which brings us back to gap number one. This problem may be solved by using Articles 59 and 60 of Additional Protocol I (non-defended localities and demilitarized zones) as a model for rendering environmentally sensitive areas immune.

Third, there is a lack of clarity surrounding collateral damage to civilian objects as a result of attacks against military objectives. The gap here is a lack of clarity about the practical proportionality issues where environmental damage is collateral damage, caused by attacks against military objectives.

There are other deficiencies in the existing IHL framework.³¹ These include, for example, uncertainties in IHL governing protection of the environment during non-international armed conflict.³² This is problematic, as the vast majority of current armed conflicts are non-international.

Application of international environmental law during armed conflict³³

In the light of the significant gaps and deficiencies in the IHL framework regarding the protection of the environment during armed conflict, it must be asked whether some of these gaps could be addressed through the application of international environmental law (IEL). IEL provides a well-established body of norms, standards, approaches, and mechanisms preventing and redressing – including through responsibility and, increasingly, liability – damage to the environment during times of peace. With the development, maturation, and application of a substantial body of law governing environmental use and protection, the question is whether and to what extent these provisions of IEL continue to apply during armed conflict and whether they provide a meaningful protection against the specific risks of warfare. IEL rules protecting certain natural resources are one example to be considered. Their ability to restrain waste and destruction by warfare has to be assessed. Rules that prohibit the causation of specific types of environmental damage should also be taken into account. To use an example referred to above, if a power station is destroyed during a war or other military operation (as happened with the power plant at Jiyeh, Lebanon, in 2006), should the subsequent oil spill trigger an institutional mechanism for response and clean-up or a

31 See generally UNEP, above note 4.

32 A differentiated answer is given by J.-M. Henckaerts and L. Doswald-Beck, above note 11, Vol. I, pp. 148ff. and 156ff.

33 The following section draws from the authors' analyses in UNEP, above note 4.

liability regime?³⁴ Would the World Heritage Convention, which protects sites of cultural and natural heritage,³⁵ prohibit targeting or causing extensive harm to a World Heritage site during military activities?

Questions regarding the application of IEL during armed conflict are complicated for two reasons. First, environmental law is still dynamic, and it keeps developing. Second, this is part of the general phenomenon of fragmentation of international law, which entails the question of how, in the case of overlapping fields of application, different regimes or bodies of international law relate to each other. Scholarship and commentary provide several perspectives on whether IEL applies during armed conflict. Starting in the 1990s, there has been a noticeable shift in the historic belief that laws applicable during war and peace were mutually exclusive. Contemporary perspectives increasingly bridge the two bodies of law, applying peacetime international law during armed conflict to varying degrees. Where both bodies of law apply concurrently, however, the question of their relationship (*lex specialis*) also has to be answered.

This development is clearly documented in the work of the International Law Commission (ILC). In 2004, the General Assembly approved the ILC's proposal to include work on the 'effects of armed conflict on treaties' in its long-term programme. In 2008, that work resulted in a set of draft articles that attempt to regulate the applicability of treaties during armed conflicts.³⁶ The draft articles state that the onset of armed conflict 'does not necessarily terminate or suspend the operation of treaties' between belligerents or belligerents and neutral parties.³⁷ Rather, this is determined by a complex body of different considerations: express provisions and subject matter of the treaty, treaty interpretation according to Articles 31 and 32 of the Vienna Convention on the Law of Treaties (VCLT) of 23 May 1969, the nature and extent of the armed conflict, and the effect of the armed conflict on the treaty.³⁸ What this means in practice has to be ascertained on a case-by-case basis.

34 The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 18 December 1971, 1110 UNTS 57, and the International Convention on Civil Liability for Oil Pollution Damage, 29 November 1969, 973 UNTS 3, only apply to oil pollution from ships. In Jiyeh, on-the-ground assistance was provided pursuant to the Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency (Emergency Protocol), Barcelona, 16 February 1976.

35 A question that also deserves attention in this context is whether the Convention for the Protection of Cultural Property in the Event of Armed Conflict, 14 May 1954, 249 UNTS 215, provides a more appropriate protection in cases where heritage sites are at the same time cultural property.

36 International Law Commission (ILC), *Report of the International Law Commission*, 59th Session, 7 May–5 June and 9 July–10 August 2007, paras. 266–324, UNGA Supp. A/62/10; ILC, *Effects of Armed Conflicts on Treaties*, UN Doc. A/CN.4/L.727/Rev.1, 6 June 2008; ILC, *Effects of Armed Conflicts on Treaties*, Addendum, UN Doc. A/CN.4/L.727/Rev.1/Add.1, 11 July 2008. The draft articles were provisionally adopted and circulated to states for comment and observation, to be submitted by January 2010: ILC, *Report of the International Law Commission*, 60th Session, 5 May–6 June and 7 July–8 August 2008, para. 14, UNGA Supp. A/63/10.

37 ILC, *Effects of Armed Conflicts on Treaties*, 6 June 2008, above note 36, Art. 3.

38 *Ibid.*, Art. 4.

This part of the article provides an overview and analysis of law and commentary addressing IEL applicability during armed conflict. It is organized in three main sections: (a) multilateral environmental agreements that might be applied; (b) customary international environmental law and soft-law instruments that might be applied; and (c) commentary on the applicability of these two bodies of IEL during armed conflict.

Multilateral environmental agreements

With regard to the question of whether and to what extent multilateral environmental agreements (MEAs) continue to protect the environment in times of armed conflict, a basic distinction has to be made, which is also a basic problem. As a rule, the law applicable in times of peace applies between belligerents and neutral states (more generally, states not parties to an armed conflict). This means that, at least as a matter of principle, an MEA must continue to apply during an armed conflict at least in the relation between the parties to the conflict and the states that are not parties. From this perspective, the continued application of an MEA during an armed conflict only constitutes a problem in the relationship between belligerents. In addition, and in line with this logic, the existence of a non-international armed conflict arising on the territory of a party to an MEA does not affect the application of the treaty. The situation is not, however, as simple as that. The fundamental question of whether a state involved in an armed conflict, whether an international armed conflict or a non-international one, can be expected to fulfil its international obligations in the same way as if the conflict did not exist has to be asked and answered. The *clausula rebus sic stantibus*³⁹ and necessity as a circumstance precluding wrongfulness⁴⁰ may modify the relationship between parties and non-parties to an armed conflict in comparison to their relationship in time of peace. While the basic distinction between the relationship between belligerents and the one between belligerents and non-belligerents has to be maintained, a closer look at the scope of that distinction is necessary, taking into account the basic content of relevant MEAs.

How instruments of IEL address their applicability during times of armed conflict varies substantially. Some MEAs directly or indirectly provide for their continued application during hostilities, while others specifically state that they are automatically suspended, terminated, or inapplicable once armed conflict has begun; others remain silent on the issue. Unfortunately, most MEAs fall into the third category, so there is substantial uncertainty.⁴¹

39 VCLT, Art. 62.

40 ILC, 'Responsibility of states for internationally wrongful acts', in *Yearbook of the International Law Commission*, Vol. II, Part Two, 2001, pp. 32ff., Art. 25.

41 Relying on *lex specialis* is not helpful. On the one hand, it may be argued that IHL is *lex specialis* as it is developed specifically for the context of armed conflict. On the other hand, it can be argued at least as forcefully that IEL is *lex specialis* as it has much more developed provisions relating to the environment, while IHL only touches on the issue generally.

An MEA may indirectly provide that it continues to apply during armed conflict. Under the World Heritage Convention, the World Heritage Committee establishes and updates a World Heritage List of cultural heritage and natural heritage properties with ‘outstanding universal value’.⁴² Inclusion on the list requires the concerned state’s consent. In addition, the Committee keeps a ‘list of World Heritage in Danger’ that includes sites that require ‘major operations’ to conserve, for which assistance has been requested, and that are ‘threatened by serious and specific dangers’. Serious and specific dangers may include ‘the outbreak or the threat of an armed conflict’.⁴³

Another example is found in the Ramsar Convention, which establishes a List of Wetlands of International Importance.⁴⁴ The Convention does not expressly state whether it applies to belligerents; however, intent may be inferred from the Convention’s language that a party to the agreement has the right, ‘because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it on the List’.⁴⁵ It is possible, although unclear, that situations of ‘urgent national interests’ may include armed conflict.⁴⁶ It is notable that urgent national interests do not allow a party to restrict the protective measures of a listed wetland, only to amend its boundaries. The question then arises whether a military use of the area constitutes a violation of the duties of protection established by the Convention.

Similarly, the UN Convention on the Law of the Sea (UNCLOS)⁴⁷ requires states party ‘to protect and preserve the marine environment’, as well as to take measures to prevent, reduce, and control marine pollution.⁴⁸ Article 236 of UNCLOS, however, establishes a variance for ‘any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service’. Parties are then instructed to ‘ensure, by the adoption of appropriate measures not impairing operations or operational capabilities ... that such vessels or aircraft act in a manner consistent, so far as is reasonable and practicable, with this Convention’.⁴⁹ Although the standards applied to military as opposed to non-military vessels and aircraft vary, UNCLOS

42 World Heritage Convention, Art. 11(2).

43 *Ibid.*, Art. 11(4).

44 Ramsar Convention, Art. 2.

45 *Ibid.*, Art. 3. Article 4 of the Ramsar Convention then requires that, when urgent national interests cause a party to make such a deletion or restriction, they should attempt to compensate for that loss of wetlands.

46 See, e.g., Alice Louise Bunker, ‘Protection of the environment during armed conflict: one gulf, two wars’, in *Review of European Community & International Environmental Law*, Vol. 13, No. 2, 2004, p. 211. We have seen that, although environmental treaties can be applied to situations of armed conflict, their provisions are often too flexible and ambiguous to provide any real guidance to commanders on the battlefield or to be enforced after the event. The only area of environmental law where this is perhaps not true is the protection of areas of special significance such as World Heritage sites or Ramsar wetlands. Here it is clear that a defined area should be avoided and peacetime protections can be more easily linked to wartime activity, as suggested by the IUCN Protected Areas Draft Convention.

47 United Nations Convention on the Law of the Sea (UNCLOS), 10 December 1982, 1833 UNTS 3.

48 *Ibid.*, Arts. 192 and 194; see also Arts. 207–208 and 212.

49 *Ibid.*, Art. 236.

may continue to apply during armed conflict.⁵⁰ More specific requirements are formulated in the San Remo Manual on International Law Applicable to Armed Conflicts at Sea.⁵¹ Article 44 of the Manual states that '[d]amage to or destruction of the natural environment not justified by military necessity and carried out wantonly is prohibited'. It also provides that, when hostile actions are undertaken within the exclusive economic zone of a neutral state, belligerents shall 'have due regard for the rights and duties of the coastal State, inter alia, for ... the protection and preservation of the marine environment'.⁵²

In contrast, some MEAs explicitly suspend, derogate, or terminate the agreement between belligerents during armed conflict. For example, the Convention on Third Party Liability in the Field of Nuclear Energy (1960) exempts operators for damage directly resulting from armed conflict or similar activities,⁵³ although Austria and Germany objected to this provision and explicitly declared their right to hold operators liable for such damage.⁵⁴ This is equivalent to the established principle of insurance law that insurance against losses does not cover war damages. Seen in this light, the rule would apply not only to the relationship between belligerents but also to that between belligerents and non-belligerents.

Many MEAs contain no reference to their applicability during armed conflict. Such MEAs include the Convention on Biological Diversity (1992), the UN Convention to Combat Desertification (1994), and the Convention on the Conservation of Migratory Species of Wild Animals (1979).⁵⁵ The effect of their silence, and whether it varies by type of convention, is uncertain. For example, commentary has posited that the Convention on Biological Diversity applies to belligerent parties, as it is analogous to human rights treaties that do not automatically terminate upon hostilities.⁵⁶ This uncertainty raises questions about how parties should proceed, such as whether belligerents should agree on sites to be placed off limits,⁵⁷ or if military entities should be instructed on the principles of the MEAs and charged to abide by them to the extent possible.

50 See, e.g., Michael N. Schmitt, 'Green war: an assessment of the environmental law of international armed conflict', in *Yale Journal of International Law*, Vol. 22, No. 1, 1997, pp. 47–49, discussing the potential protections that UNCLOS may afford during armed conflict. Silja Vöneky, 'Peacetime environmental law as a basis of state responsibility for environmental damage caused by war', in J. E. Austin and C. E. Bruch, above note 4, p. 207, argues that, because UNCLOS creates an 'objective regime' and intends 'to serve the interests of the state community as a whole', it continues to apply during armed conflict.

51 San Remo Manual, above note 22.

52 *Ibid.*, Art. 34. If mines are laid within a neutral state's exclusive economic zone, the belligerent must notify the neutral state and give '[d]ue regard ... to the protection and preservation of the marine environment' (*ibid.*, Art. 35).

53 Convention on Third Party Liability in the Field of Nuclear Energy, Art. 9, 29 July 1960, amended 28 January 1964, 956 UNTS 264.

54 *Ibid.*, Annex I, para. 4.

55 Convention on Biological Diversity, 5 June 1992, 1760 UNTS 79; United Nations Convention to Combat Desertification, 17 June 1994, 1954 UNTS 3; Convention on the Conservation of Migratory Species of Wild Animals, 23 June 1979, 1651 UNTS 333.

56 See S. Vöneky, above note 50.

57 See above, 'Elements of the environment as civilian objects'.

Customary international environmental law and soft-law instruments

Certain soft-law instruments explicitly refer to armed conflict. Other IEL principles and soft-law instruments may apply, although they do not address armed conflict directly. So-called soft-law instruments are not legally binding unless they rise to the level of customary IEL. An example is furnished by arguments discussing whether the precautionary principle and the right to a healthy environment constitute – or are emerging – customary IEL.⁵⁸ Even if a soft-law instrument is deemed to not constitute customary IEL, it may still inform the interpretation and application of international law.

The Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration)⁵⁹ of 1972 articulated an overarching principle that may bear on IEL applicability during armed conflict. Principle 21 provides that ‘States have ... the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction’.⁶⁰

Two decades later, the Declaration on Environment and Development (Rio Declaration) of 1992 stated in Principle 24 that: ‘Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary’.⁶¹ While the intent to protect the environment is clear, the provision’s precise meaning is less so; it may mean that IEL applies during conflict, or it may simply reiterate required state adherence to relevant IHL provisions.⁶²

The Rio Conference adopted similar language in the Programme of Action for Sustainable Development (Agenda 21) in Article 39(6), detailing the means of implementation. It states that ‘[m]easures in accordance with international law should be considered to address, in times of armed conflict, large-scale destruction of the environment that cannot be justified under international law’. The Article specifies that the UN General Assembly and Sixth Committee should handle such efforts, with ICRC consideration.⁶³

More broadly, Principle 5 of the World Charter for Nature mandates that ‘[n]ature shall be secured against degradation caused by warfare or other

58 A potential complication when analysing what may constitute customary IEL is that there have been few state-by-state assessments to ascertain state practice and *opinio juris*; most commentaries rely on international declarations and on isolated samples of practice.

59 Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), 16 June 1972, UN Doc. A/CONF.48/14/Rev. 1 (1973).

60 *Ibid.*, Principle 21. This is the Trail Smelter principle, discussed below.

61 Rio Declaration on Environment and Development, 13 June 1992, UN Doc. A/CONF.151/26, Vol. I, Principle 24.

62 See, e.g., M. N. Schmitt, above note 50, pp. 43–44.

63 Agenda 21: Programme of Action for Sustainable Development, UN GAOR, 46th Session, Agenda Item 21, UN Doc. A/Conf.151/26, 14 June 1992, Art. 39(6).

hostile activities'.⁶⁴ This principle appears intended to prohibit environmental harm during armed conflict. But it is probably rather a political postulate than the expression of a legal rule. In the light of the controversies surrounding the customary law character of rules protecting the environment in times of armed conflict, such a sweeping rule could not reasonably meet the test of general practice and *opinio iuris*.

UN General Assembly resolution 47/37, adopted in 1993, urges states to take measures for complying with international law protecting the environment during armed conflict.⁶⁵ Although it also encourages incorporating such international law into military manuals, the precise import of these provisions remains unclear. Its reference to provisions 'applicable to the protection of the environment' may refer to relevant provisions within IHL, or to IEL. The resolution led to the ICRC's development of Guidelines for incorporating environmental protection into military manuals, discussed earlier.⁶⁶

While some principles expressly address armed conflict, others – such as the Trail Smelter principle – are silent. Nonetheless, they may be applied to armed conflict. The Trail Smelter principle arose from an arbitral decision resolving a dispute between the United States and Canada regarding transboundary air pollution in which a Canadian smelter harmed US crops and forests downwind of it.⁶⁷ The *Trail Smelter* arbitral panel held that Canada had a responsibility to prevent harmful transboundary air emissions from the smelter, and was liable for the damages that such emissions incurred. The decision was based on a fundamental responsibility to use one's territory so as not to cause harm to that of another. It must nowadays be considered as a rule of customary international law.

The Trail Smelter principle may afford protection to non-belligerent, neutral territories by establishing state responsibility for environmental damage caused outside the state where the acts or events entailing such damage occur. Certain comments suggest that such allocation might not apply if belligerent interests outweigh the victim state's harm.⁶⁸ Where damage is caused in neutral territory, this thesis is in contradiction with the general principle of the law of neutrality that the neutral territory is inviolable and that the neutral state, as a matter of principle, may not be affected by the armed conflict. There is no basis in state practice for the suggested exception to this customary rule of international

64 UN General Assembly resolution 37/7, 28 October 1982, *World Charter for Nature*, UN Doc. A/RES/37/7, Principle 5.

65 UN General Assembly resolution 47/37, 9 February 1993, *Protection of the Environment in Times of Armed Conflict*, UN Doc. A/RES/47/37.

66 See ICRC, above note 12, and accompanying text. The first military manual specifically instructing environmental protection during hostilities is thought to be the US Department of the Navy's *Commander's Handbook on the Law of Naval Operations*. See US Navy, US Marine Corps, and US Coast Guard, *The Commander's Handbook of the Law of Naval Operations*, NWP 1-14M, October 1995; see also Arthur H. Westing, 'In furtherance of environmental guidelines for armed forces during peace and war', in J. E. Austin and C. E. Bruch, above note 4, p. 177.

67 *Trail Smelter Case (United States v. Canada)*, 16 April 1938 and 11 March 1941, Reports of International Arbitral Awards (R.I.A.A.), Vol. III, p. 1905.

68 M. N. Schmitt, above note 50, pp. 46–47.

law. The frequent reiteration of the Trail Smelter principle indeed indicates the rapid emergence of a state's right to environmental protection as customary IEL that also applies during armed conflict.⁶⁹

This conclusion results, in particular, from the jurisprudence of the International Court of Justice. In the *Corfu Channel* case, the ICJ practically extended the Trail Smelter principle to the actions of parties during conflict, although the case did not specifically address transboundary pollution.⁷⁰ In this case, the ICJ held Albania responsible for damage from mines laid in Albanian waters to British ships travelling through these waters, observing that international law obliges the state 'not to allow knowingly its territory to be used for acts contrary to the rights of other states'.⁷¹

The ICJ also recognized the Trail Smelter principle in the 1996 *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons*. ICJ advisory opinions, although not legally binding, provide persuasive evidence of customary international law and the application and implementation of international law. In this advisory opinion, the Court notes that a state's general obligation 'to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment'.⁷² The decision continues by instructing states to account for environmental considerations when determining what constituted necessary and proportionate measures in light of military objectives.⁷³ Following the decision, states appear, at a minimum, to be required to abide by the Trail Smelter principle; the outer boundaries of mandatory environmental protection, however, are less certain.

The same concept of neighbourly protection from harm is seen in the 2010 decision by the ICJ in the *Pulp Mills* case.⁷⁴ The Court decided that the construction and operation of Pulp Mills in Uruguay required the country to undertake a transboundary environmental impact assessment. The Court recognized that a state must take specific measures to prevent harm to its neighbours, thus extending the general principle of the Trail Smelter decision.

Commentary

MEAs, rules of customary environmental law, and soft-law instruments of IEL afford numerous examples of rules and decisions that establish norms (including

69 Sonja Ann Jozef Boelaert-Suominen, *International Environmental Law and Naval War: The Effect of Marine Safety and Pollution Conventions During International Armed Conflict*, Newport Paper No. 15, Naval War College, Newport, December 2000; Margaret T. Okorodudu-Fubara, 'Oil in the Persian Gulf War: legal appraisal of an environmental warfare', in *St. Mary's Law Journal*, Vol. 23, 1991, pp. 204–206.

70 ICJ, *Corfu Channel Case (United Kingdom v. Albania)*, Merits, Judgment of 9 April 1949, ICJ Reports 1949, p. 4.

71 *Ibid.*, p. 22.

72 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, above note 21, para. 29.

73 *Ibid.*, para. 30.

74 ICJ, *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Merits, Judgment of 20 April 2010.

on responsibility and liability) relating to environmental damage, and most commentary holds that many of these provisions continue to apply during armed conflict. The next section examines a few key lines of doctrine on the issue.

Commentary on the continued applicability of MEAs in times of conflict

A number of lines of argument have been developed concerning the question as to whether and to what extent MEAs apply during armed conflict. These include classification theory, intention theory, the context and nature of the MEA, and a sliding-scale system.

‘Classification theory’ assigns environmental laws to categories that determine their application during armed conflict. For example, Vöneky found that the current categorization methodology assumes IEL applies during times of both peace and armed conflict for three categories of treaties: if the legal instrument expressly says it continues to apply, if it is compatible with armed conflict, or if it is a *jus cogens* or *erga omnes* obligation.⁷⁵

By combining classification theory and intention theory – that is, the approach of holding as closely as possible to the original intent of the parties at the time that the treaty was formed – Boelaert-Suominen addressed instances in which an international agreement does not clearly fit into pre-defined categories.⁷⁶ The classification system has been criticized as overly simplistic for complex international relations; conversely, intention theory holds as closely as possible to the parties’ original intent at the time that they formed the treaty.⁷⁷ Boelaert-Suominen concluded that, when an MEA does not clearly fit into a particular category, a case-specific analysis of the parties’ intention should decide the matter.⁷⁸

A third set of theories holds that MEA applicability during armed conflict can be based on the context and nature of the agreement. Schmitt identifies a theory of differentiation, which holds that continuance of a treaty during armed conflict depends on the consistency of continuance with the context of the agreement. He reasons that, in the absence of express termination language or clear inconsistency, MEAs continue during armed conflict.⁷⁹ Sharp published a related theory according to which a treaty containing no termination clause may be denounced or withdrawn depending on ‘the nature of the treaty’.⁸⁰ He suggested that,

75 Silja Vöneky, ‘A new shield for the environment: peacetime treaties as legal restraints of wartime damage’, in *Review of European Community & International Environmental Law*, Vol. 9, No. 1, 2000, pp. 20–22; S. Vöneky, above note 50.

76 S. A. J. Boelaert-Suominen, above note 69, pp. 124–226.

77 For a discussion of intention theory, see Luan Low and David Hodgkinson, ‘Compensation for wartime environmental damage: challenges to international law after the Gulf War’, in *Virginia Journal of International Law*, Vol. 35, No. 2, 1995, p. 405. The authors review variations such as analysing the nature of the treaty, the treaty’s compatibility with war, or the number of parties to the treaty as different ways to assess intention.

78 S. A. J. Boelaert-Suominen, above note 69, p. 133.

79 M. N. Schmitt, above note 50, pp. 37–38.

80 Walter G. Sharp, Sr., ‘The Effective Deterrence of Environmental Damage during Armed Conflict: A Case Analysis of the Persian Gulf War’, in *Military Law Review*, Vol. 137, Summer 1992, p. 23.

if the treaty is directed at ‘sovereign’ relations, it should be suspended or terminated during armed conflict. Conversely, a treaty regulating non-military conduct or indirect state interactions should not automatically conflict with a state of hostilities.⁸¹

Another approach is the sliding-scale theory, which reflects a balancing of environmental protection against military mission success.⁸² It expresses an inverse relationship between IEL’s effect and the degree of military operations: when military operations are low-intensity (e.g., during training), environmental laws are in almost full effect, but as the military operations grow the effect of environmental laws lessens. Unfortunately, this approach does not provide concrete explanations or criteria regarding which rules bind a military entity during different types and phases of military engagement.

These lines of argument are not mutually exclusive. A large part of these theories is reflected in the ILC draft articles on the effect of armed conflict on treaties.⁸³

Commentary on the continued applicability of customary IEL in times of conflict

Although customary international environmental law and MEAs are both binding, there may be differences in their application during armed conflict. This distinction may stem in part from the difficulty of determining whether a specific measure is a customary international law and what its precise legal scope is. Most commentators posit that customary IEL applies during armed conflict in a similar manner to MEAs. Citing the ICJ Statute, Parsons emphasized that environmental norms are equally relevant and applicable during armed conflict.⁸⁴

Some support for this argument may be derived from the so-called Martens Clause, which addresses the role of norms, custom, and practice as the law of war develops.⁸⁵ The clause appears in a number of treaty provisions, in particular in the Hague Convention on the laws and customs of war (versions of 1899 and 1907) and in Additional Protocol I of 1977, which are similar in their essential content. They refer to sources of law other than the treaties in which the clause is included. In the 1977 version, the clause reads:

In cases not covered by the present Protocol and other international agreements, civilians and combatants remain under the protection and

81 *Ibid.*, pp. 23–25.

82 John P. Quinn, Richard T. Evans, and Michael J. Boock, ‘United States Navy development of operational–environmental doctrine’, in J. E. Austin and C. E. Bruch, above note 4, pp. 161–165.

83 See ILC, above note 36.

84 Rymn James Parsons, ‘The fight to save the planet: U.S. armed forces, ‘greenkeeping’, and enforcement of the law pertaining to environmental protection during armed conflict’, in *Georgetown International Environmental Law Review*, Vol. 10, No. 2, 1998, p. 482.

85 Rupert Ticehurst, ‘The Martens Clause and the laws of armed conflict’, in *International Review of the Red Cross*, No. 317, 1997, p. 125.

authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.⁸⁶

In the current stage of development of the international community, it is appropriate to subsume the protection of the environment under all three of the sources of protection enumerated in the clause.

Some observers note that particular international environmental principles presently, or may soon, constitute customary IEL. Soft-law instruments are quoted in this respect. One article notes that ‘since [the World Charter for Nature] was adopted by a significant number of States, at the very least the Charter is incorporated in customary international law’.⁸⁷ The question of whether and to what extent resolutions of international organizations can be used as proof of customary international law can in principle be answered affirmatively, but each case has to be analysed on its own merits. The fact that a resolution was adopted by consent and without declarations to the contrary is an important circumstance. In *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, the ICJ based part of its decision on the parties’ consent to a UN resolution. The Court explained that, in the instant case, *opinio juris* – one of the two elements of customary international law – ‘may ... be deduced from, *inter alia*, the attitude of the Parties and the attitude of States towards certain General Assembly resolutions’.⁸⁸ This holding of the Court related to the question of whether and to what extent the so-called Friendly Relations Declaration⁸⁹ and the definition of aggression⁹⁰ adopted by the General Assembly constituted customary international law. If widely accepted UN resolutions may constitute evidence of *opinio juris*, at least some of the soft-law documents previously discussed would be closer to constituting customary international law and becoming binding on all states.

86 Additional Protocol I, Art. 1(2); see also the Preambles of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflict (Additional Protocol II), 8 June 1977, and of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 10 October 1980, as well as the provisions of the four Geneva Conventions of 12 August 1949 on denunciation, Arts. 64/62/142/158.

87 Marc A. Ross, ‘Environmental warfare and the Persian Gulf War: possible remedies to combat intentional destruction of the environment’, in *Dickinson Journal of Environmental Law and Policy*, Vol. 10, 1992, p. 534.

88 ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States)*, Merits, Judgment of 27 June 1986, ICJ Reports 1986, para. 188. In this case, the ICJ found that the US had violated international law by supporting guerrillas in a war against the Nicaraguan government and by mining Nicaragua’s harbours.

89 Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, Annex to General Assembly resolution 2625 (XXV), 24 October 1970.

90 Annex to General Assembly resolution 3314 (XXIX), 14 December 1974.

Remaining questions

The preceding argument has shown that there are a number of approaches for determining when and how IEL applies during armed conflict. Nevertheless, the question is open and there is probably no general and simple answer to it. There is no ICJ decision clarifying the issue, and the ILC draft articles leave questions because they offer a variety of considerations to determine the continued application of treaties during armed conflict. In the meantime, MEAs continue to be negotiated, implemented, and enforced, but many of them similarly fail to provide clarification regarding their application during armed conflict. A remarkable exception is shown by the recent articles elaborated by the ILC on the protection of transboundary aquifers, which contain a specific provision on protection in times of armed conflict.⁹¹ Military manuals of many countries incorporate environmental provisions, yet these tend to focus on the requirements found in IHL. Specific interpretations and practice remain inconsistent. Further analysis and clarification is necessary to make the approaches that have been discussed operational, for example deciding how to implement a sliding scale.

Several general questions of both IHL and IEL have a bearing on the issue discussed in the present article. The first one is the distinction between international and non-international armed conflict. It seems at least plausible that environmental treaties signed by a state on the territory of which a non-international conflict takes place would not be affected by the existence of this conflict. But what if the treaty applies to parts of the territory that are no longer under the control of the governmental party to the conflict? How far can non-compliance with the treaty be justified on the basis of a state of necessity?⁹² Second, the relationship between the rules concerning the continued application of treaties during armed conflict and the law of neutrality remains to be clarified. If the relations between a belligerent and a neutral state in principle continue to be subject to the law of peace alone, do the duties of abstention and impartiality, being essential elements of the law of neutrality, not modify certain obligations flowing from environmental treaties, be they multilateral or bilateral? Third, what is the relationship between MEAs and customary environmental law during armed conflicts? Fourth, what is the relationship between the private law liability for environmental damages and state responsibility for the causation of the same damages? Modern environmental treaties rely to a great extent on private law liability of the private actors involved. Can this solution be maintained in a situation of armed conflict? Finally, there is the general question regarding the relationship between different MEAs that overlap in certain instances. Whatever answer is given to the question in general, is it the same for the situation of peace and for that of an armed conflict?

91 Article 18 Draft articles on the law of transboundary aquifers, ILC, *Report of the International Law Commission*, 60th session, 5 May–6 June and 7 July–8 August 2008, GOAR A/63/10, Ch. V, p. 19.

92 See ILC, above note 40, Art. 25.

This article has attempted to address the question of *whether* IEL continues to apply during armed conflict. The subsequent questions, which remain unanswered, are *when* and *how* it might apply in specific circumstances. For example, if area-based agreements such as the World Heritage Convention and the Ramsar Convention continue to apply, they might protect specified areas in the absence of military necessity. Although the protection offered might be limited, it is a relatively clear application. Conversely, consider the Convention on International Trade of Endangered Species of Wild Flora and Fauna (CITES) in the context of conflict resources.⁹³ If the agreement continued to apply, would it spur states receiving such goods to take action against the country of origin, if it were party to CITES? To what effect? How might the analysis change if rebels are engaging in the trade in CITES-listed species? Alternatively, the effect of MEAs may be to create a basis for providing assistance in certain circumstances; or to provide a framework of standards and methodologies, for example for conducting environmental assessment or remediation in conflict contexts (as the UN Compensation Commission borrowed peacetime environmental methodologies for assessing and valuing natural resource damages). These are but some of the questions and scenarios that arise when considering the practical effect and import of IEL during armed conflict.

None of these questions have clearly defined answers, and all involve significant considerations that must be carefully balanced.

Conclusions

Significant efforts to protect the environment during armed conflict began in the 1970s, mainly in response to events that had taken place during the Vietnam War; there was a resurgence of international attention to the issues following the deliberate oil fires and spills during the 1990–1991 Gulf War. However, the framework that has developed over the past four decades contains numerous gaps and ambiguities.

Although IHL reacted very soon after the development of a broad environmental awareness in the late 1960s, three key gaps or deficiencies remain:

- the regrettably narrow, but also unclear definition of impermissible environmental damage in the provisions explicitly addressing environmental protection during armed conflict;
- unsatisfactory protection of the elements of the environment as civilian objects owing to the easy transformation of such elements into military objectives; and
- doubts as to the practical application of the principle of proportionality to environmental damage, which is so-called collateral damage resulting from attacks against military objectives.

93 Convention on International Trade of Endangered Species of Wild Flora and Fauna, 3 March 1973, 993 UNTS 243.

This article has shown a few ways in which these deficiencies can be remedied. It has also explored the chances that could be provided by a continued application of international environmental law, created essentially for the situation of peace, during armed conflict. In this respect, too, major uncertainties remain.

More clarity regarding the extent of environmental protection during armed conflict is necessary. Some questions (such as how various provisions of IEL apply during armed conflict) require additional research. Others (such as the threshold for ‘widespread, long-term and severe’ under Articles 35 and 55 of Additional Protocol I) require international action. Belligerents are also called upon to address some of the existing deficiencies on a case-by-case basis through mutual agreement, and the UN Security Council can play a role in this regard. Despite the doubts and challenges discussed above, it appears that international law continues to maintain the concern for future generations – which is the essence of environmental law – in times of war.

Law-making at the intersection of international environmental, humanitarian and criminal law: the issue of damage to the environment in international armed conflict

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Abstract

The relationship between international environmental law and international humanitarian law, like relationships between many other subsystems of contemporary international law, has not yet been articulated. The problem of environmental damage in international armed conflict lies at the intersection of these two branches and thus provides an ideal opportunity to investigate this relationship. Rather than simply evaluating the applicable international law rules in their context, we break them into elements that we separately assess from both (international) environmental law and international humanitarian/international criminal law perspectives. By doing so, we identify how international law rules for cross-sectoral

problems may appropriately combine the existing expertise and institutional strengths of simultaneously applicable branches of international law, and also discover how an evaluation of the ultimate appropriateness of the cross-sectoral rules adopted may be substantially affected by the different frames of reference that are used by those working within the different fields.



International law's responses to the radical changes that international society has undergone since World War II have been well documented. With each new area of international life created by increased global interaction and groundbreaking technological developments,¹ a new branch of international law has been spawned. Refugee and international migration law for the ever growing number of individuals traversing national borders, international trade law for the increasingly complex web of international trade relations, space law and international aviation law for new atmospheric frontiers. These branches are but a few among many.

The creation of new, specialized subsystems of international law for new areas of international relations was not only politically more feasible than, for example, expanding the scope and resources of pre-existing general international law but also offered the clear advantage of dedicated institutions, legal instruments, and tribunals generally better suited to the regulation of new areas of international activity, particularly those that are sufficiently technical to require of their practitioners considerable scientific knowledge. Classical, general international law could not necessarily accommodate such specialized fields. As noted by the International Law Commission's Special Rapporteur on the Fragmentation of International Law, Martti Koskenniemi, '[v]ery often new rules or regimes develop precisely in order to deviate from what was earlier provided by the general law'.²

Recently, however, this proliferation of subsystems, and particularly of courts and tribunals, has caused some concern among scholars of international law.³

1 See Barry Jones, *Globalization and Interdependence in the International Political Economy: Reality and Rhetoric*, Pinter, London and New York, 1995, pp. 11–15; Sheila Croucher, *Globalization and Belonging: The Politics of Identity in a Changing World*, Rowman & Littlefield, Lanham, 2004, p. 10; Simon Reich, *What is Globalization? Four Possible Answers*, Helen Kellogg Institute for International Studies at the University of Notre Dame, Working Paper No. 261, December 1998, available at: <http://kellogg.nd.edu/publications/workingpapers/WPS/261.pdf> (last visited 7 September 2010).

2 International Law Commission (ILC), *Report of the Study Group on Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, 18 July 2006, UN Doc. A/CN.4/L.702, para. 10.

3 Certain judges of the International Court of Justice (ICJ) were particularly prominent in raising this concern. Former ICJ Judge Oda, in particular, was unambiguous in his 1980s criticism of the ICJ chambers procedure (Shigeru Oda, 'Further thoughts on the chambers procedure of the International Court of Justice', in *American Journal of International Law (AJIL)*, Vol. 82, 1988, pp. 556–562) and was somewhat more aggressive in his 1990s critique of the International Tribunal for the Law of the Sea (Shigeru Oda, 'The International Court of Justice and the settlement of ocean disputes', in *Collected Courses of the Hague Academy of International Law*, Vol. 244, 1993, pp. 127–155). A wider range of

Many participants in the fragmentation debate that has dominated much of international law theory over the last ten to fifteen years have expressed concern about different international jurisdictions competing or arriving at inconsistent interpretations of the norms and principles they consider as the common core of the discipline and call 'general international law', the internal cohesiveness of which they wish to retain.⁴

The now abundant literature on the relationship between public international law and the World Trade Organization (WTO) system for multilateral trade, for example, underscores the tendency to focus on what can be seen as *diagonal* interactions between general international law and subsystems of international law.⁵ What appear to have largely escaped scholarly attention (at least in relative terms) are the *horizontal* interactions between subsystems of international law.⁶ As international activity intensifies and becomes increasingly specialized, branches of international law are becoming not only more numerous but also more significant. A result of this broadening and deepening of international law is that the relative importance of general international law is declining, such that these diagonal overlaps between a subsystem of international law on the one hand, and general international law on the other, are becoming relatively less likely to occur.

fragmentation issues was then discussed at several conferences in the late 1990s, including a 1995 American Society of International Law (ASIL) forum, the Fourth EC/International Law Forum of 1997, and a 1998 New York University/PICT symposium. For proceedings, see Laurence Boisson de Chazournes (ed.), *Implications of the Proliferation of International Adjudicatory Bodies for Dispute Resolution*, ASIL, 1995; Malcolm Evans (ed.), *Remedies in International Law: The Institutional Dilemma*, Hart Publishing, Oxford, 1998; and *New York University Journal of International Law and Politics*, Vol. 31, No. 4, 1999, respectively.

- 4 See e.g. Pierre-Marie Dupuy, 'L'unité de l'ordre juridique international: cours général de droit international public', in *Recueil des cours*, Vol. 297, Hague Academy of International Law, 2002. With regard to potentially diverging interpretations of different international courts and tribunals see, in particular, Gilbert Guillaume, *The Proliferation of International Judicial Bodies: The Outlook for the International Legal Order*, Speech to the Sixth Committee of the UN General Assembly, 26 October 2000, press release available at: <http://www.icj-cij.org/presscom/files/9/3069.pdf> (last visited 10 September 2010). See further Rosario Huesa Vinaixa and Karel Wellens (eds), *L'influence des sources sur l'unité et la fragmentation du droit international*, Bruylant, Brussels, 2006.
- 5 See e.g. the now abundant literature on the openness of the World Trade Organization (WTO) system to public international law, including, for example, Gabrielle Marceau, 'A call for coherence in international law: praises for the prohibition against "clinical isolation" in WTO dispute settlement', in *Journal of World Trade*, Vol. 33, 1999, pp. 87–152; Joost Pauwelyn, 'The role of public international law in the WTO: how far can we go?', in *AJIL*, Vol. 95, 2001, pp. 535–578; Lorand Bartels, 'Applicable law in WTO dispute settlement proceedings', in *Journal of World Trade*, Vol. 35, No. 3, 2001, pp. 499–519; Markus Böckenförde, 'Zwischen Sein und Wollen: über den Einfluss umweltvölkerrechtlicher Verträge im Rahmen eines WTO Streitbelegungsverfahrens', in *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht*, Vol. 63, 2003, pp. 971–1005.
- 6 Gunther Teubner's theoretical writings focusing on private international law are the main exception. Indeed, in 1992 he had already predicted that should 'the law of a global society become entangled within sectoral interdependences, a wholly new form of conflicts law will emerge; an "intersystemic conflicts law," derived not from collisions between the distinct nations of private international law, but from collisions between distinct global social sectors'. Gunther Teubner, *Law as an Autopoietic System*, Blackwell, Cambridge MA, 1993, p. 100. See further Julian Wyatt, *Beyond Fragmentation: WTO Jurisprudence, Environmental Norms and Interactions Between Subsystems of International Law*, Graduate Institute of International and Development Studies, Geneva, 2008.

The incidence of horizontal, subsystem–subsystem overlaps is, by contrast, only increasing both in absolute and relative terms. Not only is international law producing ever more, ever stronger branches, but the international problems deserving of international law’s attention are also increasingly complex and thus ever more likely to traverse the artificial bounds of the different subsystems of contemporary international law.

The theme of environment and armed conflict provides an ideal opportunity to visit a particular species of this horizontal interaction between subsystems of international law. International humanitarian law, which prescribes rules and standards for the conduct of armed conflict, and international environmental law, which consists of rules and principles aimed at the protection of the natural environment, overlap in certain specific areas. Such interactions raise various issues. For example, which branch’s rules will apply? If no rules are in existence, in which subsystem of international law should the international legal problem be addressed? Then, in formulating those rules, should the international community be guided by the normative and institutional approaches of one system, or those of the other, or even of a mixture of the two? Where there is an actual or potential conflict in the internal logic or ideology behind each system, how should such conflicts be mediated?

The present article seeks to explore such issues through the consideration of the international legal response to the key problem that occurs at the intersection of international humanitarian and international environmental law: environmental damage in international armed conflict. After setting out, in the first part of the article, the nature of the problem of such damage and the branches of international law that might be suited to regulating it, we then discuss how the international community has in fact dealt with this problem. Having thus identified the current international legal regime applying to wartime environmental damage, we will endeavour to analyse its specific elements in terms of how they manage the interaction of the two main branches of international law applicable to the problem. Finally we make some conclusions as to how the present-day regime for wartime environmental damage might be viewed from the different perspectives of the two branches of international law concerned, and what this example of a cross-sectoral international legal problem says about the relationship between subsystems of contemporary international law.

The cross-sectoral problem of wartime environmental damage

Serious and intentional damage to the natural environment in the context of armed conflict – what I have for the sake of convenience decided to refer to as ‘wartime environmental damage’ – is, like war itself, regrettably no novelty in the history of humankind. Early examples of such environmental warfare can be found in the ancient strategy of ‘salting the earth’, said to have been carried out as early as 1290 BC by the Assyrians in Mitanni and, most famously, though perhaps

apocryphally, by Roman legions around Carthage in the Third Punic War of 149–146 BC.⁷

The deliberate use of environmental destruction in armed conflict is, however, much more prevalent in modern history, appearing largely as part of the ‘total warfare’ strategies periodically used since the French Revolution.⁸ Many such acts involve large-scale burning and have therefore been frequently termed ‘scorched earth’ tactics. As in ancient history, armies have resorted to such methods both to punish (or alternatively to hamper the war effort of) their enemies and to protect themselves against invasion. Examples of the aggressive method include both sides’ widespread destruction of vast agricultural areas in China’s enormously bloody Taiping Rebellion (1850–1864), as well as Unionist General Sherman’s ‘March to the Sea’ and General Sheridan’s ‘burning’ of the Shenandoah Valley in the American Civil War.⁹ Defensive scorched earth policies include those carried out by both Portugal and Russia to resist advancing French armies in the Napoleonic Wars; Boer forces’ burning of grasslands in the Second Anglo-Boer War; and those planned, but never put into effect, during World War II, by the Australian government in the event of a Japanese land invasion, as well as Hitler’s notorious ‘Nero order’ to Albert Speer to raze the whole of Germany before the arrival of Allied Forces.¹⁰

In the period following World War II, armies moved beyond simple ‘scorched earth’ tactics to a more sophisticated and arguably more sinister species of environmental destruction, exemplified by the US bombing of Korean dams in the Korean War of 1950–1953 and, most significantly, by the array of environmental modification techniques carried out by the US military between 1961 and 1971 as part of the Vietnam War.¹¹ Far from simply setting ablaze Vietnamese jungle in which the Vietcong were hiding (though this was also carried out with the incendiary weapon Napalm),¹² from 1961 the United States began spraying twelve million gallons of highly toxic chemical agents over more than six million acres of

7 Jay E. Austin and Carl E. Bruch (eds), *The Environmental Consequences of War*, Cambridge University Press, Cambridge, 2000, p. 1. For a text disputing the veracity of this account, see Ronald Ridley, ‘To be taken with a pinch of salt: the destruction of Carthage’, in *Classical Philology*, Vol. 81, No. 2, 1986, pp. 140–146.

8 See e.g. David A. Bell, *The First Total War: Napoleon’s Europe and the Birth of Warfare as We Know It*, Houghton Mifflin Company, Boston, 2007.

9 Jacques Reclus, *La révolte des Tai-Ping: prologue de la Révolution chinoise*, Le Pavillon, Paris, 1972, p. 234; James M. McPherson, ‘From limited war to total war in America’, in Stig Förster and Jörg Nagler (eds), *On the Road to Total War: The American Civil War and the German Wars of Unification, 1861–1871*, Cambridge University Press, Cambridge, 2002, pp. 295–310.

10 Bill Nasson, ‘Waging total war in South Africa: some centenary writings on the Anglo-Boer War, 1899–1902’, in *Journal of Military History*, Vol. 66, No. 3, July 2002, pp. 813–828; Ralf Blank, ‘Die Kriegsendphase an Rhein und Ruhr 1944/45’, in Bernd-A. Rusinek (ed.), *Kriegsende 1945. Verbrennen, Katastrophen, Befreiungen in nationaler und internationaler Perspektive*, Wallstein Verlag, Göttingen, 2004, pp. 88–124. See generally William Thomas, *Scorched Earth*, New Society Publishers, Philadelphia, 1995.

11 See e.g. Asit K. Biswas, ‘Scientific assessment of long-term environmental consequences’, in J. E. Austin and C. E. Bruch, above note 7, p. 307.

12 Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2004, p. 5.

crops and trees in an effort to preclude the growth of groundcover,¹³ and even endeavoured to influence weather patterns for military advantage by engaging in cloud seeding.¹⁴ Then, during the 1980s Iraq–Iran war, Iraqi bombers targeted Iranian oil installations in the Nowruz offshore field, sending enough smoke into the atmosphere to partially block out the sun for days and enough oil into the Red Sea to create a slick of 12,000 square miles, with catastrophic consequences for wildlife, including endangered species in that region.¹⁵

The end of the cold war did not spell the end of environmental methods of warfare. In the Gulf War of 1990–1991, Iraqi soldiers are said to have detonated approximately 720 Kuwaiti oil wells, with the intention of setting them alight and creating a thick smoke hazard, and also pumped enormous quantities of Kuwaiti oil into the Red Sea.¹⁶ Then, in the context of the intervention in Kosovo, NATO forces are alleged to have intensively bombed a petrochemical plant, nitrogen-fertilizer-processing factory, and oil refinery at Pančevo on the eastern bank of the Danube river.¹⁷ One of the severe environmental consequences of the alleged bombing was the leaking of large quantities of various toxic chemicals into the Danube river, which was connected to the facilities via a 1,800-metre artificial canal.¹⁸ After significant oil spills in the Iraq war beginning in 2003 and the Israel–Lebanon conflict of 2006, fuel stations and tanks were routinely targeted during Israel’s military operations in Gaza in December 2008–January 2009, severely contaminating soils and potentially contaminating groundwater with rainfall.¹⁹ Other recent environmental consequences of warfare include the damage done by fire after the use of white phosphorus in particular, as well as countless instances of water and land contamination, including the spillage of 100,000 cubic metres of mostly untreated wastewater and sewage sludge over 55,000 square metres of agricultural land in Gaza after damage to the Az Zaitoun wastewater treatment plant in December 2008.²⁰

13 J. E. Austin and C. E. Bruch, above note 7, p. 1; K. Hulme, above note 12, p. 5.

14 J. E. Austin and C. E. Bruch, above note 7, p. 2; K. Hulme, above note 12, pp. 11 and 73.

15 See Elisabeth Mann-Borgese, ‘The protection of the marine environment in the case of war’, in René-Jean Dupuy (ed.), *L’avenir du droit international de l’environnement/The Future of the International Law of the Environment*, Colloque, La Haye, 12–14 November 1984, Martinus Nijhoff, Dordrecht, 1985, pp. 105–106.

16 Samira Omar, Ernest Briskey, Raafat Misak, and Adel Asem, ‘The Gulf War impact on the terrestrial environment of Kuwait: an overview’, in J. E. Austin and C. E. Bruch, above note 7, pp. 321–322. Such incidents prompted comment from the United Nations General Assembly: see UN General Assembly Resolution 47/37 (1992).

17 Details of the environmental effects of the NATO bombing campaign can be found in the Yugoslavian Application and Yugoslavian Memorial dated 5 January 2000 in ICJ, *Case Concerning Legality of Use of Force (Yugoslavia v. Belgium, Canada, France, Germany, Italy, Netherlands, Portugal and United Kingdom)*, ICJ Reports 1999. The allegations were never tested because the case never got to the merits, separate proceedings against all defendants being dismissed after preliminary objections for want of jurisdiction.

18 See K. Hulme, above note 12, p. 188.

19 United Nations Environment Programme (UNEP), *Environmental Assessment of the Gaza Strip Following the Escalation of Hostilities in December 2008–January 2009*, Nairobi, UNEP, 2009, pp. 30–31.

20 *Ibid.*, p. 34.

As has already been indicated, at least two separate branches of public international law are potentially applicable to cross-sectoral situations such as those described immediately above: international environmental law and international humanitarian law.

International environmental law

International society only came to speak of the disciplines of international environmental law and environmental law on the domestic level after the conceptualization of 'environment', principally in the 1960s. However, while international and domestic environmental law have witnessed considerable development since this time, this does not mean to say that their rules and principles do not have their origin in earlier sources. Indeed, there is evidence of laws to protect the environment in even some of the most ancient civilizations. The Mesopotamian state of Ur, for example, declared laws against deforestation around 2700 BC, and the Indian King Ashoka enacted, around 250 BC, a law for the protection of various animal species. Then, in the early industrial period, legal action started being taken against environmental damage. As early as 1739, Benjamin Franklin petitioned the Pennsylvania Assembly to act against the tanneries of Philadelphia for the local pollution they were causing. By the mid-nineteenth century, courts of the world's first country to industrialize on a grand scale, Great Britain, were receiving numerous claims for damage suffered as a result of progressively larger-scale and more intensive industrial processes. In the absence of any notion of 'environment' at that stage, these problems were dealt with on the basis of existing common law torts and rules of nuisance, trespass to goods, the enjoyment of property and the action of scienter, which has its unlikely origin in the harm caused to another by a defendant's dangerous animal.

In England, a general notion that each subject of the law is free to do as he or she wishes in his or her own territory, but will be responsible and required to pay compensation if his or her activity results in damage to someone else or someone else's property, has been applied at least since the famous 1868 case of *Rylands v. Fletcher*, in which this general principle was crystallized and applied to the actions of a farmer who, in filling up his dam before closing off some disused mine shafts, managed to flood his neighbour's interconnected mines.²¹ The domestic law systems of other countries that industrialized through the nineteenth century also had damage liability provisions capable of dealing with what were increasingly prevalent instances of environmental damage. For example, the Prussian General Land Law of 1794 had provisions to support the clearly stated principle that

21 'We think that the true rule of law is, that the person who, for his own purposes, brings on his land and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril; and if he does not do so, is *prima facie* answerable for all the damage which is the natural consequence of its escape' (Justice Blackburn in *Fletcher v. Rylands*, LR 1 Ex 265 (Exchequer Chamber, 1866), cited approvingly in UK House of Lords, *Rylands v. Fletcher*, judgment of Lord Cairns, 3 HL 330, (1868) LR 3 HL 330, [1868] UKHL 1 (17 July 1868)).

‘whoever impedes another’s exercise of his rights, offends him and is responsible for all damage and detriment arising from this’,²² a position later written into the German civil law (*Bundesgesetzbuch*).²³ In the United States, the Latin maxim, *sic utere tuo ut alienum non laedas* (one must so use his own as not to do injury to another), any Roman origins of which are more than questionable,²⁴ was frequently invoked in what would be now called environmental damage cases as a derivation from, and legal equivalent of, Christianity’s golden rule.²⁵

When industry reached a sufficiently large scale to have transboundary environmental impacts, the law of environmental damage stepped onto the terrain of international law. Yet it was not in any public international law, nor specifically environmental context, that the first key cases of transboundary environmental damage were decided. The ground-breaking *Trail Smelter* arbitration of 1938–1941, generally regarded as the first international environmental law case and the key judicial contribution to international law on liability for loss or damage,²⁶ was in fact decided against the background of domestic law on the compensation for damage to another’s property described above. The dispute between Canada and the United States (US) centred on the emissions from an enormous zinc and lead smelter in southern British Columbia, the fumes of which damaged farms, orchards, and timberlands more than seven miles across the border in the US state of Washington. Crucially, the agreement between the United States and Canada establishing the arbitral tribunal permitted it to apply not only ‘international law and practice’ but also ‘the law and practice followed in dealing with cognate questions in the United States of America’.²⁷ Noting the absence of any sufficient international law on the matter, the arbitral tribunal in fact applied liability principles from US tort law in support of its finding that Canada was responsible for the transboundary environmental damage caused by the smelter and would be required to pay reparations to compensate for that damage.²⁸

The international law principle that a state should not use its territory in such a way as to cause damage to another state’s territory was subsequently confirmed in a more general context by the International Court of Justice (ICJ),²⁹ and

22 *Allgemeines Landrecht für die Preußischen Staaten* (1794), para. 93: ‘Wer den andern in der Ausübung seines Rechts hindert, beleidigt denselben, und wird ihm, für allen daraus erwachsenen Schaden und Nachtheil, verantwortlich’ (present author’s translation).

23 *Bundesgesetzbuch* (German Civil Code), esp. para. 823: ‘Schadensersatzpflicht’, and para. 826: ‘Sittenwidrige vorsätzliche Schädigung’.

24 See Johan Gerrit Lammers, *Pollution of International Watercourses*, Martinus Nijhoff Publishers, The Hague, 1984, p. 570.

25 See Mark B. Greenlee, ‘Echoes of the Love command in the halls of justice’, in *Journal of Law and Religion*, Vol. 12, No. 1, 1995, pp. 255–270.

26 See e.g. Alan Boyle, ‘Globalising environmental liability: the interplay of national and international law’, in *Journal of Environmental Law*, Vol. 17, 2005, pp. 3–26.

27 *Convention for Settlement of Difficulties Arising from Operation of Smelter at Trail, B.C.*, U.S. Treaty series No. 893, signed at Ottawa, 15 April 1935; ratifications exchanged 3 Aug. 1935, Art. IV.

28 ‘Trail smelter arbitration (United States v Canada)’, 1938, in *Reports of International Arbitral Awards* (RIAA), Vol. 3, 16 April 1938 and 11 March 1941, esp. p. 1920; and ‘Trail smelter arbitration (United States v Canada)’, 1941, in RIAA, Vol. 3, 16 April 1938 and 11 March 1941, pp. 1947ff.

29 ICJ, *Corfu Channel Case (UK v. Albania)*, Merits, Judgment of 9 April 1949, ICJ Reports 1949, p. 4.

has since become one of the key tenets of the new discipline of international environmental law.³⁰ It is regarded by respected international jurists as the sole environmental principle that has without doubt crystallized into customary international law³¹ and is ‘sufficiently well-established to provide the basis for an international cause of action’.³²

Cases of transboundary environmental damage aside, international environmental law did not exist until well after World War II. A relatively young discipline, it has its origins in the post-World War II efforts of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and, more significantly, in the environmentalist movement of the 1960s and 1970s. It is an oft-forgotten fact that even though, upon its formation, the founding fathers of the United Nations (UN) could not have intended the organization to take on an environmental protection role,³³ organs of the UN were already heading in this direction in the 1950s. One of the four specialized agencies under the aegis of the UN’s Economic and Social Council, UNESCO had been created in 1945 as a forum of intellectuals and scientists with the aim of increasing international co-operation through the promotion of education, science, and culture in UN member states.³⁴ As early as its second session, in 1947, UNESCO launched an International Conference on the Protection of Nature, and in 1948 a conference at Fontainebleau under its guidance saw the creation of the International Union for the Conservation of Nature, the world’s first international environmental organization and a key participant in many areas of contemporary environmental law.³⁵

However, it was the UN General Assembly, which had become increasingly active in the 1960s as a result of the addition of a number of post-colonial UN member states, that placed environmental protection firmly on the agenda of the international community. It did so in the context of the burgeoning environmental movement of this time, the geographical spread and political intensity of which was most probably the chief cause of the speed with which international society and international law established an environmental branch. In 1962, the *New York*

30 ‘Trail smelter’, above note 28, p. 1965. See further Franz X. Perrez, ‘The relationship between “permanent sovereignty” and the obligation not to cause transboundary environmental damage’, in *Environmental Law*, Vol. 26, 1996, pp. 1187–1212.

31 See ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, ICJ Reports 1996, para. 29. See further André Nollkaemper, ‘Sovereignty and environmental justice in international law’, in Jonas Ebbeson and Phoebe Okowa (eds), *Environmental Law and Justice in Context*, Cambridge University Press, Cambridge, 2009, pp. 253–269.

32 See e.g. Philippe Sands, *Principles of International Environmental Law*, 2nd edition, Cambridge University Press, Cambridge, 2003, pp. 236–237.

33 Kofi A. Annan, United Nations Department of Public Information, and United Nations Secretary-General, ‘*We the Peoples: The Role of the United Nations in the 21st Century*’, United Nations Department of Public Information, New York, 2000, para. 254, available at: <http://www.un.org/millennium/sg/report/full.htm> (last visited 10 September 2010).

34 *Constitution of the United Nations Educational, Scientific and Cultural Organization*, 16 November 1945, entered into force on 4 November 1946, preamble, available at: http://www.unesco.org/education/information/nfsunesco/pdf/UNESCO_E.PDF (last visited 10 September 2010).

35 See e.g. *Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)*, opened for signature 3 March 1973, entered into force 1 July 1975, 993 UNTS 243.

Times had published extracts of Rachel Carson's famous book on the harmful impact of DDT on birds, *Silent Spring*, a book that garnered substantial attention for environmental causes, particularly in the US. Then, in 1967, the oil tanker *Torrey Canyon* ran aground, discharging 120,000 tons of crude oil into the sea near the British coast and awakening the European population in particular to the prospect of large-scale environmental disasters. Against the backdrop of the social upheavals of 1968, in which many protesters also attacked the so-called 'out of control' growth of population and consumption, the General Assembly adopted, on the recommendation of UNESCO, a resolution to organize a UN Conference on the Human Environment³⁶ which took place in June 1972 in Stockholm – the birthplace of international environmental law.

It should be noted that, despite its rapid evolution since the 1970s, international environmental law has taken a different route in respect of environmental damage to that taken by its domestic law counterpart. Whereas most domestic environmental law systems have gone on to mandate unambiguously that compensation be paid in the event of environmental damage, international environmental law has been far more equivocal as regards the payment of compensation for damage and has instead focused on somewhat vague principles of prevention and precaution. While an obligation to pay reparations would usually be attached to any violation of the well-established *sic utere tuo ut alienum non laedas* environmental damage rule as a matter of general international law,³⁷ it is interesting to note that the main international environmental law expressions of this principle, including Principles 21 and 2 of the Stockholm and Rio declarations respectively,³⁸ as well as the International Law Commission's 2001 draft articles on the 'Prevention of Transboundary Harm from Hazardous Activities',³⁹ do not speak of *ex post facto* liability, but instead place their emphasis on pre-damage prevention. There are, of course, countless instances of international practice where compensation has in fact been paid for environmental damage,⁴⁰ and others have pointed to

36 UN General Assembly Resolution 2398 (XXIII), 3 December 1968, 'Problems of the Human Environment'.

37 'Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries', text adopted by the ILC at its fifty-third session, 2001, in *Yearbook of the International Law Commission*, Vol. II, 2001, Part Two.

38 'States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction' (*Declaration of the United Nations Conference on the Human Environment*, 16 June 1972, 1972 UNYB 319, 11 ILM 1416 (1972) ('Stockholm Declaration'), Principle 21); and *Rio Declaration on Environment and Development*, Report of the UN Conference on Environment and Development, Annex I, 12 August 1992, UN Doc. A/ Conf. 151/26, Vol. I, Principle 2.

39 Text adopted by the ILC at its fifty-third session, 2001, and submitted to the General Assembly as a part of the Commission's report covering the work of that session. The report, which also contains commentaries on the draft articles, appears in Official Records of the General Assembly (GAOR), Fifty-sixth Session, Supplement No. 10 (A/56/10), in *Yearbook of the International Law Commission*, Vol. II, 2001, Part Two.

40 Goldblat even finds such practice that pre-dates the birth and codification of international environmental law, with examples including the United States' payment of compensation to Japan for the effects

the growing recognition for the application of the payment aspect of the ‘polluter pays’ principle at an international level.⁴¹ However, thorough analyses of state practice have revealed that a state’s payment of compensation for its breach of the ‘soft responsibility’⁴² obligation not to cause environmental damage is the exception rather than the norm.⁴³

It can therefore be concluded that contemporary international environmental law focuses more on prevention before the fact than the distribution of justice after the fact of environmental damage. Prevention is the main strategy adopted by countless prominent international environmental law instruments adopted since the Stockholm Conference, including the wildly successful Vienna Convention/Montreal Protocol regime for the protection of the ozone layer⁴⁴ and the universally known, even if somewhat less successful, Framework Convention and Kyoto Protocol in respect of anthropogenic emissions that contribute to global climate change.⁴⁵ Such a focus on prevention in the environmental context (as opposed to a financial context, for example) is understandable when, as pointed out by the ICJ in the *Gabčíkovo-Nagymaros Case*, one notes the ‘limitations inherent in the very mechanism of reparation of this type of damage’.⁴⁶ Indeed, the practical difficulties of *ex post facto* compensation for environmental harm are compounded at the international level, where international dispute resolution is not as suited to dealing with problems of proof and the calculation of damages as its domestic equivalents.⁴⁷

of radioactive fallout from a nuclear explosion it set off in the Pacific in 1954 (though the payment to the crew of the *Lucky Dragon* was technically made *ex gratia*, i.e. without admitting responsibility) and to Spain for the radioactive contents of hydrogen bombs that accidentally fell from a US bomber over Palomares, Spain, in 1966, damaging crops and fields. Jozef Goldblat, ‘The environmental warfare convention: how meaningful is it?’, in *Ambio*, Vol. 6, No. 4, 1977, pp. 216–221.

- 41 See Rio Declaration, above note 38, Principle 16. See also Hans Christian Bugge, ‘The polluter pays principle: dilemmas of justice in national and international contexts’, in J. Ebbeson and P. Okawa, above note 31, pp. 411–428.
- 42 See Alexandre Kiss, ‘Present limits to the enforcement of state responsibility for environmental damage’, in Francesco Francioni and Tullio Scovazzi, *International Responsibility for Environmental Harm*, Graham & Trotman, London, 1991, pp. 3–14.
- 43 Benedetto Conforti, ‘Do states really accept responsibility for environmental damage?’, in F. Francioni and T. Scovazzi, above note 42, pp. 179–180.
- 44 *Vienna Convention on the Protection of the Ozone Layer*, opened for signature 22 March 1985, 1513 UNTS 293, entered into force 22 September 1988; *Montreal Protocol on Substances that Deplete the Ozone Layer*, opened for signature 16 September 1987, 1522 UNTS 3, entered into force 1 January 1989.
- 45 *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 31 ILM 854 (1992), entered into force 21 March 1994; *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 11 December 1997, 37 ILM 22, entered into force 16 February 2005.
- 46 ICJ, *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment of 25 September 1997, ICJ Reports 1997, p. 78, para. 140. Cited approvingly in ICJ, *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment of 20 April 2010, para. 185.
- 47 See Christian von Bar and Joachim Schmidt-Salzer (eds), *Internationales Umwelthaftungsrecht II: Tagung des Instituts für Internationales Privatrecht und Rechtsvergleichung des Fachbereichs Rechtswissenschaften der Universität Osnabrück am 8. und 9. April 1994 in Osnabrück*, C. Heymann, Köln, 1995, p. 229. The difficulties encountered by the ICJ when dealing with the proof of environmental damage in the recent *Pulp Mills on the River Uruguay* case support this view. See ICJ, *Pulp Mills case*, above note 46.

Nevertheless, the fact that the international environmental law system generally stops at prevention and does not go on to prescribe detailed consequences for violation, as its domestic counterparts do, is perhaps indicative of some weakness in this still young and underdeveloped field of law. Relative to other subsystems of international law, international environmental law places considerable reliance on soft law norms and principles rather than hard norms of customary or treaty law, lacks capable institutional backing (the funding problems at the United Nations Environment Programme are well documented), and suffers from problems with enforcement.

It would be all too easy to attribute the fact that, as we will see, the bulk of the rules on wartime environmental damage were not developed in the international environmental law field to such weaknesses in the structure and form of international environmental law. However, this would ignore the fact that the nature of the subject matter of international environmental law itself often prevents it from claiming ownership to certain areas of international law properly falling within its ambit. Indeed, those who appear to forget or even explicitly deny the existence of international environmental law as a separate branch of international law generally do so on the basis that other areas of international law are often capable, perhaps even more capable, of dealing with environmental problems than the norms and principles belonging to international environmental law itself. Malgosia Fitzmaurice, for example, once went so far as to say that international environmental law is merely a subspecies of state responsibility law,⁴⁸ thereby implying that the sophisticated preventative machinery international environmental law has developed in respect of a range of international environmental problems can be largely ignored. Others may point to the fact that the environmental chamber of the ICJ has not yet been used or that the majority judgment even in one of the more famous environmental cases that has come before the ICJ, the *Gabčíkovo-Nagymaros Case*, arguably just paid lip service to international environmental law rules and principles while arriving at its findings on the substantive legal questions through a methodical application not of international environmental law rules or principles but of the dictates of treaty law and state responsibility law.⁴⁹ However, all of this does not serve to show that international environmental law, most appropriately defined as the set of rules and principles aimed at the protection of the natural environment,⁵⁰ does not exist, but merely that it rarely, if ever, exists in isolation, hermetically sealed off from the application of other branches of international law. After all, as noted in the introductory part of

48 Malgosia Fitzmaurice, 'International environmental law as a special field of international law', in *Diversity in Secondary Rules and the Unity of International Law: Special Volume Marking the 25th Anniversary of the Netherlands Yearbook of International Law*, 1994, p. 209.

49 See ICJ, *Gabčíkovo-Nagymaros case*, above note 46.

50 For the main elements of definition for international environmental law, see Laurence Boisson de Chazournes, Richard Desgagné, Makane Mbengue, and Cesare Romano, *Protection internationale de l'environnement*, 2nd edition, Pedone, Paris, 2005, p. 1; Patricia Birnie and Alan Boyle, *International Law and the Environment*, 2nd edition, Oxford University Press, Oxford, 2002, pp. 1–2; and P. Sands, above note 32, p. 15.

this article, contemporary international problems are often of such complexity that it is almost inconceivable that one of the many other branches of modern-day international law would not apply simultaneously with international environmental law in relation to an international environmental issue, a fact borne out in recent practice before international courts and tribunals where prominent international environmental law cases overlap with everything from the law on the use of force⁵¹ to international trade law⁵² and human rights law.⁵³

It is for this reason that serious practitioners of international environmental law must bring to their work knowledge not just of general international law but also of a range of other areas of international law. For environmental damage in the marine environment, law of the sea is likely to be relevant,⁵⁴ and where environmental damage is caused by a foreign investor, investment law will almost certainly come into play.⁵⁵ If environmental damage occurs in the context of armed conflict, international humanitarian law and potentially also international criminal law will obviously need to be addressed. It is to the latter interaction that we will devote our attention for the remainder of this article.

International humanitarian law

In the present publication, a general introduction to international humanitarian law is unnecessary, but a few remarks as to how environmental damage may come within its scope should be helpful. The first instruments of international humanitarian law were motivated by the principle of humanity and thus, at least from an environmental law point of view, were highly anthropocentric. However, while the focus of early international humanitarian law was on minimizing direct causes of human suffering among participants in armed conflict, the discipline itself was never restricted in such a way. Indeed, international humanitarian law has its foundations in general exhortations of the Martens clause and, originally, in the call of the International Committee of the Red Cross (ICRC)'s founder, Henry Dunant, to 'press forward in a human and truly civilized spirit the attempt to prevent, or at least to alleviate, the horrors of war'.⁵⁶ Moreover, the first code for the conduct of warfare, the famous Lieber Code adopted by Abraham Lincoln for the

51 See ICJ, *Legality of the Threat or Use of Nuclear Weapons*, above note 31.

52 See e.g. WTO Appellate Body, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WTO Appellate Body, 12 October 1998, WT/DS58/AB/R.

53 See e.g. European Court of Human Rights, *Öneriyildiz v. Turkey*, Judgment of 18 June 2002, Application No. 48939/99 [2002] ECHR 491. See more generally Cesare Paolo R. Romano, *The Peaceful Settlement of International Environmental Disputes: A Pragmatic Approach*, Kluwer Law International, The Hague, 2000.

54 See e.g. Arbitral Tribunal constituted under annex VII of the United Nations Convention on the Law of the Sea, *Southern Bluefin Tuna Case (Australia and New Zealand v. Japan)*, Award on Jurisdiction and Admissibility, Decision of 4 August 2000.

55 See e.g. *Methanex Corporation v. United States of America*, International Arbitration under Chapter 11 of the North American Free Trade Agreement and the UNCITRAL Arbitration Rules, Final Award of the Tribunal on Jurisdiction and Merits, 7 August 2005.

56 Henry Dunant, *Un souvenir de Solferino*, 2nd edition, Joel Cherbuliez Libraire, Geneva and Paris, 1862.

use of his Union forces in the American Civil War in 1863, is also quite general in its scope, with its section II on the public and private property of the enemy, containing, for example, several provisions that aim to protect the culturally and scientifically important items and all property belonging to churches, hospitals, or other establishments of an exclusively charitable character.⁵⁷

Two aspects of the twentieth-century development of international humanitarian law along more general lines are of particular importance for an understanding of the regulation of wartime environmental damage. First, the progressive expansion of the scope of persons protected by the law of war, from soldiers directly engaged in the conflict to civilians indirectly caught up in it, placed new emphasis on how war affects civilian life and thereby laid the groundwork for international humanitarian law's consideration of the impacts of wartime environmental damage. Second, when the ICRC arguably went beyond the bounds of its primary mandate to assist victims and, in an effort to make a greater practical impact, brought within the scope of international humanitarian law efforts to restrict the use of certain types of weapons deemed inhumane and unnecessary,⁵⁸ treaties that could easily be adapted to regulate wartime environmental damage were adopted. It should come as no surprise, therefore, that it was within the system of international humanitarian law, the *lex specialis* applicable to armed conflict, that efforts to curb wartime environmental damage were first taken.

International legal efforts specifically to address the problem of wartime environmental damage

Many authors who have searched through the annals of human history for examples of 'environmental' legislation have come across policies and specific measures to reduce the impact of warfare on the environment. Indeed, some of the oldest and most important ancient texts dealing with the subject of war state such principles. Both the Old Testament common to Jews and Christians⁵⁹ and the Qur'an⁶⁰ implore followers who participate in armed conflict not to damage the trees of one's enemy.

Even though, at the beginning of the modern era, the major religions were in general agreement that the environment should be spared where possible from

57 Francis Lieber, *Instructions for the Government of Armies of the United States in the Field (Lieber Code)*, originally issued as General Orders No. 100, Adjutant General's Office, 1863, Government Printing Office, Washington, 1898, Arts. 34–36.

58 See Toni Pfanner, 'Editorial', in *International Review of the Red Cross*, Vol. 87, No. 859, 2005, p. 416.

59 Bible, Deuteronomy 20:19–20: 'When thou shalt besiege a city a long time, in making war against it to take it, thou shalt not destroy the trees thereof by forcing an axe against them: for thou mayest eat of them, and thou shalt not cut them down (for the tree of the field is man's life) to employ them in the siege: Only the trees which thou knowest that they be not trees for meat, thou shalt destroy and cut them down; and thou shalt build bulwarks against the city that maketh war with thee, until it be subdued'.

60 Holy Qur'an, 59:5: 'Whether ye cut down (o ye Muslims!) the tender palm-trees or ye left them standing on their roots it was by leave of Allah and in order that He might cover with shame the rebellious transgressors'.

the effects of armed conflict, damage to the environment was tolerated as a necessary evil of war. This began to change with the rapid development of new warfare techniques throughout the first half of the twentieth century and a growing realization of the great dangers inherent in modern warfare. Indeed, the major powers began to act as early as 1925, when they came together to prohibit the use of asphyxiating, poisonous, or other gases and of bacteriological methods of warfare in response to the widespread harm inflicted by the use of mustard gas in World War I.⁶¹ Then, after total war had reached its apogee with the mass civilian deaths of World War II and the first use of the atomic bomb, the international community took steps to protect civilian populations through the adoption of the Fourth Geneva Convention of 1949. However, even while several rules of such instruments may have applied to instances of environmental damage, international humanitarian law of this period remained highly anthropocentric.⁶²

It was in the 1960s, against the backdrop of growing fears of a nuclear winter and the Vietnam War of 1955–1975 (in which, as described above, US forces undertook, among other things, a vast exfoliation campaign against the guerrilla fighters of the Vietcong), that enough concern was generated about the capacity of modern warfare to severely damage the environment for the first specific legal efforts against wartime environmental damage to be undertaken. One commentator on this period even went so far as to say that ‘the entire future of mankind is very much dependent on a firm, precise and categorical assertion of the environmental law to be observed in wartime’.⁶³

Initial efforts were launched from within both the international humanitarian law and the international environmental law systems. On 16 December 1969, with the ongoing Vietnam War, the burgeoning environmental movement, and significant changes in composition of the international community, the UN General Assembly endeavoured to extend the scope of the somewhat anthropocentric creature of international humanitarian law, the ‘Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare’,⁶⁴ to chemical or biological agents of warfare intended to cause disease in or have direct toxic effects on ‘man, animals or plants’.⁶⁵ While adapting international humanitarian law instruments to new policy areas on the one hand, the General Assembly was, with the other, launching a new branch of international law to deal with precisely the same area of policy concern.

61 See International Committee of the Red Cross, *ICRC in WWI: Efforts to Ban Chemical Warfare*, 11 January 2005, available at: <http://www.icrc.org/web/eng/siteeng0.nsf/html/57JQGS> (last visited 10 September 2010).

62 Heller and Lawrence cite as examples Articles 23 and 55 of the Hague Regulations of 1907 and Article 53 of the Fourth Geneva Convention of 1949. See Jessica C. Lawrence and Kevin Jon Heller, ‘The first ecocentric environmental war crime: the limits of Article 8(2)(b)(iv) of the Rome Statute’, in *Georgetown International Environmental Law Review*, Vol. 20, 2007, p. 62.

63 Nagendra Singh, ‘The environmental law of war and the future of mankind’, in R.-J. Dupuy, above note 15, p. 419.

64 *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, Geneva, 17 June 1925, entered into force 8 February 1928.

65 General Assembly Resolution 2603 (XXIV) of 16 December 1969, 24th Session, 1836th plenary meeting.

Just one year earlier it had called for the United Nations Conference on the Human Environment as part of a ‘framework for comprehensive consideration within the United Nations of the problems of the human environment’.⁶⁶ At this conference in Stockholm in 1972, the international environmental law movement promulgated principles calling for action on matters related to wartime environmental damage. Such moves included requiring states to co-operate to develop further international law regarding liability for environmental damage (Principle 22), and asking states to ‘strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of [nuclear] weapons’ (Principle 26).⁶⁷

These Stockholm principles revealed the desire to deal with the issue of wartime environmental damage, but it was an understandably very small step toward regulation of the issue at the founding conference of the international environmental law movement. Viewing the issue of wartime environmental damage in the context of this international environmental awakening and the ongoing Vietnam War, some states wanted to go much further than these general, soft law pronouncements of questionable legal effect.

The applicability of international environmental law instruments during armed conflict

One of the reasons proffered for why regulation of wartime environmental damage was and continues to be developed broadly within the subsystem of international humanitarian law is that international environmental law rules, even if they are legally binding, are often considered not to apply in the event of armed conflict. There are, in the present author’s view, two approaches that can be taken to this complex question.⁶⁸

Strictly applying treaty law to the issue, all international environmental law instruments would potentially apply in times of armed conflict except the very few that specifically exclude their application in times of war⁶⁹ or those from which

66 Economic and Social Council (ECOSOC) Resolution 1346 (XLV) (1968) and General Assembly Resolution 2398 (XXIII) of 3 December 1968.

67 Stockholm Declaration, above note 38.

68 The identification of two distinct approaches, argued for here specifically in relation to environmental treaties and armed conflict, has certain parallels with the ILC’s distinction between a subjective and objective test discussed in paragraph 9 of the ILC Report, *The Effect of Armed Conflict on Treaties: An Examination of Practice and Doctrine*, 1 February 2005, available at: http://untreaty.un.org/ilc/documentation/english/a_cn4_550.pdf (last visited 6 September 2010), esp. paras. 9ff, with the strict treaty law approach ultimately involving an appreciation of the subjective intention of the treaty drafters and the ICJ’s approach clearly depending on an objective evaluation of whether the operation of the treaty provision is compatible with the conduct of warfare.

69 P. Birnie and A. Boyle, above note 50, p. 149. Notable, albeit rare, examples include Part XII of the *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 3, 21 ILM 1261, entered into force 16 November 1994, Part XII – Protection and Preservation of the Marine Environment (which is essentially a mini multilateral environmental agreement for the marine environment), esp. Article 236 excluding the application of the provisions of that part to ‘to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State’; and the *International Convention*

it can be clearly ascertained that applying their provisions in times of armed conflict was not foreseen by the negotiating parties.⁷⁰ In light of the strict interpretation of what constitutes a ‘fundamental change of circumstances’ in the Vienna Convention on the Law of Treaties formulation of the *rebus sic stantibus* rule, excluding the application of general international environmental law instruments and rules, particularly those dealing specifically with armed conflict, seems extremely difficult as a matter purely of treaty law.⁷¹ Indeed, it is difficult to maintain that the drafters of provisions like the Stockholm Declaration’s Principle 26 on nuclear weapons did not foresee its application in times of war.

The more common approach to this thorny issue is to avoid the issue of applicability and simply subordinate the application of often vague dictates of international environmental law instruments to the application of more specific and more established rules of international law. This seems to have been the method adopted by the ICJ in its *Legality of the Threat or Use of Nuclear Weapons* Advisory Opinion where it stated that:

the issue is not whether the treaties relating to the protection of the environment are or are not applicable during an armed conflict, but rather whether the obligations stemming from these treaties were intended to be obligations of total restraint during military conflict. The Court does not consider that the treaties in question could have intended to deprive a State of the exercise of its right of self-defence under international law because of its obligations to protect the environment.⁷²

The Court then goes on to list the provisions of international environmental and international humanitarian law that specifically subordinate environmental considerations to the considerations of the laws of armed conflict in line with what it calls ‘the general view according to which environmental considerations constitute one of the elements to be taken into account in the implementation of the principles of the law applicable in armed conflict’.⁷³

Given these difficulties likely to be encountered in applying international environmental law provisions in such crossover areas, it is understandable that, especially during the formative years of international environmental law, those concerned about wartime environmental damage turned their attention to the law

on Civil Liability for Oil Pollution Damage, adopted 29 November 1969, 973UNTS 3, entered into force 19 June 1975, Art. III(2)(a), which excludes, *inter alia*, damage resulting from an act of war, hostilities, civil war, or insurrection. See E. Mann-Borgese, above note 15, pp. 105–108. See further Richard Desgagné, ‘The prevention of environmental damage in time of armed conflict’, in Horst Fischer and Avril McDonald (eds), *Yearbook of International Humanitarian Law*, Vol. 3, 2000, esp. pp. 122–126.

70 The doctrine of *rebus sic stantibus* is reflected in Article 62(3) of the *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331, entered into force 27 January 1980, which allows the suspension of the operation of a treaty after a fundamental change of circumstances.

71 See further Michael Bothe, Antonio Cassese, Frits Kalshoven, Alexandre Kiss, Jean Salmon, and Kenneth R. Simmonds, *Protection of the Environment in Times of Armed Conflict*, Report established by a study group constituted by European Communities, European Commission, Brussels, 1985.

72 ICJ, *Nuclear Weapons Advisory Opinion*, above note 31, para. 30.

73 *Ibid.*, paras. 31–32.

of armed conflict. However, international humanitarian law of that era fell well short of these states' desire to specifically prohibit wartime environmental damage, at least where it was severe and intended. Instruments such as the Lieber Code of 1863,⁷⁴ the Hague Conventions of 1899 and 1907⁷⁵ and even the Geneva Conventions of 1949,⁷⁶ while sometimes containing provisions on 'wanton destruction', did not specifically address the issue of wartime environmental damage, so specific treaty provisions were sought.⁷⁷

When states convened in Geneva in 1974 for the Diplomatic Conference for the Reaffirmation and Development of International Humanitarian Law, there was already a significant groundswell of support for the introduction of a provision protecting the natural environment in wartime. Interestingly, the draft text put forward at the commencement of the conference by the ICRC did not contain any specific provision dealing with this issue.⁷⁸ However, a wide-ranging group of states put forward proposals for a provision of international law protecting the environment.

One of the first such proposals was made, ironically, by Australia on 19 March 1974, a state that had earlier fought alongside the US in the Vietnam War but, by the time of the Geneva conference, was being run by a pioneering new government that had ended Australia's involvement in the Vietnam War and was in the process of passing a raft of highly progressive pieces of legislation.⁷⁹ The provision suggested by the Australian delegation not only prohibited the use of wartime methods harming the environment and reprisals against the environment, but also made any violation of these prohibitions a 'grave breach',⁸⁰ thereby entailing individual criminal liability enforceable through universal jurisdiction. However, opposition from, among others, the United Kingdom, eventually resulted in the Australian provision – and similar proposals put forward by the German Democratic Republic, Czechoslovakia, Uganda, and Vietnam – being substantially watered down.⁸¹ As a result, the relevant provisions of Additional

74 *Lieber Code*, above note 57.

75 See the relevant Hague Conventions of 1899 and 1907, all available at: <http://www.icrc.org/ihl.nsf/INTRO?OpenView> (last visited 7 September 2010).

76 See the Geneva Conventions of 1949, all available at: <http://www.icrc.org/IHL.nsf/CONVPRES?OpenView> (last visited 7 September 2010).

77 Note that, once specific rules had been developed, the *lex specialis derogate legi generali* rule had a non-neutral application as between the two subsystems of international law, requiring that the specific provisions developed within international humanitarian law apply in place of pre-existing general international environmental law rules on environmental damage (but not in wartime) or general international humanitarian law rules on wanton destruction (but not specifically destruction of the natural environment).

78 Alexandre Kiss, 'Les protocoles additionnels aux Conventions de Genève de 1977 et la protection de biens de l'environnement', in Christophe Swinarski (ed.), *Études et essais sur le droit international humanitaire et sur les principes de la Croix-Rouge en l'honneur de Jean Pictet*, Martinus Nijhoff, La Haye, 1984, p. 182.

79 Australia's Whitlam Government was elected in 1972, ending a twenty-three-year conservative stranglehold on federal power. Pioneering legislation passed by this short-lived government included the wide-ranging consumer protection provisions of the *Trade Practices Act* of 1974 and the socially-progressive *Family Law Act* of 1975.

80 See A. Kiss, above note 78, p. 182.

81 *Ibid.*, pp. 183–184.

Protocol I as it was signed,⁸² while prohibiting reprisals against the natural environment (Article 55(2)), introduced a qualifying mental element for the prohibition on the use of methods of armed conflict damaging the environment (Articles 35(3) and 55(1)) and did not make violation of either of these provisions a ‘grave breach’ under the Protocol such as to entail individual war crimes responsibility (see Article 85 of Additional Protocol I). Further, no environmental provisions were included in Additional Protocol II,⁸³ which regulates non-international armed conflict, reportedly on the basis that rebel forces fighting in civil wars were unlikely to apply international humanitarian law anyway and their actions would therefore be better addressed through the human rights framework.⁸⁴

Between the first and second sessions of the 1974–1977 Geneva Conference that produced Additional Protocol I, the Soviet Union submitted to the UN General Assembly a draft international convention on the prohibition of action to influence the environment and climate for military and other purposes and proposed that an international convention along these lines be adopted.⁸⁵ The General Assembly accepted this proposal and, after the United States cooperated with the USSR in its drafting,⁸⁶ the *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques* (the ENMOD Convention) was already set to be adopted by the General Assembly on 10 December 1976, prior to the conclusion of the Geneva Conference and the adoption of Additional Protocol I.⁸⁷ While it has received criticism from environmentalists for its limited scope,⁸⁸ the ENMOD Convention remains the first and only instrument specifically focusing on the protection of the environment in armed conflict.⁸⁹ It is neither a Convention that prosecutes wartime environmental damage as such nor a Convention that bans the use of certain weapons, but rather an effort to restrict the use of certain techniques in armed conflict such as those that had been employed by the US military in Vietnam.

82 *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)* (hereafter ‘Additional Protocol I’), opened for signature 8 June 1977, 1125 UNTS 3 (entered into force 7 December 1978).

83 *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts* (hereafter ‘Additional Protocol II’), opened for signature 8 June 1977, 1125 UNTS 609 (entered into force 7 December 1978).

84 A. Kiss, above note 78, p. 184.

85 See General Assembly Resolution 3264 (XXIX) of 9 December 1974.

86 See General Assembly Resolution 3475 (XXX) of 11 December 1975, introductory paragraph 5.

87 General Assembly Resolution 31/72 of 10 December 1976.

88 See e.g. Susana Pimiento Chamorro and Edward Hammond, *Addressing Environmental Modification in Post-Cold War Conflict: The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD) and Related Agreements*, Edmonds Institute Occasional Papers Series, 2001, available at: <http://www.edmonds-institute.org/pimiento.html> (last visited 20 September 2010).

89 *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques*, (hereafter ‘ENMOD Convention’), adopted 10 December 1976, opened for signature at Geneva on 18 May 1977 (entered into force 5 October 1978). See further Daniel Bodanksy, *Legal Regulation of the Effects of Military Activity on the Environment*, Research Report 201 18 103 for the German Federal Ministry of the Environment, Nature Conservation and Nuclear Safety, Erich Schmidt, Berlin, 2003, p. 26.

Neither of these two instruments – nor the weak provisions of subsequent instruments spawned either by the international humanitarian law branch (such as the heavily qualified 1982 CCW *Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons* provision)⁹⁰ or by the international environmental law branch (such as the vague, soft law articles in the General Assembly's 1982 *World Charter for Nature*⁹¹ and *Agenda 21*,⁹² which simply urge protection of the environment in armed conflict) – proved particularly effective in preventing subsequent wartime environmental damage. As described above, the 1980s and 1990s witnessed some of the most egregious acts against the environment during armed conflict. It is submitted that there are three main reasons for this apparent failure.

As regards the more specific, further-reaching 1970s provisions, first, neither the ENMOD Convention nor Additional Protocol I prohibits environmental damage occurring in non-international armed conflicts such as insurrections by rebels and full-blown civil wars.⁹³ Many of the instances of wartime environmental damage in the 1980s and 1990s occurred in the context of non-international armed conflicts, such as the Guatemalan Civil War where Agent Orange-style defoliants were reportedly used in regions of guerrilla activity; in the Salvadoran Civil War, where napalm and white phosphorus are understood to have been used; and in the early part of the Kosovo conflict, where Serb forces are alleged to have poisoned wells and adopted scorched earth tactics against ethnic Albanians.⁹⁴

Secondly, the environmental damage provisions of the 1976–1977 instruments are only binding on the states who have signed them, unless they are deemed reflective of customary international law. In light of prior and subsequent state practice, it is difficult to see how these provisions could be considered customary international law applicable against some of the most militarily active states, which

90 Protocol III to the Convention on Certain Conventional Weapons, Geneva, 10 October 1980, available at: <http://www.icrc.org/ihl.nsf/FULL/515> (last visited 20 September 2010), Art. 2(4): 'It is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives'. As can be seen, this provision is heavily compromised by an explicitly broad notion of military objectives, such that it would not even find the US activities in Vietnam in breach.

91 UN General Assembly Resolution 37/7 of 28 October 1982: '5. Nature shall be secured against degradation caused by warfare or other hostile activities; ... 20. Military activities damaging to nature shall be avoided'.

92 'Agenda 21', Annex II to the Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3 to 14 June 1992, UN Doc. A/CONF.151/26: '39.6.a) Measures in accordance with international law should be considered to address, in times of armed conflict, large-scale destruction of the environment that cannot be justified under international law. The General Assembly and the Sixth Committee are the appropriate *fora* to deal with this subject. The specific competence and role of the International Committee of the Red Cross should be taken into account'.

93 ENMOD Convention, above note 89, Art. I: 'Each State Party ... as the means of destruction, damage or injury to any other State Party'. As noted above, Additional Protocol I expressly applies only to international armed conflict and no environmental damage provision was included in Additional Protocol II, which regulates non-international armed conflict.

94 See sources cited in J. E. Austin and C. E. Bruch, above note 7, pp. 3–5.

had refused to ratify them.⁹⁵ There are presently 167 parties to Additional Protocol I, but these do not include the US, Israel, Iraq, and Iran; while the ENMOD Convention has only been ratified or acceded to by 72 states, not including France and most Middle Eastern states. Most major incidents of post-1980 wartime environmental damage were therefore committed by states not party to these international agreements, including the Iraqi use of oil installations in the Iran–Iraq and Persian Gulf wars, the US-led NATO bombings in Kosovo in 1999 (particularly at industrial complexes in Pančevo and around Novi Sad), and the Israeli actions in Lebanon and Gaza. More will be said about these incidents below, but it suffices to note for present purposes that neither Iraq nor Israel (which were and are still not party to either agreement), nor the US (whose environmental damage was not attributable to the use of environmental modification techniques and which was not a party to Additional Protocol I) was subject to an international law treaty regime that could have rendered them in breach of an international obligation not to damage the environment in armed conflict.

Thirdly, as noted in the above history as to how these provisions were adopted, the environmental protection norms as set out in both these instruments – like most norms in the Geneva Conventions and Additional Protocols – are not considered ‘grave breaches’ under international humanitarian law; violations of them therefore only entail a weak obligation on states to repress such breaches and potentially state responsibility with, at most, consequences such as reparations and possibly international co-operation against the offending state.⁹⁶ Indeed, the civil liability aspect of international humanitarian law is underscored by Article 91 of Additional Protocol I, which makes a ‘Party to the conflict which violates the provisions ... if the case demands ... liable to pay compensation’.⁹⁷ The practical limitations of enforcing a system of state responsibility on states already involved in armed conflict are obvious. Indeed, the basis for the enforcement of the decentralized and consensual international legal system rests on the often vain hope that states will apply international law and settle their disputes in good faith, but armed conflict generally indicates a reluctance to apply international law rules and to co-operate in such a manner as to settle disputes peacefully.⁹⁸ In addition, international law’s last-resort, United Nations system of sanctions is, as Sassòli

95 For their customary nature see Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law: Volume I: Rules*, Cambridge University Press, Cambridge, 2005, pp. 142–143, now available at: http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter14_rule4 (last visited 7 September 2010). Even if norms of precisely this nature are considered to have been the subject of sufficiently constant and widespread state practice with accompanying *opinio juris* to have become customary, which in the present author’s view is doubtful, the persistent objector notion would seem to prevent these rules being applied in relation to certain key militarily active states.

96 See e.g. Additional Protocol I, Part V, Section II.

97 Additional Protocol I, Art. 91. See further Stanislaw Nahlik, ‘Le problème des sanctions en droit international humanitaire’, in C. Swinarski, above note 78, pp. 469–481.

98 See Frits Kalshoven, *Reflections on the Law of War*, Martinus Nijhoff, Leiden, 2007, pp. 596–597. See also Marco Sassòli and Antoine A. Bouvier, *How Does Law Protect in War? Cases, Documents, and Teaching Materials on Contemporary Practice in International Humanitarian Law*, 2nd edition, ICRC, Geneva, 2006.

notes, in such politically charged contexts often governed by ‘arbitrary and selective political decisions of States’ and undermined by the use of the veto at the UN Security Council empowered to decree sanctions.⁹⁹ Such problems caused Birnie and Boyle, writing from an international environmental law perspective, to comment that ‘the law of armed conflict is one of the least sophisticated parts of contemporary international law’, with no means to ‘afford adequate assurance of military restraint’.¹⁰⁰

The criminalization of international humanitarian law norms as an effort to ensure greater compliance

International humanitarian law’s response to these issues, particularly the third problem, was to criminalize certain particularly serious violations of the Geneva and Hague Conventions and their protocols in the hope that, by raising the spectre of personal criminal liability for politicians or military commanders, they would at least be discouraged from carrying out the most serious and inexcusable acts.

However, the ‘grave breaches’ regime of the Geneva Conventions and Additional Protocols is itself subject to important practical limitations. For all grave breaches, international humanitarian law creates universal jurisdiction and requires states to enact legislation either for prosecuting and trying persons alleged to have committed, or to have ordered to be committed, such crimes, or for extraditing those persons to another High Contracting Party for trial.¹⁰¹ Yet few states have introduced such legislation or taken such action in their national courts, and, where there is legislation and enforcement, how the rules are applied has often greatly diverged across systems.¹⁰² In branding the Geneva law’s provisions on national jurisdiction over grave breaches ‘a dead letter’, Cassese cites as possible reasons for this failure, first, the reluctance of states to prosecute, or expose to prosecution, their own nationals, and second, political and diplomatic considerations frequently causing states to refrain from prosecuting foreigners.¹⁰³ Indeed, many of the few cases conducted in national courts relate to the events of World War II,¹⁰⁴ the most famous of which only came to pass after the lawless Israeli abduction of Adolf Eichmann in violation of Argentina’s territorial sovereignty. The vast majority of other prosecutions for grave breaches have only been possible in tribunals specially constituted by the winners of the relevant war, including in the *ad hoc* international criminal tribunals established by the Security Council taking a broad view of its powers under Chapter VII of the UN Charter. As Sharp

99 Marco Sassòli, ‘Humanitarian law and international criminal law’, in Antonio Cassese (ed.), *The Oxford Companion to International Criminal Justice*, Oxford University Press, Oxford, 2009, pp. 111–122.

100 P. Birnie and A. Boyle, above note 50, p. 150.

101 See e.g. Geneva Convention IV, Arts. 49, 50, 129, and 146; Additional Protocol I, Art. 85(1).

102 See Michael Bothe, Peter Macalister-Smith, and Thomas Kurzidem (eds), *National Implementation of International Humanitarian Law*, Martinus Nijhoff, Dordrecht, 1990.

103 Antonio Cassese, ‘On the current trends towards criminal prosecution and punishment of breaches of international humanitarian law’, in *European Journal of International Law*, Vol. 9, No. 2, 1998, p. 5.

104 *Ibid.*, p. 6.

has provocatively argued, an international legal order that is dependent on such actions as one sovereign invading or interfering with the territorial sovereignty of another is a dubious foundation for a stable rule of law.¹⁰⁵

As the result of such reliance on external factors, the international humanitarian law regime revealed itself to be in need of bolstering if it were to achieve the outcome of comprehensive punishment and powerful deterrence for which the grave breaches regime had been established. Unfortunately, little could be done about this in the fragmented international community of the cold-war era, but the fall of the iron curtain ushered in a decade of internationalist optimism in which the concept of an international criminal court enjoying wide jurisdiction to try individuals for such violations was revived.¹⁰⁶

The International Criminal Court (ICC) came into being as a result of the entry into force of the Rome Statute of the International Criminal Court ('ICC Statute') on 1 July 2002. The Statute differs from statutes promulgated for the earlier *ad hoc* criminal tribunals by setting out more than simply the main categories of offences over which the Court has jurisdiction and instead providing considerable detail as to the precise crimes for which the Court may find an individual personally criminally liable.¹⁰⁷

In respect of war crimes, the ICC Statute spells out, in Article 8(2)(b), twenty-six separate violations over which, if they occur in international armed conflict, the Court has jurisdiction. The war crimes detailed move beyond the grave breaches of the Geneva Conventions (over which jurisdiction is separately established by Article 8(1) of the ICC Statute) and also mark a significant progression from the jurisdiction granted to the *ad hoc* international criminal tribunals for Rwanda (ICTR) and the Former Yugoslavia (ICTY) by statutes drafted only four of five years earlier. Article 3 of the Statute for the *International Criminal Tribunal for the Former Yugoslavia* (1993), for example, explicitly mentions only six war crimes over and above the grave breaches of the Geneva Convention – twenty fewer than the ICC Statute.¹⁰⁸ For present purposes, it is important to note that that ICTY list contains the 'employment of poisonous weapons or other weapons calculated to cause unnecessary suffering' (Article 3(a) of ICTY Statute) and the

105 Peter Sharp, 'Prospects for environmental liability in the International Criminal Court', in *Virginia Environmental Law Journal*, Vol. 18, No. 217, 1999, p. 220.

106 A. Cassese, above note 103, p. 7. The General Assembly had already drawn up plans for an international criminal court in the immediate aftermath of World War II, complete with a draft statute. See UN General Assembly Resolution 489 (V) of 12 December 1950 and a reproduction of the statute in *American Journal of International Law*, Supplement, Vol. 46, 1942, pp. 1–13; and for the problems seen to have plagued that project, see Julius Stone, 'The proposed international criminal court', in Julius Stone, *Legal Controls of International Conflict: A Treatise on the Dynamics of Disputes- and War-Law*, Rinehart, New York, 1954, pp. 377–379.

107 The Nuremberg Statute already contained the distinction between genocide, war crimes, and crimes against humanity, as did the Tokyo, ICTY, and ICTR statutes. See *Charter of the International Military Tribunal, Annex to the Agreement for the Prosecution and Punishment of the Major War Criminals of the European Axis (London Agreement)*, 8 August 1945, 82 UNTS 279.

108 *Statute of the International Tribunal for the Former Yugoslavia* ('ICTY Statute'), adopted 25 May 1993 by Security Council Resolution 827; as amended 13 May 1998 by Resolution 1166 and 30 November 2000 by Resolution 1329, Art. 3.

‘wanton destruction of cities, towns or villages, or devastation not justified by military necessity’ (Article 3(b)), but does not include any explicit criminalization of general wartime environmental damage. Even though this list is explicitly stated not to be exhaustive, under the test laid down by the ICTY Appeals Chamber presiding in the *Tadić Case*, it is extremely unlikely that the rule in Articles 35(3) and 55(1) of Additional Protocol I, not listed as a grave breach by the aforesaid instrument, could meet the requirement that a violation of its terms attracts individual criminal responsibility as a matter of customary international law.¹⁰⁹

Clearly then, by explicitly attaching individual criminal liability to certain instances of wartime environmental damage in its Article 8(2)(b)(iv), the ICC Statute has moved further than the non-grave-breach provisions of Additional Protocol I and also the statutes of the *ad hoc* international criminal tribunals for Rwanda and Yugoslavia. Significantly, the ICC Statute does not end its list of war crimes at the acts considered grave breaches, and therefore attracting individual criminal responsibility under the Geneva Conventions and Additional Protocol I. It is indeed a tribute to the somewhat unexpected success of the Rome Conference that it was able not merely to achieve a crystallization of existing customary international law, but also to contribute to the progressive development of that law in certain key respects, including the criminalization of what Richard Falk had famously termed ‘ecocide’.¹¹⁰

Without doubt, the addition of a provision attaching criminal liability to instances of wartime environmental damage significantly bolsters the international legal regime governing this type of act. Within the humanitarian law structure, the imposition of criminal liability is regarded as the furthest that legal regulation can reach and the sanction most likely to produce greater long-term compliance with the laws of war.¹¹¹ Indeed, as noted by the Nuremberg tribunal in 1947:

crimes against international law are committed by men, not abstract entities, and only by punishing individuals who commit such crimes can the provisions of international law be enforced.¹¹²

Interestingly, criminal liability is viewed in a very similar manner in environmental law. While international environmental law has not yet reached the stage of evolution where it can think in general terms about imposing criminal liability for breaches of its norms, many domestic environmental law systems use criminal responsibility as a key part of their regulatory armoury. In adopting a directive on the protection of the environment through criminal law in 2008, the

109 See ICTY Appeals Chamber, *Prosecutor v. Dusko Tadić*, Decision of 2 October 1995, para. 94. See further Anne-Marie La Rosa, *Dictionnaire de droit international pénal: Termes choisis*, Presses universitaires de France, Paris, 1998, pp. 31–32.

110 Richard Falk, ‘Environmental warfare and ecocide’, in Richard Falk (ed.), *The Vietnam War and International Law*, Vol. 4, Princeton University Press, Princeton, 1976, p. 300.

111 See e.g. M. Sassòli, above note 99, p. 122.

112 Nuremberg International Military Tribunal: Judgment and Sentences, in *American Journal of International Law*, Vol. 41, 1947, p. 221.

European Parliament noted the importance of criminal penalties, saying in its third preambular paragraph:

Experience has shown that the existing systems of penalties have not been sufficient to achieve complete compliance with the laws for the protection of the environment. Such compliance can and should be strengthened by the availability of criminal penalties, which demonstrate a social disapproval of a qualitatively different nature compared to administrative penalties or a compensation mechanism under civil law.¹¹³

Domestic environmental law systems are replete with examples of where criminal penalties have been introduced to increase compliance with laws protecting against environmental damage. The US *Clean Air Act*, for example, prescribes criminal penalties involving fines and/or imprisonment of up to five years in length for flagrant failures to comply with environmental law obligations,¹¹⁴ and fines and/or imprisonment of up to fifteen years for the most egregious acts of air pollution.¹¹⁵ In Spain, the possibility of penal sanctions for environmental breaches is even set out in the country's constitution,¹¹⁶ while in South Africa '[c]riminal enforcement power is the most widely prescribed for implementation of environmental law'.¹¹⁷

By imposing a state responsibility obligation that ultimately entails the payment of damages for less serious acts of wartime environmental damage (the equivalent to a civil law obligation in domestic law), then individual criminal liability for more serious acts, the existing international legal regime in respect of wartime environmental damage can be seen, on a very general level at least, to be in keeping with the general approaches and internal logics of domestic and international forms of both humanitarian and environmental law.

This does not mean, of course, that the precise legal consequences associated with each type of wartime environmental damage in each type of situation are sure to be appropriate, be they viewed from the international humanitarian/

113 Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law.

114 See *Clean Air Act*, 42 USC Section 7413(c)(1): 'Any person who knowingly violates any requirement or prohibition of an applicable implementation plan (during any period of federally assumed enforcement or more than 30 days after having been notified ...)'.

115 See *ibid.*, Section 7413(c)(5)(A): 'Any person who knowingly releases into the ambient air any hazardous air pollutant listed ... and who knows at the time that he thereby places another person in imminent danger of death or serious bodily injury shall, upon conviction, be punished by a fine under title 18, or by imprisonment of not more than 15 years, or both'.

116 *Spanish Constitution*, Art. 45 [Environment]: '(1) Everyone has the right to enjoy an environment suitable for the development of the person as well as the duty to preserve it. (2) The public authorities shall concern themselves with the rational use of all natural resources for the purpose of protecting and improving the quality of life and protecting and restoring the environment, supporting themselves on an indispensable collective solidarity. (3) For those who violate the provisions of the foregoing paragraph, penal or administrative sanctions, as applicable, shall be established and they shall be obliged to repair the damage caused'.

117 Bowman Gilfillan, 'Chapter 55: South Africa', in *The International Comparative Legal Guide to Environmental Law 2009*, Global Legal Group, 2009, pp. 397–398.

international criminal law or the (international) environmental law perspective. Indeed, such an evaluation can only be made once the specifics of the norms regulating wartime environmental damage, including the ICC Statute provision, which attaches criminal liability to its commission (Article 8(2)(b)(iv)), have been analysed in greater detail.¹¹⁸

Environmental, humanitarian, and criminal law perspectives on each element of the applicable international legal regime

Today's international legal framework regulating damage to the natural environment in armed conflict is multi-layered and pushes in different directions. There are international treaty norms prohibiting signatory states from use of a specific and quite narrow category of techniques of manipulating the environment as a weapon and thus altering its natural state; provisions in general international humanitarian law instruments attaching state responsibility to those who use methods of armed conflict that severely damage the environment; and now an international criminal court that can, in certain cases, find individuals who intentionally damage the environment in armed conflict criminally liable. In addition, if one were to extend the scope of this article's consideration to environmental damage occurring in the context of non-international armed conflict, one would have to add domestic environmental law provisions relating to environmental damage and human rights considerations into the equation.¹¹⁹

This part of the present article considers the appropriateness of the legal regime created from two main angles. First, given that the problem of wartime environmental damage occurs at the intersection of two branches of international law with different approaches, different values, and different areas of expertise, does the single, albeit multi-layered, international legal regime conceived to deal

118 Some authors, such as Freeland, Weinstein, and Sharp, consider that other provisions in the ICC Statute – such as those pertaining to genocide or crimes against humanity – may be applicable to acts of wartime environmental damage. The present author does not share this view. Most environmental damage is unlikely to be sufficiently localized to have the effect of deliberately targeting a specific national, ethnical, racial, or religious group and to reach the high threshold rightly imposed by the ICC Statute's genocide provision (Article 4), while crimes against humanity, which generally require 'great suffering or serious injury to body or to mental or physical health' (see ICC Statute, Art. 7(1)(k)), at the most only capture attacks against the environment directly causing, with knowledge, substantial *human* suffering, not simply '*environmental*' crimes. See Steven Freeland, 'Crimes against the environment: a role for the International Criminal Court?', in *La Revue Juridique Polynésienne*, Hors Série, 2005, pp. 335ff.; Tara Weinstein, 'Prosecuting attacks that destroy the environment: environmental crimes or humanitarian atrocities?', in *Georgetown International Environmental Law Review*, Vol. 17, 2005; and P. Sharp, above note 105.

119 The scope of this article has been limited to international armed conflict not simply because the relevant international criminal law is restricted to international conflicts (see ICC Statute, Art. 8(2)(b) (chapeau); ICC Preparatory Commission, Elements of Crimes, ICC Doc: ICC-ASP/1/3 (hereafter 'Elements of Crimes')), but also to avoid the analysis of a significant further branch of international law – human rights law – and the detailed discussion that its interaction with both international environmental law and international humanitarian law in this context would merit.

with it manage to fuse these different perspectives into a cohesive whole or are we instead left with an inconsistent set of norms leading to anachronistic outcomes? Do the specific elements of the relevant norms borrow from the appropriate area of international law such that the branches can mutually support each other or do they simply follow the path of least resistance, adopting the lowest common denominator of legal regulation? Second, in general terms, does the international legal regime for wartime environmental damage, considered in the context of certain key contemporary examples, go too far or not far enough? Finally, would our conclusions as to the appropriateness of the level of regulation differ if we were to answer these questions and evaluate the regime in general from a specifically international humanitarian law perspective or a solely international environmental law perspective?

Like many legal norms that also have criminal liability as a consequence of their violation, the existing international legal regime for wartime environmental damage can be divided into six key parts.¹²⁰ In the first place, there must be (i) a certain type of act or omission that (ii) causes (iii) a particular type of consequence. Then there are the mental elements, which criminal lawyers often refer to as *mens rea*, including whether the person so acting (iv) intended to commit the act and (v) was aware that the particular consequences would ensue and finally the issue of (vi) whether there are any applicable defences to exclude liability in the specific case. In an effort to evaluate the regime prohibiting environmental damage in international armed conflict from the plural perspectives required for an activity that sits at the intersection of different branches of public international law, we will now break it down into these six constitutive parts.

The range of acts prohibited by each of the relevant rules

The first norm to be adopted in respect of wartime environmental damage, the ENMOD Convention, appears to be narrower than the later provisions in terms of the range of acts that fall within the prohibition. While its Article II definition of what constitutes an environmental modification technique is quite broad, the set of illustrative examples in the Understandings appended to the Convention (CCD Understandings) by the Geneva Conference of the Committee on Disarmament and adopted by the UN General Assembly appears to place undue restriction on the scope of this rule.¹²¹ Indeed, as pointed out by Jozef Goldblat shortly after

120 It should be noted that in defining the scope of her study of Transboundary Damage in general, Xue Hanqin uses four elements of definition which overlap substantially with those outlined here. See Xue Hanqin, *Transboundary Damage in International Law*, Cambridge University Press, Cambridge, 2003, p. 4.

121 *Understandings Appended to the Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques by the Conference of the Committee of Disarmament* (hereafter 'CCD Understandings'), available at: <http://www.icrc.org/ihl.nsf/FULL/460?OpenDocument> (last visited 20 September 2010).

the Convention was adopted, it appears that the Convention is a half-measure clearly prohibiting only fanciful events such as the triggering of earthquakes, while environmental modification techniques more likely to be adopted during armed conflict, such as certain instances of river diversion or strategic cloud seeding, do not seem to be prohibited.¹²²

Additional Protocol I and the ICC Statute are, however, much more general in terms of the range of acts that may, under certain circumstances, lead to responsibility for wartime environmental damage. Articles 35(3) and 55(1) of Additional Protocol I speak in general terms of ‘methods or means’ that cause damage to the environment, while Article 8(2)(b)(iv) of the ICC Statute speaks of an ‘attack’. The Elements of Crimes document adopted by the Preparatory Commission for the International Criminal Court (PrepCom) shortly after the signature of the Statute makes it clear that attack should be interpreted in the general sense of ‘acts of violence against the adversary, whether in offence or in defence’ (as defined in Article 49(1) of Additional Protocol I) and not confused with the special, *jus ad bellum*, sense of how this term and its cognates, including ‘armed attack’, are used in the UN Charter.¹²³

The use of notions such as ‘hostile use of technique’ (ENMOD), ‘methods or means’ (Additional Protocol I), or an ‘attack’ (ICC Statute) in defining the scope of acts prohibited, is the first clear sign that the provisions that constitute the current international legal regime against wartime environmental damage were clearly adopted in accordance with the logic of international humanitarian law and not according to the principles and approach of international environmental law. The scope of the ENMOD Convention in particular may be somewhat disturbing to someone viewing these norms from an environmental law perspective, not only because it unduly restricts the range of techniques but also because it targets only those situations where the environment itself was effectively used as a weapon, thereby excluding all other situations of incidental damage to the environment in international armed conflict. Even the more general norms of Additional Protocol I and the ICC Statute are liable to a certain degree of such criticism from this perspective, as there may be situations where the environment is greatly damaged in wartime as part of events that neither constitute environmental ‘methods or means of warfare’ (Additional Protocol I) nor offensive or defensive acts of violence against an adversary (ICC).

An applicable test for causation?

In terms of causation, none of the relevant provisions specifies what exactly this might require in the circumstances. ENMOD speaks of ‘having [certain] effects’, Additional Protocol I of methods that ‘are intended, or may be expected, to cause’

¹²² J. Goldblat, above note 40, p. 217.

¹²³ *Charter of the United Nations*, opened for signature 26 June 1945, 1 UNTS 16, entered into force 24 October 1945, Art. 51.

certain damage, and the ICC Statute provision simply uses the expression 'will cause' the damage.¹²⁴

Without any authoritative explanations or jurisprudence showing what test for causation is likely to be used, it is impossible to evaluate whether the international legal regime for wartime environmental damage approaches questions of causation more in the style of international humanitarian law or of international environmental law. Suffice to say that, if the opportunity to develop such a test eventually arises in relation to environmental damage, the court, tribunal, or other institution may well begin by placing itself within the frame of how causation has been understood in relation to other breaches of international humanitarian law. Yet an international environmental lawyer would prefer to tailor the rules of causation to the specific situation of environmental damage and would prefer such a body not to rely on general humanitarian law notions, but instead on the theory of causation elaborated precisely in relation to environmental damage.

The United Nations Compensation Commission (UNCC) established to compensate victims of the Gulf War for harm they suffered, including environmental harm, is one such source of jurisprudence for the causation of environmental damage to which international environmental lawyers would refer the ICC. This commission had been established by a UN Security Council resolution that held Iraq 'liable under international law for *any direct loss, damage, including environmental damage* and the depletion of natural resources, or injury to foreign Governments, nationals and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait'.¹²⁵ The UNCC Panel of Commissioners for 'F4' claims (environmental damage claims) drew on tests for causation elaborated in the context of peacetime environmental damage to determine what constituted a direct cause, taking a very liberal approach to 'direct causation' in one particular case where the Commissioners held that, even where there were intervening events, a direct causal link could be established so long as those events did not break the chain of causation.¹²⁶

It should be noted that this UNCC test for the 'direct causation' of environmental damage is much more lenient than equivalent tests used in relation to non-environmental international humanitarian law norms. For example, the ICRC's recently published *Interpretive Guidance on the Notion of Direct*

124 ENMOD Convention, above note 89, Art. I; Additional Protocol I, Arts. 35(3) and 55(1); ICC Statute, Art. 8(2)(b)(iv).

125 UN Security Council Resolution 687 (1991), UN Doc. S/RES/687 (1991), emphasis added; Report of the Secretary-General pursuant to paragraph 19 of Security Council resolution 687 (1991), UN Doc. S/22559, 2 May 1991. For context and discussion, see Laurence Boisson de Chazournes and Danio Campanelli, 'The United Nations Compensation Commission: time for an assessment?', in Andreas Fischer-Lescano, Hans-Peter Gasser, Thilo Marauhn, and Natalino Ronzitti (eds), *Peace in Liberty: Festschrift für Michael Bothe zum 70. Geburtstag*, Nomos/Dike, Baden-Baden/Zürich, 2008, pp. 3–17.

126 See e.g. the *Well Blowout Control Claim*, Report of 15 November 1996, UN Doc. S/AC.2/Dec.40, 36 ILM 1343 (1997), 1356, paras. 85–86 (approved by Governing Council Decision 40, 17 December 1996 (S/AC.26/Dec.40), reproduced in I.L.R., Vol. 109, p. 669). See further Roger P. Alford, 'Well Blowout Control Claim. UN Doc. S/AC.2/Dec.40, 36 ILM 1343 (1997)', in *AJIL*, Vol. 92, No. 2, 1998, pp. 287–291.

Participation in Hostilities Under International Humanitarian Law, says that: ‘direct causation should be understood as meaning that the harm in question must be brought about in one causal step [such that] ... conduct that ... only indirectly causes harm, is excluded from the concept of direct participation in hostilities’.¹²⁷

Widespread, long-term, and/or severe damage to the natural environment

The type and extent of environmental damage that must be caused to trigger the application of the rules prohibiting wartime environmental damage is probably their most important element. The formulation ‘widespread, long-term *and* severe damage to the natural environment’ (emphasis added) is used in all of Additional Protocol I’s Articles 35(3) and 55(1) and Article 8(2)(b)(iv) of the ICC Statute. Hence, in terms of the environmental damage caused, the ICC Statute’s criminalized form of the prohibition, unlike certain prior draft criminal environmental damage provisions,¹²⁸ does not differ from Additional Protocol I’s humanitarian obligation except as regards the ICC Statute’s additional requirement that the damage be ‘clearly excessive in relation to the ... military advantage anticipated’ – the element of the ICC Statute provision that will be discussed in the final subsection of the present analysis.

Before turning to the ‘widespread, long-term and severe damage’ formula, it should be noted that what constitutes the ‘*natural* environment’ is neither defined in these instruments nor the object of consensus. Indeed, as Jensen goes to substantial lengths to demonstrate, there is not yet a generally accepted definition of the ‘environment’ let alone the ‘*natural* environment’ and even the widely referenced scientific and comprehensive definition of Article II of the ENMOD Convention, in Jensen’s view, provides little clarity.¹²⁹ Alexandre Kiss argues that the adjective ‘natural’ seems to exclude urbanized or industrial zones,¹³⁰ while the ILC’s 1991 Commentary to its *Draft Code of Crimes Against the Peace and Security of Mankind* contains a broader interpretation of ‘natural environment’.¹³¹ In light of

127 ICRC, *Interpretive Guidance on the Notion of Direct Participation in Hostilities Under International Humanitarian Law*, ICRC, Geneva, 2009, p. 53.

128 See e.g. the 1996 Draft Code of the Crimes Against Humanity, Art. 20 (War Crimes): ‘(g) ... cause widespread, long-term and severe damage to the natural environment *and thereby gravely prejudice the health or survival of the population*’ (emphasis added).

129 See ENMOD Convention, above note 89, Article II: ‘the term “environmental modification techniques” refers to any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space’; Eric Talbot Jensen, ‘The international law of environmental warfare: active and passive damage during armed conflict’, in *Vanderbilt Journal of Transnational Law*, Vol. 38, 2005, pp. 150–152.

130 A. Kiss, above note 78, p. 188.

131 *Report of the International Law Commission on the Work of its Forty-third Session, 29 April–19 July 1991, Official Records of the General Assembly, Forty-sixth Session, Supplement No. 10, Doc. A/46/10* (hereafter ‘ILC 1991 Commentary’), para. 4 of commentary to draft Article 26, available at: http://untreaty.un.org/ilc/documentation/english/A_46_10.pdf (last visited 7 September 2010). The ILC 1991 Commentary remains the most detailed on this point, as the draft provision was subsequently altered.

ever-increasing consciousness of the fragility of the environment, one might suggest abandoning the Kiss interpretation in favour of a more contemporary, broader view that more closely resembles the ENMOD definition.

In terms of the scope of application of Articles 33(5) and 55(1) of Additional Protocol I and Article 8(2)(b)(iv) of the ICC Statute, it is of vital importance to note that the provisions use the conjunctive element ‘*and*’ to link the three adjectives qualifying the damage to the natural environment. This means that ‘widespread damage’, ‘long-term damage’, and ‘severe damage’ are cumulative conditions, all of which must separately be met in order for there to be a breach of the relevant provision. Greater environmental damage is accordingly required than that which would potentially constitute a breach of Article I of the ENMOD Convention, an instrument that uses the less demanding, disjunctive formula of ‘widespread, long-lasting *or* severe’.¹³²

The precise meanings of the separate elements ‘widespread’, ‘long-term’, and ‘severe’ were the subject of long discussions at the Geneva Conference for Additional Protocol I,¹³³ but remain shrouded in ambiguity.¹³⁴ Commenting on a draft provision drawn from Article 55(1) of Additional Protocol I in 1991, the ILC simply described these elements as cumulative factors to determine the seriousness of a crime, with little guidance as to the thresholds to be applied.¹³⁵ The ICC Elements of Crimes document of 1998 does not specify the meaning of these terms so, in a search for clarity, one must return to the older official and unofficial commentaries regarding the meaning of these same terms as they were used in the ENMOD Convention and Additional Protocol I.

Widespread damage

The CCD Understandings appended to the ENMOD Convention define widespread damage in Article I of that Convention to mean ‘an area on the scale of several hundred square kilometres’,¹³⁶ but Hulme argues that the drafters of Additional Protocol I intended somewhere between this minimum standard and something closer to the damage to some 20,000 square kilometres actually caused in Vietnam.¹³⁷

The CCD Understandings were provided subject to the disclaimer that they apply only to the ENMOD Convention and do not prejudice the interpretation of the same or similar terms used in other international agreements.¹³⁸

132 ENMOD Convention, above note 89, Art. I, emphasis added.

133 A. Kiss, above note 78, p. 189.

134 René Provost, ‘International criminal environmental law’, in Guy S. Goodwin-Gill and Stefan Talmon (eds), *The Reality of International Law: Essays in Honour of Ian Brownlie*, Clarendon Press, Oxford, 1999, p. 447.

135 ILC 1991 Commentary, above note 131, p. 107, para. 5 of commentary to draft Article 26.

136 See CCD Understandings, above note 121. See also L. Boisson de Chazournes *et al.*, above note 50, p. 645.

137 K. Hulme, above note 12, p. 92.

138 See Dietrich Schindler and Jiří Toman, *The Laws of Armed Conflicts*, Martinus Nijhoff Publishers, Leiden, 1988, pp. 164–169.

Moreover, in the final debate on the Article 55 provision containing these words at the Geneva Conference negotiating Additional Protocol I, several delegations made the point that the words ‘widespread, long-term and severe’ do not have the same meaning as the corresponding words in the ENMOD Convention.¹³⁹ However, the fact that no higher threshold was provided in materials associated with either Additional Protocol I or the ICC Statute may mean that the low ENMOD standard of widespread damage has been adopted by default. Indeed, this is the interpretation given to the provision by many states’ military handbooks.¹⁴⁰

Even if the less demanding interpretation of widespread were not adopted for the non-ENMOD rules, from an international environmental law perspective at least the ENMOD Convention’s prohibition appears quite reasonable. Combined with the less burdensome disjunctive test of widespread, long-term, or severe damage, its clear statement of a low threshold for ‘widespread’ damage means that most instances of wartime environmental damage will meet the ENMOD Convention’s damage requirement. However, as was noted above, the scope of acts to which the ENMOD Convention applies is potentially very limited, so this provision is, overall, not as accessible as its damage requirement suggests. The Additional Protocol I and ICC Statute provisions, on the other hand, adopt a definition of ‘widespread damage’ that may ultimately exclude many incidents that environmental campaigners would probably consider at least sufficient grounds for non-criminal liability, such as the recent spillage of untreated wastewater and sewage sludge over only 0.055 square kilometres of agricultural land in densely populated Gaza.

Long-term damage

The requirement that damage be long term refers to the persistence of the damage in time.¹⁴¹ The ENMOD Convention’s CCD Understandings’ interpretation of this term again sets a low threshold of ‘a period of months, or approximately a season’.¹⁴² However, as pointed out by an ICRC report to the General Assembly in 1993, there are substantial grounds, including from the *travaux préparatoires* of Additional Protocol I, to suggest that ‘long-term’ should be interpreted to mean decades, rather than months.¹⁴³

It is unclear which interpretation would be preferred by the ICC provision on wartime environmental damage. The difference between these two standards is significant and could have substantial implications on whether a state can be found

139 See Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann (eds), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC/Martinus Nijhoff Publishers, Geneva, 1987, Article 55 of Additional Protocol I, para. 2136, and sources cited therein.

140 See e.g. International and Operational Law Department, US Army, *Operational Law Handbook* (2007), p. 232, available at: <http://www.fas.org/irp/doddir/army/law2007.pdf> (last visited 5 September 2010).

141 ILC 1991 Commentary, above note 131, p. 107, para. 5 of commentary to draft Article 26.

142 ENMOD Convention, above note 89. See also L. Boisson de Chazournes *et al.*, above note 50, p. 645.

143 ICRC, *Report to the UN General Assembly 1993*, UN Doc A/48/269, para. 34; see also the similar conclusion reached by K. Hulme, above note 12, pp. 92–95, after an extensive analysis of the provision.

responsible under Additional Protocol I or an individual prosecuted under Article 8(2)(b)(iv) of the ICC Statute. For example, the environmental damage caused by the discharging of oil into the Persian Gulf in 1991 was probably not sufficiently long-term to come within the scope of these provisions, as much of it in fact evaporated away relatively quickly, while the report of the UN Environmental Programme's Balkan Task Force on the war in Kosovo concluded that the long-term pollutants in the Danube were the result of pre-war industrial processes, and therefore not of the Allied bombing campaigns.¹⁴⁴ Any deforestation caused in Lebanon by the Israeli use of incendiary weapons potentially including white phosphorus would also not meet this temporal threshold, which therefore seems, particularly from a perspective that seeks to maximize protection of the environment, inappropriately high.

Severe damage

The 'severe damage to the natural environment' requirement is probably the most controversial part of the Additional Protocol I rule from an international environmental law perspective. While this clearly refers to the intensity of the damage and requires that it is, at the very least, more than 'significant',¹⁴⁵ many delegates and commentators since the ENMOD Convention and Additional Protocol I have connected this requirement to human suffering. For example, the CCD Understandings define 'severe' damage as 'involving serious or significant disruption or harm to human life, natural and economic resources or other assets',¹⁴⁶ while the second sentence of Article 55(1) of Additional Protocol I specifies that protection of the natural environment against widespread, long-term, and severe damage includes the 'use of methods ... to cause such damage to the natural environment and *thereby to prejudice the health or survival of the population*'.¹⁴⁷

Writing in 1984, soon after the signing of Additional Protocol I, Kiss reacted to its clearly anthropocentric manner of treating protection of the environment saying: 'A défaut de reconnaître que l'environnement en lui-même représente désormais une valeur intrinsèque ... le *Protocole de Genève* ne pouvait l'envisager qu'en fonction de la protection des humains'.¹⁴⁸ Given recent advances in the appreciation of the importance of protecting the natural environment for its own sake or, at any rate, by virtue of its *indirect* relationship to human utility, it is

144 UNEP and United Nations Centre for Human Settlements (Habitat), *The Kosovo Conflict: Consequences for the Environment and Human Settlements*, UNEP and UNCHS, Switzerland, 1999, p. 61; see further K. Hulme, above note 12, p. 195.

145 K. Hulme, above note 12, p. 96.

146 CCD Understandings, above note 121.

147 Additional Protocol I, Art. 55(1), emphasis added.

148 'Failing to admit that the environment had itself come to represent something of intrinsic value ... the Geneva Protocol could only envisage it in terms of the protection that it affords to humans'. A. Kiss, above note 78, pp. 191–192 (present author's translation).

regrettable that delegates at the Rome Conference and the PrepCom did not take the opportunity to set down that it is no longer a requirement of ‘severe damage’ that it cause (direct) human suffering.

Irrespective of how leniently these three separate conditions may one day be interpreted, it cannot be doubted that, outside the otherwise peripherally applicable ENMOD Convention, the ‘widespread, long-term and severe’ formula sets an extremely high threshold for actionable environmental damage, which goes well beyond the thresholds for damage set by other instruments of international environmental law. For example, the 1979 *Convention on Long-range Transboundary Air Pollution* sets the damage threshold at ‘deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment’,¹⁴⁹ while Article 40 of the Statute for the River Uruguay – recently at the root of Argentina and Uruguay’s *Pulp Mills* litigation – also speaks in wider terms of ‘deleterious effects or harm to living resources, risks to human health, or a threat to water activities including fishing or reduction of recreational activities’.¹⁵⁰ Compared to such international environmental law instruments, the conception of environmental damage for wartime seems very restricted.

The mental elements of the crime

The well-established criminal principle of *actus non facit reum, nisi mens sit rea* means that while the ENMOD Convention and Additional Protocol I may attach state responsibility to acts causing widespread, long-term, and severe damage to the environment, individual criminal responsibility will only ensue where such acts are intentional and undertaken in the knowledge that they would cause such damage. Given the above-noted weaknesses of enforcing state responsibility regimes such as ENMOD and Additional Protocol I and the great potential of the ICC Statute provision for ensuring greater compliance with rules prohibiting wartime environmental damage, it is important to evaluate in detail the limitations that these mental elements may place on enforcing legal consequences for damage to the environment in international armed conflict.

Article 8(2)(b)(iv) of the ICC Statute speaks of ‘[i]ntentionally launching an attack in the knowledge that such attack will cause ... widespread, long-term and severe damage to the natural environment ...’. Unlike some war crimes that do

149 *Convention on Long-range Transboundary Air Pollution*, opened for signature 13 November 1979, 1302 UNTS 217, entered into force 16 March 1983, Art. 1(a). Note, however, the impasse between states on setting an appropriate threshold for damage in negotiations for the annex on comprehensive liability for harm to the Antarctic environment required under Article 16 of the 1991 Environment Protocol to the Antarctic Treaty. See further Louise de La Fayette, ‘The concept of environmental damage in international liability regimes’, in Michael Bowman and Alan Boyle, *Environmental Damage in International and Comparative Law*, Oxford University Press, Oxford, 2002, pp. 180–182.

150 ICJ, *Pulp Mills case*, above note 46, p. 58, para. 198, quoting from the Statute of the River Uruguay (UNTS, Vol. 1295, No. I–21425, p. 340, Art. 40) as authoritatively interpreted in the CARU Digest (E3), Title I, Chapter I, Section. 2, Art. 1(c).

not specify the nature of the mental element,¹⁵¹ this provision avoids the difficulties posed by the much-contested ‘intent and knowledge’ drafting of ICC Statute’s general, default provision on the mental elements of crimes (Article 30). As pointed out by Werle and Jessberger, intent and knowledge have different meanings depending on the elements to which they are connected.¹⁵² By specifying intent as an adverbial qualifier exclusively of the launching of the attack and knowledge as solely relating to the consequences of the act, Article 8(2)(b)(iv) of the ICC Statute associates intent only with the relevant conduct and associates knowledge solely with the relevant consequences. This in turn reveals two distinct mental elements: (1) an intent to launch an attack; and (2) the knowledge that such an attack will cause environmental damage. We will now deal with each of these required mental elements in turn.

Intent to launch an attack

Some analysts have tried to make something out of the use of the word ‘launching’ in sub-section (iv), because the formulation ‘directing attacks’ is used in sub-sections (i) through (iii). According to the commentary of Knut Dörmann, one delegation at the Rome Conference at which the ICC Statute was negotiated and drafted brought up the fact that the use of the word ‘launch’ might require the person to have also planned the attack, whereas the word ‘direct’ would not, the use of the word ‘launching’ thereby narrowing the scope of this crime relative to attacks on civilians *et cetera* in parts (i), (ii), and (iii) of Article 8(2)(b) of the ICC Statute.¹⁵³ While this view remained both uncontested and undeveloped at the conference, the relevance of the change in terminology can be ascertained by other official language versions of the ICC Statute, which is equally authoritative in all six UN languages. The distinction, while made in the Spanish version, is not made in the French version, where the formula ‘*diriger intentionnellement*’ is used for all four sub-sections.¹⁵⁴ Given that the Statute was predominantly negotiated in English and French, it would appear to be going too far to suggest that a different and narrower meaning should be read into the provision, leading to a more onerous requirement that the attack be ‘launched’. Indeed, the confusion in the language used appears to indicate that the expressions ‘direct an attack’ and ‘launch an attack’ were understood by drafters of the Statute to be identical.

151 See e.g. ICC Statute, Art. 8(2)(b)(vi): ‘Killing or wounding a combatant who, having laid down his arms or having no longer means of defence, has surrendered at discretion’.

152 Gerhard Werle and Florian Jessberger, ‘“Unless otherwise provided”: Article 30 of the ICC Statute and the mental element of crimes under international criminal law’, in *Journal of International Criminal Justice*, Vol. 3, No. 1, 2005, pp. 35–55, esp. p. 39.

153 Knut Dörmann, *Elements of War Crimes under the Rome Statute of the International Criminal Court: Sources and Commentary*, ICRC/Cambridge University Press, Cambridge, 2003, p. 162.

154 It should be noted that the ‘launching’ of an attack is the expression used in the grave breaches provision of Article 85 of Additional Protocol I (in reference to the grave breach for the non-environmental limb of Article 8(2)(b)(iv) of the ICC Statute). This is probably the origin of the use of this word in the ICC Statute. Interestingly, Article 85 of the French version of Additional Protocol I uses ‘lancer une attaque’.

In the view of the present author, this debate merely serves to show that the element of intent is already somewhat bound up in the notion of ‘launching’ or ‘directing’ an attack. One need not ascribe too much importance to the adverb ‘intentionally’, which may well be redundant, as it is difficult to imagine how an unintended attack could nonetheless be deemed to have been launched or directed.

Knowledge that the attack will cause environmental damage

The critical mental element of the environmental damage offence is not the intention to perform the act being potentially in violation of the provision, which will be present in all but the most unlikely incidences of widespread, long-term, and severe environmental damage in armed conflict, but the question of whether or not the perpetrator acted in the knowledge that his or her actions would cause such environmental damage. Indeed, it is when we view the act from the perspective of the knowledge of the perpetrator that we best see the differences between the three international rules regarding wartime environmental damage emerge.

According to an ICRC study of the elements of the ICC Statute crimes, some delegations at the Rome Conference insisted on a literal reading of the expression ‘in the knowledge that such attack will cause’ (*‘qu’elle causera’* in the French version) in the Statute’s text to argue that an individual could only be prosecuted under the provision if the act in question did in fact cause the damage.¹⁵⁵ The PrepCom, however, sided with the majority of delegations and sought to avoid this narrower interpretation by using the words ‘would cause’ (*‘allait causer’* in the French version) in the Elements of Crimes document.¹⁵⁶ The result is that it is generally agreed that an individual can be convicted under this provision even if the attack in fact ended up failing, for example, owing to a device’s failure to explode.

The practical importance of this minor clarification of the wording used in the provision is clear from an incident of intentional wartime environmental damage reportedly figuring rather strongly in the minds of those negotiating the provision at the Rome Conference. In the Gulf War of 1990–1991, Iraqi soldiers are said to have detonated approximately 720 Kuwaiti oil wells with the intention of setting them alight and creating a thick smoke hazard.¹⁵⁷ In fact, only about 600 wells were ignited.¹⁵⁸ Assuming for the sake of argument that all other elements of Article 8(2)(b)(iv) of the ICC Statute can be established in relation to this act – as we will see, a far from insignificant assumption – the latter interpretation adopted by the PrepCom would enable the ICC to prosecute even those individuals for whom it could only be proven that they ordered the detonation of oil wells and not that the oil wells they had ordered to be detonated actually caught on fire.

155 K. Dörmann, above note 153, p. 162.

156 Elements of Crimes, above note 119, p. 21.

157 S. Omar *et al.*, above note 16, pp. 321–322.

158 J. E. Austin and C. E. Bruch, above note 7, p. 2.

On the other hand, one could argue that following the narrower interpretation makes little substantive difference because all perpetrators coming within the broader interpretation would be caught by the ICC Statute's attempt provision (Article 25(3)(f)) anyway – a provision permitting the Court to find an individual criminally responsible and liable for attempts to commit a crime within the jurisdiction of the Court by taking action that commences its execution by means of a substantial step, but which 'does not occur because of circumstances independent of the person's intentions'.¹⁵⁹

This 'knowledge of causation' part of the Article 8(2)(b)(iv) of the ICC Statute provision also points to the first of many important ways in which the ICC Statute provision criminalizing attacks causing wartime environmental damage sets a higher threshold than similar international humanitarian law provisions involving lesser, state-responsibility-related consequences. The second limb of the Additional Protocol I, Article 55 formula, 'methods or means of warfare which are intended or *may be expected to cause*' (emphasis added), is significantly wider than the 'will cause (*causera*)' of the ICC Statute or even the 'would cause (*allait causer*)' preferred by the PrepCom in the Elements of Crimes document. The difference extends beyond the substitution of actual cause for probable cause. Whereas the ICC Statute demands proof of *subjective* reliance on whether the perpetrator knew that the act would cause damage, Additional Protocol I allows an *objective* determination of whether the act would cause the damage, as is clear from the use of the impersonal subject '*on*' in the French version of the Additional Protocol I provision, '*méthodes ou moyens conçus pour causer ou dont on peut attendre qu'ils causent*' the requisite damage.¹⁶⁰ It will therefore be much more difficult to establish a violation of the ICC provision than of the Additional Protocol I provision.

The strictness of the knowledge requirement imposed by the ICC Statute provision on wartime environmental damage is clear from the genealogy of its precise terms. The phrase used in Article 8(2)(b)(iv) of the ICC Statute, 'in the knowledge that' ('*en sachant que*' in the French version), comes directly from Article 85(3)(b) of Additional Protocol I, which designates the non-environmental, civilian damage limb of Article 8(2)(b)(iv) of the ICC Statute as a grave breach of international humanitarian law. Such clear use of terminology from a grave breach provision is understandable and allows us to clarify the precise meaning of the knowledge requirement through reference to the commentary on that particular article of Additional Protocol I, which states that the individual committing the act must have known 'with certainty that the described results would ensue, and this would not cover recklessness'.¹⁶¹

159 ICC Statute, Art. 25(3)(f).

160 Note that, in contradistinction to Article 55, Article 35 of the French version of Additional Protocol I uses the future of the verb *causer* ('*dont on peut attendre qu'ils causeront*'), which in the context has the same meaning as the slightly less grammatically correct Article 55 formulation ('*dont on peut attendre qu'ils causent*').

161 Y. Sandoz *et al.*, above note 139, para. 3479.

That the content of the knowledge required by Article 8(2)(b)(iv) of the ICC Statute is much narrower than the Additional Protocol I language is evident when one applies the provision to a controversial instance of wartime environmental damage occurring shortly after the ICC Statute was signed. On 17–18 April 1999, NATO intensively bombed a petrochemical plant, nitrogen-fertilizer-processing plant, and oil refinery at Pančevo on the eastern bank of the Danube river.¹⁶² As mentioned earlier, one of the severe environmental consequences was the leaking of large quantities of various toxic chemicals into the Danube. There can be little doubt that the bombing of the facilities *may have been expected to cause* (Additional Protocol I) serious environmental damage, or that the relevant military personnel were reckless as to whether it would cause such damage, but it is substantially more difficult to prove that they *in fact knew that the bombings would cause* (ICC Statute) serious environmental damage. Of course, in such situations one might be able to prove that the perpetrators knew that *some* environmental damage would occur, but the different elements of Article 8(2)(b)(iv) of the ICC Statute should not be read too independently: it is necessary that they *actually knew* it *would* cause the *widespread, long-term and severe* damage to the natural environment required before a breach of this provision can be established.

This interpretation of Article 8(2)(b)(iv)'s knowledge requirement, proffered on the basis of text itself and also of the commentaries to the identical terminology of Article 85(3)(b) of Additional Protocol I, seems most faithful to the intent of the ICC Statute's drafters, but also sets the bar very high. Some commentators have therefore argued that it should not be interpreted to refer to the (subjective) knowledge actually existing in the mind of the perpetrator at the relevant time, but instead, in the manner of the Additional Protocol I provision, merely the knowledge objectively, or at least constructively, available to him or her at that time. On the basis of the ICTY report regarding the NATO bombing campaign,¹⁶³ Dörmann suggests that the knowledge requirement be determined through an objective appreciation of the knowledge of the 'reasonable military commander' in the circumstances.¹⁶⁴ Support for this approach can be found in the constructive knowledge standard for command responsibility adopted by various decisions of the ICTY and codified, for command responsibility, in Article 28 of the ICC Statute.¹⁶⁵ However, importing this popular juridical device of reasonableness, principally used to identify objective standards of conduct for negligence claims in common law systems, through the international criminal provisions on command responsibility for the separate issue of wartime environmental damage cannot, in

162 See above note 17 and text thereto.

163 ICTY, *Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia*, 13 June 2000, para. 22, available at: <http://www.icty.org/x/file/Press/nato061300.pdf> (last visited 20 September 2010).

164 K. Dörmann, above note 153, p. 176.

165 See ICTY, *Prosecutor v. Delalic et al.*, Case No. IT-96-21-T, Judgment of 16 November 1998, para. 393; affirmed in *Prosecutor v. Delalic et al.*, Case No. IT-96-21-A, Judgment of 20 February 2001, para. 238; ICC Statute, Art. 28. See further Eugenia Levine, 'The *mens rea* requirement', in *Global Policy Forum*, February 2005, paras. 45–58.

the present author's view, be supported either by the text of the Statute read in its historical context or the relevant note in the Elements of Crimes document. Footnote 37 of the latter document somewhat confusingly states that '[a]n evaluation of that value judgement must be based on the requisite information available to the perpetrator at the time', which appears to fuse the two poles by suggesting that the Court consider the perpetrator's actual knowledge to see if the value judgement was made, but test the veracity of his evidence about that subjective judgement through consideration of the objective knowledge available to him or her at the time.¹⁶⁶ How such requirements would apply in practice will remain unclear at least until we obtain a more authoritative interpretation of it, preferably from the ICC itself.¹⁶⁷

How it is in fact interpreted will clearly have important consequences, but it is more likely than not that the ICC will adopt a restrictive interpretation of the knowledge requirement along the lines of the textual interpretations of Drumbl and Schmitt, who both claim that in the absence of proof beyond reasonable doubt that the defendant had actual knowledge that the act would cause widespread, long-term, and severe damage, he or she would, under the present wording, not be able to be convicted.¹⁶⁸

This has significant implications for the enforcement of the rule against wartime environmental damage in the International Criminal Court. Indeed, it has been well reported that the ICTY Prosecutor opted not to pursue members of the NATO force under applicable ICTY provisions partly because of likely difficulties in obtaining the evidence from the Pentagon that would ultimately be sufficient to prove beyond reasonable doubt that NATO forces actually knew the bombing of the installations at Pančevo and other places could have such environmental consequences.¹⁶⁹ On the other hand, responsibility of the state that caused the environmental damage in such situations is likely to follow from Additional Protocol I or even the ENMOD convention so long as the act itself can, from an objective point of view, be seen as potentially causing widespread, long-term, and severe environmental damage. The key question from a policy point of view is whether the individual criminal responsibility should also attach to intentional acts that a reasonable person could have expected to cause such severe environmental damage.

International environmental law, like its domestic counterpart, very occasionally imposes strict liability in respect of certain environmental offences

166 Elements of Crimes, above note 119, p. 132, footnote 37.

167 None of the cases currently before the ICC involve a charge under either limb of Article 8(2)(b)(iv) of the ICC Statute, the only provision containing this particular 'knowledge of facts'-style requirement.

168 Mark A. Drumbl, 'Waging war against the world: the need to move from war crimes to environmental crimes', in *Fordham International Law Journal*, Vol. 22, 1998, p. 130. Michael N. Schmitt, 'Humanitarian law and the environment', in *Denver Journal of International Law and Policy*, Vol. 28, No. 3, 2003, pp. 265 and 281.

169 See ICTY, above note 163, in particular paras. 21–25. See also D. Bodansky, above note 89.

causing environmental damage.¹⁷⁰ In simple terms, strict liability means that a defendant may be legally liable even where mental elements such as intention to commit the offence or knowledge that the offence was being committed cannot be proven. However, in all of the few instances in which international environmental law operates on a strict liability basis, the prescribed penalties are rarely severe and do not include the incarceration that flows from a conviction under the ICC's war crimes provision. Indeed, as explained above, international environmental law does not yet have the notion of criminal sanctions for breaches of its rules, so has never formulated rules and principles to establish whether and on what bases an international environmental law offence may attract individual criminal responsibility. The domestic environmental policy and law of many jurisdictions has, on the other hand, been known to prescribe civil, administrative, and criminal penalties. However, it should be noted that criminal penalties, despite their growing popularity in certain parts of the world, still constitute the exception for breaches of domestic environmental law and, if part of a regime, tend only to apply to the most egregious breaches and subject to a host of conditions. While there are many examples of strict (or absolute) liability offences in domestic environmental law systems, very few prescribe criminal penalties on a strict liability basis. A quick review of the US *Clean Air Act* shows that criminal offences must be committed 'knowingly' or 'negligently', while Australian states have many strict liability civil environmental laws and many strict and absolute liability criminal offences, but few, if any, strict liability criminal environmental offences. European jurisdictions also insist on intent or negligence: Sweden's Environmental Code, for example, prescribes criminal penalties including imprisonment for broadly defined acts of environmental nuisance where they were committed 'deliberately or through negligence'.¹⁷¹

It can be concluded that neither international environmental law, nor its somewhat more developed domestic counterparts, have a general policy imposing criminal liability for any acts of environmental damage without the protection of the *mens rea* defences. Clearly, in venturing into the terrain of criminal law, with its potentially harsher penalties, environmental law yields to the long-established policy considerations of criminal law and respects its fundamental principles. Even from a domestic environmental law perspective, therefore, it is far from surprising to see the international rules on wartime environmental damage with criminal implications qualified by the mental elements of intention and knowledge. What is somewhat more difficult for international environmental lawyers to comprehend is the next element of the ICC war crimes provision on environmental damage, the proportionality requirement.

170 See e.g. *Convention on International Liability for Damage Caused by Space Objects*, opened for signature 29 March 1972, 961 UNTS 187, entered into force 1 September 1972, available at: <http://www.oosa.unvienna.org/oosa/SpaceLaw/liability.html> (last visited 7 September 2010). See further A. Boyle, above note 26.

171 Swedish Environmental Code, adopted 1998, entered into force 1 January 1999, Part Six 'Penalties', Chapter 29, 'Penalty provisions and forfeiture', Sections 1–4.

The proportionality 'defence'

The environmental damage provision of the ICC Statute does not simply require an act causing widespread, long-term, and severe damage to the natural environment, an intention to commit that act, and knowledge that it would cause that damage, but also demands that such damage is 'clearly excessive in relation to the concrete and direct overall military advantage anticipated'.¹⁷²

On the one hand, it seems justifiable that a further requirement be introduced to distinguish the more serious criminal offence from the violation of humanitarian law. However, compared to the parallel Additional Protocol I provisions, the ICC Statute already contains a stricter causality and a more demanding knowledge requirement (see sub-sections above). Providing, in addition, a very open proportionality requirement that, through its link to an 'overall military advantage anticipated', effectively amounts to a wide defence of necessity seems to give perpetrators yet another way to avoid the application of a provision that, in light of the analysis undertaken in the previous five sub-sections, it already appears extremely difficult to apply to many instances of intentional wartime environmental damage.

This proportionality requirement-cum-defence, like other elements of Article 8(2)(b)(iv) of the ICC Statute seems to have its origins in provisions relating to its other limb, civilian damage, including Additional Protocol I's Article 51. Indeed, the proportionality requirement in relation to civilians dates from a UK claim in relation to the 1938 Spanish Civil War.¹⁷³ A consequence of the ICC Statute's combination of civilian damage and environmental damage into the one provision therefore appears to be that proportionality with a military advantage has, for what appears to be the first time in any international instrument relating to wartime environmental damage, become a defence for any perpetrator of such damage. This defence is one of the most enduring elements of classical international humanitarian law, having featured prominently in the aforementioned Lieber Code, which was so expansive in its definition of the defence that it was sometimes construed as a licence to contravene the laws of war.¹⁷⁴ Yet, as Carnahan notes, the Lieber Code's necessity defence is increasingly seen as out of sync with contemporary international humanitarian law norms that protect the civilian population and the environment, and is 'widely regarded today as an insidious doctrine invoked to justify almost any outrage'.¹⁷⁵

In this context, one can understand the 'astonishment' expressed by Allain and Jones in response to the inclusion of what is in effect a defence of military

172 ICC Statute, Article 8(2)(b)(iv).

173 ICTY, Trial Chamber, *Prosecutor v. Kupreskic et al.*, Judgment of 14 January 2000, para. 524.

174 It should be noted that Article 14 of the *Lieber Code*, above note 57, also combines into one provision the linked elements of necessity and proportionality: '... indispensable for securing the ends of war [necessity] and lawful according to the modern laws of war [proportionality]'. See further Burrus M. Carnahan, 'Lincoln, Lieber and the laws of war: the origins and limits of the principle of military necessity', in *AJIL*, Vol. 92, No. 2, 1998, pp. 213–231.

175 B. M. Carnahan, above note 174, p. 230.

necessity, which they argue ‘runs counter to ... the whole spirit of the times, which recognises that the infliction of such damage on the natural world cannot be tolerated in any circumstances’.¹⁷⁶ The ICRC authors of a study on the elements of ICC crimes, on the other hand, claim that this result was not only intended but indeed reflects the *opinio juris* of the international community as regards wartime environmental damage.¹⁷⁷ This view is supported by authoritative pieces of evidence including the ICJ’s *Nuclear Weapons* Advisory Opinion, which, as Freedland points out, declined to promote the protection of the environment above questions of military necessity,¹⁷⁸ by urging that environmental considerations be taken into account ‘when assessing what is necessary and proportionate in the pursuit of legitimate military objectives’.¹⁷⁹ A General Assembly Resolution on the ‘Protection of the environment in times of armed conflict’ provides further support to this claim as it also makes this link, speaking of environmental destruction that is ‘not justified by military necessity and carried out wantonly’.¹⁸⁰

In terms of the precise meaning of the Article 8(2)(b)(iv) of the ICC Statute proportionality requirement, it should be noted that it goes further than Article 51(5)(b) of Additional Protocol I (and other instruments using identical wording)¹⁸¹ by adding the word ‘overall’ to the ‘concrete and direct military advantage anticipated’ and the word ‘clearly’ to the requirement that the damage be ‘excessive’. There are no other international legal sources using the precise phraseology of the ICC Statute, so these slightly different terms were not simply borrowed but rather reflect a specific effort at the Rome Conference to expand the defence of proportionality with a military objective. Indeed, whereas some delegations at the Geneva Conference (such as Australia, New Zealand, Germany, and Canada) considered the addition of the word ‘overall’ a mere improvement on the drafting of the Additional Protocol I provision, several delegations worried that it would allow the long-term advantages of winning the war *per se* to be taken into account. Solf’s use of the word ‘overall’ in his analysis of Article 52 of Additional Protocol I implies consideration of the entire military operation as a whole rather than the specific military objective.¹⁸² Following his logic, the word overall would enable the application of the defence of proportionality to a situation such as the

176 Jean Allain and John Jones, ‘A patchwork of norms: a commentary on the 1996 Draft Code of Crimes against the Peace and Security of Mankind’, in *European Journal of International Law*, Vol. 8, No. 1, 1997, p. 115.

177 K. Dörmann, above note 153, pp. 171–176.

178 Stephen Freedland, *Human Security and the Environment: Prosecuting Environmental Crimes in the International Criminal Court*, paper presented at the 12th Annual Conference of the Australian and New Zealand Society of International Law, Canberra, Australia, 18–20 June 2004, p. 7.

179 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, above note 31, para. 30.

180 General Assembly Resolution 47/37 of 25 November 1992.

181 Terminology copied in the *Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Protocol II)*, 1342 UNTS 168, 19 ILM 1529, entered into force 2 December 1983; as amended 3 May 1996, 35 ILM 1206.

182 Waldemar A. Solf, ‘Article 52: general protection of civilian objects’, in Michael Bothe, Karl Josef Partsch, and Waldemar A. Solf (eds), *New rules for Victims of Armed Conflicts*, Martinus Nijhoff Publishers, The Hague, 1982, p. 324.

Allied bombing campaign in the Pas de Calais, which was unnecessary in the specific sense, but necessary as part of the overall purpose of distracting German forces from the Allies' subsequent landings on the beaches of Normandy.¹⁸³

The more significant way in which Article 8(2)(b)(iv) of the ICC Statute expands the proportionality defence is through the addition of the word 'clearly' before 'excessive'.¹⁸⁴ After all, almost any defendant coming before the Court, having intrinsically launched an attack in an international armed conflict, is likely to plead the defence of proportionality with his or her army's military objectives. One might suggest that it would be a brave court indeed who would go so far as to say that actions were 'clearly excessive' ('*manifestement excessifs*' in the French version) to the military advantage described.

In this regard, Weinstein directs our attention to what she calls 'the only case in history where military necessity was balanced against environmental damage':¹⁸⁵ the Nuremberg Tribunal's prosecution of the Austrian general Lothar Rendulic in *US v. Wilhelm List & Ors* (1948).¹⁸⁶ Rendulic was not found guilty in relation to scorched earth offences in Norway on the basis of military necessity, even though the necessity did not exist in fact but only in Rendulic's mind – he had proceeded from the false assumption that the Russians were advancing. Far from providing a narrower interpretation of a defence that, it must be recalled, did not use the wider phrase 'clearly excessive', this decision merely serves to show just how broad even the unexpanded defence is, so much so that it probably even extends to subjectively determined necessity rather than objective necessity.

A brief consideration of the two main instances of wartime environmental analysis that sparked the international community's desire to prohibit attacks against the environment – US actions in Vietnam and Iraq's actions in Kuwait – further demonstrates the considerable breadth of this defence. If a US general who had directed the spraying of defoliants over vast tracts of Vietnamese territory were tried under such a provision, he would be likely to point to the US military's need to remove the jungle cover exploited against it by Vietcong fighters. Would a court be able to determine that the damage caused to the foliage, most of which subsequently grew back, was *clearly excessive* to the military advantage obtained by pursuing this objective? It would seem equally difficult in relation to the Iraqi forces who supposedly ignited oil wells to create a smoke cover against US aircraft and jettisoned millions of barrels of oil into the Persian Gulf to obstruct US naval movements. Given that the environmental consequences of these actions were not, for a variety of reasons, as catastrophic as they perhaps could have been, could a court determine them to have been *clearly excessive* in relation to Iraq's

183 *Ibid.*, p. 325.

184 Whether the damage was excessive in the context is to be judged, according to footnote 37 included by the PrepCom in its Elements of Crimes document (above note 119), on the basis of the information available to the perpetrator at the time of his or her decision to launch the attack (i.e. whether the disproportionality was foreseeable).

185 T. Weinstein, above note 118, p. 697.

186 'The Hostages Trial (Wilhelm List and Others)', in *Law Reports of Trials of War Criminals*, Vol. 8, 1948, pp. 66–69.

aforementioned military objectives? Indeed, it would seem enormously difficult to imagine a situation in which a court would definitely deem the environmental damage caused clearly excessive to the overall military advantage anticipated.

The likely willingness of any future defendants to invoke this defence and insist upon the importance of the military objective being balanced against the environmental damage caused is reflected in the public relations statements made even by those potentially not even subject to the Court's jurisdiction in relation to well-known instances of wartime environmental damage. On 14 July 1999, the *New York Times* quoted a NATO spokesperson as saying in relation to the incident at Pančevo:

NATO had two types of targets. There were tactical and strategic targets. The oil refinery in Pančevo was considered a strategic target. It was a key installation that provided petrol and other elements to support the Yugoslav army. By cutting off these supplies we denied crucial material to the Serbian forces fighting in Kosovo. *When targeting is done, we take into account all possible collateral damage, be it environmental, human or to the civilian infrastructure. Pančevo was considered to be a very, very important refinery and strategic target, as important as tactical targets inside Kosovo.*¹⁸⁷

Importantly for the purposes of the present article, the proportionality-cum-necessity defence in Article 8(2)(b)(iv) of the ICC Statute brings into focus the different perspectives taken on the problem of wartime environmental damage by the different branches of public international law. By demanding that the environmental damage caused be balanced against the overall military advantage obtained, this provision provides a classic example of how horizontal conflict between separate subsystems of international law and international relations can occur. Two different value structures are, in effect, being played off against each other: the objective of preventing environmental damage on the one hand, and, on the other, the humanitarian law philosophy of accepting all aspects of armed conflict necessary for the conduct of hostilities.

Balancing international environmental law and international humanitarian law values

Problems also arise when one considers who undertakes this balancing act, where, and in what context. In an ideal world, the environmental damage would be assessed within the bounds of and according to the principles of international environmental law, while the overall military advantage would be apprehended in the international military law or humanitarian law fields used to dealing with such questions. Yet the balancing act must be undertaken by one court or tribunal and

¹⁸⁷ Chris Hedges 'Serbian town bombed by NATO fears effects of toxic chemicals', in *New York Times*, 14 July 1999, emphasis added. See also UNEP and United Nations Centre for Human Settlements (Habitat), above note 144, p. 32.

one group of decision-makers likely to have the same areas of expertise. With little doubt, a peace-loving environmentalist would place greater weight on the environmental damage and lesser importance on the overall military advantage than a military lawyer or even an international humanitarian lawyer, who might see destruction of the natural environment to fulfil a military objective as more necessary than reasonably available military alternatives that might involve, for example, grave restriction of the rights of enemy non-combatants. Of course, in the case of wartime environmental damage, it would be the ICC that would have to mediate between the values of different fields of international relations and the distinct approaches of different areas of public international law. Could this pose problems from the perspective of international environmental law?

International environmental law is, for the various reasons stated above, quite accustomed to decision-makers from 'foreign' subsystems of international law measuring the importance of an environmental objective against the philosophy of another branch of international law. Indeed, much of the trade and environment debate that briefly became so characteristic of inter-subsystem interaction grew out of the extraordinary interest shown within environmental circles for the WTO's *Shrimp-Turtle* case.¹⁸⁸ In that case, the first panel had in general terms found that an extra-territorial environmental measure undermined the structure of the multilateral trading system and could therefore not come within the general exceptions of Article XX of the General Agreement on Tariffs and Trade (GATT). This jurisprudence was overturned on appeal to the Appellate Body, who set out a more balanced approach, less heavily biased in favour of trade values. However, the fact remains that non-trade values, including environmental values, continued to be weighed against trade values in WTO adjudicatory bodies, panels, and an Appellate Body composed most commonly of experts in trade law supported by secretariat staff again more comfortable with the highly specialized area of international trade law than with general international law or the details of other, particularly non-economic, subsystems of international law.

Parts of the tests in the general exceptions in GATT, Article XX are analogous to the necessity defence for wartime environmental damage. Indeed, according to the WTO jurisprudence under GATT, Article XX(b), the importance of the public policy goal sought by a government measure will be weighed and balanced against various factors, including, most significantly, the trade restrictiveness of the measure.¹⁸⁹ Recently, the WTO Appellate Body has focussed on the *necessity* of the measure and in doing so has asked the parties taking the measure to protect the environment to prove that there was not a less trade-restrictive

188 See WTO Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WTO Appellate Body Report of 12 October 1998, WT/DS58/AB/R.

189 See Gabrielle Marceau and Julian Wyatt, 'Trade and the environment: the WTO's efforts to balance economic and sustainable development', in Rita Trigo Trindade, Peter Henry, and Christian Bovet (eds), *Economie environnement éthique: De la responsabilité sociale et sociétale. Liber Amicorum Anne Petitpierre-Sauvain*, Schulthess, Zurich/Basel/Geneva, 2009, pp. 225–235.

alternative available.¹⁹⁰ As general international law on proportionality and necessity reveals,¹⁹¹ such a less restrictive alternative approach is a logically appealing way of dealing with an evaluation of necessity or ‘excessiveness’ and could easily be used by the ICC considering a plea that wartime environmental damage was not clearly excessive to the overall military advantage obtained. If the WTO law or general law approach to necessity were followed at the ICC, the prosecutor’s pleadings would then have to suggest ways in which the overall military advantage could have been obtained with a lesser impact on the environment. While this seems to open up a new route toward eventual conviction, the evidentiary complications are patent, further restricting the likelihood of criminal sanctions for a military officer who engaged in wartime environmental damage.

Of course, there is always the chance that the judges on the International Criminal Court will respond well to the delicate balancing-of-interests tasks vested in them by this ICC rule on environmental damage. Indeed, some environmental law commentators have praised the environmental contribution of the WTO Appellate Body, at least in a notable period in which it had some prominent general international lawyers with wide-ranging experience in different fields of public international law sitting on its bench.¹⁹² Yet, the danger remains that as part-environmental-law cases move into courts and tribunals with their own ideologies and special areas of expertise, the distinct international environmental law philosophy will eventually be drowned out, never to resurface.¹⁹³

Ultimately, from an international environmental law perspective one must ask the question of whether it is better to have environmental rules enforced by another subsystem’s court or tribunal on the basis largely of that other subsystem’s philosophy or, alternatively, for them not to be enforced at all. In the absence of any proprietary international environmental law court, tribunal, or enforcement structure, should this field of international law really react negatively to the fact that other subsystems are taking a keen interest in environmental protection and bringing their greater institutional force to bear in order to achieve greater compliance with international law principles? After all, we have already seen how international humanitarian law has effectively reached out to the more closely related, but at the same time distinct, field of international criminal law in the hope that a different set of remedies may improve compliance with its rules. Along the

190 WTO Appellate Body Report, *Brazil – Measures Affecting Imports of Retreaded Tyres (DS 332)*, 3 December 2007, para. 171. See also WTO Appellate Body Report, *United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services (DS 285)*, 7 April 2005, para. 291. See further G. Marceau and J. Wyatt, above note 189, pp. 232–233.

191 See e.g. ICJ, *Gabčíkovo-Nagymaros case*, above note 46, para. 55, where the Court suggested alternative means by which Hungary could have protected its environmental concerns without abandoning the joint works.

192 See Steve Charnovitz, ‘The WTO’s environmental progress’, in *Journal of International Economic Law*, Vol. 10, No. 3, 2007, pp. 685–706.

193 See J. Wyatt, above note 6. See also Tomer Broude, *Fragmentation(s) of International Law: On Normative Integration as Authority Allocation*, paper delivered at the International Law Review 2008 Symposium, 15 February 2008, esp. p. 5, available at: http://www.luc.edu/law/activities/publications/ilrsymposium/2008sym/broude_normative_integ_paper.pdf (last visited 20 September 2010).

way, sacrifices have been made. In order to fit in with the criminal law philosophy, which comes with penalties including incarceration, the combined system requires mental elements such as intention and knowledge before conviction. Of course, the fit between international humanitarian law and international criminal law is much better than those involving international environmental law and these branches, international humanitarian and international criminal law ultimately dealing with the same subject matter according to a predominantly shared set of values. However, it cannot be denied that, even in relation to problems overlapping with areas of international law with which it does not have any particular affinity, international environmental law may, in certain cases, be very well served by employing another subsystem's framework, particularly for the purposes of enforcement of its norms.

Perhaps on the basis of a recognition of this point, the majority of the criticism of what are essentially international humanitarian law and international criminal law instruments regulating wartime environmental damage is focused not on the fact that the rules do not sit within a properly environmental structure and may potentially corrupt it, but on the fact that, from an environmental perspective, these rules do not go far enough.

Too strong or too weak a regime? From what perspective?

All policy-makers and legislators are aware of the common irony of a new policy or rule going too far for one group of people and not far enough for another. In international law, this is often the response elicited by law-making efforts aimed at cross-sectoral problems, issues that traverse the bounds of different branches of international law and the divergent value structures that they represent. A review of the literature in relation to the international legal regime for wartime environmental damage, and the relevant ICC Statute provision in particular, is illustrative of this phenomenon. The following remarks constitute an attempt to evaluate the regime from not just one but the two different international law perspectives likely to be applied to this phenomenon.

Too weak a regime from the perspective of international environmental law?

In the contemporary world of international humanitarian law, individual criminal penalties, be they applied through state courts, *ad hoc* tribunals, or the ICC, are often seen as the best available method for safeguarding compliance with international humanitarian law norms. At first blush, therefore, environmental campaigners should be delighted to see rules on wartime environmental damage that were previously not even part of the grave breaches regime elevated to the status of war crimes at the International Criminal Court. However, as the above analysis of the elements of Article 8(2)(b)(iv) of the ICC Statute and how they would apply to classic examples of intentional wartime environmental damage has shown, the

scope of this rule's application is extremely limited. Indeed, with the high threshold requirements for the damage caused, the complex knowledge requirement, and the specially enhanced and thus overly available proportionality/necessity defence, one may wonder, with Heller and Lawrence, whether it is even possible to convict someone under this ICC provision for wartime environmental damage¹⁹⁴ – all the more when one considers that we must strictly construe any definition of a crime without extending it by analogy and, in the case of ambiguity, by leaning towards the interpretation favourable to the person being prosecuted.¹⁹⁵ Arguably, any military act capable of falling within the ambit of Article 8(2)(b)(iv) of the ICC Statute would be so severe and inexcusable that it would probably fall within the ambit of other international crimes anyway.

ICC Statute, Article 8(2)(b)(iv) may have appeared to commentators at first sight to be a ground-breaking gain for protection of the environment in armed conflict, but seems on closer inspection to be but a mirage, unlikely ever to play a role in addressing the problem of intentional wartime environmental damage through international criminal prosecution. Indeed, a contributor to this *Review* arrived at a very similar conclusion ten years ago,¹⁹⁶ even before the United States had effectively taken such a large chunk out of the ICC's jurisdiction by signing so-called 'Article 98 agreements' with more than 100 different states.

Yet steps in any new and worthy direction, even if they are only very small, should nonetheless be lauded. After all, supporters of environmental causes and international environmental lawyers should themselves be all too aware of the difficulties involved in progressing rapidly toward hard, far-reaching international law on a new topic. Arguably, if the international environmental law movement had already reached a higher stage of development and formed a stronger institutional structure, a farther-reaching norm might have been adopted at the Rome Conference. It is all too easy for diplomats to hold the mirror up to the weaknesses of another field and areas of that field that have not been regulated as an excuse for inaction or only the smallest of steps. Such temptation was resisted in relation to wartime environmental damage, the criminalization of which must therefore, in the present author's view, be seen as the passing of a new frontier for international environmental law. No other area of this discipline even comes close to such severe consequences as incarceration for the breach of the terms of an environmental treaty or for international acts that damage the natural environment. Treaties such as the Basel Convention declare certain acts illegal but provide no enforcement measures, merely making a vague call to state parties to use domestic measures to

194 Jessica C. Lawrence and Kevin Jon Heller, 'The limits of Article 8(2)(b)(iv) of the Rome Statute: the first ecocentric environmental war crime', in *Georgetown International Environmental Law Review*, Vol. 20, No. 1, 2007, p. 62.

195 ICC Statute, Art. 22(2).

196 Thilo Marauhn, 'Environmental damage in times of armed conflict: not "really" a matter of criminal responsibility?', in *International Review of the Red Cross*, No. 840, 2000, p. 1036.

enforce Convention rules.¹⁹⁷ Even the Additional Protocol I provisions on wartime environmental damage should be lauded because they sit in a relatively small group of international environmental law rules by which a state can be held responsible for damage it caused even if such damage was not specifically intended, subjectively foreseeable, or reckless.

Viewed in the context of the present state of international environmental law, therefore, the criminalization of wartime environmental damage, far from not going far enough, may actually seem to have gone too far. Is it really right, from a legal policy point of view that the crew of a ship that disgorges toxic waste into the high seas, or the director of a company that takes the decision to pollute an international watercourse, should not necessarily be sent to prison, while a military commander, whose *raison d'être* is to inflict harm on his enemies, may end up spending time in prison on the basis of the incidental environmental harm that his military activities caused?

In a field such as international environmental law, where the guiding objective is greater protection of the environment by painting new international legal rules on a still relatively empty canvas, any new environmental norms will be welcomed irrespective of any apparent imbalances they may seem to create or contradictions of notions of basic fairness they may seem to engender. Indeed, it is the nature of international law that some branches of the domain are better regulated and better enforced than others, so international environmental law – many aspects of which depend on different branches – will inevitably be somewhat uneven in terms of how it seeks to protect the environment at the international level. The inevitably haphazard pattern of international law-making ensures that international law cannot follow the legal policy paradigm typical of domestic legal systems, pursuant to which the weight of legal sanction rises in tandem with the seriousness or public policy importance of the breach or offence. Such inconsistency is unavoidably more prevalent in branches of international law devoid of a strong internal structure and also in those domains whose norms are more likely to overlap with those of other areas of international law.

Ultimately, whether an international environmental lawyer considers that the criminalization of wartime environmental damage goes too far or not far enough will depend on his or her preparedness to accept, in the interests of the advancement of law-making in this still young subsystem of international law, both a new, yet limited and imperfect international environmental rule and also a patent lack of evenness regarding what activities within the discipline's scope are in fact regulated.

However, it is submitted that such inequities in what activities are regulated and not regulated will be less acceptable to those accustomed to branches of international law that do not typically rely on somewhat sporadic and often

197 *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, opened for signature 22 March 1989, 1673 UNTS 57, 28 ILM 657 (entered into force 5 May 1992), Art. 4, paras. 3 and 4.

fragmented treaty-making efforts, nor on the institutional support of a wide range of other branches of international law. International humanitarian law is one such system and it is therefore important to consider whether, from this field's perspective, the criminalization of wartime environmental damage creates a similar degree of unevenness as it appears to in the context of international environmental regulation.

Too strong a regime from the perspective of international humanitarian/international criminal law?

Employing the same method as we used for our evaluation of the legal regime for environmental damage in armed conflict from an international environmental law perspective, we should now consider it in relation to other violations of international humanitarian law on a separate international humanitarian law/international criminal law scale. In somewhat less scientific terms, the key question is whether it is even appropriate that an individual military commander can potentially be held personally liable for damage to the environment or whether individual criminal liability should instead be restricted to egregious acts carried out directly against human beings, such as genocide and torture. In this light, one might argue that by criminalizing wartime environmental damage, the ICC Statute, far from not going far enough on account of its restricted scope and effectiveness, actually goes too far.

The preamble of the ICC Statute speaks of 'unimaginable atrocities that deeply shock the conscience of humanity' and affirms that the 'most serious crimes of concern to the international community as a whole must not go unpunished'.¹⁹⁸ Some authors have even set out specific, numbered conditions that must be met before the violation of a norm is capable of becoming an international crime.¹⁹⁹

Above, we saw how the ICC Statute provides a very broad definition of, among other things, crimes against humanity and war crimes over which the Court has jurisdiction. In discussing terrorism, one of the crimes not included in the ICC Statute, Professor Antonio Cassese, the first President of the ICTY, notes that the ICC Statute was intended only to include crimes that are, among other things, considered by the international community to be serious enough, in terms of their scale of effects and intensity, to warrant prosecution by an international tribunal.²⁰⁰

However, a substantial portion of doctrine does not stop at a factual consideration of the seriousness of the violation. Many argue that more formalistic requirements must be met for a norm of international law, including of international humanitarian law, to be criminalized. In a separate publication, Cassese argues that, even for a 'serious' violation of international humanitarian law to

¹⁹⁸ ICC Statute, Preamble.

¹⁹⁹ Prabhu, for example, sets out five such features: Mohan Prabhu, 'General report on crimes against the environment', in *International Review of Penal Law*, Vol. 64, 1994, p. 703.

²⁰⁰ Antonio Cassese, 'Terrorism is also disrupting some crucial legal categories of international law', in *European Journal of International Law*, Vol. 12, No. 5, 2001, pp. 993–994.

become a war crime, it is necessary that there is proof that the violation has been criminalized by the jurisprudence of either relevant national courts or international courts and tribunals.²⁰¹ René Provost argues that there must be consensus on the fact that the given breach will incur the individual penal responsibility of its author,²⁰² while Georges and Rosemary Abi-Saab seem to go the farthest of all, by setting out an arduous double formation test akin to that generally considered to be necessary for the establishment of customary *jus cogens* norms:

En fait, pour que la violation d'une règle du *jus in bello* ait l'effet spécial d'engager la responsabilité pénale individuelle, il faut établir non seulement l'existence de la règle violée en droit international, mais également l'existence d'une règle secondaire, normalement coutumière, qui attribue à la règle cet effet spécial.²⁰³

These two authors, who appear to be desirous of maintaining the integrity of the international criminal law system, then go on to express concern that the drafters of the ICC Statute, who were appointed merely to set up an institution and not to codify substantial law, in fact promulgated the existence of war crimes beyond the scope of those established as criminal in customary international law.²⁰⁴ The prohibition of wartime environmental damage is of course one prominent example of this phenomenon.

However, there are equal numbers on the other side, who consider it far from inappropriate that a group of national representatives may agree on provisions of international criminal law and have praised the ICC drafters' willingness to move faster than a customary international law to criminalize such acts as sexual offences and, of course, wartime environmental damage. For example, Provost argues that both the nature of environmental norms and the ineffectiveness of the state-responsibility-based regime to address the problem of wartime environmental damage justifies the criminalization of this prohibition,²⁰⁵ while Steven Freeland is considerably more robust in his support for the criminalization of the norm, noting that the ICC was set up for the 'deterrence and punishment of the most serious international crimes' and then claiming that '[t]he deliberate destruction of the environment for strategic and military purposes, with its disastrous consequences for human populations, clearly falls within this description'.²⁰⁶

201 Antonio Cassese, *International Criminal Law*, 2nd edition, Oxford University Press, Oxford, 2007, pp. 84–86.

202 R. Provost, above note 134, p. 440.

203 'In fact, for a violation of a *jus in bello* rule to have the particular consequence of engaging individual criminal responsibility, one must establish not only the existence of a violation of a rule of international law but also the existence of a secondary rule, normally customary, which attributes this particular consequence to a violation of that rule'. Georges and Rosemary Abi-Saab, 'Chapitre 21: les crimes de guerre', in Hervé Ascensio, Emmanuel Decaux, et Alain Pellet (eds), *Droit international pénal*, Pedone, Paris, 2000, p. 278 (present author's translation).

204 *Ibid.*, pp. 284–285.

205 R. Provost, above note 134, p. 442.

206 S. Freeland, above note 178, p. 12.

The critical question is thus a matter of one's philosophy or, more precisely, one's frame of reference. In keeping with one of the key points made by this article, it is generally the authors looking at the provision from an environmental or international environmental law perspective who see no problem with the criminalization of wartime environmental damage, while those who approach it from a classical international law or international humanitarian/international criminal law perspective will question whether the ICC Statute's drafters really should have gone this far.

Indeed, given that criminal prosecution may be one of the best ways of ensuring compliance with many important norms of international humanitarian law, one should be careful not to detract too much from its integrity. A fledgling system depends on strong international consensus that its goals, approaches, and specific rules are appropriate. In the case of international criminal law, this would mean that all war crimes, which have imprisonment as their chief consequence,²⁰⁷ should be sufficiently serious to warrant the major and politically controversial step of criminal prosecution of individuals in international courts. As Peter Sharp points out, 'There is a compelling argument to be made for not pushing too far too fast in trying to turn the International Criminal Court into more than its language clearly states. One must conserve political capital for the most urgent battles.'²⁰⁸

Given that the attacks in armed conflict causing widespread damage have only been prohibited in international humanitarian law since 1977 and do not appear to have yet crystallized into customary international law prohibitions, it would, in the present author's view, be inappropriate to suggest that all acts causing such damage should be subject to criminal prosecution. Indeed, most of the other violations criminalized by the ICC Statute, such as genocide, torture, and the taking of hostages, are well-established norms of customary law, which have even, in some cases, obtained the status of *jus cogens*. Returning to our scale of the seriousness of different international law violations, it is worth noting that many acts of terrorism²⁰⁹ and the hostile use of nuclear weapons do not as such attract international criminal liability under the ICC Statute.²¹⁰ While it may be debatable whether such acts should be considered as serious as wartime environmental damage in a contemporary world increasingly concerned about the degradation of the environment, such a comparison serves to show that, at least from an international humanitarian law perspective, the relevant criminal law provision analysed in detail above is perhaps justifiably narrow in its scope.

However, the contention that not all acts causing wartime environmental damage should be subject to prosecution in international criminal courts does not

207 ICC Statute, Art. 77.

208 P. Sharp, above note 105, p. 219.

209 For the reasons why terrorism as such was not included in the Rome Statute, see A. Cassese, above note 200, p. 994.

210 India's proposal in this respect at the negotiations of the Rome Statute was defeated. See Marlies Glasius, 'Expertise in the Cause of Justice: Global Civil Society Influence on the Statute for an International Criminal Court', in Marlies Glasius, Mary Kaldor and Helmut Anheier (eds), *Global Civil Society*, Oxford University Press, Oxford, 2002, p. 137.

require as a corollary the view that no such acts should entail this consequence. Evidently, some intentional acts causing environmental damage in the context of armed conflict are significantly more serious, inexcusable, and therefore deserving of international criminal consequences for their perpetrators than others. When one considers both the growing international appreciation of the need to protect the natural environment and the fact that the prohibition of wartime environmental damage is still a relatively new phenomenon not yet established in the codex of customary international law, the international legal order is best served by settling for a compromise position that criminalizes only the most egregious intentional military acts causing significant damage to the natural environment.

Whether or not the ICC Statute correctly draws the line between those acts against the environment that are sufficiently serious to warrant criminalization and those that are not is something that can only be determined if and when we have jurisprudence from the ICC that authoritatively interprets the precise scope of Article 8(2)(b)(iv) of the ICC Statute. In the meantime, it is submitted on the basis of the analysis conducted in this article, that Article 8(2)(b)(iv) of the ICC Statute should not be criticized either for going too far by criminalizing wartime environmental damage or for not going far enough by imposing several demanding conditions that must be satisfied if a charge is to be sustained. Instead, one should appreciate that, when viewed from each of the two separate perspectives applicable to this matter – environmental law and the law of armed conflict – this limited, but nonetheless significant, step towards the criminalization of wartime environmental damage (as a corollary to existing, less demanding Additional Protocol I and ENMOD rules entailing the international responsibility of the offending state) may indeed strike the right balance between the need to protect the environment and the importance of maintaining the integrity of international humanitarian and international criminal law.

Conclusion

This analysis of wartime environmental damage, a phenomenon that sits squarely at the intersection of two separate branches of international law, serves to show a number of things about the international legal regulation of properly cross-sectoral problems. By missing the opportunity to define in any great detail both (a) the particular type of causal link required for all of the relevant rules between the act and the environmental damage; and (b) the precise contours of widespread, long-term, and severe damage, the negotiators of the relevant texts missed an opportunity to rely on the expertise of and consensus obtained in another (here environmental) field of international law to give their provisions greater clarity. This points to the potential pitfalls of remaining too closely associated with one particular branch of international law while formulating a cross-sectoral norm. By attaching a severe consequence to certain violations of the norm – the criminal penalty of imprisonment for war crimes – the wartime environmental damage example also shows how cross-sectoral problems may tap into the stronger

enforcement structure of one system, yet simultaneously create concern in the other system about the ‘functional neutrality’ of how that stronger system will enforce (and therefore more authoritatively interpret) the shared norm.

Most of all, however, this example shows that the increasing ‘complexification’ and specialization of contemporary international law,²¹¹ with the concomitant isolationist tendencies of practitioners of its different branches, creates real problems for the proper evaluation of cross-sectoral norms. The example of wartime environmental damage, especially since its criminalization by the ICC Statute, shows that international law scholars should always endeavour to analyse the growing number of cross-sectoral international law norms from a plurality of perspectives and evaluate them in the context of the objectives, principles, approaches, and norms of each relevant branch. It is a difficult and laborious task, but the complexity of modern international life and of contemporary international law demands it.

211 The notion of ‘complexification’ of the international legal order is drawn from Georges Abi-Saab, ‘Fragmentation or unification: some concluding remarks’, in *New York University Journal of International Law and Politics*, Vol. 31, No. 4, 1999, pp. 919–933.

Water, international peace, and security

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Abstract

Water scarcity, accelerated by climate change, affects water availability and may threaten peace and security. This role of water, as a contributing factor for triggering wars, sheds light on the significance of the protection of water during armed conflict. Keeping water out of war not only contributes to preserving an indispensable natural resource for life but also serves as a tool for the hostile parties to start negotiations, building trust and peace.



The uneven distribution of water resources, and the competition between the multiple uses of those resources combined with the growth of the world's population has given rise to a debate on future 'water wars'. While some predict such wars,¹ others indicate that no 'water war' has taken place since 4,500 years ago.² According to the latter view, increased competition for water could become the catalyst for more intense co-operation in the future.³ Beyond the arguments about the existence of 'water wars', when one looks at the interactions between riparian states over shared water resources, it may be noticed that those interactions include forms of both conflict and co-operation between states.⁴

Naturally, water is the most abundant resource on earth. However, only a small quantity – around 2.53% – of it is freshwater that can be used for agriculture, human consumption, and industrial purposes. Moreover, a significant part of this freshwater is locked up in ice or in groundwater resources. Some of those resources, having insignificant or no source of recharge by surface waters, can become non-renewable resources and risk being exhausted.⁵ As a scarce resource, water has the potential for triggering conflict and these may become increasingly important as water scarcity is accelerated by human factors.

One of the main concerns regarding the possibility of conflict over water, is the occurrence of armed hostilities between states. Hostilities may take several forms, such as intra-state armed conflicts, national violence, skirmishes, and occupation of a territory.⁶ In looking at the linkage between water and international peace and security, one may consider water not only as a factor triggering war but also as a weapon and an objective of armed conflict, often a neglected topic in studies on the relationship between water and armed conflict.⁷ Finally, limitations on access to water and the environmental damage to water resources caused by armed conflict endanger the security of a population as a whole, rendering the return to peace longer and more difficult in countries affected by war.

The objective of this article is to look at the linkage between water and international peace and security, highlighting the potential of water as a path for contributing to the return to peace. First, the article will analyse the role of water scarcity as one of the causes in triggering armed conflict. It will focus on a number of international documents dealing with the role of water in the maintenance of international peace and security. In this context, the practice of the United Nations Security Council will also be addressed. Then, the article will turn to the norms of international humanitarian law ensuring the protection of water in time of armed conflict. Beyond international humanitarian law, norms of other areas of

- 1 See Joyce R. Starr, 'Water wars', in *Foreign Policy*, No. 82, 1991, pp. 17–36; John Bulloch and Adil Darwish (eds), *Water Wars: Coming Conflicts in the Middle East*, Victor Gallanz, London, 1993.
- 2 Aaron T. Wolf, 'Conflict and cooperation along international waterways', in *Water Policy*, Vol. 1, No. 2, 1998, pp. 251–265.
- 3 The adoption of more than 3,600 international water agreements is suggested as evidence of co-operation on water resources. See Jesse H. Hammer and Aaron T. Wolf, 'Patterns in international water resource treaties: the Transboundary Freshwater Dispute Database', in *Colorado Journal of International Environmental Law and Policy*, Vol. 9, 1998, pp. 157–177.
- 4 See Mark Zeitoun and Naho Mirumachi, 'Transboundary water interaction I: reconsidering conflict and cooperation', in *International Environmental Agreements: Politics, Law and Economics*, Vol. 8, No. 4, 2008, pp. 297–316; David Philips, Marwa Daoudy, Stephen McCaffrey, Joachim Ojendal, and Antony Turton, *Transboundary Water Cooperation as a Tool for Conflict Prevention and for Broader Benefit-Sharing*, Ministry of Foreign Affairs, Sweden, Stockholm, 2006, p. 15; United Nations Development Programme (UNDP), Human Development Report, *Beyond Scarcity: Power, Poverty and the Global Water Crisis*, 2006, p. 203, available at: <http://hdr.undp.org/en/media/HDR06-complete.pdf> (last visited 27 September 2010); UNESCO–Green Cross International Initiative, *Water Security and Peace: A Synthesis of Studies Prepared under the PCCP–Water for Peace Process*, compiled by William J. Cosgrove, pp. 9–18, available at: <http://www.unwater.org/wwd09/downloads/133318e.pdf> (last visited 24 September 2010).
- 5 Gabriel Eckstein, 'A hydrogeological perspective of the status of ground water resources under the UN Watercourse Convention', in *Columbia Journal of Environmental Law*, Vol. 30, No. 3, 2005, pp. 558–561.
- 6 On the role of water as a strategic resource indispensable for pursuing economic and social development in a state, see Frédéric Lasserre and Luc Descroix, *Eaux et territoires: Tensions, coopérations et géopolitiques de l'eau*, 2nd edition, Presses de l'Université du Québec, Canada, 2005, pp. 17–32.
- 7 However, there are a few studies that have been devoted to this topic: see *Water and War: Symposium on Water in Armed Conflict*, Montreux 21–23 November 1994, International Committee of the Red Cross (ICRC), Geneva, 1994; Ameer Zemmali, 'La protection de l'eau en période de conflit armé', in *International Review of the Red Cross*, No. 815, 1995, pp. 601–615; Théo Boutruche, 'Le statut de l'eau en droit international humanitaire', in *International Review of the Red Cross*, No. 840, 2000, pp. 887–915; Nicolai Jorgensen, 'The protection of freshwater in armed conflict', in *Journal of International Law and International Relations*, Vol. 3, No. 2, 2007, pp. 57–96.

international law contribute to the protection of this vital natural resource. They include human rights law and the law on transboundary water resources. Thus, in the final section, the article will examine the contribution of those areas of international law to the protection of water during armed conflict.

Water scarcity as a cause for armed conflict

Causes that may bring on conflict over water include natural and human factors. Among the human causes are the degradation of freshwater resources⁸ and the impacts of climate change.⁹ Many regions that are already relatively dry, such as the Middle East and North Africa, are likely to experience further decreases in water availability. Moreover, availability of water is also likely to be reduced by the decline of water supplies stored in glaciers and snow cover. As an illustration, climate-change-induced glacial melt in the Himalaya, which is the source of the ten largest rivers in Asia, risks affecting half a billion people in the Himalayan region. Finally, climate change will also have an impact on the quality of water. Increasing water temperatures may raise the threat of toxic substances in drinking water.¹⁰

Climate change risks accelerating drought and desertification, and those phenomena could lead to a loss of agricultural land and a decrease of food production and water supplies. A significant example of this is the impact of climate change on water availability in Sudan. According to the United Nations Environment Programme (UNEP), climate change has reduced agricultural production owing to a decline in rainfall and this is a contributing factor for the conflict in

8 On the degradation of freshwater resources, see WWF, *World's Top Ten Rivers at Risk*, 2007, available at: http://www.unwater.org/downloads/worldstop10riversatriskfinalmarch13_1.pdf (last visited 7 September 2010).

9 The Intergovernmental Panel on Climate Change (IPCC) issued a technical paper on climate change and water in 2008. The paper indicates that '[t]here is abundant evidence from observational records and climate projections that freshwater resources are vulnerable and have the potential to be strongly impacted by climate change'. It also notes that, although water agreements improve transboundary water management, '[c]limate change and increased water demand in future decades will represent an added challenge to such framework agreements, increasing the potential for conflict at the local level. For instance, unilateral measures for adapting to climate-change-related water shortages can lead to increased competition for water resources'. Intergovernmental Panel on Climate Change, *Climate Change and Water*, Technical paper VI, 2008, p. 135 and p. 66 respectively, available at: <http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf> (last visited 7 September 2010). See also the Annex to the Letter dated 5 April 2007 from the Permanent Representative of the United Kingdom and Northern Ireland to the United Nations addressed to the President of the Security Council, S/2007/186, para. 7(b) and (d) and the Secretary-General's *Statement at the Security Council debate on energy, security and climate*, New York, 17 April 2007, available at: http://www.un.org/apps/news/infocus/sgspeeches/search_full.asp?statID=79 (last visited 7 September 2010).

10 Office of the United Nations High Commissioner for Human Rights (OHCHR), *Climate Change and the Human Rights to Water and Sanitation*, Position Paper, 2010, pp. 18–20, available at: http://www2.ohchr.org/english/issues/water/ixpert/docs/Climate_Change_Right_Water_Sanitation.pdf (last visited 7 September 2010). See also Gabriel Eckstein, 'Water scarcity, conflict, and security in a climate change world: challenges and opportunities for international law and policy', in *Wisconsin Journal of International Law*, Vol. 27, 2010, pp. 409–461.

Darfur.¹¹ Climate change is therefore an issue that fuels the debate over conflicts triggered by water, by accelerating droughts and scarcity of water resources.¹²

The analysis on the linkage between water and armed conflict finds its origin in the studies on the role of environmental factors as drivers of conflict between states. Environmental security studies have underlined the role of water as the potential trigger for armed struggles,¹³ and several analyses have seen the Middle East as the ideal scenario for ‘water wars’. Water was considered as the main issue of several wars in the past and it is assumed likely to trigger new wars in the future.¹⁴ This scenario is not completely new, since some similar analyses have been made in regard to oil.¹⁵ Along with the scarcity of water resources, the shared character of some international watercourses such as the Jordan river and the Nile river have been mentioned as factors that would be able to trigger conflicts in the regions of the Middle East and North Africa.¹⁶

Between the 1990s and the 2000s, the debate over water and armed conflict changed its contours. Analysis of the scarcity of water resources and its relation to armed conflict was accompanied by the study of other factors such as population growth and inequitable allocation of natural resources.¹⁷ The idea that water scarcity could be the only cause of a conflict, along with that of the existence of ‘water

- 11 UNEP, *Sudan: Post-Conflict Environmental Assessment*, 2007, p. 84, available at: http://postconflict.unep.ch/publications/UNEP_Sudan.pdf (last visited 7 September 2010).
- 12 The United Nations Secretary-General, Ban Ki-moon, indicated in his statement to the Security Council on 7 July 2010 that ‘[a]rmed conflict ... is often the result of a lack of good governance, competition for scarce resources, the complex interaction of factors including ethnicity, or all of these combined. Climate change, desertification and land disputes can be additional drivers of conflict’. Secretary-General, SG/SM/130003, SC/9974, 7 July 2010, available at: <http://www.un.org/News/Press/docs//2010/sgsm13003.doc.htm> (last visited 7 September 2010). The former Britain Defence Secretary, Mr. John Reid, pointed out the linkages between the risks of violent conflicts, climate change, and lack of access to water supplies. See Ben Russell and Nigel Morris, ‘Armed forces are put on standby to tackle threats of wars over water’, in *The Independent*, online edition, 28 February 2006, available at: <http://www.independent.co.uk/environment/armed-forces-are-put-on-standby-to-tackle-threat-of-wars-over-water-467974.html> (last visited 7 September 2010).
- 13 For example Arthur H. Westing affirms that ‘competition for limited supplies of fresh water ... leads to severe political tensions and even to war’. Arthur H. Westing, ‘Environmental factors in strategic policy and action: an overview’, in Arthur H. Westing (ed.), *Global Resources and International Conflict: Environmental Factors in Strategic Policy and Action*, Oxford University Press, New York, 1986, p. 9. In this book see also the article of Malin Falkenmark, ‘Fresh waters as a factor in strategic policy and action’, in A. H. Westing, *ibid.*, pp. 85–113. See also Jessica Tuchman Mathews, ‘Redefining security’, in *Foreign Affairs*, Vol. 68, No. 2, 1989, pp. 162–177.
- 14 See Wilfried Remans, ‘Water and war’, in *Humanitäres Völkerrecht*, Vol. 8, No. 1, 1995, pp. 1–14; Miriam R. Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin*, Cambridge University Press, Cambridge, 1995; Christian Chesnot, *La bataille de l'eau au Proche-Orient*, L'Harmattan, Paris, 1993.
- 15 Tony Allan, ‘Avoiding war over natural resources’, ICRC Forum, *Water and War*, 1998, p. 17.
- 16 For example, the 1967 Six Day War has been studied as a conflict over the control of the access to water resources situated in the West Bank and the Golan Heights. The invasion of Lebanon in 1982 has also been analysed as a conflict over the control of the Litani river. See John K. Cooley, ‘The war over water’, in *Foreign Policy*, No. 54, 1984, pp. 3–26. See also J. R. Starr, above note 1, p. 19.
- 17 See Thomas F. Homer-Dixon, ‘On the threshold: environmental changes as causes of acute conflict’, in *International Security*, Vol. 16, No. 2, 1991, pp. 76–116; Thomas F. Homer-Dixon, ‘Environmental scarcities and violent conflict: evidence from cases’, in *International Security*, Vol. 19, No. 1, 1994, pp. 5–40.

war', was nuanced or even rejected.¹⁸ At the same time, the co-operative side of shared water resources has been increasingly recognized.¹⁹

Rejecting the analysis on 'water wars' does not mean denying that water is a cause of armed conflict. In this regard, one should mention the studies of Homer-Dixon, which have established a methodological framework followed by other scholars.²⁰ The scarcity and inequitable allocation of water resources, along with the growth of population, are counted among the causes of armed conflict. Moreover, the studies of the International Peace Research Institute of Oslo have underlined that deforestation and degradation of soil and water, along with authoritarian regimes, increase the risks of conflicts and hostilities.²¹ Political and socio-economic aspects interact with the degradation of the environment in complex ways. Those interactions can have an impact on poverty and social insecurity and become triggers for armed conflict. Furthermore, other elements studied as causes for violence are related to national policies on the management of water. Privatization of water services and the development of hydroelectric installations have been considered as possible sources of violence within states.²² In this context, the violence triggered by the privatization of water services in Cochabamba during the spring of 2000 has been cited as a new kind of 'water war'.²³

There is one further dimension of the relation between water and international peace and security. Water can be read both as a factor triggering armed conflicts and also as a weapon and an objective of armed conflict. The research conducted by Gleick found that the use of water as a weapon of war and military target is common during hostilities. With his research group, Gleick has developed a chronology of conflicts enumerating over 200 examples in which water has been used as a means of warfare or as a military target.²⁴ Moreover, many environmental assessment reports conducted by UNEP have highlighted the impact of armed conflict on water resources and water facilities.²⁵ The relationship between water,

18 Thomas F. Homer-Dixon, 'The myth of global water wars', ICRC Forum, *Water and War*, 1998, pp. 10–15.

19 See Christina Leb, 'Changing paradigms: the impact of water securitization on international water law', in *Il Politico*, Vol. 221, No. 2, 2009, pp. 113–128.

20 The researchers of the Swiss Federal Institute of Technology (ETH) and of the Swiss Peace Foundation established the Environment and Conflicts Project, which analyses the root causes of armed conflict, including water shortages. See Stephan Libiszewski, *Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab–Israeli Conflict*, Occasional Paper No. 13, 1995, available at: http://www.mideastweb.org/Mew_water95.pdf (last visited 7 September 2010).

21 Hans Petter Wollebaek Toset, Nils Petter Gleditsch, and Håvard Hegre, 'Shared rivers and interstate conflict', in *Political Geography*, Vol. 19, No. 8, 2000, pp. 971–996.

22 Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*, MIT Press, Cambridge, MA, 2006, pp. 167–255.

23 Sandra L. Postel and Aaron T. Wolf, 'Dehydrating conflict', in *Foreign Policy*, No. 126, September–October 2001, pp. 60–67.

24 Chronology of the *Pacific Institute for Studies in Development, Environment, and Security*, available at: <http://www.worldwater.org/conflict/list/> (last visited 7 September 2010).

25 See, *inter alia*, UNEP and United Nations Centre for Human Settlements (Habitat), *Balkan Task Force, The Kosovo Conflict: Consequences for the Environment & Human Settlements*, 1999, pp. 59–62, available at: <http://www.grid.unep.ch/btf/final/finalreport.pdf> (last visited 7 September 2010); UNEP, *Desk Study on the Environment in Iraq*, 2003, pp. 28–33, available at: <http://postconflict.unep.ch/publications/>

international peace, and security therefore has two main facets. One of them relates to the emerging role of water in the maintenance of international peace and security, while the other deals with the impact of armed conflicts on water.

The changing contours of international peace and security

The maintenance of international peace and security has been mainly understood as the protection of a state's territory and sovereignty. Despite the fact that the risks of conflict over water have been recognized since the 1980s,²⁶ and are known to be accelerated by climate change, water still has a modest role in the maintenance of international peace and security. This can be explained by the fact that the latter is mainly understood as connoting the protection of the state's territory from military attacks by other states. Nevertheless, while focusing originally on military use of force, the maintenance of international peace and security has been moulded into other contours, which include economic,²⁷ social, and environmental aspects, as well as military ones.²⁸

Since the end of the 1990s, the Security Council has paid attention to the management and protection of natural resources within the framework of conflict prevention and post-conflict peace-building.²⁹ Other UN institutions have also underlined the role of natural resources as a means for strengthening peace and security. Since competition over water use and water shortages may be among the causes of conflict, ensuring access to and protection of water may contribute to peace and security. Water is one of the factors triggering or aggravating conflicts and tensions, but it is also a path for dialogue and building confidence between

Iraq_DS.pdf (last visited 7 September 2010); UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, 2003, pp. 20–41, available at: <http://postconflict.unep.ch/publications/INF-31-WebOPT.pdf> (last visited 7 September 2010); UNEP, *Afghanistan: Post-Conflict Environmental Assessment*, 2003, pp. 49–62, available at: <http://postconflict.unep.ch/publications/afghanistanpcajanuary2003.pdf> (last visited 7 September 2010); UNEP, *Lebanon: Post-Conflict Environmental Assessment*, 2006, pp. 110–129, available at: http://postconflict.unep.ch/publications/UNEP_Lebanon.pdf (last visited 7 September 2010).

26 See A. H. Westing, above note 13, p. 6f.; J. K. Cooley, above note 16, p. 5.

27 On the economic aspects, see Laurence Boisson de Chazournes, 'Collective security and the economic interventionism of the UN: the need for a coherent and integrated approach', in *Journal of International Economic Law*, Vol. 10, No. 1, 2007, pp. 51–86.

28 The concepts of 'environmental security' and 'human security' support the inclusion of issues related to the protection of natural resources and vital human needs in the context of international peace and security. See Karen Hulme, 'Environmental security: implications for international law', in *Yearbook of International Environmental Law*, Vol. 19, 2008, pp. 3–25; Barbara von Tigerstrom, 'International law and the concept of human security', in Ustinia Dolgopool and Judith Gardam (eds), *The Challenges of Conflict: International Law Responds*, Martinus Nijhoff, Leiden/Boston, 2006, pp. 599–616; Hans Günter Brauch, *Environment and Human Security: Towards Freedom from Hazard Impacts*, InterSecTions Paper No. 2, United Nations University, Institute for Environment and Human Security (UNU-EHS) Publication, Bonn, 2005, available at: <http://www.ehs.unu.edu/file/get/4031> (last visited 7 September 2010).

29 Jo Stigen and Ole Kristian Fauchald, 'Environmental security', in Cecilia M. Bailliet (ed.), *Security: A Multidisciplinary Normative Approach*, International Humanitarian Law series, Martinus Nijhoff Publishers, Vol. 26, 2009, pp. 324–331.

states. As the article will point out later, joint commissions on transboundary water resources have been resilient during armed conflicts and they have sometimes been the only available fora for discussion between riparian states involved in war.

The role of water in international peace and security

During the 1970s and 1980s, the linkage between natural resources and peace started to find some expressions in international documents. It was in the Declaration of the United Nations Conference on the Human Environment held at Stockholm in 1972 (Stockholm Declaration) that the connection between natural resources, social development, and peace was first recognized. The Stockholm Declaration opened the door to the perspective that environmental protection of natural resources is a fundamental objective of states ‘together with, and in harmony with, the established and the fundamental goals of peace and of worldwide economic and social development’.³⁰ Three years later, the Helsinki Final Act of 1975, adopted at the Conference on Security and Cooperation in Europe, constituted another step in affirming the relationship between natural resources and international peace and security. The Act underscores the importance of environmental co-operation for the maintenance of peaceful relations between states.³¹

During the 1980s, the analysis of the linkages between natural resources, peace, and security took a larger perspective with the inclusion of socio-economic dimensions. As an example, one may cite the Independent Commission on Disarmament and Security, chaired by Olof Palme, which included environmental and socio-economic factors in its analysis of the notion of security.³²

The report ‘Our Common Future’ of the World Commission on Environment and Development of 1987 (also known as the Brundtland Report) deals with the theme of peace and security within the context of the need for environmental protection sustainable development and of increased scarcity of water resources.³³ Some instruments adopted during the 1990s have followed its approach on the causes of armed conflict. The relation between environment, development, and peace is recognized in the Rio Declaration on the Environment and Development of 1992. Its Principle 25 affirms that ‘[p]eace, development and

30 ‘Declaration of the United Nations Conference on the Human Environment’, Stockholm, 16 June 1972, preamble para. 6, in *International Legal Materials (ILM)*, Vol. 11, 1972, p. 1416, available at: <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503> (last visited 7 September 2010).

31 ‘The Final Act of the Conference on Security and Cooperation in Europe’, Helsinki, 1 August 1975, in *ILM*, Vol. 14, p. 1292 (Helsinki Declaration), available at: <http://www1.umn.edu/humanrts/osce/basics/finact75.htm> (last visited 7 September 2010).

32 Peter H. Liotta, ‘Military and environmental security: revisiting the concepts in the Euro-Mediterranean’, in Hans G. Brauch, Peter H. Liotta, Antonio Marquina, Paul F. Rogers, and Mohammad El-Sayed Selim (eds), *Security and Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*, Berlin, Springer, 2003, p. 303.

33 *Report of the World Commission on Environment and Development: Our Common Future*, transmitted to the General Assembly as Annex to UN Doc. A/42/427, 4 August 1987, paras. 12–13 and 15, available at: <http://www.un-documents.net/wced-ocf.htm> (last visited 7 September 2010).

environmental protection are interdependent and indivisible'.³⁴ Moreover, in the Agenda for Peace of 1992 the environment and sustainable development are mentioned as means for the maintenance of peace.³⁵

Between the end of the 1990s and the 2000s, the issue of access to water took a specific place in international instruments.³⁶ Water is considered as a natural resource with a particular statute. The Ministerial Declaration on Water Security in the 21st Century adopted at the Second World Water Forum in The Hague in 2000 addressed the linkage between water and security. This Declaration affirms that 'water security' goes together with political stability.³⁷ The protection of water resources and their ecosystems, as well as the access to safe and sufficient water, are included in the concept of water security promoted by this text.

The definition of water security given by the Ministerial Declaration of 2000 is broad; it includes not only environmental but also human aspects, such as the access to water, indicating that water security should be read through the concept of human security.³⁸ According to the approach promoted by this concept, individual human beings and not just states are entitled to benefit from peace and security.³⁹ Meeting vital human needs such as the protection of water supplies contributes to the decrease of conflicts and to the return to peace.

The role that natural resources play in the context of international peace and security is indicated in the Report of the High-Level Panel created by the former UN Secretary-General, Kofi Annan, which was released in 2004. The objective of the Panel was 'to assess current threats to international peace and security' and to recommend measures 'for strengthening the United Nations so that it can provide collective security for all in the twenty-first century'.⁴⁰ The

34 'Declaration of the United Nations Conference on the Environment and Development', Rio de Janeiro, 14 June 1992, in *ILM*, Vol. 31, 1992, p. 876 (Rio Declaration), available at: <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163> (last visited 7 September 2010).

35 Report of the Secretary-General pursuant to the statement adopted by the Summit Meeting of the Security Council on 31 January 1992, *An Agenda for Peace: Preventive Diplomacy, Peacemaking and Peace-keeping*, UN Doc. A/47/277, para. 5.

36 See *infra* on the contribution of human rights law on this theme.

37 Ministerial Declaration of The Hague on Water Security in the 21st Century, 22 March 2000, <http://www.gdrc.org/uem/water/hague-declaration.html> (last visited 7 September 2010).

38 For a definition of human security see UNDP, Human Development Report, *New Dimensions of Human Security*, 1994, pp. 22–23, available at: http://hdr.undp.org/en/media/hdr_1994_en_chap2.pdf (last visited 7 September 2010). On the role of water in the concept of human security see Commission on Human Security, *Human Security Now*, 2003, p. 15, available at: <http://www.humansecurity-chs.org/finalreport/English/FinalReport.pdf> (last visited 7 September 2010).

39 The approach that the security of people contributes to peace has been taken into account in the 2006 Report on the Prevention of Armed Conflict, which affirms that: 'Bringing communities together to tackle humanitarian concerns such as food insecurity, water supplies, health and the needs of children can also serve a conflict-prevention purpose by opening avenues for dialogue and mutual cooperation'. Report of the Secretary-General, *Progress Report on the Prevention of Armed Conflict*, A/60/891, 18 July 2006, para. 35. See also Report of the Secretary-General on the Implementation of the Security Council Resolution 1625 (2005) on Conflict Prevention, particularly in Africa, S/2008/18, 14 January 2008, para. 29.

40 Report of the High-Level Panel on Threats, Challenges and Change, *A More Secure World: Our Shared Responsibility*, annexed to General Assembly resolution A/59/565/, 2 December 2004, para. 3, available

Report identifies six clusters of ‘threats’ including poverty, infectious disease, and environmental degradation. This wide understanding of ‘threats’ to security was criticized by a number of states, who perceived it as a means for expanding the powers of the Security Council.⁴¹

The approach taken by the High-Level Panel may be considered as an attempt to ‘securitize’ the issue of the protection of natural resources. In fact it closely associates natural resources with security concerns of states. Natural resources and environmental degradation are topics that are very different from other issues dealt with by the High-Level Panel, such as terrorism and the use of nuclear, radiological, chemical, and biological weapons. Since natural resources can either be a factor fuelling conflict or play the role of promoting co-operation between states, this ‘securitization process of natural resources’⁴² may run the risk of underlining only one dimension of the role played by those resources.⁴³

Another way to look at the function of natural resources in promoting peace and security is to analyse the practice of the UN Security Council. While the practice on water of the Security Council is modest or almost non-existent, since the end of the 1990s, it has increasingly been paying attention to the protection of natural resources as a tool for preventing conflicts and building peace in post-conflict countries.⁴⁴

Water and the Security Council

In conformity with its mandate conferred by the UN Charter, the Security Council has the ‘primary responsibility for the maintenance of international peace and security’.⁴⁵ Over the years, it has dealt with water issues on very few occasions. During the 1950s, it adopted two resolutions concerning some development

at: http://www2.ohchr.org/english/bodies/hrcouncil/docs/gaA.59.565_En.pdf (last visited 7 September 2010).

41 S. Neil MacFarlane and Yuen Foong Khong, *Human Security and the UN: A Critical History*, Indiana University Press, Bloomington and Indianapolis, 2006, p. 10.

42 D. Philips *et al.*, above note 4, p. 20.

43 It should be noted that calls have been made to use carefully the concepts of ‘threats’ and ‘security’. Both concepts are particularly important when one considers the powers of the Security Council under Chapter VII of the UN Charter. See Marco Sassòli, ‘The concept of security in international law relating to armed conflicts’, in C. M. Bailliet (ed.), above note 29, pp. 7–17. Some authors have analysed in which situations the threats to the environment can be characterized as a ‘threat to peace, breach of the peace or act of aggression’ according to Article 39 of the UN Charter. See Alexandra Knight, ‘Global environmental threats: can the security council protect our Earth?’, in *New York University Law Review*, Vol. 80, 2005, pp. 1549–1585.

44 See, *inter alia*, Security Council resolution 1625, adopting the ‘declaration on strengthening the effectiveness of the Security Council’s role in conflict prevention, particularly in Africa’, stressing the need to adopt a broad strategy of conflict prevention that includes the ‘root causes of armed conflict and political and social crisis’ and the promotion of ‘sustainable development’, UN Security Council resolution 1625, 14 September 2005, S/RES/1625. In this regard see J. Stigen and O. K. Fauchald, above note 29, pp. 324–331.

45 Article 24 of the UN Charter.

projects on the waters of the Jordan river in the demilitarized zone established under the General Armistice Agreement between Israel and Syria of 1949.⁴⁶ The Security Council requested the suspension of works while establishing criteria for determining what kind of projects could be realized in the demilitarized zone.⁴⁷

After the Six Day War and the occupation of the Golan Heights, West Bank, and Gaza Strip, the Security Council once again dealt with the situation of water resources in the Middle East. In 1979, it established a Commission, composed of three Security Council members appointed by the President of the Council, whose aim was to analyse the situation relative to settlements in the Arab territories occupied since 1967.⁴⁸ In 1980, the Security Council included water issues in the mandate of the Commission. It indicated the need of the Commission ‘to consider measures for the impartial protection of private and public land and property, and water resources’ in the Occupied Palestinian Territories and other Arab territories⁴⁹ and it charged the Commission with investigating the ‘serious depletion of natural resources, particularly the water resources, with a view to ensuring the protection of those important natural resources of the territories under occupation’.⁵⁰ The Commission released its report in the same year, indicating the use of water by Israel as ‘an economic and even political weapon to further its policy of settlements’.⁵¹ Although these concerns were expressed in the report, no measure dealing with water was taken.

While the Security Council has rarely dealt with water issues, there has been a more frequent focus on the role of other natural resources such as diamonds and timber in fuelling armed conflicts in some countries of Africa, such as the Democratic Republic of Congo (DRC), Liberia, and Côte d’Ivoire.⁵² Additionally, the Security Council has noted in some of its resolutions the need to address the root causes of armed conflict in a comprehensive manner, and has highlighted

46 General Armistice Agreement between Israel and Syria, 20 July 1949, in *United Nations Treaty Series (UNTS)*, Vol. 42, 1949, p. 327.

47 In its resolution of 18 May 1951, the Security Council decided that no project ‘involving the transfer of persons across international frontiers, across armistice lines or within the demilitarized zone’ should be realized ‘without prior decision of the Chairman of the Mixed Armistice Commission’. It should be noted that, in making this request, the Security Council did not act under Chapter VII of the UN Charter. Security Council resolution 93, 18 May 1951, S/2157. See also Jean-Victor Louis, ‘Les eaux du Jourdain’, in *Annuaire Français de Droit International*, Vol. 11, 1965, p. 837.

48 Security Council resolution 446 (1979), 22 March 1979, S/RES/446 (1979), para. 4.

49 Security Council resolution 465 (1980), 1 March 1980, S/RES/465 (1980), preamble.

50 *Ibid.*, para. 8.

51 *Report of the Security Council Commission established under Resolution 446 (1979)*, 25 November 1980, UN Doc. S/14268, para. 239, available at: <http://unispal.un.org/UNISPAL.NSF/0/6956B6BC3E956094852563B7005AC2BD> (last visited 7 September 2010).

52 On the conflict in the Democratic Republic of Congo (DRC) see, for example, Security Council resolutions 1565 (2004), 1 October 2004, S/RES/1565 (2004), para. 22; and 1533 (2004), 12 March 2004, S/RES/1533, para. 6. On the conflict in Liberia see, for example, Security Council resolutions 1509 (2003), 19 September 2003, S/RES/1509, para. 3(r); and 1854 (2008), 19 December 2008, S/RES/1854, preamble. On the conflict in Côte d’Ivoire see, for example, Security Council resolution 1643 (2005), 15 December 2005, S/RES/1643, para. 9(b).

sustainable development as an essential factor of peace-building.⁵³ In this regard, the mandate of the Peace-building Commission established in 2005 states that one of its purposes is to 'lay the foundation for sustainable development'⁵⁴ and the Security Council 'acknowledges the crucial role that the Peace-building Commission ... can play, in post-conflict situations, in assisting governments, upon their request, in ensuring that natural resources become an engine for sustainable development'.⁵⁵

Thus it can be seen that there has so far been little focus on water and natural resources in the resolutions of the Security Council. It may be argued that the protection of water belongs to the mandate of the General Assembly and the Economic and Social Council more than to that of the Security Council.⁵⁶ The former bodies present a more 'democratic' character and they may be more adapted to dealing with environmental and socio-economic issues.⁵⁷ However, as the main body for the maintenance of international peace and security, the Security Council, by promoting sustainable development as a conflict prevention strategy and as a tool for peace-making, could play a significant role in addressing the root causes of armed conflict in a more comprehensive way.

The emerging recognition of the function of natural resources in the maintenance of international peace and security may contribute to emphasizing that water resources must be better protected in time of armed conflict. The post-conflict environmental assessments made by UNEP have underscored that reconstruction efforts should include strategies for ensuring access to water and for the environmental rehabilitation of water resources. Those elements are needed for the successful return to peace.⁵⁸

The linkages between the maintenance of international peace and security and the protection of water during armed conflict

An assessment of the relation between water, international peace, and security includes looking at the impacts of armed conflict on water. Armed conflict affects

53 See Security Council resolutions 1170 (1998), 28 May 1998, S/RES/1170, para. 1; 1265 (1999), 17 September 1999, S/RES/1265, preamble; 1318 (2000), 7 September 2000, S/RES/1318, preamble; 1366 (2001), 30 August 2001, S/RES/1366, para. 21; 1674 (2006), 28 April 2006, S/RES/1674, para. 1.

54 See Security Council resolution 1645, 20 December 2005, S/RES/1645, para. 2(b); and General Assembly resolution 60/180, 30 December 2005, A/RES/60/180, para. 2(b). See also General Assembly resolution 60/1, 24 October 2005, A/RES/60/1, paras. 97–105.

55 Statement made by the President of the Security Council, 25 June 2007, UN Doc. S/PRST/2007/22.

56 According to the UN Charter, the General Assembly 'may discuss any questions or any matters within the scope of the present Charter', and the Economic and Social Council 'may make or initiate studies and reports with respect to international economic, social, cultural, educational, health and related matters and may make recommendations with respect to any such matters to the General Assembly, to the Members of the United Nations, and to the specialized agencies concerned'. Articles 10 and 62 of the UN Charter.

57 See Pierre-Marie Dupuy, 'Sécurité collective et organisation de la paix', in *Revue Générale de Droit International Public*, Vol. 97, 1993, pp. 623–624.

58 See Carl Bruch, David Jensen, Mikiyasu Nakayama, Jon Unruh, Rebecca Gruby, and Ross Wolfarth, 'Post-conflict Peace Building and Natural Resources', in *Yearbook of International Environmental Law*, Vol. 19, 2008, pp. 70–73 and 80–82.

water in several ways: destruction and damage to water facilities, attacks against power plants providing water supplies, and the collapse of water treatment and sewage systems are all aspects. The limitations on access to water as well as the over-utilization and pollution of water resources in the Occupied Palestinian Territories illustrates the many dimensions of the consequences of the conduct of hostilities and of the regime of occupation on water.⁵⁹ Meanwhile, armed conflict may affect the environment and ecosystem of water resources. This was the case, for example, in the conflict in Kosovo in 1999, when the attacks against industrial facilities situated along the Danube river caused the release of polluting substances in the river. The bombing of Pančevo and Novi Sad oil refineries spread the fear of widespread ecological damage to water resources.⁶⁰

The connection between water and international peace and security can be analysed through the norms of international humanitarian law dealing with the protection of water. Those norms play a significant role in ensuring human security, with the protection of the basic needs of the population lying at the centre of that concept.⁶¹ Protecting human security implies meeting basic water needs of the population and thus contributing to the peace process. Some provisions of international humanitarian law deal with the protection of access to water and environmental protection of water resources.

The protection of water in the conduct of hostilities

The first norms of modern international humanitarian law dealing with the protection of access to water pertain to the protection of specific categories of individuals such as prisoners of war and internees. Those norms were provided for by the Third and Fourth Geneva Conventions of 1949 respectively.⁶² Yet, it was not until the adoption of the Additional Protocols of 1977 to the 1949 Geneva Conventions that the protection of access to water was included in the regime of the limitations imposed on military operations during international and non-international armed conflicts.

Water installations and water resources are generally understood as civilian objects and as such they are immune from attacks.⁶³ In addition, international

59 See Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water: Israel-Occupied Palestinian Territories*, October 2009, available at: <http://www.amnesty.org/en/library/asset/MDE15/027/2009/en/e9892ce4-7fba-469b-96b9-c1e1084c620c/mde150272009en.pdf> (last visited 7 September 2010); UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, above note 25.

60 UNEP and United Nations Centre for Human Settlements (Habitat), above note 25, pp. 59–62.

61 For a definition see UNDP, above note 38, p. 23.

62 Articles 20(1), 26(3), 29(3), and 46(3) of the Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949 (hereafter Third Geneva Convention); Articles 85(3), 89(3), and 127(2) of the Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949 (hereafter Fourth Geneva Convention).

63 According to Article 52(1) of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) of 8 June 1977 (hereafter Additional Protocol I): ‘Civilian objects are all objects which are not military objectives as defined in paragraph 2’. See also Yoram Dinstein, *The Conduct of Hostilities Under the Law of*

humanitarian law grants special protection to water essential to the survival of the civilian population. Both Article 54(2) of Additional Protocol I and Article 14 of Additional Protocol II,⁶⁴ provide for the protection of objects indispensable to the survival of the civilian population, such as ‘drinking water installations and supplies and irrigation works’.⁶⁵

Neither Article 54(2) of Additional Protocol I nor Article 14 of Additional Protocol II contains an exhaustive list of indispensable objects.⁶⁶ In this respect, one may raise the issue as to whether or not the ‘objects indispensable to the survival of the civilian population’ include water resources such as rivers, lakes, or groundwaters. When water is scarce and climate harsh, protecting water resources may be indispensable to ensuring the survival of the civilian population. Another issue that has also been raised is whether or not ‘drinking water installations’ encompass ‘electricity-generating plants that supply the power necessary for the purification and pumping of drinking water’.⁶⁷ In so far as the civilian population is concerned, it can make little difference whether the attack is against a drinking water installation or against infrastructure that is indispensable to the functioning of a utility providing essential water services. In both cases, the impact of the military operation can be the same, implying the denial of water supplies indispensable to the survival of the civilian population.⁶⁸

Although both Additional Protocols provide for the ban on attacking objects indispensable to the survival of the civilian population, this prohibition is defined slightly differently for international and non-international armed conflicts. In the latter case, Article 14 of Additional Protocol II (which does not admit any exception to the prohibition of attacks against water supplies) states an absolute proscription of attacks with the purpose to starve civilians. In the context of an international armed conflict, by contrast, Article 54 of Additional Protocol I provides for some exceptions to the prohibition.⁶⁹ The criteria for derogation, however, are restrictive.⁷⁰ Article 54(3)(b) of Additional Protocol I states that ‘in no event’ shall attacks against targets such as drinking water installations be

International Armed Conflict, 2nd edition, Cambridge University Press, Cambridge, 2010, paras. 303–305.

64 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) of 8 June 1977 (hereafter Additional Protocol II).

65 Additional Protocol I, Art. 54(2), and Additional Protocol II, Art. 14. On the content of those provisions in international humanitarian law, see T. Boutruche, above note 7, pp. 887–915. Moreover, attacks against civilian objects, and in particular objects that are indispensable to the survival of the civilian population, are classified as war crimes. See Article 8(2)(b)(ii) and (xxv) of the Rome Statute of the International Criminal Court (ICC) of 17 July 1998, A/CONF.138/9 (hereafter Rome Statute).

66 Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann (eds), *Commentary on the Additional Protocols of 8 June 1987 to the Geneva Conventions of 12 August 1949* (hereafter *Commentary AP*), ICRC/Martinus Nijhoff Publishers, Geneva, 1977, paras. 2103 and 4802.

67 Henry Shue and David Wippman, ‘Limiting attacks on dual-use facilities performing indispensable civilian functions’, in *Cornell International Law Journal*, Vol. 35, 2002, p. 573.

68 In this respect, see the prudent position of Y. Dinstein, above note 63, para. 535.

69 See Additional Protocol I, Art. 54(3) and (5).

70 *Commentary AP*, above note 66, paras. 2109–2112 and 2116–2123.

undertaken when they may be ‘expected to leave the civilian population with such inadequate food or water as to cause its starvation or force its movement’. At this point, prosecutions of attacks against essential means of survival, such as drinking water supplies, before international judicial or quasi-judicial bodies are still rare.⁷¹

Access to water also can be affected by attacks against works and installations containing dangerous forces, such as dams and dykes. Attacks against dams and dykes used for providing water supplies indispensable to the survival of the civilian population and made for the specific purpose of denying water to the civilian population are against both Articles 54(2) and 56(1) of Additional Protocol I. Both Additional Protocols provide for the prohibition of attacking dams and dykes, ‘even where these objects are military objectives’.⁷² As in the case of the protection of objects indispensable to the survival of the civilian population, there are some differences in the regime of protection accorded to dams and dykes during international and non-international armed conflicts. While Article 15 of Additional Protocol II does not admit any exception, Article 56(2) of Additional Protocol I establishes specific requirements under which the special protection conferred to dams and dykes would cease.⁷³ Yet, even in cases where protection ceases, the civilian population is entitled to the protection accorded ‘by international law, including the protection of the precautionary measures provided for in Article 57 [of Additional Protocol I]’.⁷⁴

Dams may often provide the energy indispensable to bring water supplies or even provide water supplies. However, it can be difficult to prove a violation of the prohibition against attacking installations containing dangerous forces. An example is provided by the *Armed Activities on the Territory of the Congo* case brought by the DRC against Uganda before the International Court of Justice (ICJ). Although the DRC raised the violation of Article 56 of Additional Protocol I in its application to the ICJ in 1999,⁷⁵ it then decided not to develop this argument during the written and oral phases of the procedure before the Court.⁷⁶ This

71 An example is the award of the Eritrea–Ethiopia Claims Commission, established under the auspices of the Permanent Court of Arbitration (PCA), analysing an Ethiopian military operation against a water reservoir in Eritrea. Eritrea Ethiopia Claims Commission, *Western Front, Aerial Bombardment and Related Claims: Eritrea’s Claims 1, 3, 5, 9–13, 14, 21, 25 & 26*, Partial Award, 19 December 2005, paras. 98–105, available at: <http://www.pca-cpa.org/upload/files/FINAL%20ER%20FRONT%20CLAIMS.pdf> (last visited 7 September 2010).

72 Additional Protocol I, Art. 56(1) and Additional Protocol II, Art. 15. The regime of protection conferred to the installations containing dangerous forces is completed by Article 85(3)(c) of Additional Protocol I, which considers attacks against such objects as grave breaches.

73 The protection against attack will cease only if a dam or a dyke ‘is used for other than its normal function and in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support’ (Additional Protocol I, Art. 56(2)(a)).

74 Additional Protocol I, Art. 56(3).

75 International Court of Justice (ICJ), *Armed Activities on the Territory of the Congo (Democratic Republic of Congo v. Uganda)*, Application Instituting Proceedings, filed in the Registry of the Court on 23 June 1999, pp. 15 and 17, available at: <http://www.icj-cij.org/docket/files/116/7151.pdf> (last visited 7 September 2010).

76 In its memorial, the DRC affirms that the Inga dam generates electricity for the town of Kinshasa and that taking possession of the Inga dam and causing power cuts had ‘catastrophic’ impacts on both the town and the surrounding area. Article 56 of Additional Protocol I was not, however, mentioned in the

approach shows that taking possession of the dam was not considered sufficient for proving a violation of Article 56 of Additional Protocol I. According to this article, an attack against a dam is prohibited 'if such [an] attack may cause the release of dangerous forces and consequent severe losses among the civilian population'.⁷⁷ Both elements are required to prove a violation of the article. The same difficulties in applying the prohibition of attacks against works containing dangerous forces could arise with regard to Article 15 of Additional Protocol II.

There are other rules ensuring protection of access to water during armed conflict, which deal with the protection of the environment. The safe character of water supplies is indispensable to preventing threats to the health of the civilian population and the spread of waterborne disease. The release of polluting substances caused by the attacks to industrial facilities may contaminate sources of water, especially groundwater resources that are particularly vulnerable to the risks of pollution.⁷⁸

Rivers, lakes, and groundwater resources are generally considered as civilian objects, and as such they are entitled to all of the protection afforded to 'civilian objects'.⁷⁹ Additional Protocol I, providing in Articles 35(3) and 55 the prohibition of causing 'widespread, long-term and severe damage', establishes a very high threshold of damage. The adjectives 'widespread, long-term and severe' used in Additional Protocol I mean that it is a triple, cumulative standard that needs to be fulfilled.⁸⁰ The conditions for the application of Articles 35(3) and 55 of Additional Protocol I are thus extremely stringent. For instance, the notion of 'long-term' employed by Additional Protocol I was defined as lasting for a period of years rather than months.⁸¹ The report adopted by the Committee established to review the NATO military operations in the Federal Republic of Yugoslavia (FRY) in 1999 illustrated well the difficulties regarding the application of Articles 35(3) and 55 of Additional Protocol I in respect to the pollution of water resources.⁸² In the view of the Committee, the application of these Articles could be only invoked in situations of extreme pollution of water resources.

Military operations on transboundary water resources may affect the environment of other states. Those attacks violate the protection granted to civilian

memorial submitted by the DRC. ICJ, Memorial, July 2000, p. 65, available at: <http://www.icj-cij.org/docket/files/116/8321.pdf> (last visited 7 September 2010).

77 Additional Protocol I, Art. 56(1), first sentence.

78 In this regard, see International Law Commission (ILC), *Second Report on Shared Natural Resources*, by Mr. Chusei Yamada, *Special Rapporteur*, 9 March 2004, A/CN.4/539, para. 25.

79 See Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff Publishers, 2004, p. 300.

80 The same adjectives are also used in Article 8(2)(b)(iv) of the Rome Statute.

81 *Commentary AP*, above note 66, para. 1452.

82 See *Final Report to the Prosecutor by the Committee established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia*, June 2000, paras. 15 and 17, available at: http://www.icty.org/x/file/About/OTP/otp_report_nato_bombing_en.pdf (last visited 7 September 2010). For a critical appraisal of the report, see Paolo Benvenuti, 'The ICTY prosecutor and the review of the NATO bombing campaign against the Federal Republic of Yugoslavia', in *European Journal of International Law*, Vol. 12, No. 3, 2001, pp. 503–529.

objects by international humanitarian law and they are also in violation of a general principle of international law providing that states have ‘to ensure that activities within their jurisdiction and control respect the environment of other States’.⁸³ Moreover, the impacts on the environment have to be taken into account when states are ‘assessing what is necessary and proportionate in the pursuit of legitimate military objectives’.⁸⁴ Thus, general principles of international humanitarian law may play an important role in protecting water resources against environmental damage caused in both international and non-international armed conflicts.

Many of the impacts on water are caused not by attacks against the resource itself but by military operations against industrial facilities and the consequent release of polluting substances. For example, during the conflict in Kosovo, the NATO bombing of industrial facilities caused a significant contamination of water resources, particularly in the Danube river, its tributaries, and groundwater resources. The report adopted by the Committee established to review the NATO military operations against the FRY took into account the principle of proportionality and it considered that ‘military objectives should not be targeted if the attack is likely to cause collateral environmental damage which would be excessive in relation to the direct military advantage which the attack is expected to produce’.⁸⁵ This approach is significant because it opens an alternative protection to the environment to that provided by Articles 35(3) and 55 of Additional Protocol I. Although the Committee underscored the importance of the principle of proportionality, it concluded that it was not necessary that the Office of the Prosecutor of the International Criminal Tribunal for the former Yugoslavia (ICTY) open an investigation because there was a lack of sufficient information to evaluate the environmental damage.⁸⁶ However, one of the responsibilities of a judicial body such as the Committee is to gather the pertinent information in order to evaluate facts such as the damage caused to water resources and to determine the legal consequences of those facts.

The protection of water under the regime of occupation

The 1907 Hague Regulations⁸⁷ and the Fourth Geneva Convention, containing norms on the protection of property and on the treatment of civilians, are the two principal sources of law regulating the use of water resources and the access to water in occupied territories.⁸⁸ The contribution of the rules on property to the uses

83 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, ICJ Reports 1996, para. 29.

84 *Ibid.*, para. 30.

85 *Final Report to the Prosecutor*, above note 82, para. 18.

86 *Ibid.*, paras. 22 and 24.

87 Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land of 18 October 1907 (hereafter 1907 Hague Regulations).

88 See Antonio Cassese, ‘Powers and duties of an occupant in relation to land and natural resources’, in Emma Playfair (ed.), *International Law and the Administration of Occupied Territories: Two Decades of Israeli Occupation of the West Bank and Gaza Strip*, Oxford, Clarendon Press, 1992, pp. 419–442;

of natural resources has been illustrated by the judgement of the ICJ in the case *Armed Activities on the Territory of Congo*. The DRC claimed that Ugandan forces systematically looted and exploited the assets and natural resources in the occupied territory in violation of the norms of international humanitarian law. The Court, relying on United Nations reports and other international sources, considered that the Ugandan troops involved in the looting and exploitation of natural resources in the territory of the DRC 'acted in violation of the *jus in bello*, which prohibits the commission of such acts by a foreign army in the territory where it is present'.⁸⁹ The Court reached this conclusion on the basis of the prohibition of pillage contained in both the 1907 Hague Regulations and the Fourth Geneva Convention.⁹⁰

The 1907 Hague Regulations contain a nuanced legal framework on property, distinguishing between private and public property as well as between movable and immovable property. Both of these distinctions are important factor in the assessment of the extent to which the occupying power can control water resources. Legal scholars have taken different approaches on the qualification of water under the law of belligerent occupation: whereas some treat the exploitation of water resources as a private property right enjoyed by the owner of the land, others see water as a public resource.⁹¹ Depending on the domestic legislation, water can be either private or public property. Water wells or pumps privately owned must be respected and cannot be confiscated.⁹² Moreover, water installations owned by municipalities have to be treated as private property.⁹³ Regarding the qualification as movable or immovable property, water may be included in both kinds of property. While bottles of water are movable property, water in rivers, lakes, or groundwater resources, can be qualified as immovable property.⁹⁴

Although water sources constitute assets that can be either private or public depending on domestic legislation, transboundary rivers, lakes, and aquifers are a unique type of resource and they are not usually privately owned.⁹⁵ As noted above, the 1907 Hague Regulations make a distinction between state-owned movable and immovable property. Both Articles 53(1) and 55 of the 1907 Hague

Eyal Benvenisti, 'Water conflicts during the occupation of Iraq', in *American Journal of International Law (AJIL)*, Vol. 97, No. 3, 2003, pp. 860–872.

89 ICJ, *Armed Activities on the Territory of Congo (Democratic Republic of Congo v. Uganda)*, Judgment, 19 December 2005, ICJ Reports 2005, para. 245.

90 Article 47 of the 1907 Hague Regulations and Article 33 of the Fourth Geneva Convention prohibit pillage.

91 Iain Scobbie, 'H2O after Oslo II: legal aspects of water in the Occupied Territories', in *Palestine Yearbook of International Law*, Vol. 8, 1994–1995, p. 92; Gamal Abouali, 'Natural resources under occupation: the status of Palestinian water under international law', in *Pace International Law Review*, 1998, Vol. 10, No. 2, p. 470.

92 1907 Hague Regulations, Art. 46.

93 *Ibid.*, Art. 56(1).

94 Groundwater bears many similarities to oil in the ground, which was found to be an immovable asset by the Court of Appeal of Singapore, 'N.V. de Bataafsche Petroleum Maatschappij v. The War Damage Commission', 13 April 1956, in Hersch Lauterpacht (ed.), *International Law Reports (ILR)*, Vol. 23, 1960, p. 810. See Edward R. Cummings, 'Oil resources in Occupied Arab Territories under the law of belligerent occupation', in *Journal of International Law and Economics*, Vol. 9, 1974, p. 558.

95 See A. Cassese, above note 88, p. 431.

Regulations place limitations upon the occupant's right of seizure and utilization.⁹⁶ The right of using water resources does not include the privilege to commit waste of the property involved nor can the population of the occupied territory be deprived of its essential means of survival.⁹⁷

Article 53(1) of the 1097 Hague Regulations provides that an occupying power may take public movable assets only if they 'may be used for military operations'. For example, bottles of water owned by an army and used for the provisioning of its troops, may be considered as used for military operations and may be taken by an occupying power.⁹⁸ Article 55 of the 1907 Hague Regulations deals with the protection of immovable public property. The occupying power is prohibited from claiming ownership over public property as it 'shall be regarded only as administrator and usufructuary'.⁹⁹ Although Article 55 has been criticized for its referral to concepts of private law, such as the usufruct, that would be particularly difficult to apply,¹⁰⁰ it contributes to limiting the rights and obligations of an occupying power on the uses of public property such as water resources.

According to the most common interpretation, this provision prohibits wanton dissipation and destruction of public property.¹⁰¹ Article 55 of the 1907 Hague Regulations imposes on an occupying power the duty to act as a *bonus paterfamilias* and to safeguard the capital of a source of water. This reading of Article 55 is linked to the obligations contained in Article 53 of the Fourth Geneva Convention prohibiting destruction of property.¹⁰²

96 See United States Military Tribunal, 'In re Goering', 1 October 1946, in Hersch Lauterpacht (ed.), *Annual Digest and Reports of Public International Law Cases*, London, Butterworth & Co., 1951, Vol. 13, 1946, Case No. 92, p. 215. See also United States Military Tribunal, 'In re Krupp', 30 June 1948, in *ibid.*, Vol. 15, 1948, Case No. 214, p. 622; United States Military Tribunal, 'In re Weizsaecher (Ministries Trial)', 14 April 1949, in Hersch Lauterpacht (ed.), *Annual Digest and Reports of Public International Law Cases*, London, Butterworth & Co., 1955, Vol. 16, 1949, Case No. 118, p. 360.

97 See United States Military Tribunal, 'In re Weizsaecher', above note 96, p. 361.

98 In this regard, the Court of Appeal of Orleans considered that wine vats owned by the French army and used for the provisioning of troops were 'used for military operations'. Court of Appeal of Orleans, 'French State v. Etablissements Monmousseau', 1948, in *ILR*, Vol. 15, pp. 596–597, as quoted in Yoram Dinstein, *The International Law of Belligerent Occupation*, Cambridge, Cambridge University Press, pp. 218–219.

99 1907 Hague Regulations, Art. 55.

100 Charles Rousseau, *Le droit des conflits armés*, Pedone, Paris, 1983, p. 160.

101 See United States Military Tribunal, 'In re Weizsaecher', above note 96, p. 361. In this regard, McDougal and Feliciano considered that 'the occupant may not wantonly dissipate or destroy the public resources and may not permanently alienate them (*salva rerum substantia*)'. Myres S. McDougal and Florentino P. Feliciano, *The International Law of War: Transnational Coercion and World Public Order*, New Haven Press, New Haven, 1994, p. 812. Moreover, according to Oppenheim, the occupying power 'may sell the crops from the public land, cut and sell timber in the public forests', under the condition of not exercising this right 'in a wasteful and negligent value so as to decrease the value of the stock and plant'. Lassa Oppenheim, *International Law: A Treatise*, 7th edition, Longman, London, 1972, Vol. 2, pp. 397–398, para. 134.

102 According to Article 53 of the Fourth Geneva Convention: 'Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social and cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations'. Moreover, Article 147 of the Fourth Geneva Convention indicates as a 'grave breach' the 'extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly'.

The obligations of an occupying power should be, however, the object of a broader interpretation. Preventing the destruction or wanton dissipation of water resources is not sufficient to ensure adequate protection for this indispensable resource for life.¹⁰³ The fact that water is an increasingly scarce resource in many regions of the world and that, in some cases, it may be non-renewable necessitates a broad interpretation of Article 55 of the 1907 Hague Regulations.

Beyond Article 55 of the 1907 Hague Regulations, larger duties imposed on the occupying power in the use of water resources may be supported by the principle of permanent sovereignty over natural resources. One of the main features of this principle, which emerged during the 1960s, is that it is both a state's right and a people's right.¹⁰⁴ In the case of occupation, full exercise of the right to use freely, control, and dispose of natural resources could take place only with the restoration of control (namely sovereignty) over the occupied territories to the states and peoples concerned.¹⁰⁵ As long as that does not materialize, the occupying power is under an obligation not to interfere with the exercise of permanent sovereignty by the population of occupied territories.¹⁰⁶ The principle of permanent

103 Some documents, such as a Memorandum of the US Department of State of 1976, dealing with the development by Israel of new oil fields in the Sinai Peninsula and Gulf of Suez, stated that developing new oil fields would be prohibited by the 1907 Hague Regulations. In reaching this conclusion, the State Department indicated that an occupying power has the right to exploit an existing oil field 'at the previous rate of exploitation' but not to develop a new oil field and exploit it 'even at a reasonable rate'. US Department of State, 'Memorandum of law on Israel's right to develop new oil fields in Sinai and the Gulf of Suez', in *ILM*, Vol. 16, 1977, p. 737. See also, Brice M. Clagett and O. Thomas Johnson, Jr., 'May Israel as a belligerent occupant lawfully exploit oil resources of the Gulf of Suez?', in *AJIL*, Vol. 72, No. 3, 1978, pp. 558–585.

104 Article 1 common to the International Covenant on Civil and Political Rights of 1966 and the International Covenant of Economic, Social and Cultural Rights of 1966 recognizes that: 'All peoples ... freely dispose of their natural wealth and resources In no case may a people be deprived of its own means of subsistence'. On the double facets of the principle of permanent sovereignty over natural resources, see Georges Abi-Saab, 'La souveraineté permanente sur les ressources naturelles', in Mohamed Bedjaoui, *Droit international: Bilan et perspectives*, Paris, Pedone, Vol. 2, 1991, p. 644.

105 It should be noted that, in its judgment on *Armed Activities on the Territory of Congo*, the ICJ, dealing with the principle of permanent sovereignty over natural resources, indicated that 'there is nothing in these General Assembly resolutions [1803 (XVII) of 14 December 1962, 3201 (S.VI) of 1 May 1974 and 3281 (XXIX) of 12 December 1974] which suggests that they are applicable to the specific situation of looting, pillage and exploitation of certain natural resources by members of the army of a State militarily intervening in another State ... The Court does not believe that this principle is applicable to this type of situation'. ICJ, *Armed Activities on the Territory of Congo*, above note 89, para. 244. The words used by the Court leave open the question of whether or not this principle would not be applicable to the specific situation of Congo or, in general, to occupied territories. Some clarifications on this issue may be found in the declaration of Judge Koroma noting that the 'exploitation of natural resources of a State by the forces of occupation contravenes the principle of permanent sovereignty over natural resources, as well as the Hague Regulations of 1907 and the Fourth Geneva Convention of 1949'. ICJ, *Armed Activities on the Territory of Congo (Democratic Republic of Congo v. Uganda)*, Declaration of Judge Koroma, p. 289, para. 11.

106 See in this regard, the resolutions of the UN General Assembly dealing with permanent sovereignty over natural resources in the occupied Palestinian and other Arab territories. See, *inter alia*, General Assembly resolutions 51/190, 16 December 1996, A/RES/51/190; 54/230, 22 December 1999, A/RES/54/230; 56/204, 21 December 2001, A/RES/56/204; 62/181, 19 December 2007, A/RES/62/181; 64/185, 21 December 2009, A/RES/64/185.

sovereignty over natural resources underscores the standpoint that water resources may only be used in connection with the needs of the occupation forces.¹⁰⁷ The limitations on the rights of using water resources rely on the fact that powers of an occupying power are transitory and that it only exercises a *de facto* authority.¹⁰⁸

A number of rules on the treatment of civilians included in the Fourth Geneva Convention contribute to the protection of access to water. The occupying power must ensure the survival of the population, as well as of public health, by preventing the spread of contagious diseases and epidemics.¹⁰⁹ Although Articles 55 and 56 of the Fourth Geneva Convention are confined to food and medical supplies, water supplies should be considered as included in those provisions.¹¹⁰ The fact that Additional Protocol I was extended to the provision of the ‘supplies essential to the survival of the population’¹¹¹ and that Article 54(1) and (2) of the same instrument prohibit starvation and attacks on drinking water installations, underscores the qualification of water as a food supply indispensable for the survival of the civilian population. Even if Article 54(1) and (2) of Additional Protocol I is not directed specifically to occupied territories, it is usually considered as applicable to them¹¹² and it highlights the status of water as an essential means of subsistence in occupied territory.

The contribution of other areas of law to the protection of water during armed conflict

International humanitarian law is not isolated from other areas of international law. It should be interpreted and applied within the context of general international law, taking into account other norms and instruments of international law such as those of human rights law and the law on transboundary water resources. The interplay between international humanitarian law and other areas of international law raises the issue of the application of the principle of *lex specialis*, as well as that of treaty interpretation.¹¹³

107 See United States Military Tribunal, ‘*In re Goering*’, above note 96, p. 215. In this regard, it should be noted that the judgment rendered by the Appeal Court of Singapore, in the case *De Bataafsche Petroleum v. War Damages Commission*, condemned the confiscation of oil in Malaysia from the Japanese forces. According to the Court, the oil confiscated was not only used for satisfying the military needs of the occupying forces but also for covering the needs of the civilian population in Japan. Court of Appeal of Singapore, above note 94, p. 810.

108 See 1907 Hague Regulations, Art. 42.

109 Fourth Geneva Convention, Arts. 55 and 56.

110 Supreme Court of Israel, *Physicians for Human Rights et al. v. IDF Commander of Gaza* (Rafiah case), 30 May 2004, HCJ 4764/04, excerpts in *Israeli Yearbook of Human Rights (IYHR)*, Vol. 35, 2005, p. 327.

111 Additional Protocol I, Art. 69(1).

112 Y. Dinstein, above note 98, pp. 148–149.

113 See ILC, ‘Conclusions of the work of the Study Group on the fragmentation of international law: difficulties arising from the diversification and expansion of international law’, in *Yearbook of the International Law Commission*, 2006, Vol. 2, Part Two, available at: http://untreaty.un.org/ilc/texts/instruments/english/draft%20articles/1_9_2006.pdf (last visited 7 September 2010).

A way to consider the relationship between several norms of international law is to look at treaty relations according to the principle of systemic integration.¹¹⁴ While international humanitarian law, human rights law, and the law on trans-boundary water resources confer different degrees of protection to water during armed conflict, the principle of systemic integration calls for interpreting different treaties and norms within the framework of international law regarded as a system. Moreover, this principle also pleads in favour of a search for compatibility between rules of law. When two or more rules exist on the same subject, they should, to the fullest extent possible, be interpreted in a compatible way. The principle of systemic integration may allow for reducing the risks of fragmentation between norms owing to different areas of law. At the same time, the application of this principle does not imply that possible conflicts or overlaps of norms cannot occur. However, its application may reduce the risk of possible conflict.¹¹⁵

Water and human rights law

The right to drinking water plays an increasingly important role in the international legal order. Among the most recent recognitions, an independent expert on the right to water and sanitation was appointed by the Human Rights Council in 2008 and a resolution recognizing the right to water and sanitation was adopted by the UN General Assembly in 2010.¹¹⁶ The right to water, which entitles everyone to have ‘sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses’,¹¹⁷ has been included in various international human rights instruments, such as the 1979 Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW),¹¹⁸ the 1989 Convention on the Rights of the Child (CRC),¹¹⁹ and the 2006 Convention on the Rights of Persons with Disabilities.¹²⁰ Other instruments provide implicitly for it, including the 1966 International Covenant on Economic, Social and Cultural Rights (ESCR Covenant).¹²¹

114 See Campbell McLachlan, ‘The principle of systemic integration and Article 31(3)(c) of the Vienna Convention’, in *International and Comparative Law Quarterly*, Vol. 54, 2000, pp. 279–320.

115 See ILC, Report of the Study Group, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, A/CN.4/L.682, 2006, paras. 411–412.

116 UN Human Rights Council resolution 7/22, 28 March 2008; and UN General Assembly resolution 64/292, 28 July 2010, A/RES/64/292.

117 Committee on Economic, Social and Cultural Rights (ESCR Committee), General Comment No. 15 on the Right to Water, 26 November 2002, UN Doc. E/C.12/2002/11, para. 2.

118 Article 14(2)(h) of the Convention on the Elimination of All Forms of Discrimination Against Women, A/RES/34/830 (1979), in *ILM*, Vol. 19, 1980, p. 33.

119 Article 24(2)(c) of the Convention on the Rights of the Child, A/RES/44/25 (1989), in *ILM*, Vol. 28, 1989, p. 1457.

120 Article 28(2)(a) of the International Convention on the Rights and Dignity of Persons with Disabilities, A/RES/61/106 (2006), available at: <http://www1.umn.edu/humanrts/instree/disability-convention2006.html> (last visited 7 September 2010).

121 International Covenant on Economic, Social and Cultural Rights (ESCR Covenant), A/RES/2200 (XXI) (1966), in *ILM*, Vol. 6, 1967, p. 360.

The protection of the right to drinking water during armed conflict is included among the ‘obligations to respect’ embodied in General Comment No. 15 adopted by the Economic, Social and Cultural Rights Committee (ESCR Committee) in 2002. This document, stating that ‘the right to water embraces those obligations by which States parties are bound under international humanitarian law’, recognizes the close relationship of the obligations embodied in human rights law and international humanitarian law.¹²²

The limitations on the access to water supplies indispensable to the survival of the civilian population are a violation of both international humanitarian law and human rights law. Although the application of human rights instruments in time of armed conflict is contested by some states, the jurisprudence of international courts such as the ICJ,¹²³ as well as UN bodies, has affirmed their application to situations of armed conflict.¹²⁴ On the subject of water, both the ESCR Committee and the Committee on the Rights of the Child addressed the issue of access to drinking water in occupied territory.¹²⁵ In favour of the argument that the obligations resulting from the ESCR Covenant are applicable in times of armed conflict, one may also mention that the ESCR Covenant does not contain provisions for derogation in case of armed conflict. The only derogations to the Covenant that a state may invoke are stated in its Article 4. This Article indicates that the limitations to the 1966 ESCR Covenant have to be ‘determined by law only in so far as this may be compatible with the nature of these rights and solely for the purpose of promoting the general welfare in a democratic society’. This establishes restrictive criteria for the derogation of the ESCR Covenant.¹²⁶

Beyond the issue of the derogation of human rights obligations during armed conflict, the application of these instruments also raises the issue of extra-territoriality. In other words, one may ask whether or not the right to water is applicable to acts performed by a state outside its own sovereign territory. Contrary to the 1966 Covenant on Civil and Political Rights¹²⁷ and the CRC,¹²⁸ the ESCR

122 ESCR Committee, General Comment No. 15, above note 117, paras. 21–22.

123 ICJ, *Nuclear Weapons*, Advisory Opinion, above note 83, para. 25; ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, 9 July 2004, ICJ Reports 2004, p. 178, para. 105.

124 See Cordula Droege, ‘Elective affinities? Human rights and humanitarian law’, in *International Review of the Red Cross*, Vol. 90, No. 871, 2008, pp. 507–509; Marco Sassòli, ‘Le droit international humanitaire, une “lex specialis” par rapport aux droits humains?’, in Andreas Auer, Alexander Fluckiger, and Michel Hottelier (eds), *Les droits de l’homme et la Constitution: études en l’honneur du Professeur Giorgio Malinverni*, Schulthess, Geneva, 2007, pp. 376–377.

125 ESCR Committee, *Concluding Observations: Israel*, 31 August 2001, E/C.12/1/Add.69, paras. 12–13; ESCR Committee, *Concluding Observations: Israel*, 26 June 2003, E/C.12/1/Add.90, para. 40; Committee on the Rights of the Child, *Concluding Observations: Israel*, 9 October 2002, CRC/C/15/Add.195, para. 51.

126 In its Advisory Opinion on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, the ICJ considered that restrictions to the 1966 Covenant could be invoked by states ‘solely for the purpose of promoting the general welfare in a democratic society. ICJ, *Wall case*, above note 123, para. 136.

127 Article 2(1) of the International Covenant on Civil and Political Rights, A/RES/2200A (XXI) (1966), in *ILM*, Vol. 6, 1967, p. 368.

128 CRC, above note 119, Art. 2(1).

Covenant does not contain provisions regarding its scope of application. This may be explained by the fact that the rights covered by this instrument are essentially territorial.¹²⁹ Protecting the right to water against the acts made by one state in the territory under its own control may however play an important role in limiting the impact caused by an armed conflict on the access to water. For example, one could consider the control that an occupying power might exercise over the management, distribution, and extraction of water resources in a territory under its control. On several occasions, both the ESCR Committee and the Committee on the Rights of the Child have reminded the government of Israel of its obligations regarding access to an equitable distribution and management of water resources in the Occupied Palestinian Territories.¹³⁰

The impacts of an armed conflict on a population's means of survival should be considered in the light of the specific conditions of water scarcity and aridity of some regions. For instance, in the context of Darfur – harsh terrain in which water and food sources are scarce – the destruction and poisoning of water wells and pumps could provide sufficient ground to believe that destruction of the means of survival of the civilian population constitutes a violation of both international humanitarian law and the right to water.

The right to water should be read in conjunction with the duties imposed by the rules of international humanitarian law governing the regime of occupation. Under this regime, it may be argued that, in some cases, water resources are exploited beyond the limit set by the rule of usufruct affirmed in Article 55 of the 1907 Hague Regulations and put at risk the survival of the civilian population, which must be ensured according to the Fourth Geneva Convention and Additional Protocol I.¹³¹ An argument of this kind could be made in the context of exploitation of the coastal aquifer in the Gaza Strip by Israel.¹³² In 2003, the UNEP *Desk Study on the Environment in Occupied Palestinian Territories* described the condition of the coastal aquifer as alarming, since it was characterized by 'lowering groundwater table, reduction in availability of fresh groundwater, and increased seawater intrusion and potential intrusion of deep brines'.¹³³ Many years of over-pumping by the occupying power have resulted in seawater intrusion and upcoming of saline groundwater. Moreover, the pollution of the groundwater in Gaza was also cited as a major problem.¹³⁴ This over-exploitation of water has

129 ICJ, *Wall case*, above note 123, para. 112.

130 ESCR Committee, *Concluding Observations: Israel*, 2001, above note 125, paras. 12–13; ESCR Committee, *Concluding Observations: Israel*, 2003, above note 125, para. 40; Committee on the Rights of the Child, *Concluding Observations: Israel*, above note 125, para. 51.

131 See Fourth Geneva Convention, Art. 55; Additional Protocol I, Art. 69(1).

132 An analysis of the interpretation of Article 55 of the Hague Regulations in the Gaza Strip can be found in Harold Ditcher, 'The legal status of Israel's water policies in the Occupied Territories', in *Harvard International Law Journal*, Vol. 35, No. 2, Spring 1994, pp. 572–573 and pp. 584–585.

133 UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, above note 25, p. 38.

134 *Ibid.*, p. 39. A report by Amnesty International also points out that, in the Gaza Strip, '[t]he aquifer has been depleted and contaminated by over-extraction and by sewage and seawater infiltration, and 90–95 per cent of its water is contaminated and unfit for human consumption. Waterborne diseases are common'. Amnesty International, above note 59, pp. 4–5.

strongly limited the access of the Palestinians to water, and the pollution of the groundwater has threatened the survival and health of the population. This indicates that lack of respect of the norms of international humanitarian law may lead to simultaneous violations of the right to water.

The contribution of the law on transboundary water resources

The protection of water in times of armed conflict may also be read through the lens of the law on transboundary water resources. There are few instruments of this area of law that deal with the protection of water resources and water installations during such periods. The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association (ILA) at its Helsinki Conference in 1966, contain only one article (Article XX) that refers to problems arising from armed conflict, and that article is confined to the limited subject of navigation.¹³⁵ Realizing the lacunae in the legal protection of water in wartime, the ILA addressed the issue ten years later. Thus, during its fifty-seventh Conference, held at Madrid in 1976, the ILA adopted a resolution on the protection of water resources and water installations in wartime.¹³⁶

While international humanitarian law protects water as a civilian object in general and as an object indispensable to the survival of the civilian population in particular, human rights law protects water through the right to sufficient and safe drinking water supplies. Yet neither area of law envisages the protection of water *per se*. The application of water agreements during armed conflict may provide for this protection, although this application raises the issue of the effects of armed conflict on treaties.¹³⁷ Some water instruments adopted at the beginning of the twentieth century contain explicit provisions on this topic.¹³⁸ Recent instruments such as the 1997 Convention on the Law of Non-Navigational Uses of

135 Article XX reads as follows: 'In times of war, other armed conflict, or public emergency constituting a threat to the life of the State, a riparian State may take measures derogating from its obligations under this Chapter to the extent strictly required by the exigencies of the situation, provided that such measures are consistent with its other obligations under international law. The riparian State shall in any case facilitate navigation for humanitarian purpose'. Helsinki Rules on the Uses of Waters of International Rivers, in *Report of the Fifty-second Conference of the International Law Association held at Helsinki, 14 to 20 August 1966*, 1967, p. 484.

136 International Law Association, *Report of the Fifty-seventh Conference held at Madrid, 30 August to 4 September 1976*, 1978, p. xxxiv.

137 In this regard, it should be noted that the ICJ decided not to deal with this issue in its advisory opinion on the Threat or Use of Nuclear Weapons of 1996. ICJ, *Nuclear Weapons*, Advisory Opinion, above note 83, para. 30.

138 The 1921 Statute on the Regime of Navigable Waterways of International Concern (focusing on the freedom of navigation) and the 1923 Geneva Convention relating to the Development of Hydraulic Power affecting more than one State (dealing with the carrying out of works for the exploitation of hydraulic power), state that in times of armed conflict they continue to be in force 'so far as such rights and duties [of belligerents and neutral powers] permit'. Article 15 of the Statute of the Regime of Navigable Waterways of International Concern, Barcelona, 20 April 1921, in *League of Nations Treaty Series (LNTS)*, Vol. 7, p. 37; Article 9 of the Convention relating to the Development of Hydraulic Power affecting more than one State, Geneva 9 December 1923, in *LNTS*, Vol. 36, p. 77.

International Watercourses (hereafter 1997 UN Watercourses Convention) and the 2008 ILC Draft Articles on Transboundary Aquifers also provide for norms in this respect.¹³⁹ In its Article 29, the 1997 UN Watercourses Convention affirms that international watercourses¹⁴⁰ 'shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules'.¹⁴¹ In this regard, it was commented that the obligation of riparian states to protect and use international watercourses in accordance with the UN Watercourses Convention remains in effect during an armed conflict.¹⁴²

Some specific agreements on water resources have continued to be in force during armed conflicts. For example, the Mekong Committee continued its activities during the conflict in Vietnam.¹⁴³ In the 1960s, it conducted analysis on the uses of the Mekong River and it gathered information on the characteristics of the river, including its topography and hydrography.¹⁴⁴ Similarly, during the armed hostilities between India and Pakistan in the 1960s and 1970s, the Indus Water Treaty of 1960 remained in force and the Permanent Indus Commission established by this Treaty continued to serve as the channel of communication between the two parties.¹⁴⁵ Another example of the fact that water provides one of the few paths for dialogue during an armed conflict is given by the role of the Joint Water Committee between Israeli and Palestinians.¹⁴⁶ This Committee set up under the Interim Agreement of 1995,¹⁴⁷ adopted a Joint Declaration for Keeping the Water Infrastructure Out of the Cycle of Violence in 2001.¹⁴⁸ This Declaration illustrates

139 United Nations Convention on the Non-Navigational Uses of International Watercourses, A/RES/51/869 (1997), in *ILM*, Vol. 36, 1997, p. 700; Draft Articles on the Law of Transboundary Aquifers, A/RES/63/124 (2008), available at: http://www.internationalwaterlaw.org/documents/intldocs/UNGA_Resolution_on_Law_of_Transboundary_Aquifers.pdf (last visited 7 September 2010).

140 According to the 1997 UN Watercourses Convention, a watercourse means 'a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus'. The term 'international watercourse' means 'a watercourse, parts of which are situated in different States'. Article 2(a) and (b) of the 1997 UN Watercourses Convention.

141 *Ibid.*, Art. 29.

142 ILC, Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Commentaries Thereto and Resolution on Transboundary Confined Groundwater, in *Yearbook of the International Law Commission*, 1994, Vol. 2, Part Two, p. 131.

143 The official name of this Committee was the Committee for the Coordination of Investigations of the Lower Mekong Basin. It was established by Cambodia, Laos, Thailand, and Vietnam in response to a decision taken by the United Nations Economic Commission for Asia and the Far East on 31 October 1957. See Vanessa Richard, *La coopération sur la gestion des cours d'eau internationaux en Asie*, La Documentation Française, Paris, 2005, p. 75.

144 See *ibid.*, pp. 75 and 82; Nguyen T. Dieu, *The Mekong River and the Struggle for Indochina: Water, War, and Peace*, Praeger, Westport, 1999, pp. 86–87.

145 Indus Water Treaty, Karachi, 19 September 1960, in *UNTS*, Vol. 419, p. 126.

146 For a review of the activities of the Committee see World Bank, *West Bank and Gaza: Assessment of Restriction on Palestinian Water Sector Development*, April 2009, pp. 47–53, available at: <http://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/WaterRestrictionsReport18Apr2009.pdf> (last visited 7 September 2010).

147 Israeli–Palestinian Interim Agreement, 28 September 1995, in *ILM*, Vol. 36, 1997, p. 551, Annex III, Article 40, para. 11.

148 UNEP, *Desk Study on the Environment in the Palestinian Occupied Territories*, above note 25, p. 180.

that, even in time of thorny relations and violence between the parties, the Committee continued to hold its meetings and showed a common willingness to protect water from the effects of the hostilities. A final example to mention is related to the Senegal river: the relation between two of the riparian states of this river, Senegal and Mauritania, has, from time to time, been heated by issues relating to the boundary delimitation of this river. However, the common management of the river between riparian states has prevailed over the years, including in times of tension.¹⁴⁹

Both the 1997 UN Watercourses Convention and the 2008 ILC Draft Articles on the Law of Transboundary Aquifers consider the socio-economic needs of the riparian populations as one of the relevant factors to be considered by riparian states and aquifer states in order to realize an equitable and reasonable utilization of international watercourses and transboundary aquifers.¹⁵⁰ Moreover, they point out that ‘special regard shall be given to vital human needs’ in weighing different kinds of utilization.¹⁵¹ This requirement implies that riparian states cannot threaten the ‘provision of sufficient water to sustain human life, including both drinking water and water required for the production of food in order to prevent starvation’.¹⁵² These norms included in instruments belonging to the area of the law on transboundary water resources thus support the obligation of international humanitarian law to protect objects indispensable to the survival of the civilian population, as well as the right to water.

Beyond the protection offered by water agreements, there are also other international agreements that may be of help for protecting water *per se*. This is the case in the instruments of international environmental law. Examples include the Convention on Wetlands of International Importance especially as Waterflow Habitat (Ramsar Convention), which provides for the protection of specific ecosystems of watercourses such as deltas, and the Convention on Biological Diversity,

149 Makane Moïse Mbengue, ‘Le statut du fleuve Sénégal: visages actuels’, in Laurence Boisson de Chazournes and Salman M. A. Salman, *Water Resources and International Law*, The Hague Academy of International Law, Martinus Nijhoff, Leiden/Boston, 2005, p. 498.

150 Article 6(1) of the 1997 UN Watercourses Convention reads as follows: ‘Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including: ... b) The social and economic needs of the watercourse States concerned; c) The population dependent on the watercourse in each watercourse State’. Article 5(1)(b) of the ILC Draft Articles on Transboundary Aquifers points out that ‘Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner of draft article 4 requires taking into account ... (b) The social, economic and other needs, present and future, of the aquifer States concerned’.

151 Article 10(2) of the 1997 UN Watercourses Convention, devoted to the ‘Relationship between different kinds of uses’, points out that ‘[i]n the event of a conflict between uses of an international watercourses, it shall be resolved ... with special regard being given to the requirement of vital human needs’. According to Article 5(2) of the ILC Draft Articles on Transboundary Aquifers: ‘In determining what is equitable and reasonable utilization, all relevant factors are to be considered together and a conclusion reached on the basis of all the factors. However, in weighing different kinds of utilization of a transboundary aquifer or aquifer system, special regard shall be given to vital human needs’.

152 ILC, above note 142, p. 110.

which protects the biological resources of water resources.¹⁵³ The importance of the application of these instruments of international environmental law during an armed conflict has been indicated by the Rio Declaration noting that 'States shall ... respect international law providing protection for the environment in times of armed conflict',¹⁵⁴ although that document did not expressly mention the issue of the effects of armed conflicts on environmental agreements. For their part, the Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict have indicated that environmental agreements 'may continue to be applicable in times of armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict'.¹⁵⁵

International water agreements provide a tool for dialogue and co-operation between parties involved in a dispute. In regions where there are risks of conflicts over water, instruments dealing with transboundary water resources may contribute to preventing the violence and hostilities between parties. For example, the issue of an uneven distribution of water resources is viewed as one of the potential reasons for conflict in the Central Asia region. The significance of water, especially related to its nexus with energy supplies along the Syr-Daria river, has caused incidents between Kirghizstan, Uzbekistan, and Kazakhstan.¹⁵⁶ The Environment and Security Initiative emphasized the risks of potential conflict caused by water in Central Asia and indicated the need for strengthening joint water bodies set up between the states in this region.¹⁵⁷

Water agreements may play an important role before and after an armed conflict. In particular, the agreements on transboundary water resources may contribute to mitigating the risks of conflicts and tensions between parties as well as create the conditions for durable peace in post-conflict countries.¹⁵⁸ They serve as

153 Convention on Wetlands of International Importance especially as Waterflow Habitat (Ramsar Convention), 2 February 1971, in *ILM*, Vol. 11, 1972, p. 963; Convention on Biological Diversity, 5 June 1992, in *ILM*, Vol. 31, 1992, p. 818.

154 Rio Declaration, above note 34, Principle 24.

155 Article 5 of the 'Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict', in *International Review of the Red Cross*, No. 311, 1996, available at: <http://www.icrc.org/web/eng/siteeng0.nsf/html/57JN38> (last visited 7 September 2010). In a resolution of 1994, the UN General Assembly invited 'all States to disseminate widely the revised guidelines for military manuals and instructions on the protection of the environment in times of armed conflict received from the International Committee of the Red Cross and to give due consideration to the possibility of incorporating them into their military manuals and other instructions addressed to their military personnel'. General Assembly resolution 49/50, 9 December 1994, A/RES/49/50, para. 11.

156 Environment and Security Initiative (ENVSEC Initiative), *Environment and Security: Transforming Risks into Cooperation: Central Asia – Ferghana/Osh/Khujand Area*, 2005, pp. 22–23, available at: http://www.grida.no/_res/site/file/publications/envsec/ferghana-report-eng.pdf (last visited 7 September 2010).

157 The ENVSEC Initiative was established by UNDP, UNEP, and the Organization for Security and Co-operation in Europe in 2003. NATO became an associate member in 2004. In 2006, two other institutions – the United Nations Economic Commission for Europe (UNECE) and the Regional Environment Center for Central and Eastern Europe (REC) – joined the initiative. See *ibid.*, p. 23.

158 For example, it may be noted that, during the 1980s and early 1990s, before the conclusion of the Peace Agreement between Israel and Jordan in 1994, the parties started to discuss the sharing of water during the so-called 'picnic table' talks. To illustrate the importance of water for both parties, the Peace

a channel of information and communication and build trust between states. Joint mechanisms and commissions established by water agreements may serve as an avenue for dialogue not only when peaceful relations between riparian states prevail but also when the relations are heated or even marred by violence.

Conclusion

The linkage between water and international peace and security should be studied taking into account both the fact that water may be a driver of hostilities between states and of national violence and the impact that armed conflict causes on water. Ensuring access to water, along with the protection of water resources, contributes to preventing conflicts and to the transition to peace in post-conflict states.¹⁵⁹

The damage or destruction caused by armed conflict on water installations and water resources needs to be minimized in order to ensure access to sufficient and safe water for the civilian population. Some norms of international humanitarian law, such as the obligation of not causing ‘widespread, long-term and severe damage’ to the environment, provide for a very high threshold of application. The violation of these norms may be difficult to prove, however, and may be insufficient to prevent risks to human health caused by unhealthy water.¹⁶⁰ Moreover, the norms of international humanitarian law do not deal with the protection of water *per se*. For instance, within the regime of occupation, international humanitarian law deals with water as a property as well as a food supply. However, the rules applicable to water in occupied territory should be read taking into account the specific characteristics of water as an indispensable natural resource for life as well as a part of the ecosystem. The linkage between international humanitarian law and other areas of law such as human rights law and the law on transboundary water resources may ensure better protection of water during armed conflict. The strengthening of the protection of water may contribute to a return to peace and to ensuring the satisfaction of vital human needs of the population.

Reading the relationship between the different norms protecting water during an armed conflict through the lens of the principle of systemic integration allows us to take into account the specificities of water and to ensure a better protection for it. As water is particularly vulnerable to the impacts of armed conflict, its protection should be vigorously pursued, with more emphasis placed on the similarities between norms of instruments of international law than on their differences. This will contribute to strengthening the protection of this natural resource in times when it is most at risk.

Agreement contains specific norms on this issue. See Treaty of Peace Between the State of Israel and the Hashemite Kingdom of Jordan, 26 October 1994, in *ILM*, Vol. 35, 1995, p. 46, Article 6 and Annex II.

159 See C. E. Bruch *et al.*, above note 58.

160 See *Final Report to the Prosecutor*, above note 82, conclusion.

Taking care to protect the environment against damage: a meaningless obligation?

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Abstract

Little attention is paid to the obligation of ‘care’ in Article 55(1) of Additional Protocol I. Beyond a general principle of upholding environmental value in times of armed conflict, what is the scope and content of the obligation? If it is worthless, what makes it so? Since the care provision includes the same high threshold of harm found elsewhere in the environmental provisions, has this stumbling block now been removed by state practice? Rule 44 of the Customary Law Study might appear to suggest that this is so, or does it? Ultimately then, is the care obligation worth caring about?

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Concern for the environment has vastly increased over the past fifty years or so, and particularly so in the past ten years, undoubtedly a reaction to constant media attention focussed on climate change.¹ As a consequence, environmental concern has crossed over from pure environmental law into most areas of law. Law-makers working in areas of aid and development, human rights, international trade, company law, discrimination, refugee law, space law, and law of the sea, for example, have all had to consider the environment, both in terms of the impact of those activities on the environment and, vice versa, the impact of environmental degradation – most urgently as the result of climate change – on those activities. This integration of environmental concern into almost every aspect of everyday life serves to educate the world’s population about the fragility of our environment, and about the need for its careful governance. Meanwhile, the laws of armed

conflict have recognized the need for environmental protection for over three decades now and there is some evidence that the main treaty provisions, or at least some aspects of them, have achieved a customary law equivalent.²

While the two provisions in Additional Protocol I³ (Articles 35(3) and 55) have certainly directed attention to the notion of environmental protection in times of armed conflict, it is suggested that the real gem hidden among those provisions is not the prohibition of means and methods causing widespread, long-term, and severe damage in Article 35(3) of Protocol I, but the obligation on states parties to take ‘care’ to protect the environment against such harm.

Having been largely ignored for decades, the provision – or at least debate surrounding the provision – has received new life from the authors of *Customary International Humanitarian Law* (hereafter *Customary Law Study*). There is a difference in format, but the main question to be asked of the opening sentence of the Study’s Rule 44 is whether its substance retains the same ‘care’ obligation as that of Article 55(1) of Protocol I or if it represents a new departure. Furthermore, an analysis of the ‘care’ obligation suggests that it might be useful in protecting the wartime environment from other emergent threats, such as the pollution released in attacks on chemical, pharmaceutical, and oil facilities, the destruction and exploitation of conflict resources, and the polluting effects of certain weapons. Might it also be valuable in preventing military actions exacerbating the onset or impacts of climate change?

A valued environment

The question is often raised of why Protocol I contains two provisions (Articles 35(3) and 55(1)) that on first inspection appear to cover the same ground.⁴ The general response is that, while there is some overlap in the language of Articles 35(3) and 55(1), the two provisions are different in emphasis.⁵ Article 35(3) of Protocol I sits neatly beside the most fundamental provisions on means and methods, and its placing here is pertinent to the absolute limit that it imposes. This section of the Protocol is not limited by the reference in Article 49(3) to warfare having effects on land, and so it appears to apply to all the Earth’s environment, including the marine environment and areas beyond national jurisdiction. The repetition of language in the second sentence of Article 55(1) of Protocol I but with

1 See Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, Cambridge University Press, Cambridge, 2007.

2 Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, Cambridge University Press, Cambridge, 2005 (hereafter *Customary Law Study*), Commentary and evidence for Rules 43–45.

3 Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977 (hereafter Protocol I).

4 Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann (eds), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC/Martinus Nijhoff Publishers, Geneva, 1987, paras. 1449–1452.

5 *Ibid.*, para. 2133.

the additional requirement of risk to the human population reminds us *why* the prohibition exists. The prohibition repeats mention of means and methods causing such harm, but it is indicated as being only an example of the notion of protection elaborated in the first sentence of Article 55(1). It is to this frequently overlooked first sentence of Article 55(1), however, that we must turn our attention.

The opening sentence of Article 55(1) of Protocol I stipulates that 'Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage'. This first sentence thus encapsulates the *raison d'être* or what Dinstein referred to as the 'underlying concept' of the provision.⁶ According to Cohan, the 'care clause' suggests a 'supervening standard or a general governing principle of due care in military deployments. That is, it seems to require that the effects or repercussions of permitted deployments ... do not end up escalating or otherwise producing the prohibited effects.'⁷ In simple and clear terms it suggests the need to protect the environment in times of armed conflict. And, unlike the second sentence, the 'care' obligation does not refer to environmental protection only on those occasions when people might be harmed.⁸ Yet is that all that this first sentence does? Does it function only as the 'underlying concept', and, if so, what does this mean in practice?

Certainly, without this first sentence the rest of the provision together with Articles 35(3) and 36 of Protocol I would be sufficient to continue the ban on means and methods of warfare causing widespread, long-term, and severe environmental damage. These other provision parts would also be capable of indicating the recognition of the need to protect the environment in armed conflict, as well as why it is protected. Is this first sentence then simply superfluous? Indeed, according to the ICRC Commentary, 'To some extent this formula [found in the first sentence] seems to reduce the effect of the provision by allowing some latitude of judgment'.⁹ Consequently, does the first sentence in fact weaken the provision? On the contrary, it will be argued, this obligation of 'care' is a key strength of Protocol I for those engaged in the pursuit of environmental protection. The provision recognizes the value of the environment to humanity; that the environment is so important that its value can limit the actions of parties to armed conflict. The first sentence of Article 55(1) is thus a lasting reminder of this recognition that humankind must continue to protect the environment in armed conflict.

While the provision, or indeed any other provision, does not explicitly designate the environment as civilian in nature, this is the prevailing view of

6 Yoram Dinstein, 'Protection of the environment in international armed conflict', in *Max Planck Yearbook of United Nations Law*, Vol. 5, 2001, p. 531.

7 John A. Cohan, 'Modes of warfare and evolving standards of environmental protection under the international law of war', in *Florida Journal of International Law*, Vol. 15, 2003, p. 504.

8 Much confusion often surrounds the notion of 'anthropocentrism'; there is a difference, however, between *why* we choose to protect the environment (which is arguably anthropocentric, as that protection is ultimately based on the benefit of a viable environment to humanity) and *what* we choose to protect (for example, prohibiting 'pure' environmental damage in the sense that no people are harmed).

9 Y. Sandoz *et al.*, above note 4, para. 2133.

the international community and undoubtedly the force behind the protection. Article 55 of Protocol I is positioned within Part IV, Section I, Chapter III, entitled ‘Civilian objects’, which contains the general protection of civilian objects as well as other provisions concerning protection of civilian objects when used by the military: notably Article 54, concerning ‘objects indispensable to the survival of the civilian population’, and Article 56, governing the ‘protection of works and installations containing dangerous forces’. This is not to suggest that the environment or a specific component of it cannot form a legitimate military objective, but the general view is that unless the environment (or a part of it) fulfils the definition provided by Article 52(2) of Protocol I it should be considered as *prima facie* civilian. Certainly, the recognition of the environment as a *prima facie* civilian object has done more to protect it than any environmentally specific rule of international humanitarian law. And, it is submitted, that recognition is embodied in the first sentence of Article 55(1). Once the notion of the ‘environment’ is given form and content by this recognition of civilian status, it becomes a real thing or entity that is to be saved from harm. Once rivers, lakes, and trees are seen as *prima facie* civilian, they are no longer just a valueless part of the scenery in which a battle takes place. And over the years, as we have come to realize our human impact on the environment as well as our dependence on it and its viability, it seems that the laws of war – or at least the ways in which they are applied – have generally and genuinely become greener. Of course, flowing from the recognition of civilian status is the invaluable protection granted by the principles of distinction¹⁰ and proportionality,¹¹ as well as those provisions governing the required precautions in attack¹² and against the effects of attack.¹³

Moving beyond the civilian-based protection afforded by Article 55(1), what is meant by the obligation requiring parties to take care to protect the environment?

The notion of ‘care’

The term ‘care’ itself is not unusual in international humanitarian law; it is frequently used in the sense of providing medical care to the wounded and sick¹⁴ or care for children.¹⁵ The obligation of providing children with the ‘care and aid they

10 See Protocol I, Art. 48.

11 See Protocol I, Art. 51(5)(b).

12 See Protocol I, Art. 57.

13 See Protocol I, Art. 58.

14 See, for example, Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of August 12, 1949, Arts. 12 and 15; Geneva Convention Relative to the Treatment of Prisoners of War of August 12, 1949, Art. 30; Geneva Convention Relative to the Protection of Civilian Persons in Time of War of August 12, 1949, Arts. 18 and 50.

15 See, for example, Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction of 18 September 1997 (hereafter Anti-Personnel Mines Convention), Art. 6(3) and Protocol on Explosive Remnants of War (Protocol V to the 1980 UN Certain Conventional Weapons Convention) of 28 November 2003, Art. 8(2), both concerned with ‘care and

require',¹⁶ for example, appears to be slightly more akin to a needs-based, parental, nurturing role. When examining the obligation of taking 'care' in Article 55(1), however, this same sense of nurturing is not immediately apparent. Taking care to prevent some occurrence or injury, for instance, is a different usage of the notion of care and appears to be more akin to an obligation of ensuring that one employs 'caution' and pays 'attention' to the need to avoid such injury.¹⁷ The Netherlands' Military Manual (1993), for example, requires that 'attention must be paid to the protection'¹⁸ of the environment against widespread, long-term, and severe damage, and the Swedish Manual (1991) directs that 'the parties shall exercise caution' so that widespread, long-term, and severe damage to the environment 'can be avoided'.¹⁹ Consequently, the notion of 'care' found in Article 55(1) is one of approaching the issue with caution and attention, just as one might say, for instance, that there is a need to 'take care' when crossing the road, or to pay attention or be cautious when crossing the road, or to take steps to ensure that you cross the road safely.

Furthermore, the obligation of 'constant care' found in Article 57 of Protocol I governing precautions in attack would seem to suggest an ongoing or more integral duty of paying attention or heed to a particular issue while engaging in, in this case, military operations: to pay heed to constantly or to be borne in mind constantly. The *Customary Law Study* adds further descriptors in the sense of 'particular care' and 'special care'.²⁰ And so it would seem that 'care' alone (that is, without the descriptor) denotes a somewhat lower scale or standard of caution. Consequently, if the required standard of care varies with the importance or value of the protected object, how *much* 'care' needs to be provided to the environment to fulfil the obligation in Article 55(1) of Protocol I and what is the *content* of the obligation of 'care'?

'Taking care to protect'

The nature of the obligation of 'care'

However one analyses Article 55(1) of Protocol I it is difficult to conclude that it is anything other than an obligation of conduct rather than result. This conclusion follows from the absence of any notion of 'ensuring' such protection. Of course, the all important word 'shall' is also included, which makes this a course of conduct that states parties *must* undertake. And reference to the notion of

rehabilitation, and social and economic reintegration, of mine victims'; Convention on Cluster Munitions of 30 May 2008, Art. 5(1), concerned with 'medical care'.

16 See Protocol I, Art. 77(1).

17 See also Anti-Personnel Mines Convention, above note 15, Art. 8(2); and 2008 Convention on Cluster Munitions, Art. 8(2), stating that 'care being taken to avoid abuse' of the clarification mechanism.

18 See J. M. Henckaerts and L. Doswald-Beck, above note 2, Vol. II, Part 1, Ch. 14, p. 881, para. 177.

19 *Ibid.*, p. 882, para. 181.

20 See *ibid.*, Vol. I, Rules 42, 81, and 84 on 'particular care', and Rule 38 for 'special care'.

‘warfare’²¹ would appear to relate the obligation to all parties engaged in operations (that is, in both attack and defence). Consequently, the obligation is one of ‘taking steps’, in attack and defence, to protect the environment, often referred to in shorthand as an obligation of ‘due diligence’.²² In answering the question of what steps need to be taken to show ‘due diligence’, environmental law typically requires only ‘reasonable’²³ steps, and there is no reason to suggest that this would not also be appropriate for the ‘care’ obligation in Article 55(1). Finally, the inclusion of a very high threshold of harm in that provision thus suggests that ‘reasonable steps must be taken to avoid widespread, long-term and severe environmental damage’.

The notion of environmental ‘protection’

In environmental law, the notion of environmental ‘protection’ tends to be an umbrella notion for the wide range of environmentally beneficial obligations that states must undertake. Obligations, for example, that range from simple ‘prevention’ of damage or pollution by requiring the prohibition of certain activities or by minimizing their impacts, to the more onerous ‘conservation’ and ‘wise use’ of natural resources (biotic and abiotic). Most of these methods of environmental protection are not fundamentally incompatible with military operations: for example, banning a particular substance or activity altogether or in a particular location, or otherwise reducing the environmental (or human) impact of activities. The more onerous obligations found in environmental treaties, however, might be incompatible. For instance, we cannot expect those engaged in hostilities to create conservation projects for endangered species – for example, to set up a breeding programme, or purposely to flood an area to create a wetland rich in biodiversity and to manage it sustainably on a stewardship basis. We can, however, require a level of protection of these established activities in wartime, largely by avoiding or minimizing the impact of the conflict in their vicinity. Indeed, international humanitarian law may already include recognition of such methods of protection. For example, states could utilize the notion of demilitarized zones,²⁴ which, although established to protect the civilian population,²⁵ could conceivably be used to protect the environment provided the requirements of the provision are met. Michael Bothe utilizes a similar methodology in his suggestion of a new rule designed to protect certain environmental spaces.²⁶ At present, provided that these

21 The meaning of ‘warfare’ appears to relate to active hostilities, certainly to the use of means and methods of warfare, and, according to the ICRC Commentary, is apparently broader than ‘combat’. See Y. Sandoz *et al.*, above note 4, para. 1401.

22 See Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2004, pp. 80–88; René Lefeber, *Transboundary Environmental Interference and the Origin of State Liability*, Kluwer Law International, The Hague, 1996, pp. 61ff.

23 R. Lefeber, above note 22.

24 See Protocol I, Art. 60.

25 Y. Sandoz *et al.*, above note 4, paras. 2303 and 2312.

26 Michael Bothe, ‘War and Environment’, in R. Bernhardt (ed), *Encyclopedia of Public International Law*, Vol. 4, Elsevier, Amsterdam, 2000, p. 1344. Note that draft Article 48 *ter*, concerned with the protection

spaces do not become (legitimate) military objectives, their protection depends largely on a rigorous application of the proportionality rule and, it is suggested, the ‘care’ obligation, with the latter also functioning as a brake on the means and methods of attack of nearby targets. Clearly, therefore, while it is often not the methods themselves that are alien to international humanitarian law, it is generally the level of protection that can be afforded the environment during armed conflict that is the real issue.

Thus, the obligation of ‘protection’ in Article 55(1) would seem to suggest that states parties must take steps – positive steps – to ‘guard’, ‘defend’, ‘keep safe’ the environment from damage. While a guardianship or stewardship role would provide the highest level of environmental protection, in practice the protection that can be afforded will largely entail minimizing collateral impacts and guarding against the higher levels of harm. As a rule of thumb, more serious harm will clearly be caused more easily and quickly to the more important environmental areas or components, such as areas rich in biodiversity and fragile environments. In theory, therefore, in regard to such fragile or important environmental components, the standard of ‘care’ (for fulfilment of the ‘care’ obligation) would require greater cautionary measures.

Practical applications of environmental ‘care’

The obligation of protection more generally could therefore include a wide range of actions, including (but not limited to): (a) undertaking a rigorous environmental assessment involving a thorough investigation of intelligence data and evaluation of potential environmental harm of a particular attack scenario, including a full appraisal of the environmental effects (including synergistic effects) of proposed weapons, as well as risks to particular kinds of environment;²⁷ (b) the alteration of an attack scenario to avoid potential environmental harm; and (c) calling off a planned attack due to the potential environmental harm. All of these scenarios would appear to fit the definition of ‘taking care to protect the environment against damage’. There is no doubt that more basic actions are also within the definition.

Returning to the question of how much care is needed for fulfilment of the obligation: what is the minimum that states must do? A good faith application of the obligation would surely entail much more than a simple ‘tick box’ approach: it would require a proper environmental assessment in the circumstances of potential harm. Where environmental harm was identified as a potential consequence of an action, the mandatory obligation to ‘take steps to protect the environment’ against

of ‘nature reserves’, was rejected for inclusion in Protocol I. See Y. Sandoz *et al.*, above note 4, paras. 2138-9 and proposed Amendment CDDH/III/276.

27 For the obligation of states to take the environment into consideration in their weapons assessment, see International Committee of the Red Cross, *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, ICRC, Geneva, 2006, pp. 19–20.

that damage would then surely require the state party not only simply to ‘consider’ how it could prevent that damage but to take positive steps if needs be to avoid or reduce the potential damage (moving from actions (a) through to (b) and (c) above). This could be done, for example, by actions of the attacking party in minimizing the weaponry necessary for the attack, employing different weaponry or tactics from those planned, changing the objective to be attacked,²⁸ or changing the timing of the attack, and ultimately, of course, by calling off the attack. Depending on the level of military advantage to be gained this last suggestion might not be so extreme in the circumstances. The defending party also has an obligation of ‘care’ in warfare, which includes minimizing the risks to its environment, including its particularly rare, endangered, biodiverse, and fragile environments. This obligation could include the removal of military objectives from the vicinity of its national parks or similarly important environmental areas, and could also include the closure of particularly risky or sensitive chemical facilities.²⁹ During the Kosovo Conflict, for example, the operators of some facilities attempted to remove or make safe hazardous chemicals on site, so that if attacked the damage would be minimized.³⁰ Clearly, a strict application of military necessity and proportionality might also reduce the number and types of chemical facilities attacked.

The threshold for ‘care’?

The application of the ‘care’ obligation in Article 55(1) of Protocol I is, of course, limited to preventing, or ‘taking steps’ to prevent, environmental damage only where that damage might reach the threshold scale of widespread, long-term, and severe harm. The inclusion of the threshold undoubtedly reduces the value of the ‘care’ obligation; some might say its value is reduced to zero. Indeed, the carrying out of an assessment of potential environmental harm will probably be sufficient fulfilment of the obligation, provided that the assessment reveals a level of potential harm below the threshold. And, as will be seen, even the most devastating, irreversible destruction of an area of environment will fail to breach the threefold threshold if it is insufficiently ‘widespread’. Consequently, the threshold of damage required to activate the obligation remains its fundamental hurdle to robustness. So, what if the threshold of ‘widespread, long-term and severe’ damage could be lowered or, better still, removed altogether?

28 This obligation is also recognized in part in Protocol I, Art. 57(3).

29 These obligations can be deduced from both Articles 55 and 58 of Protocol I.

30 Unfortunately, in the example of the Azotara fertilizer plant, the reports suggest that workers dumped 250 tons of liquid ammonia into the Danube, apparently fearing that greater environmental damage would be caused if the plant were bombed and the ammonia set on fire: see United Nations Environment Programme and United Nations Centre for Human Settlements (Habitats), *The Kosovo Conflict: Consequences for the Environment and Human Settlements*, UNEP and UNCHS, Geneva, 1999, p. 35.

The threshold: a 'credible' interpretation

While better scientific understanding today helps us to realize more starkly how easily damage can be caused to the environment, there is little evidence of any real downward movement in the way in which the three terms of Article 55(1) of Protocol I are interpreted. Rather obviously, the US Operational Law Handbook suggests that (in theory) the 'severe' element of the threshold might 'possibly' have been met by the two nuclear bombs dropped on Japan during World War II,³¹ although it is worth remembering that the US, among others, rejected the applicability of Articles 35(3) and 55 of Protocol I to the use of nuclear weapons.³² Consequently, it seems that the only weapon that the US can foresee *might* breach the threshold is the one weapon that it denies applicability to. Would a more modern, environmentally educated approach to the threshold of 'severe' harm, therefore, lead us to quantify as 'severe' harm that which would not have been so quantified previously? And, naturally, therefore, is the threshold of 'severe' harm constantly being lowered in real terms as we become better able to assess the true scale and quantification of harm to the environment?

Regardless, the real obstacle to lowering the threshold lies with the term 'widespread'. Even with the apparent endorsement of the definition provided in the Annex to the Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques (ENMOD) of 'several hundred square kilometres'³³ as a 'credible interpretation' by the US in recent years,³⁴ it still means that an area the size of the New Forest in the UK (measuring approximately 377 square kilometres),³⁵ or even a whole country (for example, the Maldives, measuring 300 square kilometres), would need to be damaged, in addition to the fulfilment of the other two threshold criteria ('long-term' and 'severe'). Quite straightforwardly, one can imagine 'severe' harm that is at the same time also

31 See Brian Bill, Marie Anderson, and J. Jeremy Marsh (eds), *Operational Law Handbook 2009*, International and Operational Law Department, Judge Advocate General's Legal Center and School, Charlottesville, VA, 2009 (hereafter US Operational Law Handbook), p. 351, available at: [https://www.jagcnet.army.mil/JAGCNETPortals/Internet/DocLibs/kfiddoclib.nsf/f45bab0efc3ec172852574d00068d6a5/23842DE37A0862CF852576E7004B669E/\\$FILE/2009%20operational-law-handbook.pdf](https://www.jagcnet.army.mil/JAGCNETPortals/Internet/DocLibs/kfiddoclib.nsf/f45bab0efc3ec172852574d00068d6a5/23842DE37A0862CF852576E7004B669E/$FILE/2009%20operational-law-handbook.pdf) (last visited 20 September 2010). On the definition of 'severe', the US Operational Law Handbook refers to 'any act that prejudices the health or survival of the population', suggesting 'roughly the same meaning' as that used in the Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques (ENMOD) of 10 December 1976; namely, 'severe or significant disruption or harm to human life, natural or economic resources, or other assets'. See Annex to the ENMOD Convention, Understandings regarding the Convention, letter c). See also Paul Fauteux, 'The Gulf War, The ENMOD Convention and the Review Conference', in *UN Institute for Disarmament Research Newsletter*, Vol. 18, 1992, p. 6.

32 See the statement by the US in Adam Roberts and Richard Guelff, *Documents on the Laws of War*, Clarendon Press, Oxford, 3rd edition, 2000, p. 512; note the reservation of the UK, for example, available at: <http://www.icrc.org/ihl.nsf/NORM/0A9E03F0F2EE757CC1256402003FB6D2?OpenDocument> (last visited 20 September 2010).

33 See Annex to the ENMOD Convention, Understandings regarding the Convention, letter a).

34 See US Operational Law Handbook, above note 31, p. 351.

35 See 'New Forest: explorers' guide', available at: <http://www.newforestexplorersguide.co.uk/sitefolders/landscape/aintroduction/landscapeintro.html> (last visited 20 September 2010).

anticipated to be ‘long-term’;³⁶ indeed, it is probably definable as ‘severe’ because of that very anticipation. Yet not all ‘long-term’ and ‘severe’ harm will be ‘widespread’, and not all ‘widespread’ harm will be either ‘long-term’ or ‘severe’. Certainly, ‘widespread’ environmental damage could be classifiable as ‘significant’ or ‘serious’ damage without more, but if there is no foreseeable ‘long-term’ harm then it is also unlikely to be classified as ‘severe’.

Other than this ‘credible’ interpretation of ‘widespread’ damage there appears to be little evidence that states have changed their perceptions of the scale required for the three threshold terms.

Omitting the threshold

Ultimately, it is the enduring immensity of the threshold that proves to be the provision’s downfall. It might seem like an unlikely suggestion, therefore, but can we then simply omit the threshold? Upon first glance, this is precisely what the authors of the *Customary Law Study* appear to have done with their Rule 44.

Analysing Rule 44

In the *Customary Law Study*, Rule 45 reflects the prohibition found within Article 35(3) of Protocol I,³⁷ but the authors penned an additional provision in Rule 44, such that:

Methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimise, incidental damage to the environment. Lack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions.³⁸

Certainly, clauses two and three of Rule 44 can be deduced, to some extent,³⁹ from state practice governing precautions in attack. And, as with the chosen

36 Negotiating states appeared to agree to the notion of ‘long-term’ being measured in ‘decades, twenty or thirty years as a minimum’. See CDDH/215/Rev.1, para. 27; Y. Sandoz *et al.*, above note 4, para. 1454.

37 The US rejects the Study’s conclusion that Rule 45 reflects customary law, see letter dated November 3, 2006 written by John B. Bellinger III, Legal Adviser for the Department of State, and William J. Haynes II, General Counsel for the Department of Defense, to Jakob Kellenberger, President of the International Committee of the Red Cross, in *International Review of the Red Cross*, Vol. 89, No. 866, June 2007, p. 455. The Rule is described as *lex ferenda* by Major J. Jeremy Marsh, ‘*Lex Lata or Lex Ferenda? Rule 45 of the ICRC Study on Customary International Humanitarian Law*’, in *Military Law Review*, Vol. 198, 2008, pp. 116–164.

38 J. M. Henckaerts and L. Doswald-Beck, above note 2, Rule 44.

39 This partial criticism of the formulation as adopted relates specifically to the authors’ recognition of the precautionary principle found in international environmental law, which this author believes is not reflected at the current time in international humanitarian law, and thus not in customary international humanitarian law; at least, not reflected in the form adopted by the authors. See Karen Hulme, ‘Natural

formulation of clause one of Rule 44, of course, the provisions governing precautions in attack (Article 57 of Protocol I) contain no threshold of harm. Article 57 refers instead to ‘constant care’ being taken to ‘spare the civilian population, civilians and civilian objects’. Since this reference to ‘sparing’ civilian objects would appear to be closer to the meaning of clause two of Rule 44, is clause one then based to some degree on state practice of the ‘care’ obligation in Article 55(1) of Protocol I? And, if so, is this a fair reflection of state practice and thus a customary norm; and what are we to make of the glaring absentee – the threshold of harm?

While much of the wording of clause one of Rule 44⁴⁰ is similar to that found within the ‘care’ obligation of Article 55(1), it is submitted that this is not the same creature. Leaving aside both the notion of ‘preservation’ that is more at home with marine protection⁴¹ and naval warfare,⁴² and the limitation in clause one only to the employment of means and methods (and not the broader notion of all ‘warfare’), the key difference is in the notion of ‘due regard to the protection’ of the environment.

The notion of ‘due regard’

The notion of ‘due regard’ is understood as involving a balancing exercise between two or more sets of rights or interests.⁴³ It is found within the Law of the Sea Convention⁴⁴ and, consequently, in rules on naval warfare where warring states must take into account the rights of other seafarers and where such a balancing exercise is necessary.⁴⁵ In this sense, then, the notion of ‘due regard’ seems to imply a more relative characteristic than that of ‘care’. Furthermore, the ‘regard’ that is ‘due’ to the environment could quite conceivably be very low and have nothing to do with the prevention of environmental harm. Thus, it is submitted that Rule 44 of the *Customary Law Study* imposes an obligation requiring a balancing exercise in

environment’, in Elizabeth Wilmshurst and Susan Breau (eds), *Perspectives on the ICRC Study on Customary International Humanitarian Law*, Cambridge University Press, Cambridge, 2007, pp. 204–237, at pp. 223–228.

40 This formulation is found with one wording change of ‘should’ from the US Naval Handbook to ‘must’ in Rule 44 of the *Customary Law Study*. See J. M. Henckaerts and L. Doswald-Beck, above note 2, Vol. II, Part I, Ch. 14, p. 861, para. 81.

41 See ‘United Nations Convention on the Law of the Sea of 10 December 1982’ (hereafter UNCLOS), Art. 192, in *International Legal Materials*, Vol. 21, 1982, p. 1261.

42 See K. Hulme, above note 39, pp. 218–220.

43 See Louise Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea* (hereafter San Remo Manual), prepared by international lawyers and naval experts convened by the International Institute of Humanitarian Law, International Institute of Humanitarian Law, Cambridge University Press, Cambridge, 1995, p. 84, para. 12.2. Rather confusingly, the San Remo Manual’s provision on environmental protection is also numbered as Rule 44.

44 For example, see UNCLOS, above note 41, Arts. 27(4), 39(3)(a), 56(2), 58(3), 60(3), 66(3)(a), 79(5), 87(2), 142(1), 148, and 234.

45 The phrase found in the *Customary Law Study*’s Rule 44 is mirrored in Rules 34 and 35 of the San Remo Manual, above note 43, governing ‘due regard’ to the rights and interests of states in the exclusive economic zone and on the continental shelf. Here the protection and preservation of the marine environment is specifically listed as a factor to consider in the carrying out of hostile actions (San Remo Manual, Rule 34) and mine-laying (San Remo Manual, Rule 35) in those maritime zones.

the use of means and methods involving the interests of the protection (and preservation) of the environment. It does not, therefore, seem specifically to state the requirement of ‘taking steps’, or of doing something in protecting the environment from harm – as does the ‘care’ obligation of Article 55(1) of Protocol I. As a result of this formulation, it is submitted, Rule 44 of the *Customary Law Study* acknowledges the recognition of a need to protect the environment but, unlike the ‘care’ obligation in Article 55(1) of Protocol I, it seems to remain quite vague about what states need to do in balancing that acknowledged need. Of course, this vagueness may well be a true reflection of state practice. One piece of ‘regard’ that would be ‘due’ anyway would involve the principle of distinction (and discriminate warfare), as well as the rule of proportionality and precautions demanded by Articles 57 and 58 of Protocol I. With the limiters in place in clause one of Rule 44 of the *Customary Law Study*, therefore, it is submitted that it is not in fact the same obligation as that found within the first sentence of Article 55(1) of Protocol I.⁴⁶ It is also questionable how far clause one of Rule 44 of the *Customary Law Study* is truly a reflection of customary law.⁴⁷

Rule 44 and the missing threshold of harm

Bearing these criticisms in mind, the real value in clause one of Rule 44 is the absence of a threshold of harm. According to that clause, states are required, in employing their means and methods, to have ‘due regard’ to the protection of the environment, no matter how small or low level that damage might be. Arguably, if the perceived level of damage is quite low, the regard ‘due’ will be equally low. Yet the balancing exercise may prove quite useful at higher levels of potential harm, but which are still at a level below the widespread, long-term and severe damage threshold for Protocol I. There is, however, no evidence of the specific formulation of clause one in the military manuals of states (outside the naval warfare context), whether party to Protocol I or not. Indeed, the manuals almost all refer to the three threshold terms that are, of course, the minimum that states parties must recognize. Positive evidence, therefore, for the absence of a threshold by way of military manuals is minimal. One interesting example, however, is provided by the Australian Defence Force Manual (1994), which stipulates that ‘those responsible for planning and conducting military operations have a duty to ensure that the natural environment is protected’.⁴⁸ While the Manual does later refer to the threshold in terms of the Article 55(1) prohibition on means and methods,⁴⁹ in this quote it notably imposes an obligation of result (‘to ensure’) while at the same time deleting any reference to the threshold of damage needed to activate the

46 This represents a slight change of opinion from earlier writings. See K. Hulme, above note 39.

47 According to George H. Aldrich, ‘Customary International Humanitarian Law: an interpretation on behalf of the International Committee of the Red Cross’, in *British Year Book of International Law*, Vol. 76, 2005, p. 515, ‘there is little, if any, precedent for [Rule 44] in existing law’.

48 J. M. Henckaerts and L. Doswald-Beck, above note 2, Vol. II, Part 1, Ch. 14, p. 861, para. 79.

49 *Ibid.*, p. 880, para. 165.

requirement of protection. This formulation certainly appears to be much more robust than that found in the ‘care’ obligation of Article 55(1). Whether wider state practice reflects this sense of a broader, higher level of ‘duty’ is doubtful though, at least in customary hard law form. Consequently, the absence of the threshold from Rule 44 of the *Customary Law Study* seemingly does not simply suggest that, even if that Rule were widely endorsed, the majority of states are ready to delete the threshold from the opening sentence of Article 55(1).

The relationship with Articles 57 and 58 of Protocol I

In bringing the two obligations (‘due regard’ and precautions) together in the one rule the *Customary Law Study* makes an interesting linkage. Of course, as one of the civilian objects⁵⁰ covered by the provisions of Articles 57 and 58 Protocol I on precautions, states are under the higher obligation of ‘constant care’ to ‘spare’ the environment in military operations in Article 57(1) Protocol I. And since the obligation in Article 57(1) Protocol I of taking care to ‘spare’ the environment, as a *prima facie* civilian object, is also an obligation of conduct there would appear to be an obvious overlap with the ‘care’ obligation in Article 55(1) Protocol I, but, of course, absent the very high threshold of damage. Arguably, since similar *types* of actions could fall within the notion of ‘sparing’ the environment as those under the ‘care’ obligation, notably avoiding, reducing or minimizing environmental damage, Article 57(1) Protocol I has real value for the environment.

As with the ‘care’ sentence in Article 55(1) Protocol I, the view of Article 57(1) Protocol I as enshrining only the ‘general principle’⁵¹ of sparing civilians and civilian objects tends to limit its potency as a real limit on military actions. The more concrete obligations of precaution are developed in the remainder of Article 57 and Article 58; but these clauses do not provide much for the environment beyond reminding states of the need for a robust application of the rules of distinction and proportionality.⁵² At most, an advance warning to the opposing party (required by Article 57(2)(c) Protocol I) could allow it the time to move military objectives from the location of an important environmental space, or put some protective facility in place (for example, relocating samples of rare or endangered species similar to what a state might do with cultural property).⁵³ The real tragedy of the environment in warfare is due to its very nature as forming our surroundings, and so it cannot easily be relocated or warned away from the planned area of attack.⁵⁴ On the other hand, one commitment that does appear to have real

50 When the environment does not fulfil the requirements of a military objective in Article 52(2) Protocol I.

51 Y. Sandoz *et al.*, above note 4, para. 2191.

52 See Article 57(2)(a) and (b) Protocol I.

53 See Article 58(c) Protocol I requiring the (defending) party to take ‘other necessary precautions to protect ... civilian objects under their control against the dangers resulting from military operations’.

54 See also Article 58(a) Protocol I on removing civilian objects, *inter alia*, from the vicinity of military objectives.

environmental value, and is also suggested to fall within the ‘care’ obligation (above), is Article 57(3) Protocol I which requires the parties to choose the attack with least danger to civilians and civilian objects when such a choice exists.

‘Caring’ versus ‘Sparing’

Consequently, while the ‘care’ obligation and the precautions provisions in Protocol I certainly do cover some of the same ground, the real value of the former is that it is specific to protection of the environment. An obligation to ‘spare’ the environment, it is submitted, is not as broad and robust, nor indeed emotive, as the obligation to ‘protect the environment’ against damage. It is furthermore submitted, that while some official statements of states appear to recognize the value of the environment and the need to protect the environment in wartime without reference to a threshold of harm,⁵⁵ that such an approach might be unworkable in practice and even undesirable. Even if the *de minimis* peacetime threshold of ‘not insignificant’ harm were adopted in armed conflict, such a low threshold would not necessarily entail meaningful protection in practice. Such a low threshold of environmental damage might actually encourage states to adopt the simple tick box approach, previously dismissed as inadequate for real environmental consideration during armed conflict. It is not as perverse as it might at first appear then, but there is an argument for imposing a threshold of environmental damage in the ‘care’ obligation.

Arguably, therefore, with further discussion and elaboration the ‘care’ obligation could conceivably achieve widespread recognition as a real curb on environmentally-damaging warfare and a real gem for environmental protection. It has to be admitted, though, that at present much of this influence is still an aspiration. With little downward movement of the very high threshold of harm the ‘care’ obligation is severely limited, in hard law terms, in what it can achieve. Furthermore, to suggest the removal of the threshold completely could impose far too high a burden on states, if the ‘steps’ required were to have real meaning that is. Certainly, its replacement with a lower threshold such as ‘significant’ harm would be less objectionable; but such a change remains highly unlikely without a radical rethinking in this area of the law. What then is the worth of the ‘care’ obligation?

Daring to care

With little prospect of a hard law shift in the immediate future it should at least be recognized that the obligation to ‘take care to protect the environment’ in Article

55 See for example comments made in submissions to the International Court of Justice in the Nuclear Weapons Case, as quoted in J. M. Henckaerts and L. Doswald-Beck, above note 2, Vol. II, Part 1, Chapter 14, notably Sri Lanka at p. 866, para. 104, Qatar at p. 865, para. 102, Malaysia at p. 865, para. 97, and Egypt at p. 862, para. 88.

55(1) Protocol I continues to shine like a beacon to encourage states to value the environment during armed conflict. And this role should not be understated. Even with the inclusion of the threshold the obligation to ‘take care’ requires states to, at least, contemplate what environmental damage might be caused by their military operations and just how serious a level of harm is foreseeable. Indeed, this general principle of environmental protection in warfare is clear to see in the actions of states: for example, a number of states have abandoned depleted uranium weapons altogether or switched to the so-called greener alternative, notably tungsten,⁵⁶ the US has introduced carbon-cutting measures on its domestic military bases,⁵⁷ and, of course, following widespread state condemnation of Iraqi destruction of oil wells in the first Gulf Conflict (1991) the Security Council readily included compensation for environmental clean-up efforts.⁵⁸ In recent years states’ concern for the environment in wartime has also translated into frequent attention by the Security Council and General Assembly, as well as a plethora of UN bodies and non-governmental organizations.⁵⁹ Finally, according to Schmitt, that environmental protection was not deemed too controversial to be included within the 1998 Rome Statute of the International Criminal Court ‘attests to the extent which environmental damage during armed conflict has entered the normative conscience of humanitarian law’.⁶⁰ Whether these and other examples of state action are responses to a perceived hard law obligation, soft law principle, or even a mere policy decision, there is undoubtedly a great deal of evidence to suggest that armed conflict is becoming more environmentally friendly, even if the laws themselves are slow to adapt. What does this mean in reality?

It is submitted that although states are generally not keen to negotiate new (*jus in bello*) environmental regulations, their actions in fact tend to demonstrate an awareness and enthusiasm for environmental protection during armed conflict. In other words, the hard law minimum that many states are willing officially to recognize, is only the starting point; their policies of environmental protection and the avoidance of environmental harm achieve so much more in practice and this point should be acknowledged. Thus hopefully very soon states may reach the point at which they are keen to reduce the very high threefold threshold of the

56 It is questionable, however, how much greener tungsten really is.

57 See David Sheets, ‘Military Technology and Renewable Energy’, in Carolyn Pumphrey, *Global Climate Change National Security Implications*, Strategic Studies Institute, 2008, available at: <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?PubID=862> (last visited 20 September 2010).

58 See Security Council Resolution 687 (1991) of 3 April 1991.

59 See, for example, General Assembly Resolution 61/154 of 19 December 2006, ‘The human rights situation arising from the recent Israeli military operations in Lebanon’; General Assembly Resolution 62/188 of 19 December 2007, ‘Oil slick on Lebanese shores’; General Assembly Resolution 62/30 of 5 December 2006, ‘Effects of the use of armaments and ammunition containing depleted uranium’; ICRC, ‘1994 Revised Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict’, in *International Review of the Red Cross*, Vol. 30, No. 311, 1996, pp. 230–237, and the work of the UNEP Post-Conflict Assessment Unit, available at: http://www.unep.org/depi/programmes/post_conflict_assessment.html (last visited 20 September 2010).

60 See Michael N. Schmitt, ‘Humanitarian Law and the Environment’, in *Denver Journal of International Law and Policy*, Vol. 28, 2000, p. 284.

‘care’ obligation in Article 55(1) Protocol I to a more valuable level of say ‘significant’ or ‘serious’ harm.

In addition, while at present the text of the ‘care’ obligation in Article 55(1) Protocol I is confined to ‘warfare’, states appear to be generally amenable to a broader interpretation of environmental ‘care’ in practice. Considered application of the ‘care’ provision, therefore, may be valuable in helping to protect the wartime environment against threats not confined simply to means and methods, such as curbing the environmentally-destructive exploitation of conflict resources⁶¹ (including in non-international armed conflict⁶²), as well as addressing the contribution of warfare to climate change and its potential impacts. It is also in the obligation of ‘care’ that one could possibly foresee an international humanitarian law usage or adoption of a principle of precautionary action, mirroring that found in environmental law, with particular applicability for actions, weapons or techniques with potentially serious levels of environmental damage but which has yet to be sufficiently scientifically proven.⁶³

Conclusions

After undertaking an interpretation of the obligation of ‘care’ for Article 55(1) Protocol I it is submitted that this ‘care clause’ is not simply stating the ‘underlying concept’⁶⁴ or the general principle recognizing the need for environmental protection in armed conflict. The treaty provision extends beyond mere hortatory expression or aspiration; it requires real action by states parties to take steps to protect the environment against damage. Unfortunately, the same high threshold of harm is included here as is found in Article 35(3) Protocol I which masks here, as there, the true value of the obligation. Consequently, states parties are required to take steps to protect the environment only against damage that is perceived to breach the threshold of widespread, long-term and severe harm. With little downward movement in the threshold it seems that the ‘care’ provision is denied real meaning in hard law terms. It is not true, however, that the provision is without meaning altogether. States parties will, at the very least, need to undertake an assessment of potential environmental impacts of their proposed actions in

61 See Global Witness, *The Sinews of War: Eliminating the Trade in Conflict Resources*, Briefing Document, 2006, available at: http://www.globalwitness.org/media_library_detail.php/480/en/the_sinews_of_war (last visited 20 September 2010); and United Nations Environment Programme, *Protecting the Environment During Armed Conflict: An Inventory and Analysis of International Law*, November 2009, available at: http://www.unep.org/PDF/dmb/ProtectEnvDuringConflict_en.pdf (last visited 20 September 2010).

62 Note the inclusion of an obligation of ‘regard’ to the environment in internal armed conflict in the UK Military Manual. See United Kingdom Ministry of Defence, *Manual of the Law of Armed Conflict*, Oxford University Press, Oxford, 2004, para. 15.20.

63 Some interesting thoughts on a precautionary approach are included in Avril McDonald, Jann K. Kleffner and Brigit Toebe (eds), *Depleted Uranium Weapons and International Law: A Precautionary Approach*, T.M.C. Asser Press, 2008.

64 Y. Dinstein, above note 6.

order to comply with this as well as other provisions of Protocol I. And states can and do choose to take steps to protect the environment for lower levels of perceived harm. The US is itself an example of a state not treaty bound by Protocol I but which often chooses to reflect principles of environmental protection in public statements explaining its military actions.

While the *Customary Law Study's* Rule 44 appears similar in some respects to the 'care' provision in Article 55(1) Protocol I, it is submitted that it is not the same obligation. Consequently, the absence of the threshold from Rule 44 of the *Customary Law Study* could not, even if Rule 44 were widely endorsed, simply suggest that states are ready to delete the threshold from Article 55(1) Protocol I. Indeed, it is submitted that customary law at the present time does not reflect this sentiment. It is further submitted that such an obligation while potentially workable, would possibly impose far too high a burden to be acceptable to states if those 'steps' were to have real meaning.

The sentiment of environmental protection found in the 'care' obligation is also undoubtedly present in states generally in wartime and emanates from the peacetime recognition of the value of the environment to mankind. And it is this recognition of the value of the environment, not only a healthy but ecologically-viable environment, together with the recognition of the environment as a *prima facie* civilian object that have been consistently and positively influencing the military actions of states during the recent past.

Finally, if states are encouraged to consider the 'care' obligation in this way the provision may also prove valuable in protecting the wartime environment from all sorts of threats, not only from the poisonous impacts of collateral damage from pharmaceutical or chemical factories, but from the destruction and exploitation of conflict resources (in internal armed conflict if the provision were to gain a customary equivalent), and the polluting effects of certain weapons. Considered application of the 'care' provision may also be valuable in preventing military actions exacerbating the onset or impacts of climate change: a pertinent issue in contemporary international law.

Climate change adaptation: integrating climate science into humanitarian work

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Abstract

A changing climate means more work for humanitarian organizations. Vulnerable people served by the Red Cross/Red Crescent Movement are likely to experience new patterns of disasters. In the face of these rising dangers, science-based information about likely threats can be used to reduce risk and improve resource allocation. Examples such as the 2008 emergency appeal for flood preparedness in West Africa

* The views and opinions expressed in this paper are those of the authors, and do not necessarily represent the views and opinions of the Red Cross/Red Crescent Climate Centre or any other component of the Red Cross and Red Crescent Movement.

illustrate the benefits of turning early warnings into early actions at community, national, and regional levels, at timescales ranging from hours to decades ahead of a looming threat. By making better use of a wide range of new information, humanitarian organizations can enhance their work even in the face of the rising risks of climate change.



Climate change poses significant new challenges to the humanitarian community. Global climate change is expected to bring not just gradual trends in temperature and rainfall patterns, but also more extreme and unusual weather events. This is likely to increase the need for humanitarian services, not only in terms of disaster response and recovery but also in terms of disaster preparedness, risk reduction, health, water and sanitation, food security, and shelter. Humanitarian organizations will need to review their operations, strategic planning, and the need for awareness-raising and communication. Despite the growing scientific evidence about observed and projected changes, a majority of extremely vulnerable people lack sufficient understanding of what climate change is, how it is likely to affect their lives and livelihoods, and what can be done to minimize the new risks. Much can be done, including by the Red Cross and Red Crescent Movement, to bridge the gap between knowledge and action, and to scale up implementation of strategies to manage changing climate risks.

This article reviews some of the efforts to address the changing risks in the context of the Red Cross and Red Crescent, specifically in disaster risk management. It focuses on recent experiences and insights derived from the use of scientific information in humanitarian practice: to anticipate climate-related hazards, and to link warnings across timescales with appropriate preparedness actions. This approach fits broader trends in the humanitarian sector, which is firmly moving towards more preventive approaches.

It should be noted that one responsibility of humanitarian organizations is to reflect on the humanitarian consequences of climate change and to highlight these in national and international climate-change policy processes, including in the context of the United Nations Framework Convention on Climate Change. This element is not addressed in detail in this article; instead we focus on the operational side: how can the impact of rising risks be reduced in humanitarian operations by making better use of climate information across different timescales?

The article is structured as follows: first we offer some background information on climate change and its implications for the Red Cross/Red Crescent. Then we present an approach to climate risk management that uses climate information across timescales to enhance preparedness and response. Thirdly, we suggest ways to integrate climate-related risks into Red Cross/Red Crescent work at community level. This is followed by an example illustrating how climate information across timescales, including seasonal rainfall forecasts, was used in humanitarian decisions in West Africa in 2008. The next section briefly discusses climate risk management as it relates to health. We then assess how more effective

humanitarian work in all of these areas requires targeted capacity building, illustrated through the Preparedness for Climate Change programme for national Red Cross and Red Crescent Societies, and the partnership between the International Federation of Red Cross and Red Crescent Societies (IFRC) and the International Research Institute for Climate and Society, followed by a section exploring opportunities for stronger linkages between humanitarian organizations and knowledge institutes.

Climate change and impacts on humanitarian work

Evidence of climate change is being seen throughout the globe. People, particularly in vulnerable populations, are already being affected. Adapting to the climate as it changes over time, and as it is influenced by natural climate variability, requires that we stay informed of how risks might be changing, not just towards the year 2100 – the traditional focus of climate-change projections – but also in the next decades, years, months, weeks, and days ahead. For the Red Cross/Red Crescent, adapting to climate change is not a new, stand-alone activity, but something that requires a stronger focus on disaster-risk-reduction efforts, explicitly incorporating knowledge of changing risks, and capacity building to integrate new and changing climate-related risks into regular disaster-management, water and sanitation, health, and other programmes.

Global surface temperatures rose by over 0.7 °C during the twentieth century – making it the warmest period in at least the last 1,300 years. Climate change is also accelerating: ‘January 2000 to December 2009 was the warmest decade on record’.¹ Along with the planet’s rising temperature, known as global warming:

- Glaciers have been melting, increasing the risk of lake-burst floods and threatening the water supply of millions of people;
- Rainfall patterns have changed, including decreases in tropical, subtropical, and Mediterranean regions, and increases in average precipitation in temperate regions such as parts of North America, northern Europe, and central and northern Asia;
- The frequency and intensity of extreme rainfall and snowfall events have been rising, along with the number of droughts.²

At the same time, there has been a large rise in the number of disasters (from between 200 and 250 in the period 1987–97 to about double that in the first seven years of the twenty-first century).³ This rise in disasters is caused almost

1 North American Space Agency, *NASA Research Finds Last Decade was Warmest on Record, 2009 One of Warmest Years*, Press release: 10-017, 21 January 2010, available at: http://www.nasa.gov/home/hqnews/2010/jan/HQ_10-017_Warmest_temps.html (last visited 28 September 2010).

2 Red Cross/Red Crescent Climate Centre, *Red Cross/Red Crescent Climate Guide*, The Hague, 2007, p. 10.

3 *Ibid.*, p. 15.

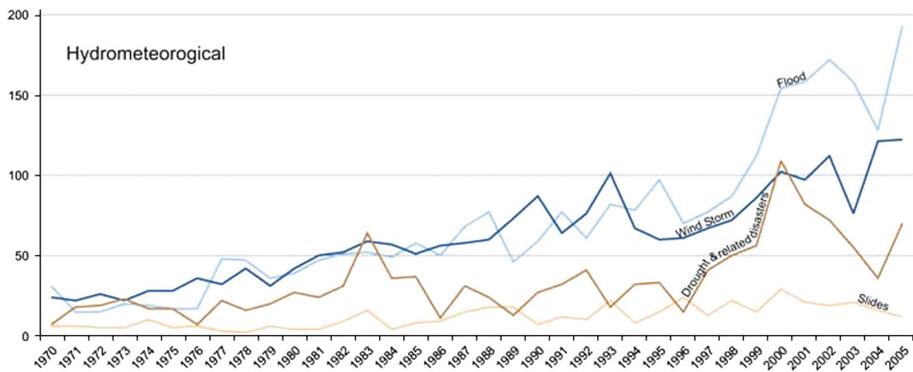


Figure 1. Annual number of weather-related disasters. From International Strategy for Disaster Reduction, *Disaster Statistics, Trends-Period 1991–2005*, available at: <http://www.unisdr.org/disaster-statistics/occurrence-trends-period.htm> (last visited 28 September 2010).

entirely by an increase in weather-related disasters (see figure 1). Disaster statistics also show that floods are not just occurring more often but also damaging greater areas than they did two decades ago. Moreover, these rises are accompanied by a rapid increase in socio-economic losses and in the number of people affected: on average 250 million people a year, up by more than 30% in just one decade. Although, since the 1970s, the number of people killed by natural disasters has decreased, largely due to better disaster preparedness, ‘in the past years, that decrease has been tapering off and even reversing’.⁴ While this increase in disasters is largely due to other reasons, such as rising vulnerability and rising numbers of people and value of assets at risk, there is growing concern that climate change is already contributing to these growing humanitarian challenges.

Based on six scenarios of greenhouse gas emissions, the Intergovernmental Panel on Climate Change (IPCC) projects that by 2100 the earth’s average temperature will have increased anywhere from 1.1 °C–6.4 °C.⁵ Sea levels could rise by as much as one metre,⁶ and an intensification of the hydrological cycle in a warmer atmosphere is expected to make floods and droughts more frequent and intense.⁷ While no single weather event can be directly attributed to climate change, we do know that, on the global scale, different conditions in the climate are contributing to the rising risk of certain disasters.⁸

4 *Ibid.*

5 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report: Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Core Writing Team, Rajendra K. Pachauri and Andy Reisinger (eds), IPCC, Geneva, 2008, p. 45.

6 Kurt Kleiner, ‘Climate science in 2009’, in *Nature*, Vol. 4, January 2010, p. 4.

7 IPCC, above note 5, p. 46.

8 See Maarten van Aalst, ‘The impacts of climate change on the risk of natural disasters’, in *Disasters*, Vol. 30, No. 1, 2006, pp. 5–18.

Climate change is caused by the build-up of greenhouse gases in the atmosphere, and so far our current emissions of these heat-trapping gases are growing faster than the most pessimistic scenario used in IPCC projections. While cutting back our emissions is imperative to prevent the worst long-term consequences of climate change, we know that, even if all emissions stopped today, we would still have some climate change. The greenhouse gases already emitted will stay in the atmosphere for decades, trapping additional solar energy in the Earth's system. Therefore, we have to be ready to cope with climate-change impacts, which will disproportionately affect developing countries and poor people throughout the world.⁹

Climate change clearly has implications for Red Cross/Red Crescent work related to disaster management, food security, livelihoods, health, water, sanitation, and support in times of social instability:

- Disaster management: the Red Cross/Red Crescent will need to respond to and help vulnerable populations prepare for new patterns of disasters such as floods, droughts, heatwaves, tropical cyclones, brush fires, and coastal inundation.
- Food security and livelihoods: while initial climate change is expected to have some agricultural benefits in cooler climates, increased temperatures, more conducive conditions for pests, changing rainfall patterns, and increased damage from floods, droughts, and storms are expected to have adverse consequences on agriculture in many parts of the world, particularly as climate change progresses and temperatures surpass productive thresholds for crop yields.¹⁰
- Health: higher temperatures, changing rainfall patterns, and more intense rainfall events may increase water-borne and vector-borne diseases and bring them to new areas. Places that experience decreased food and water availability may suffer from health effects of poor nutrition and hygiene. An increase in extreme events, such as floods and heatwaves, will also have direct implications on health.
- Water and sanitation: water availability is likely to change in many areas, owing to changing rainfall patterns. Increased occurrence of rainfall extremes could result in a lack of water for proper sanitation during droughts, and the contamination of clean water sources during floods.

9 Red Cross/Red Crescent Climate Centre, above note 2, pp. 14–15 and 17.

10 IPCC, '2007: Summary for policymakers', in Martin L. Parry, Osvaldo F. Canziani, Jean P. Palutikof, Paul J. van der Linden, and Clair E. Hanson (eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, pp. 11–12 and 18.

Using scientific information, bridging timescales

Although many of the worst climate-change projections are many decades away from being realized, evidence of climate change is becoming increasingly visible throughout the world. The most vulnerable groups are often worst affected by the rising risks. In order to address these rising risks, the best approach is *not* to focus solely on long-term projections of global warming, as often supplied by computer models used to study global climate change. Instead, part of the solution lies in reducing risk here and now, simply by enhancing resilience to a range of current and future risks, and improving our ability to anticipate and respond to risks when they occur. In those efforts, the Red Cross/Red Crescent can make use of relevant information – not primarily the projections for 2100, but the best information about the risks for the coming decade, year, season, month, day, or even hour, including both natural climate variability and the growing impact of global warming.

The use of predictions in disaster risk reduction is not a new concept. Weather forecasts for temperature, precipitation, and wind are commonly issued on short timescales of days to hours, informing Red Cross/Red Crescent offices and others when to anticipate extreme weather events such as floods and tropical cyclones. Thanks to advances in observational capacity, scientific understanding, and computer modelling of the climate system, there is also an increasing capacity to provide forecasts with longer lead times, of the order of several months ahead (albeit only for some parts of the globe). The information contained in such longer lead-time forecasts always has a degree of uncertainty, and is given in general terms. For instance, a seasonal forecast can predict the likelihood that a coming rainy season will be wetter or drier than normal, and thus be a helpful guide to anticipate impacts, for instance when reviewing seasonal contingency plans. However, when an alert for a heavy rainfall or storm season is issued, one of the key follow-ups will be to monitor forecasts on shorter timescales (such as monthly, ten-day, weekly, and daily weather forecasts) even more closely, to obtain more precise information regarding where and when extreme weather events might occur.

Monitoring forecasts across long, medium, and short timescales can allow co-ordinators of Red Cross/Red Crescent programmes, including disaster management, food security, water and sanitation, health, and livelihood support, to obtain an overall picture of the likelihood of various risks for advanced preparation, and then use forecasts on shorter timescales to anticipate impacts more precisely. Table 1 illustrates the different timescales of forecast information, indicating what the forecasts at various timescales can and cannot tell us, along with the different types of actions that could be triggered by the forecast information along the way.¹¹

11 Lisette Braman, Maarten van Aalst, Simon Mason, Pablo Suarez, Youcef Ait-Chellouche and Arame Tall, 'The Use of Climate Forecasts in Disaster Management: results from the International Federation's flood operations in West Africa, 2008', draft submission to *Disasters*, submitted on 29 January 2010.

These ideas are captured in the concept of 'Early warning, early action', defined by the IFRC as 'Routinely taking humanitarian action before a disaster or health emergency happens, making full use of scientific information on all timescales'.¹²

Incorporating climate change risks into community-level work

In addition to early warning systems and improved preparedness, the Red Cross/Red Crescent throughout the world carries out the important task of reducing disaster risk by making people aware of the hazards they face and helping them to reduce their own vulnerability. Climate change makes this work even more urgent. At the community level, many simple measures can be taken to reduce disaster impacts. The Vulnerability and Capacity Assessment (VCA)¹³ used by the Red Cross/Red Crescent, is a comprehensive set of tools to help communities assess and address local risks, and many climate-related risks are already addressed through such community-based disaster-risk-reduction efforts. For example, if a country suffers from hurricanes and takes action to reduce the population's vulnerability to hurricanes through evacuation plans or better-constructed roofs and so forth, as an indirect benefit they will also be more resilient to increases in hurricane strength due to climate change.

By integrating climate-change information and ideas directly into the participatory process, VCAs can also facilitate opportunities for communities to adjust their risk-reduction efforts to manage new or increasing risks. For example, communities unaccustomed to heat waves, but projected to have them in the future, may want to develop plans to ensure that community members take precautions to stay cool and hydrated in case of unusually warm weather. Also, by addressing a current climate risk that is likely to continue or worsen in the future, community resilience can be built. In Bangladesh, knowing that more frequent and intense flooding events are likely to be part of a longer-term climate-change trend, Red Crescent volunteers started a nursery of trees to be planted along river banks and road sides. This simple measure aims to mitigate flood impacts by absorbing water and stabilizing soil.¹⁴ Similarly, subsistence farmers in the Malawian village of Mphunga in southern Africa helped with an innovative approach to promote adaptation to climate change: in the context of a risk-management project involving the Malawi Red Cross and Meteorological Services, these farmers learned the basics of operating a video camera and structuring a script, and made a short

12 International Federation of Red Cross and Red Crescent Societies (IFRC), *Early Warning > Early Action*, 2008, p. 12, available at: www.ifrc.org/Docs/pubs/helpnow/early-warning-early-action.pdf (last visited 28 September 2010).

13 IFRC, *What is a VCA? An Introduction to Vulnerability and Capacity Assessment*, Geneva, 2006; and *How to Do a VCA: A Practical Step-by-step Guide for Red Cross Red Crescent Staff and Volunteers*, Geneva, 2007, both available at www.ifrc.org/what/disasters/dp/planning/vcaguidelines.asp (last visited 17 September 2010).

14 Red Cross/Red Crescent Climate Centre, above note 2, p. 92.

Table 1. Indications of types of forecast at different timescales.

	Long-term (century and decades)
Forecast type	Global climate-change projections (up to 2100) and decadal predictions (for the next ten to thirty years).
What the forecast tells us	General trends (e.g. drier, wetter, hotter, more extreme events, sea-level rise, probable implications for health, livelihoods, etc.). Decadal predictions will provide more information in terms of what is likely for a particular region during the coming decade as the result of both climate variability and change.
Limitations of the forecast	Large uncertainty. Lack of specificity in terms of where and when impacts will occur.
Potential actions using available information	Identification of likely risks and vulnerabilities in a particular area. Co-ordination with partners and development of a long-term vision to expand capacity, reduce vulnerability, and minimize risks.
	Medium-term (seasonal)
Forecast type	Seasonal forecasts for temperature, precipitation, and cyclone activity. Seasonal forecasts typically cover three- to four-month periods and do not normally extend beyond twelve months into the future. They should be checked for monthly updates.
What the forecast tells us	The chances that the coming season (as a whole, and over a very large geographic area) might exhibit temperatures/precipitation that are normal, above normal, or below normal. Some seasonal forecasts for extremes are also available.
Limitations of the forecast	Seasonal forecasts are made at very coarse resolutions, and thus do not tell us when and where extreme weather events are likely to occur. Forecasts are not directly about individual extreme weather events, only about the general character of the coming few months. The forecasts are given in terms of probabilities or confidence levels.

<p>Potential actions using available information</p>	<p>Integrate the seasonal forecast with what is already known about the local climate (e.g. if the forecast is for increased chances of above-normal precipitation during the rainy season, it can be inferred that flood risk is heightened; if the forecast is for above-normal temperatures during the summer, it can be inferred that heat-wave risk is heightened). Ask what needs to happen to be prepared for these risks: do staff, volunteers, and communities know what to do? Are contingency plans in place? Are communications systems ready? Are supplies sufficient and accessible? Can early warning systems be set up beforehand? Are partner agencies informed and ready? AND, at the same time, monitor on short timescales to anticipate where and when elevated risks might materialize into extreme events.</p>
<p>Forecast type</p>	<p>Short-term (weeks, days, and hours) Weather forecasts and ‘predictions in context’ (which let you know how forecast temperatures/precipitation compare to what is normal for a given time and place).</p>
<p>What the forecast tells us</p>	<p>Where and when an extreme event is approaching.</p>
<p>Limitations of the forecast</p>	<p>Minimal advanced warning. Prediction is still not 100% certain.</p>
<p>Potential actions using available information</p>	<p>Co-ordinate with partnering agencies. Mobilize human resources and supplies. Activate contingency plans. Inform populations at risk, and provide instructions on precautionary measures. Set up shelters, evacuate, etc.</p>

film on how to manage climate-change risks. The video was screened in neighbouring communities and accelerated the dissemination of climate-adaptation measures.¹⁵

Another example of integration between climate science and community-level work is illustrated by an innovative approach to bridging the gap between knowledge providers and local communities. With the support of the IFRC West and Central Africa Zone Office, the Climate Centre designed and facilitated an Early Warning, Early Action workshop in December 2009 in Saint-Louis (northern Senegal).¹⁶ This four-day event convened thirty-five participants, including Senegal Red Cross staff working at various geographic scales (from headquarters to community volunteers); scientists who develop predictions of various climate-related hazards at different timescales, and who represent all geographic levels of forecasting (from global to district level); disaster managers from Benin, Burkina Faso, Mali, and Togo; and representatives from a nearby vulnerable community. Through a series of innovative activities, including learning sessions in very small groups, specially designed games,¹⁷ and a visit to the flood-prone village of Doune Baba Dieye, this workshop helped to establish the foundations for three early warning systems addressing various threats in Senegal, as well as to improve the use of predictions for humanitarian decisions. A set of similar workshops is planned for 2010 in other regions.

Case study: early warning, early action in the 2008 West Africa flood season

One of the best documented efforts by the Red Cross/Red Crescent to implement early actions based on a seasonal rainfall forecast, comes from the IFRC West and Central Africa Zone (WCAZ) flood-preparedness efforts in 2008.¹⁸

Floods across Africa in 2007 were the worst in several decades. Hundreds of thousands of people were displaced in nearly twenty countries. Nearly 300 died as a direct consequence of the flooding, which came in the wake of several relatively

15 Fernanda Baumhardt, Ralph Lasage, Pablo Suarez, and Charles Chadza, 'Farmers become filmmakers: climate change adaptation in Malawi', in Hannah Reid *et al.* (guest eds), *Participatory Learning and Action 60: Community-based Adaptation to Climate Change*, International Institute for Environment and Development, December 2009, pp. 129–138.

16 Red Cross/Red Crescent Climate Centre, 'Senegal workshop', Newsletter Issue 15, 31 March 2010, available at: <http://www.climatecentre.org/site/news/233/newsletter-issue-15#9> (last visited 28 September 2010).

17 A short video about one of the games is available at: http://www.youtube.com/watch?v=Mpj_EbKdwEo (last visited 28 September 2010).

18 For further information, see Lisette Braman, *Early Warning, Early Action: An Evaluation of IFRC West and Central Africa Zone Flood Preparedness and Response, 2008*, IFRC, 2009, available at: http://www.climatecentre.org/downloads/File/ewea_an_evaluation_of_ifrc_west_and_central_africa.pdf (last visited 28 September 2010); Red Cross/Red Crescent Climate Centre and IFRC, 'Early Warning, Early Action': *The Experience of West African Floods 2007–2008*, available at: http://www.climatecentre.org/downloads/IFRC_climate_risk_management_ewea_july_09.pdf (last visited 28 September 2010). See also, Lisette Braman *et al.*, above note 11.

heavy flood seasons since 2000. This appeared to fit a pattern of increasing rainfall variability, possibly related to global warming, and clearly a concern for the Red Cross/Red Crescent in the region. However, long-term projections provide little guidance in this region – even annual average rainfall may go up or down. All the region could do was to be better prepared for a wider range of risks, and in particular to make use of information at shorter timescales – not merely waiting for more disasters to unfold. By 2008, the zone office was regularly monitoring seasonal climate forecasts. In May 2008, seasonal forecasts issued for West Africa showed enhanced probabilities of above-normal rainfall during the upcoming rainy season. After having been caught off-guard by devastating floods in 2007, the WCAZ Office decided to take action based on the seasonal forecast, to improve flood management and response in advance.

The first action that the WCAZ Office took was to hold a flood-preparedness meeting. A major outcome of this meeting was an action plan to develop country-specific risk maps, contingency plans, Early Warning Systems (EWS), partnerships, and better co-ordination for preparedness and mitigation of impacts. The WCAZ Disaster Management Coordinator also attended the forum for Seasonal Prediction in West Africa (PRESAO). By attending the forum, the WCAZ Office helped climate scientists to understand the needs of disaster managers for forecast information, and formed partnerships with producers of forecast information. These partnerships allowed forecast information to reach disaster managers directly, and also provided the WCAZ Office with technical support to interpret forecasts.

Additionally, the WCAZ Office held a training session for leaders of Regional Disaster Response Teams. Team leaders were equipped with coordination and management skills, including how to conduct rapid needs and impacts assessments, how to write flood-contingency plans and funding requests, and how to mobilize and manage human resources, as well as logistical, financial, and administrative procedures. Furthermore, team leaders learned how to monitor rainfall forecasts. Logistical preparations were also made, such as securing visas and medical insurance, so that deployment of team leaders to National Red Cross/Red Crescent Societies (National Societies) could be expedited.

In early July 2008, after receiving the updated seasonal forecast from the African Centre of Meteorological Application for Development, the WCAZ Office issued its first-ever emergency appeal to precede a probable disaster based on a seasonal rainfall prediction. Traditionally, emergency appeals provide funds for disaster response during and after the climate-related event that triggers the crisis. But, as a result of capacity-building efforts that heightened awareness of the potential of science-based information, a different approach was taken on this occasion. Based on the experience of past flood seasons, the WCAZ Office could anticipate the needs of flood victims. Floods cause people to be displaced from their homes and to require support through the provision of food, potable water, and household items. Therefore, the WCAZ Office knew that houses would have to be rebuilt or repaired, water sources would be contaminated, and sanitation facilities would be rendered inoperable. Crops would be ruined, and access to

markets, health care, and other essentials would be minimal owing to collapsed or submerged roads and infrastructure. The risk of waterborne diseases and malaria would be heightened. The need for Red Cross/Red Crescent kits for water and sanitation, cooking, and shelter could be high. Knowing that relief supplies commonly take two to three weeks to arrive from the logistics unit in Dubai, the WCAZ Office sought funds to prepare to meet these needs in advance of the likely event of floods – the first time ever that an emergency preparedness appeal was issued based on a seasonal forecast.¹⁹

While the donor community did not immediately respond to an appeal for funds for a disaster that had not yet struck, the WCAZ Office was able to access funds from the IFRC Disaster Relief Emergency Fund (DREF). This fund, intended for small-scale or rapid start-up of relief activities, can also fund operations on the basis of ‘imminent crises’,²⁰ in this case to initiate preparedness activities and pre-position the emergency stocks around the region. Non-food items such as blankets, kitchen sets, soap, water and sanitation kits, cholera kits, and tents were pre-positioned in three warehouses around the region – in Dakar (Senegal), Yaoundé (Cameroon), and Accra (Ghana). In 2008, pre-positioning stocks allowed beneficiaries’ needs to be met within twenty-four to forty-eight hours, as opposed to waiting more than forty days for relief items in 2007. As a result, lives were almost certainly saved and suffering minimized by the substantially reduced waiting time for basic shelter, cooking supplies, water and sanitation, and so forth.

When forecasts for heavy rainfall indicated the possibility of excess water spillage from Bagre and Kopinga reservoirs in Burkina Faso, early action was taken downstream in Ghana to avoid a repeat of the dam spillage and flooding that occurred in 2007. A controlled release of the dam waters was agreed upon, and a two-week warning was issued prior to the release. The Ghana Red Cross Society (GRCS) took full advantage of this warning, mobilizing volunteers to raise awareness about potential risks, hazards, and vulnerabilities in advance of the Bagre dam release. GRCS volunteers informed communities not to go near the river banks during the scheduled spillage of the dam, significantly contributing to the reduction of lives lost to flooding, from more than thirty in 2007 to two in 2008.

In Togo, the National Society trained thirty-eight new disaster-management trainers to build capacity within its volunteer base. It also developed an early warning communication system, which enabled the small community of Atiéguou Zogbédjé (population 2000 people) to evacuate just before flooding. Owing to the early warning system, physical damage occurred without loss of life. The Gambia Red Cross Society also held its own training of trainers. As a result of this training

19 See IFRC, *Emergency Appeal: West and Central Africa: Flood Preparedness*, Emergency Appeal No. MDR61003, 11 July 2008, available at: <http://www.ifrc.org/docs/appeals/08/MDR61003PrelEA.pdf> (last visited 28 September 2010).

20 More information on the Disaster Relief Emergency Fund (DREF) is available at: <http://www.ifrc.org/what/disasters/responding/drs/tools/dref.asp> (last visited 28 September 2010).

and preparation, the Gambia Red Cross Society was able to perform a post-flood needs assessment and submit a funding request within two days of flooding.

Anecdotal evidence from WCAZ Office suggests that, in 2008, there was a lower reliance among National Societies on international support through the DREF, owing to the investments made in advance that enabled National Societies to mobilize local resources and be ready to respond quickly. A preliminary quantitative comparison between the cost of flood response alone (2006 and 2007) and the cost of flood response with early action (2008), showed a 33% lower cost per beneficiary when these early actions were taken.²¹

Implications for health risk management

Climate change also affects health risks. For instance, diarrhoeal diseases are frequently triggered by either extreme rainfall and flooding, or degraded water quality in times of drought. Early warning systems can help to trigger precautionary measures related to water and sanitation. Better collaboration among staff working on disaster risk management, health, and water and sanitation can maximize the impacts of better use of climate information across timescales. Furthermore, stronger dialogues with national meteorological services can help enhance the provision of targeted and understandable climate information and operational early warnings for specific health applications.

Another example is vector-borne diseases. While the increases in dengue cannot be directly attributed to global climate change, dengue incidence clearly has a climate component (particularly the spread of mosquitoes), and a changing climate means changing risk of such diseases. Climate risk and dengue surveillance information can be applied to initiate and target community dengue-reduction programmes. In this case, the key notion is not just early warnings ahead of any dengue incidence but also early detection in particular. Improving surveillance systems to detect changing disease patterns can help to guide preventive interventions. Such measures at the community level in collaboration with local health authorities might include removal of mosquito breeding sites, or use of larvicide or guppy fish in water containers. Community awareness-raising can also help people take precautions to prevent mosquito bites and to identify dengue symptoms, so that they know when to seek care.

Enhancing capacity for better climate risk management

As described above, climate change poses new challenges to the Red Cross/Red Crescent, challenges that require new ways of working, including making

21 L. Braman, above note 18, p. 35.

better use of climate information across timescales, integrating changing risks in community-level risk assessments and disaster risk reduction, and assessing the health implications of climate change. Such efforts require new approaches for assessing and addressing risks in plans and programmes, use of new channels of knowledge, and new capacities of staff and volunteers. This section describes two initiatives to enhance the capacity for climate risk management in the Red Cross/Red Crescent: a programme to help National Societies assess and address changing risks in their plans and programmes, and an example of innovative partnerships with scientific institutions.

Preparedness for Climate Change in National Red Cross and Red Crescent Societies

A specific programme designed to build the capacity of National Societies to manage the increased risks and mitigate the humanitarian consequences of climate change is the Preparedness for Climate Change (PfCC) Programme offered by the Red Cross/Red Crescent Climate Centre.²² From 2006 to 2009, thirty-nine National Societies participated in the first phase of the programme. In 2010, a second phase of the programme is enabling an additional twenty-five National Societies to participate. The programme offers a guiding framework for them to take the first step in identifying country-specific climate-change risks, vulnerabilities, partners, resources, and necessary actions.

The PfCC Programme involves four key elements:

- a. organizing a workshop on the risks of climate change for Red Cross/Red Crescent staff;
- b. assessing the risks of climate change in the country and the priorities and programmes of the National Society through production of a background document;
- c. capacity building for climate-resilient Red Cross/Red Crescent programmes through exchanging experiences with other National Societies and partners in a regional workshop on climate change and disaster risk reduction;
- d. developing climate-change-resilient Red Cross/Red Crescent plans and programmes.

The programme prioritizes participation by developing countries. In phases 1 and 2 of the programme, participation involved twenty-two countries in Africa, nineteen in Latin America and the Caribbean, sixteen in Asia and the Pacific, and seven from Europe, Central Asia, and the Middle East.

While each National Society takes a country-specific look at climate change impacts likely to occur, a survey of the risks identified in each region during

²² Information about the PfCC Programme can be found at: <http://www.climatecentre.org/site/preparedness-for-climate-change-programme> (last visited 13 September 2010).

phase 1 of the programme revealed consistent themes in terms of key categories of concern:

- Rising Temperatures
- Increased Rainfall Variability (more floods and droughts, less predictable rainfall patterns)
- Water Scarcity
- Impacts on Agriculture and/or Food Security
- Challenges to livelihoods
- Health Impacts
- Sea Level Rise/Damage to Coastal Communities and Infrastructure
- Stronger Storms and Hydro-meteorological Events
- Droughts, Desertification and Fires.²³

Initial ideas for action upon identifying these risks were unique to each National Society, but they also shared some common themes. Most commonly, National Societies recognized the need to work in partnership with government, knowledge centres, and stakeholders within relevant sectors to pursue climate-change adaptation projects and policies. The need to raise awareness about climate change among the public, vulnerable communities, and Red Cross/Red Crescent staff and volunteers was also frequently expressed by National Societies. The third most common area for action was capacity building and planning within the National Societies, to manage increased climate-related risks. Other shared ideas for action included a greater focus on: water and sanitation programmes, health programmes, vulnerability assessments, early warning systems, food security programmes, support for adaptive agriculture practices, protecting coasts, incorporating climate change into Red Cross/Red Crescent policies, and strengthening livelihood support programmes.²⁴

National Societies surveyed after phase 1 of the programme reported that they:

- are making changes to their work, programmes and policies as a result of going through the PfCC process;
- are making changes to plans and strategies after learning of the risks during the PfCC process;
- believe that the work they accomplished during the PfCC will be continued and sustained;
- need further external assistance;
- would recommend PfCC to other National Societies;
- would participate in the programme again if given the opportunity;

23 Red Cross/Red Crescent Climate Centre, *Summary of Step-2 Background Documents from the Preparedness for Climate Change Programme*, January 2009, p. 3, available at: http://www.climatecentre.org/downloads/File/programs/PfCC%20Step%202%20Summary%20June%2011%202009%20with%20Executive%20Summary%20and%20Charts%20_final_.pdf (last visited 28 September 2010).

24 *Ibid.*

- have formed new partnerships with universities, NGOs, government agencies such as meteorological agencies and environment departments.²⁵

In response to feedback from phase 1 of the programme, innovative projects developed as a result of thinking about the implications of climate change for National Societies' plans and programmes. Designed to reward innovation and pilot approaches that can be studied and scaled up, the Innovations Fund recently awarded small grants to thirteen National Societies.²⁶

Partnerships with scientific institutions

An efficient flow of information and knowledge about new patterns of hazard and vulnerability is an essential part of the enabling environment that allows efficient allocation of scarce resources to people and regions that face higher threats. Red Cross/Red Crescent offices covering global, regional, national, and sub-national levels are beginning to form partnerships with scientific institutions with the aim of increasing their capacity to manage changing climate risks. These partners may vary from regional intergovernmental entities such as the African Centre of Meteorological Applications for Development (ACMAD) to national meteorological and hydrological services to university departments with sector- or country-specific climate-change expertise. Every partnership will look different depending on the needs of particular Red Cross/Red Crescent offices and the capacities of the scientific institutions.

One example of such a collaboration is the 'Partnership to Save Lives' that was formed between the IFRC and the International Research Institute for Climate and Society (IRI) at Columbia University's Earth Institute. The IRI supports the Red Cross/Red Crescent through three main components: online map rooms, IRI graduate student internships, and a help desk through which climate scientists provide rapid responses to questions from Red Cross/Red Crescent staff on matters related to forecasts, weather, and climate.

Map rooms with precipitation forecasts in context

In early 2008, the IRI designed an online map room specifically for use by the IFRC's Geneva headquarters, including incorporation into the IFRC Disaster Management Information System (DMIS). The map room was created as a first step in responding to the request for global predictions in context. Monitoring forecasts on the global level, it was difficult to know in Geneva whether a forecast

25 Red Cross/Red Crescent Climate Centre, *Climate Change in 2009: Local Actions and Global Politics*, Annual Report 2009, p. 13, available at: <http://www.climatecentre.org/downloads/File/reports/Annual%20Report%202009%20FINAL.pdf> (last visited 21 July 2010).

26 Red Cross/Red Crescent Climate Centre, 'Preparedness for Climate Change Programme and its Innovations Fund', Newsletter Issue 17, 10 September 2010, available at: <http://www.climatecentre.org/site/news/240/newsletter-issue-17#11> (last visited 28 September 2010).

for 200 mm of rainfall, for example, indicated normal or anomalous conditions for a given region during a specific time of year. In response, the IRI developed a map room that displays precipitation forecasts in the context of how the rainfall amount forecasted compares to typical rainfall for the given location and time of year. The tool also displays forecasts on multiple timescales: three-month periods and one-to six-day forecasts. Access to the map room is available through the DMIS.²⁷ When a forecast for extreme rainfall is detected, the relevant zone, regional, or national office, is encouraged to ask local meteorological and hydrological information providers for further information on the likelihood, timing, location, and severity of any threatening conditions.

A 'Haiti Weather and Climate Risk' website was also created, following the January 2010 earthquake in Haiti. Given Haiti's heightened vulnerability to rainfall, floods, and hurricanes, disaster managers wanted to know the seasonal outlook for Haiti and to have information that would inform the selection of locations for longer-term shelters, such as areas with high risk of floods, landslides, and strong winds affecting those at risk, including people in shelters. The IRI worked with the IFRC, the United Nations Office for the Coordination of Humanitarian Affairs, and numerous other partners to identify available information pertinent to disaster managers' needs, filter out overly technical products, provide explanatory text, and feature selected information in a central location for 'one-stop-shop' monitoring of forecasts and risks.²⁸

Internships

Graduate students from the Climate and Society masters programme at Columbia University are working to support Red Cross/Red Crescent offices to anticipate and manage climate-related risks. The twelve-month masters programme trains professionals and academics to understand and cope with the impacts of climate variability and climate change on society. The IRI has been central to both the design of the programme and the teaching of its students. To date a total of eighteen students have fulfilled their internship requirement by supporting the Red Cross/Red Crescent – and at least four of them continue to work on climate risks with various entities within the Red Cross/Red Crescent movement.

In 2009, ten of these students conducted surveys, interviews, meetings, and workshops over a two-month period in order, first, to better understand the humanitarian needs for, and current use of, weather and climate information; and, second, to formulate recommendations for information providers and Red Cross/Red Crescent users alike, so that forecasts across timescales can be communicated, interpreted, and utilized in a more effective and timely manner. Their findings and recommendations were presented at a side event at the 2009 World Climate

27 The global map room is also available at: <http://iridl.ldeo.columbia.edu/maproom/IFRC/Forecasts/> (last visited 28 September 2010).

28 The result of this work is available at: <http://iri.columbia.edu/haiti/> (last visited 28 September 2010).

Conference-3 in Geneva.²⁹ Thus, the internships have not only supported Red Cross/Red Crescent offices in climate risk management efforts, but have also contributed to global discussions on a framework for climate services.

Help desk

The IRI also provides the Red Cross/Red Crescent with support through a help desk, through which climate scientists respond within twenty-four hours to inquiries from Red Cross/Red Crescent staff regarding climate, weather, and forecasts. During its first full year of operation, the help-desk team responded to questions on a variety of topics including:

- Flood risk
- Climate change projections
- Sea level rise projections
- Interpretation of seasonal forecasts and guidance on appropriate action
- Recommendations of national/regional forecast and climate information providers
- Impacts from natural climate variability
- Whether observed changes can be attributed to climate change or natural climate variability
- Climate change and health
- Climate change and food security.³⁰

In May 2009, an initially weak and then moderate El Niño event developed. El Niño refers to unusual warming of the waters in the eastern equatorial Pacific Ocean. Scientists and society alike take note when an El Niño develops, because widespread warming of waters in this region can cause shifts in rainfall patterns. Knowing in advance if a given region is likely to experience too much or too little rainfall as a result can be a useful guide to prepare for that outcome.

During the rest of 2009, the IRI help desk received a number of inquiries about potential El Niño impacts and worked with the Red Cross/Red Crescent Climate Centre to provide global guidance and address common questions. Since the El Niño brought even greater reason to monitor region-specific early warnings closely, these reports also contained resources and information on how to monitor and interpret seasonal rainfall forecasts, in combination with forecasts on shorter timescales to anticipate impacts. The Red Cross/Red Crescent Climate Centre also provided guidance to help navigate through the process of taking early actions based on probabilistic seasonal forecast information.

29 Red Cross/Red Crescent Climate Centre, IFRC, and the International Research Institute for Climate and Society (IRI), *The Access and Use of Climate and Weather Information in the International Federation of Red Cross and Red Crescent Societies: Initial Observations from the Field*, 2009, available at: http://www.climatecentre.org/downloads/File/reports/ifrc_pathforward_aug.pdf (last visited 4 August 2010).

30 Ashley Curtis and Lisette Braman, 'The IFRC Help Desk at IRI', draft case-study submission to *Climate and Society*, No. 3, a publication by the IRI at Columbia University's Earth Institute, submitted on 8 September 2010.

Academic partnerships: scholars for humanity

The collaboration with the IRI is a good example of how innovative partnerships between humanitarian organizations and knowledge institutes can yield immense benefits for the humanitarian community, as well as new insights and research outputs for academia. The essential components of the IRI–IFRC partnership were not only mutual interest, but also (a) a willingness to engage in a long-term dialogue, progressing over time; (b) the combination of tailored, formalized knowledge systems such as the map rooms with designated support structures such as the helpdesk; and finally (c) an investment in ‘human bridges’, often through the involvement of young scholars and interns.

This ‘bridging role’ provides immense opportunities beyond the IRI–IFRC partnership. Many advanced students in a wide range of disciplines may have skills to support climate risk management work in the field, as well as academic requirements that align with projects from humanitarian organizations. The institutional landscape of higher education has been changing markedly, in part thanks to a transition from discipline-based to integrated approaches, which has allowed humanitarian issues to become part of the learning, teaching, and research experience of scholars. By 2005, there were over 130 million students enrolled in higher education programmes worldwide.³¹ Even if a very small fraction were willing and able to give a hand, this constitutes a vast, under-utilized pool of potential contributors to the knowledge-intensive tasks that humanitarian organizations need to tackle.

Since 2007, the Red Cross/Red Crescent Climate Centre has engaged dozens of students in fields ranging from climate science and environmental management to public health and even film studies. Most of them contributed their technical skills and enthusiastic minds not only for narrowly defined, pre-determined tasks, but also through big-picture endeavours aimed at changing the way in which newly available tools are used by humanitarian staff and volunteers, all while fulfilling academic requirements and improving their curricula vitae. The basic idea of the ‘Young Scholars for Humanitarian Work’ programme³² is to align academia with Red Cross/Red Crescent needs on climate risk management. Examples of ongoing collaborations include:

- Climate science (Columbia University);
- Communication design and information management (Parsons School for Design);
- Disaster management (Kings College, London and University of Colorado at Boulder);
- Impact assessment and modelling (Massachusetts Institute of Technology);

31 Kemal Gürüz, *Higher Education and International Student Mobility in the Global Knowledge Economy*, State University of New York Press, Albany, New York, 2008, p. 238.

32 More information is available at: <http://www.climatecentre.org/site/young-scholars> (last visited 28 September 2010).

- Environmental management and negotiations (Yale University and University of Iceland);
- Humanitarian Logistics (University of Lugano);
- Audiovisual tools (University of Miami);
- Monitoring and Evaluation (Brandeis University).

Conclusion

Climate change poses fundamental new challenges to the humanitarian community, challenges that will affect many areas of work. Yet the threat of changing risks is accompanied by a fundamental opportunity: better use of information.

While the tools are not yet perfect, science and technology have been rapidly expanding the frontiers of predicting natural hazards that lead to losses of life and livelihoods. Unfortunately, climate scientists and the humanitarian sector have only recently begun to work closely together – in part as a result of the inherent limitations of science-based predictions (i.e. probabilistic forecasts, lack of high spatial and temporal resolution) and the complexities involved in working across very different disciplines. Thus, many humanitarian organizations currently lack the structural ability to build institutional and stakeholder capacity to use newly available tools effectively. In this context, it is not enough simply to insert new information and tools into existing job descriptions and institutional structures. Capacity must be built so that the humanitarian sector can take advantage of the advanced lead time provided, when climate forecasts are monitored in conjunction with shorter-term weather forecasts to prepare for increasing extremes expected with climate change.

This article has outlined some innovations in climate risk management. The Red Cross/Red Crescent is beginning to invest time and resources in learning about and preparing for climate change. However, information providers and humanitarian organizations must work together to ensure that staff, volunteers, and vulnerable populations receive information about changing climate risks and impending threats so that action can be taken in advance to minimize the impacts of increasing climate-related risks.

Climate change, natural disasters and displacement: a multi-track approach to filling the protection gaps

Vikram Kolmannskog and Lisetta Trebbi

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Abstract

Millions are displaced by climate-related disasters each year, and this trend is set to increase as climate change accelerates. It raises important questions about how well existing instruments actually protect people driven from their homes by climate change and natural disasters. This article first examines current protection instruments and points out gaps in them. There follows an exploration of various proposals for filling those protection gaps, with the focus on cross-border natural-disaster-induced displacement. A multi-track approach is recommended, including context-oriented and dynamic interpretation of existing law, and creation of new law. Adhering to the principle of non-refoulement, and focusing on whether return is possible, permissible,

or reasonable, could be a realistic way to begin developing protection regimes for victims of natural-disaster-induced displacement.



In its fourth assessment report, published in 2007, the Intergovernmental Panel on Climate Change (IPCC) established that human-induced climate change is accelerating and is already having a severe impact, including an increase in certain natural hazards.¹ Furthermore, a study by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the Internal Displacement Monitoring Centre of the Norwegian Refugee Council (NRC) indicates that millions are already being displaced by climate-related natural disasters each year.²

This development raises important questions about how well existing law, as well as national, regional, and international regimes, protects people displaced by climate-related disasters in particular and natural disasters in general. In this article, we identify the gaps in these protection regimes and discuss a range of options for filling them. We conclude that a multi-track approach to exploring those options and in particular to building on the concept of return may prove the most effective solution.

While recognizing that a continuum exists between voluntary and forced migration and that much of the human mobility in the context of climate change may be considered voluntary (or at least in a grey zone between voluntary and forced), we choose to focus on displacement and forced migration. All migrants have certain protection needs, but forced migrants have been considered a category apart in international law and in practical humanitarian work.³ Nonetheless, the continuum between voluntary and forced raises challenges such as how to determine when a migrant's leaving his or her home must be considered a forced action.

A focus on climate-change-related displacement can be justified in order to establish climate change as a major cause of displacement, to identify the broader responsibility for displacement, to mitigate its effects, and to fund the work needed for this mitigation. From a perspective of practical security and human rights, however, there is normally no compelling reason to distinguish between climate-related and other natural disasters. We have therefore shifted

- 1 Intergovernmental Panel on Climate Change, *Climate Change 2007: The Synthesis Report*, p. 30, available at: http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm (last visited 20 September 2010).
- 2 Office for the Coordination of Humanitarian Affairs (OCHA) and the Internal Displacement Monitoring Centre (IDMC)/Norwegian Refugee Council, *Monitoring Disaster Displacement in the Context of Climate Change*, Geneva, 2009, p. 15.
- 3 See, for example, the definition of an internally displaced person as someone 'forced or obliged to flee or to leave their homes or places of habitual residence', in *Report of the Representative of the Secretary-General, Mr. Francis M. Deng, submitted pursuant to Commission resolution 1997/39, Addendum: Guiding Principles on Internal Displacement*, 11 February 1998, UN Doc. E/CN.4/1998/53/Add.2 (hereafter 1998 UN Guiding Principles on Internal Displacement), Introduction: Scope and Purpose, para. 2.

between discussing climate change in particular and natural disasters more broadly.

Linking climate change and displacement

There are major methodological challenges involved in establishing the link between climate change and displacement. People leave their homes for a complex set of reasons,⁴ and there is ‘multi-causality’ even in forced migration. Nevertheless, while examining some of the current and predicted effects of climate change, a number of researchers and international institutions have arrived at the conclusion that climate change will probably contribute to ‘major forced displacements’ over time.⁵

One major impact of climate change is the increased frequency and severity of certain hazards, as well as changes in their time-frame and location.⁶ Hazards can combine with human vulnerability to produce disasters, such as floods and droughts. In other words, there is a crucial human element involved in the occurrence of ‘natural’ disasters. We can call them climate-related disasters since climate change can influence their frequency, severity, time, and location; storms, floods, and droughts all belong to this category. All natural disasters can potentially result in forced displacement. The number of recorded natural disasters has doubled from approximately 200 to over 400 per year over the past two decades.⁷ The majority are climate-related disasters. According to the UN Emergency Relief Coordinator, this situation of more frequent and severe disasters may be ‘the new normal’.⁸

Although there is broad acceptance that voluntary and forced migration is likely to increase as a consequence of climate change, it is difficult to estimate the scale. In 2009, OCHA worked with the Internal Displacement Monitoring Centre of the NRC in a first attempt to assess the degree of displacement due to sudden-onset natural disasters. They found that as many as thirty-six million people had been displaced by such disasters in 2008, over twenty million by climate-related sudden-onset disasters alone.⁹ Estimating displacement due to slow-onset disasters such as drought and sea-level rise is much more challenging because it has a more

4 The concept of ‘environmental refugees’ or ‘climate refugees’ has been criticized by migration academics. This is mainly because climate change, migration, and displacement are not phenomena with only one cause. Moreover, the refugee concept has a restricted definition, focusing on persecution as the main grounds for fleeing, and is limited to individuals who have crossed an internationally recognized border. The limited nature of the refugee concept in itself makes the term ‘climate refugee’ somewhat unsuitable.

5 David Hodgkinson, Tess Burton, Heather Anderson, and Lucy Young, ‘Copenhagen, climate change “refugees” and the need for a global agreement’, in *Public Policy*, Vol. 4, No. 2, 2009, p. 159.

6 IPCC, above note 1, p. 30.

7 See Emergency Event Database, available at: <http://www.emdat.be/natural-disasters-trends> (last visited 20 September 2010).

8 OCHA, *Opening remarks by Sir John Holmes, Under-Secretary General for Humanitarian Affairs and Emergency Relief Coordinator at the DIHAD 2008 Conference*, 8 April 2008, available at: <http://www.reliefweb.int/rw/rwb.nsf/db900sid/YSAR-7DHL88?OpenDocument> (last visited 20 September 2010).

9 OCHA and IDMC/NRC, above note 2, p. 15.

complex set of causes and because there is a continuum between voluntary and forced migration.¹⁰ Nevertheless, the numbers quoted above give an indication of the scale of displacement caused by climate-related disasters today. While offering its own estimate, the Stern Review points out that the number of displaced people will ‘depend on the level of investment, planning and resources’.¹¹

In the near future at least, displacement is likely to go on being mostly internal, and in some cases regional.¹² All countries will eventually be affected by climate change, but some are more immediately and directly exposed than others. In its report, the IPCC highlights dangers associated with the Arctic, Africa, small islands, and the Asian and African mega-deltas, while recognizing that ‘within other areas, even those with high incomes, some people (such as the poor, young children and the elderly) can be particularly at risk, and also some areas and some activities’.¹³ Much sudden-onset, natural-disaster-induced displacement is temporary if there is effective rehabilitation and recovery, but some displacement becomes permanent.¹⁴

This research on climate change, disasters, and displacement raises central questions about the need to protect displaced individuals and entire populations. The protection needs of people displaced by natural disasters have not yet been fully explored and understood. However, one of the main ideas behind the 1998 UN Guiding Principles on Internal Displacement was that, regardless of the reason for displacement, the people concerned often have a particular set of needs.¹⁵ While recognizing that much work is needed to identify protection needs, we therefore feel justified in examining more generally the current protection regime, identifying gaps and looking at possible solutions for filling those gaps in the context of climate change.

Gaps in protection for people displaced in connection with climate change and natural disasters

Typology of climate-change effects, displacement, and protection

Setting out the various types of climate change, the main effects, and the displacement that results from them is a useful starting point for an overview of possible protection regimes, as well as the gaps associated with climate change and

10 When is the land so degraded that we consider the small-scale farmer to have been forced to leave it – and not merely to have ‘chosen’ to leave it – for a better life elsewhere? Is the degradation mainly due to climate factors or to land use, poor irrigation, economics, and governance?

11 UK Treasury, *Stern Review on the Economics of Climate Change*, Cambridge University Press, Cambridge, 2005, p. 112.

12 See, for example, Inter-Agency Standing Committee (IASC), *Climate Change, Migration and Displacement: Who will be affected?*, Working paper submitted by the informal group on Migration/Displacement and Climate Change of the IASC, 31 October 2008, p. 1.

13 IPCC, above note 1, p. 52.

14 See, for example, IASC, above note 12, p. 1.

15 See *1998 UN Guiding Principles on Internal Displacement*, above note 3.

natural disaster.¹⁶ The situations described may have more than one cause, and there are situations in which several of these scenarios may overlap.

Scenario 1: Climate change increases the frequency and/or severity of sudden-onset natural disasters and perhaps their time-frame and location

In this scenario, it is assumed that displacement will mostly be internal and temporary, depending on the effectiveness of humanitarian response and the speed of recovery. The 1998 UN Guiding Principles on Internal Displacement (a soft-law instrument) should therefore be examined to see whether they offer protection. Since the Guidance Principles recognize disaster-induced displacement, protection and assistance should be provided in accordance with these principles.¹⁷

The situation differs for those who cross a border. Article 1A of the 1951 Convention relating to the Status of Refugees, as modified by the 1967 Protocol, does not clearly apply to people driven from their homes by natural disasters, since refugee status is linked to a well-founded fear of persecution for certain specific reasons. However, contextual and dynamic interpretations explored later in this article show that some of those who are displaced across borders could qualify for refugee status and protection.

Scenario 2: Climate change increases the frequency and/or severity of slow-onset natural disasters and perhaps changes their time-frame and location

In this scenario, part of the population may decide to migrate to other parts of the same country. Some may also migrate abroad. Later, conditions may deteriorate to a point where it becomes impossible for people to remain in their homes and they are actually displaced.

The 1998 UN Guiding Principles on Internal Displacement could be applied in some cases where it is established that a drought or similar event has displaced people. However, it has been argued that the Guidance Principles were never meant to meet, and cannot really meet, the particular needs of people displaced by slow-onset disasters such as droughts.¹⁸ Furthermore, it is difficult to

16 The typology is based on that presented in IASC, above note 12, pp. 2–3; and Vikram Kolmannskog, ‘The point of no return: exploring law on cross-border displacement in the context of climate change’, in *Refugee Watch*, Vol. 34, December 2009, pp. 27–42.

17 See 1998 UN Guiding Principles on Internal Displacement, above note 3, Principle 2.

18 One case study indicated that the protection challenges are more similar to those faced by migrants than displaced persons. For example, drought is often characterized by family separation, with the male head of the household leaving in search of work, while in conflicts and sudden-onset disasters, entire families are often forced to move. A senior staff member of an international humanitarian agency has suggested that the term ‘distress migration’ is more appropriate than ‘displacement’. Perhaps the tipping point is when the entire family leaves, i.e. when there is no longer any possibility of survival at home. Then we can speak of forced displacement. See Vikram Kolmannskog, *Climate Change, Disaster, Displacement and*

establish the link between drought and displacement, as the movement is likely to be slow and in phases; it may be seen as voluntary, and the decision to finally leave the place of origin will be based on a number of factors. The distinction between voluntary migration and forced displacement is blurred in this scenario, and it is hard to determine whether people fall into the category of internally displaced persons or that of migrants. However, many migrants are similar to internally displaced persons: they are citizens of the state in which they are living and as such have certain rights and are entitled to certain treatment. But their needs and the response to those needs are not so clearly addressed in existing international law and policy.

People who are displaced or migrate across internationally recognized borders face the same situation regarding international refugee law as discussed in Scenario 1. Some may be admitted to a foreign country through legal migration, but for many this may not be an option, and assistance and protection may be required.

The case of the small island states, where a whole population could potentially be forced to leave its country, is clearly relevant to the discussion above. Sea-level rise is a gradual process, and it is difficult to draw a line here between migration and displacement. Thus, this is a case for which we find no clear solution in international law today. It remains unclear whether people who lose their state owing to climate change would be considered stateless. According to Article 1 of the 1954 Convention Relating to the Status of Stateless Persons, a stateless person is 'not considered as a national by any State under the operation of its law'.¹⁹ According to McAdam and Saul, however, the island citizens would not be protected because the definition of statelessness is premised on the denial of nationality through the operation of the law of a particular state, rather than through the disappearance of a state altogether.²⁰ Furthermore, current legal regimes are hardly sufficient to address the very specific needs of such islanders, including relocation.

Scenario 3: Climate change could cause an increase in environmental conflicts

It has been argued that the effects of climate change, such as sudden-onset and slow-onset natural disasters, can trigger conflict, through competition over scarce resources, for example.²¹ In this scenario, the 1998 UN Guiding Principles on Internal Displacement should be applied to people who are internally displaced.

Migration: Initial Evidence from Africa, New Issues in Refugee Research, Research Paper No. 180, Office of the United Nations High Commissioner for Refugees (UNHCR), December 2009, p. 11.

19 Convention relating to the Status of Stateless Persons, adopted on 28 September 1954 by a Conference of Plenipotentiaries convened by Economic and Social Council resolution 526 A (XVII) of 26 April 1954, Art. 1.

20 Jane McAdam and Ben Saul, *An Insecure Climate for Human Security? Climate-induced Displacement and International Law*, Sydney Centre Working Paper No. 4, University of Sydney, 2008, available at: http://sydney.edu.au/law/scil/documents/2009/SCILWP4_Final.pdf (last visited 28 September 2010).

21 See, for example, Nils Petter Gleditsch, 'Environmental conflict: Neomalthusians vs. Cornucopians', in Hans Günter Brauch *et al.* (eds), *Security and the Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*, Springer Verlag, Berlin, 2003, p. 478.

Conflict is explicitly mentioned in the descriptive definition of internally displaced persons,²² and the conflict's cause is not crucial when it comes to protection in relevant law.

People in this scenario who are displaced across internationally recognized borders can, in some cases, gain refugee status or complementary, possibly temporary, protection status.²³ Regional instruments such as the Organization of African Unity (OAU) Convention and the 1984 Cartagena Declaration on Refugees include as refugees those fleeing from 'generalised violence'.²⁴ The European Union (EU)'s Temporary Protection Directive provides temporary protection in the event of a mass influx of persons fleeing armed conflict,²⁵ and the EU Qualification Directive extends subsidiary protection if there is a 'serious and individual threat to a civilian's life or person by reason of indiscriminate violence in situations of international or internal armed conflict'.²⁶ However, apart from those countries that have adopted the OAU Convention and the EU directives, many states do not yet recognize people fleeing generalized violence as refugees or persons qualifying for complementary protection.

Scenario 4: Climate-change-related measures such as adaptation and mitigation efforts result in displacement

Measures to mitigate the effects of climate change and adapt to them can result in displacement. One trend that needs attention is that of authorities seeking to move people and using climate change and natural disasters either as a legitimate reason or simply as a pretext.²⁷ For example, in some of the countries affected by the 2004 Asian tsunami, there were reports that buffer zones were established in a discriminatory manner to allowing construction of tourism facilities, while local residents were not allowed to return and rebuild their homes.²⁸

22 See 1998 *UN Guiding Principles on Internal Displacement*, above note 3, Introduction: Scope and Purpose, para. 2.

23 V. Kolmannskog, above note 16, p. 32.

24 Cartagena Declaration on Refugees of 22 November 1984, reproduced in Annual Report of the Inter-American Commission on Human Rights, 1984–1985, OEA/Ser.L/V/II.86, doc. 10, rev. 1, pp 190–193, Art. III(3); OAU Convention Governing the Specific Aspects of Refugee Problems in Africa, Addis Ababa, Ethiopia, 10 September 1969, Art. 1(2).

25 Council Directive 2001/55/EC of 20 July 2001 on minimum standards for giving temporary protection in the event of a mass influx of displaced persons and on measures promoting a balance of efforts between Member States in receiving such persons and bearing the consequences thereof, Art. 2(c)(i).

26 Council Directive 2004/83/EC of 29 April 2004 on minimum standards for the qualification and status of third country nationals or stateless persons as refugees or as persons who otherwise need international protection and the content of the protection granted, Art. 15(c) in combination with Art. 2(e).

27 Vikram Kolmannskog, *Dignity in Disasters and Displacement: Exploring Law, Policy and Practice on Relocation and Return in the Context of Climate Change*, paper prepared for the Global Environmental Change and Human Security Synthesis (GECHS) Conference, 'Human Security in an Era of Global Change', University of Oslo, 22–24 June 2009, available at: <http://www.nrc.no/?aid=9411918> (last visited 20 September 2010).

28 Report of the Representative of the Secretary-General on the Human Rights of Internally Displaced Persons, Walter Kälin, *Protection of Internally Displaced Persons in Situations of Natural Disasters*, A/HRC/10/13/Add.1, 5 March 2009, para. 58.

In this scenario, relevant protection standards for internally displaced persons can be found in the 1998 UN Guiding Principles on Internal Displacement. These include provisions to ensure participatory, rights-based planning and non-discrimination.²⁹ If people are permanently relocated, certain development principles could also apply. Of particular relevance is the World Bank's Operational Policy 4.12 on Involuntary Resettlement of January 2002.

The area of climate measures and displacement needs further scrutiny for clarification of law and policy. As for people who cross a border owing to climate-related measures, their situation and needs are even less adequately accounted for.

Summary of protection gaps

In summary, we find no protection gaps in two of the scenarios set out above: internal displacement as a result of sudden-onset natural disasters and internal displacement as a result of conflict. Both scenarios are clearly covered by the 1998 UN Guiding Principles on Internal Displacement. In the following search for ways to fill the protection gaps, the focus is on cross-border displacement caused by natural disaster and excludes the particularities of statelessness. It includes both slow- and sudden-onset disasters.

Filling the gap in cross-border displacement caused by natural disaster

Amending the 1951 Convention relating to the Status of Refugees

Since many of the people displaced across borders do not seem to qualify as either stateless persons or refugees, some advocates for their protection have suggested amending the 1951 Convention relating to the Status of Refugees. This might seem like the most straightforward way of dealing with the cross-border protection gaps and a solution that would have the advantage of securing rights within a well-recognized and established legal instrument. However, critics – including the UN High Commissioner for Refugees (UNHCR) and the NRC – have pointed out that any initiative to amend the refugee definition, as agreed in the 1951 Convention, would involve the risk of a full renegotiation of the Convention. In the current political climate, any renegotiations could undermine the international refugee protection regime altogether.³⁰ Seeking to expand the definition of a refugee, no matter how pure the expanders' intentions, could result in less protection for those who find refuge through today's Convention. Any such weakening should be avoided; therefore, other options must be explored. Moreover, concepts and

29 1998 UN Guiding Principles on Internal Displacement, above note 3, Principles 6(2)(d), 7(1), 15(d), 28, and 29, and elsewhere.

30 See, for example, UNHCR, *Climate Change, Natural Disasters and Human Displacement: A UNHCR Perspective*, Geneva, 2009, p. 9.

mechanisms set out in the 1951 Convention relating to the Status of Refugees, such as the persecution concept and the idea that refugee status substitutes for protection from the home states, may not be suitable in the context of climate change and natural disaster.

Inclusion in the United Nations Framework Convention on Climate Change or other climate agreement

The 1992 UN Framework Convention on Climate Change (UNFCCC) provides the common international framework within which to address the causes and consequences of climate change. The current 1997 Kyoto Protocol commitments run until 2012 and the states are still negotiating what should come after that. While the Kyoto Protocol focuses on reducing greenhouse gas emissions (climate-change mitigation), a successor agreement is also supposed to address the consequences of climate change that can no longer be avoided (climate-change adaptation).³¹

Clearly, a climate-change agreement could be crucial to preventing disasters and displacement, including displacement resulting from climate measures. In terms of protection during displacement, the UNFCCC process has less to offer. Historically, it has had little focus on remedies and there has been a reluctance to incorporate human rights issues. However, a climate-change agreement could also play a certain role in protecting people who are migrating or have been displaced.³² Activities related to migration and displacement qualify for funding in the latest draft texts. Nevertheless, while it is important to recognize migration and displacement and to ensure funding and co-operation, it is unlikely that we will find a full solution here.

Creating a new convention

Several authors argue that the protection gaps would be best filled by creating a new international convention. Hodgkinson, Burton, Young, and Anderson argue that neither the UNFCCC nor current human rights and refugee-protection instruments are appropriate for dealing with the issue.³³ For the operation and application of a new climate-change-displacement convention, the authors stress the need to prove that climate change causes the displacement in question. They emphasize that, although the new treaty should include people displaced by a sudden-onset climatic event, current science is unable to attribute a sudden climatic event directly to climate change and that applying complex analysis to sudden-onset disasters could hamper relief operations and programmes. A new instrument would therefore, according to the authors, more readily apply to slow-onset disasters than to sudden-onset disasters. However, displacement caused by

31 See Bali Action Plan, Decision 1/CP.13 FCCC/CP/2007/6/Add.1, 14 March 2008, para. 1(c).

32 Vikram Kolmannskog, 'Towards a humanitarian climate change agreement', in *Forced Migration Review*, Vol. 33, September 2009, p. 72.

33 D. Hodgkinson *et al.*, above note 5, p. 159.

slow-onset disasters is often more complex than that of sudden-onset disasters, thereby further complicating causality. The possible lengthiness of determining the cause means that there would be a risk of the people displaced spending long periods with their protection needs unaddressed.

Bonnie Docherty and Tyler Giannini have suggested a similar comprehensive instrument that would stipulate guarantees of assistance, shared responsibilities between host and home state, and the right to protection and humanitarian aid.³⁴ The definition of ‘climate change refugee’ applied by Docherty and Giannini encompasses both slow- and sudden-onset disasters. The instrument would allow the determination of refugee status on a group basis, while still allowing individual claims. This is because climate change affects entire communities and group determination is cost-efficient, ensures equal application, and avoids repeated debate over the cause of an event.³⁵

In addition to establishing causality (discussed above), a major challenge is the probable lack of political will today to establish a comprehensive framework with strong and clear rights for the displaced. Moreover, the way that the existing international architecture is currently functioning raises questions about how effective it would be to add new institutions to it. Securing protection for just those displaced by climate-related disasters while excluding people displaced by other natural disasters also seems hard to justify. As pointed out above, there may be little difference in practical terms for a person fleeing a climate-related flood and a person fleeing a non-climate-related earthquake, though responsibility, funding, and other overarching issues may differ greatly.

Creating or amending regional conventions

There is a trend in law to create more and stronger regional treaties and treaty-based bodies. Developing regional treaties could be one way to fill protection gaps in the context of climate change and natural disasters. Climate change will certainly affect different parts of the world in different ways, and there may be more political will at the regional level to deal with impact. For example, Justice Susan Glazebrook argues that a regional approach in the Asia-Pacific area is essential for adaptation measures and for planning disaster recovery and relief, including the responsibility for relocating displaced people in the region and ensuring that their rights are promoted and protected.³⁶

A recent and relevant addition is the African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention) adopted in October 2009, which builds on the 1998 UN Guiding Principles on Internal Displacement and explicitly mentions climate

34 Bonnie Docherty and Tyler Giannini, ‘Confronting a rising tide: a proposal for a convention on climate change refugees’, in *Harvard Environmental Law Review*, Vol. 33, No. 2, 2009, p. 349.

35 *Ibid.*, pp. 374–375.

36 Susan Glazebrook, ‘Human rights and the environment’, in *Victoria University of Wellington Law Review*, Vol. 40, 2009, p. 293.

change.³⁷ There are also regional instruments with broader definitions of refugees. The 1969 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa includes as refugees persons forced to flee ‘events seriously disturbing public order’.³⁸ Although there have been examples in practice of permitting people displaced by disasters across borders to remain temporarily, it seems that in most cases, however, African governments have not characterized this as an obligation arising under the OAU Convention.³⁹ In Latin America, the 1984 Cartagena Declaration on Refugees, which has inspired the legislation of many states in the region, also includes as refugees (in Article 3) persons forced to flee ‘other circumstances which have seriously disturbed public order’. However, the International Conference on Central American Refugees does not understand the ‘other circumstances’ to include natural disasters.⁴⁰ Jurisprudence based on these regional definitions is scarce and there is a need to develop doctrine and guidance to help states interpret these criteria. We may also see a change in practice and interpretation, as climate change influences the occurrence of disasters and the resulting displacement. The regional conventions could also be amended. Similarly, Kolmannskog and Myrstad argue for inclusion of natural-disaster-related displacement in the directives being developed as part of the Common European Asylum System.⁴¹

Context-oriented and dynamic interpretation of existing refugee law

Kolmannskog has argued elsewhere for dynamic and context-oriented interpretations of existing law to address climate-change-induced displacement.⁴² For example, it may be too hasty to say that people displaced in the context of climate change and natural disaster are never covered by the refugee definition. Serious or systematic human rights violations are normally considered to amount to persecution,⁴³ and experience shows that both natural disasters and conflict are situations prone to human rights violations. For example, the recognition that

37 Kampala Convention, Art. 5(4).

38 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa, above note 24, Art. 1(2).

39 Alice Edwards, ‘Refugee status determination in Africa’, in *African Journal of International and Comparative Law*, Vol. 14, 2006, pp. 204–233.

40 Hector Gros Espiell, Sonia Picado, and Leo Valladares Lanza, *Principles and Criteria for the Protection of and Assistance to Central American Refugees, Returnees and Displaced Persons in Latin America*, prepared by the Group of Experts for the International Conference on Central American Refugees pursuant to specific objective (a) in paragraph 3 of the San Salvador Communiqué on Central American Refugees of 9 September 1988, p. 11, available at: www.acnur.org/biblioteca/pdf/3668.pdf (last visited 20 September 2010).

41 Vikram Kolmannskog and Finn Myrstad, ‘Environmental displacement in European asylum law’, in *European Journal of Migration and Law*, Vol. 11, No. 4, 2009, pp. 313–326.

42 See, for example, Vikram Kolmannskog, ‘Climates of displacement’, in *Nordic Journal of Human Rights*, Vol. 26, No. 4, 2008, pp. 302–320; V. Kolmannskog, above note 16; and V. Kolmannskog and F. Myrstad, above note 41.

43 UNHCR, *Handbook on Procedures and Criteria for Determining Refugee Status under the 1951 Convention and the 1967 Protocol relating to the Status of Refugees*, Geneva, 1992, paras. 51–53.

there is scope for human rights violations, discrimination, and persecution in the wake of disaster, as exemplified by the aftermath of the 2004 Asian tsunami, led to the IASC Operational Guidelines on Human Rights and Natural Disasters. Where the victims of natural disasters flee because their government has consciously withheld or obstructed aid in order to punish or marginalize them on one of the five grounds, at least the 1951 Convention and the UNHCR's mandate will be applicable. This has also been confirmed by the UNHCR.⁴⁴

In addition, there are often several, separate reasons why a person moves, and 1951 Convention refugees may flee in the context of disaster while the well-founded fear of persecution exists independently. Disasters seldom come alone. Some Somalis in refugee camps in Kenya reported having fled both drought and conflict, and the local UNHCR staff stated that they would not 'split hairs' when drought and conflict coincides.⁴⁵

However, in cases of natural-disaster-induced displacement where a 'well-founded fear of persecution' is less obvious, or even completely lacking, the need for protection may still be unmet in many cases. Furthermore, the main challenge for a context-oriented and dynamic interpretation of existing refugee law comes from the general political climate for refugees today. There is no global refugee court, and even if there are increasingly effective regional mechanisms, countries retain much discretion in interpreting refugee law. Today, countries are defining in an ever narrower manner whom they are prepared to recognize as a refugee.

The principle of non-refoulement set out in the 1951 Convention relating to the Status of Refugees prohibits the expulsion or return ('*refoulement*') of a refugee 'in any manner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social group or political opinion'.⁴⁶ This fundamental principle is widely regarded as part of customary international law and has counterparts in human rights law. However, it is also being challenged through interception and rejection at borders.

Context-oriented and dynamic interpretation of existing human rights law

A partial solution to the normative protection gap may be found in broader human rights law pondering the possibility, permissibility, and reasonableness of return.⁴⁷

44 UNHCR, above note 30, p. 7.

45 V. Kolmannskog, above note 18, p. 9.

46 Convention Relating to the Status of Refugees, 28 July 1951, Art. 33(1).

47 V. Kolmannskog, above note 42, pp. 312–316; V. Kolmannskog, above note 16, pp. 32–35. For an interesting and challenging perspective on the relevance of human rights law to migration, see Catherine Dauvergne, *Making People Illegal: What Globalization Means for Migration and Law*, Cambridge University Press, Cambridge, 2008. Dauvergne argues that the realm of immigration law has become an important theatre in terms of reaffirming state sovereignty in a globalizing world, and that we should not expect human rights norms to be of much use to illegal immigrants, who are the main targets of these reassertions of sovereignty. She suggests that a more promising alternative is to couch legal arguments on

We may see cases where a person's return to his or her place of origin at some point becomes impossible owing to climate change and/or disaster. The island states may be an extreme example. In other cases, disasters are likely to affect infrastructure, which may be necessary for a return. Forced return may also not be allowable because it is considered to breach a fundamental right.

In human rights law, non-refoulement is an absolute and general ban on sending a person, independent of conduct or status, to places where they risk certain rights violations. Most agree that the prohibition of torture is a peremptory norm, but there is disagreement regarding the extent to which one is protected by customary law against ill-treatment and other human rights violations.⁴⁸

No matter the degree to which a disaster has been created by humans, it is doubtful (to say the least) that it can meet the international definition of torture as the infliction of severe pain or other suffering by a public official for one of the purposes listed in the torture conventions, such as punishment or obtaining a confession. It could also seem far-fetched to call a disaster cruel, inhuman, or degrading treatment. In some cases, rather than claiming that an asylum-seeker forced to return to his or her country of origin is being returned to the infliction of ill-treatment, the return *itself* could arguably constitute ill-treatment, perhaps even torture.⁴⁹ Let us illustrate this with an example: How should we consider a case where a public official leaves a person to fend for himself with hardly any means in the middle of a desert?

Generally, courts have carefully circumscribed the meaning of 'inhuman or degrading treatment', but there are cases where the concept of 'inhuman treatment' has been interpreted rather progressively. In the case of *D. v. the United Kingdom*, the European Court of Human Rights considered that returning an HIV-infected person to St Kitts would amount to 'inhuman treatment' owing, among other things, to the lack of sufficient medical treatment, a social network, a home, or any prospect of making a living.⁵⁰ During and after disasters such as Hurricane Mitch (Central America, 1998) and Cyclone Nargis (Myanmar, 2008), both people's homes and vital infrastructure were destroyed or damaged, which hindered the provision of basic essentials such as clean water, electricity, and food. One could consider that people with particular vulnerabilities are protected against having to return to such circumstances. Clearly, law relating to the permissibility of return is relevant in the climate-change context.

behalf of illegal immigrants not in terms of human rights norms but rather in terms of the rule of law. While we believe that human rights may be built on for a solution in the specific context of climate change and natural disasters, we conclude that the risk of an overly broad scope for interpretation emerging means that an explicit mention of natural disasters, or something similar, in law governing return better ensures effective protection.

48 See, for example, International Criminal Tribunal for the Former Yugoslavia (ICTY), *Prosecutor v. Anto Furundžija*, Case No. IT-95-17/1-T, Judgment (Trial Chamber), 10 December 1998, paras. 144, 153–157. The ICTY stated that there is a *jus cogens* for the prohibition against torture, that there is no allowance for states to make reservations, and that is considered to bind all states.

49 V. Kolmannskog, above note 16, p. 33.

50 European Court of Human Rights, *D. v. the United Kingdom*, Judgment of 2 May 1997, Application No. 30240/96, paras. 46–54.

Climate change and natural disasters negatively affect the enjoyment of several human rights.⁵¹ In theory, any human rights violation under systems such as the 1950 European Convention on Human Rights could give rise to a non-refoulement obligation.⁵² Importantly, the right to life is non-derogable, with very few exceptions.⁵³ Hence, a person should not be sent back to her country of origin if there is a danger to her life. In addition, one could apply the law stipulating non-refoulement of refugees (law that, among other things, stipulates the duty to protect life) by analogy. Climate change and disasters also affect other human rights such as the right to food, the right to water, the right to health, and the right to adequate housing. Except for absolute rights – such as the right to life and the ban on torture and certain ill-treatment – most human rights provisions permit a balancing test between the interests of the individual and the state. Thus, the ‘new normal’ of climate change with more frequent and severe disasters must weigh heavily.

It should also be considered that, in some cases, forcing someone to return is unreasonable. Not only strict permissibility but also greater latitude for the criterion of reasonableness (how reasonable it is to expect someone to go back?) should be exercised by states in the context of climate change. Referring to ‘survival criteria’, Denmark has for some time allowed particularly vulnerable groups of Afghans to stay there on humanitarian grounds, because of the drought in Afghanistan.⁵⁴

It is the risk of rights being violated in the present and future, rather than the past, that is crucial in determining protection needs. Where this need is acknowledged, a clear protection status should also be granted. Existing human rights law, including the non-refoulement principle, neither provides a right to stay nor dictates the content of any protection, but it must include non-rejection at the border to be effective and can provide a basis for some form of complementary, possibly temporary, protection.

This human rights approach, which focuses on return, offers some solution to the challenges in slow-onset disasters and displacement. It is not so much a question of why someone left initially, but rather whether the gradual deterioration has reached a critical point where they cannot be expected to return now.

Bringing wider human rights such as the ban on torture, inhuman and degrading treatment, and the right to life into play regarding return has the advantage that the linkage is open to dynamic interpretation while still allowing the authorities a degree of discretion. An explicit reference in law to natural disasters, or something similar, could create a new category that potentially excludes others

51 United Nations, *Report of the Office of the United Nations High Commissioner for Human Rights on the relationship between climate change and human rights*, UN Doc. A/HRC/10/61, New York, 2009, paras. 16–41.

52 United Kingdom House of Lords, *Regina v. Special Adjudicator ex parte Ullah*, 17 June 2004, [2004] UKHL 26, paras. 24–25.

53 See European Convention for the Protection of Human Rights and Fundamental Freedoms as amended by Protocols No. 11 and No. 14, Rome, 4 November 1950, Arts. 2(2) and 15(2).

54 V. Kolmannskog and F. Myrstad, above note 41.

but would at least permit less discretionary latitude. In the discussion about complementary and temporary protection at regional and national levels, we find both vague and more precise protection terminology.

A weakness of the focus on return is that the person affected first has to be able to reach another country, though the practice of interception is making this ever harder. Other solutions – such as labour-migration programmes – could also be discussed for those who might not otherwise be able to flee, but that is beyond the scope of this article.

Complementary and temporary protection at regional and national levels

Developing complementary, possibly temporary, protection regimes may be a solution. There are already some national and regional temporary protection regimes that could apply. According to the United States Immigration and Nationality Act, the nationals of a foreign state can be designated for Temporary Protected Status if three conditions are met: (1) there has been an environmental disaster in the foreign state resulting in a substantial, but temporary, disruption of living conditions; (2) the foreign state is unable, temporarily, to handle adequately the return of its own nationals; and (3) the foreign state has officially requested such designation.⁵⁵ However, Temporary Protected Status is not a strong, legal obligation to protect the individual.⁵⁶ It is optional: the nationals of a certain state *can* receive such status. Furthermore, it is an agreement between the US and another *state*, not first and foremost a duty to the individual.

Another model is the temporary protection accorded by the EU, in accordance with the Temporary Protection Directive, during ‘mass influxes’ of certain displaced persons.⁵⁷ Arguably, temporary protection can be applicable to some cases of natural-disaster-related displacement.⁵⁸ Article 2(c) of the Temporary Protection Directive specifies those persons who ‘in particular’ qualify for temporary protection, though it does not provide an exhaustive list. It should also be noted that ‘generalized violations’ of human rights often occur in, during, or after a natural disaster, and in such cases the displaced fall within an explicitly recognized category. Importantly, if a qualified majority decides that a natural disaster calls for invoking the Temporary Protection Directive mechanisms, it is free to do so. Mobilizing the political consent and will to do so would, however, be challenging. Moreover, linking temporary protection to ‘mass influx’ can also be a weakness if the goal is protection for displaced *individuals*. An individual may be in need of protection even though he or she does not arrive as part of a ‘mass influx’. Furthermore, temporary protection may more generally provide some protection

55 See United States, Immigration and Nationality Act, Act 244 – Temporary Protected Status, Sec. 244.1/[8U.S.C. 1254], sub-para. (b).

56 See V. Kolmannskog, above note 16, pp. 36–37.

57 See Council Directive 2001/55/EC, above note 25.

58 V. Kolmannskog and F. Myrstad, above note 41.

for certain groups but does not meet the needs of people who may need to stay longer or permanently.

So far, Finland is the only EU country that explicitly grants temporary protection, in Section 109(1) of the Aliens Act, to persons who cannot return safely to their home country or country of permanent residence because of an environmental disaster. Under Section 88a, there is also the possibility of permanent protection status. The Finnish legislation could serve as a model for filling the protection gap at national levels.

A ‘soft-law approach’

Kolmannskog has argued elsewhere that one could follow a ‘soft-law approach’ similar to that taken in the case of internally displaced persons: that is, to investigate the protection gaps more closely and, if possible, create a synthesis (and analogy) of existing international law in the form of principles.⁵⁹ The 1998 UN Guiding Principles on Internal Displacement were established in order to deal with a phenomenon requiring additional protection measures at a time when there was little political will for a new convention and some questioned the need for new law. The drafters therefore built on existing human rights law, humanitarian law, and refugee law. The legal basis for similar guiding principles on displacement due to climate change and natural disaster could include all the previously mentioned areas of law – refugee law, environmental law, and human rights law – and go even further by highlighting best practices from different countries and regions.

On the other hand, the non-binding nature of such established principles may also be a significant weakness. Some states have not been willing to provide protection to internally displaced persons as outlined in the Guiding Principles. However, the Secretary-General’s representative on the human rights of internally displaced persons, Professor Walter Kälin – a supporter of the ‘soft-law’ approach – has stated the following:

One should, however, not overestimate this weakness as it is always possible to invoke the hard law that lies behind the Guiding Principles where necessary. Overall, the non-binding character of the document has been an advantage, and where the Guiding Principles were met with resistance, it was not because of their content but because of a suspicion that they might be binding regardless of all assertions to the contrary. The Representative’s experience has shown that it is much easier to negotiate with governments if the questions of violations does not loom in the background but, instead, problems can be approached by looking at what kind of guidance is provided by international standards.⁶⁰

59 See V. Kolmannskog, above note 42, p. 320.

60 Walter Kälin, *How Hard is Soft Law? The Guiding Principles on Internal Displacement and the Need for a Normative Framework*, Presentation at Roundtable Meeting, Ralph Bunche Institute for International

A multi-track approach

Choosing a combination of the solutions explored above may prove the most effective way of filling the protection gaps. This complex issue needs to be dealt with in several forums and at several levels. Climate change is a global process that is influencing the occurrence of natural disasters. The resulting international responsibility needs to be reflected in the financing of protection for the people affected by that change. This can be dealt with most appropriately in a new global climate-change agreement based on the principle of common but differentiated responsibilities and other principles of environmental law. Funding would enable countries to deal better with displacement, most of which is likely to go on being internal and regional in the developing countries. It is also important to encourage further international and regional co-operation, particularly regarding cross-border displacement. It is therefore crucial to keep the reference to migration and displacement in the adaptation text being negotiated under the UNFCCC. From a human security and protection perspective, however, there is no basic, compelling reason to distinguish between climate-related and other natural disasters. Specific law and protection should apply to all those displaced by natural disaster.

It is important to interpret law with a view to the ever-changing environment in which it must be applied. This calls for context-oriented and dynamic interpretation. For example, some of the people displaced in the context of climate change and natural disaster can be considered refugees according to the 1951 Convention relating to the Status of Refugees. But there is also a risk with unclear law and discretionary latitude for the authorities: that we are, to an excessive degree, at the mercy of the few whose task it is to interpret and apply that law. This is a particular challenge in the field of immigration law because of the volatile political situation and shifting feelings toward refugees and immigrants. There is therefore also a need to clarify or even create new law.

The human rights regime, the non-refoulement principle, and complementary protection mechanisms can provide building blocks for new ways of affording protection, particularly regarding the concept of return: if return is not possible, permissible, or reasonable owing to circumstances in the place of origin and to personal conditions, a person should receive protection and a clear status. Linking return to wider human rights has the advantage of being open to dynamic interpretation, but it also allows for discretion. An explicit reference to natural disasters or similar phenomena, such as in Finnish law, may be necessary, particularly considering the ever-shifting sentiments toward migrants and asylum-seekers. The focus on return rather than the cause and impact of the initial movement may get us around some of the challenges of slow-onset disasters, including the 'voluntary–forced' continuum. A more permanent protection status would be necessary in some cases, in addition to temporary protection.

Creation of new law can start at several levels and in a number of forums. States should already start adapting their national laws so that they can better respond to natural-disaster-induced displacement. The Finnish legislation may serve as a model. Since many of the domestic approaches are discretionary, and vary greatly, there is also a need to address this issue at a regional and global level. It can be raised in connection with existing regional processes, such as the creation of the Common European Asylum System, and in more established refugee frameworks and associated judicial and legislative institutions such as the African and Latin American instruments. Finally, it may also eventually be raised at a global level, but it is still unclear exactly where and how this would happen. A natural host for such an international process could be UNHCR.

It may help with all the initiatives mentioned above to draft a soft-law document. This document could outline existing law (as interpreted in a context-oriented and dynamic fashion) and list examples of best practice and national legislation.

No matter which mode (or modes) is chosen, there is a more fundamental challenge, already pointed out above: implementation and access to protection in the current political climate. For example, Europe already has elaborate asylum legislation, but many potential asylum-seekers are stopped from ever arriving to file an application by strict visa regimes, security forces at sea or on land, and agreements with European and North African countries on the Mediterranean. Access may become even harder if the potential numbers of legitimate asylum-seekers increase. This is a problem beyond law. It is a hot topic in politics, especially during economic downturns. It is also basically a matter of how people perceive their moral duty. What is needed is public communication and awareness-raising about climate change and displacement. Hopefully, climate change will remind us of how we are all connected and this will give rise to a new solidarity.

SELECTED ARTICLE ON INTERNATIONAL HUMANITARIAN LAW

Collective reparation for victims of armed conflict

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Abstract

Reparations are essential to establishing justice after armed conflicts. The question whether international law endorses an individual right to reparation has been a focal point of recent discussion in that regard. The victims of armed conflicts are, however, not only individuals but also collectives. The present article therefore examines the issue of collective reparation. While it is submitted that the question whether there is a right to such a remedy is not yet settled, it is argued that responsible parties should develop robust programmes of collective reparation.



Armed conflicts rage in many parts of the world, claiming high numbers of victims.¹ These victims are not without protection: it is well established that violations of international law must be remedied by reparation. Thus the Permanent Court of International Justice held in the *Chorzów Factory* case that ‘reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation, which would, in all probability, have existed if that act had not been committed’.²

The recent discussion on this subject has largely centred on the question of whether an individual right to reparation exists. Although scholars have not yet reached consensus on this point, there is at least a strong tendency to acknowledge the entitlement of the individual to reparation under modern international law.³

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Among the different forms of individual reparation, restitution and compensation are those most commonly awarded.⁴

In contrast to individual reparation, collective reparation has received little scholarly attention. It is unclear to date whether collectives have a right to reparation, so this question is examined in the present article. In the first part, the concept of collective reparation is defined. It is followed by an analysis of the normative framework for collective reparation, which shows that international law supports the idea of collective reparation but leaves unclear whether such a remedy must be conceived of as a right. The final part stresses that the uncertainties as to the legal status of collective reparation should not divert attention from the need to develop robust programmes of collective reparation.

Definition of collective reparation

For the purposes of the present article, collective reparation will be defined as the benefits conferred on collectives in order to undo the collective harm that has been caused as a consequence of a violation of international law.⁵ Collective reparation

- 1 Lotta Harbom, Erik Melander, and Peter Wallensteen, 'Dyadic dimensions of armed conflict, 1946–2007', in *Journal of Peace Research*, Vol. 45, 2008, pp. 697ff.
- 2 Permanent Court of International Justice, *Case Concerning Factory at Chorzów*, Merits, Series A, No. 17, (1928), p. 47. Deviations from the standard of full reparation are discussed for situations of mass atrocities. See e.g. Ethiopia–Eritrea Claims Commission, Final Award between the State of Eritrea and the Federal Democratic Republic of Ethiopia, *Eritrea's Damages Claims*, 17 August 2009, para. 22.
- 3 Emanuela-Chiara Gillard, 'Reparation for violations of international humanitarian law', in *International Review of the Red Cross*, Vol. 85, No. 851, 2003, p. 536; Riccardo Pisillo Mazzeschi, 'Reparation claims by individuals for state breaches of humanitarian law and human rights: an overview', in *Journal of International Criminal Justice*, Vol. 1, 2003, p. 343; Albrecht Randelzhofer, 'The legal position of the individual under present international law', in Albrecht Randelzhofer and Christian Tomuschat, *State Responsibility and the Individual: Reparation in Instances of Grave Violations of Human Rights*, Martinus Nijhoff, The Hague, 1999, p. 231; Andreas Fischer-Lescano, 'Subjektivierung völkerrechtlicher Sekundärregeln: die Individualrechte auf Entschädigung und effektiven Rechtsschutz bei Verletzungen des Völkerrechts', in *Archiv des Völkerrechts*, Vol. 45, 2007, p. 331; Robert Bank and Elke Schwager, 'Is there a substantive right to compensation for individual victims of armed conflict against a state under international law?', in *German Yearbook of International Law*, Vol. 49, 2006, pp. 398ff.; Elke Schwager, *Ius bello durante et bello confecto*, Duncker & Humblot, Berlin, 2008; Rainer Hofmann, 'Victims of violations of international humanitarian law: do they have an individual right to reparation against states under international law?', in Pierre-Marie Dupuy et al. (eds), *Common Values in International Law: Essays in Honour of Christian Tomuschat*, N.P. Engel Verlag, Kehl, 2006, p. 357; Micaela Frulli, 'When are states liable towards individuals for serious violations of humanitarian law? The *Markovich* case', in *Journal of International Criminal Justice*, Vol. 1, 2003, pp. 417f.; Marco Sassòli, 'State responsibility for violations of international humanitarian law', in *International Review of the Red Cross*, Vol. 84, No. 846, 2002, p. 419; Liesbeth Zegveld, 'Remedies for victims of violations of international humanitarian law', in *International Review of the Red Cross*, Vol. 85, No. 851, 2003, pp. 497f.
- 4 For an overview of the remedies awarded under claims programmes, see Howard M. Holtzmann and Edda Kristjánsdóttir, *International Mass Claims Processes: Legal and Practical Perspectives*, Oxford University Press, Oxford, 2007; Hans van Houtte, Bart Delmartino, and Iasson Yi, *Post-war Restoration of Property Rights under International Law*, Cambridge University Press, Cambridge, 2008; Norbert Wühler and Heike Niebergall, *Property Restitution and Compensation*, International Organization for Migration (IOM), Geneva, 2008.
- 5 On the definition of collective reparation, see also Heidi Rombouts, *Victim Organisations and the Politics of Reparation*, Intersentia, Antwerp, 2004, pp. 34f.

thus consists of four elements: benefits, a collective as beneficiary, collective harm, and a violation of international law. These elements will now be considered in greater detail.

Benefits

Collective reparation encompasses a wide range of different benefits. Representative examples can be found in the reports of truth commissions, which have repeatedly underlined the importance of collective reparation. Among the measures that have been recommended are the construction of schools or hospitals,⁶ the establishment of memorials,⁷ or the renaming of streets.⁸

Two aspects of these benefits merit special attention. First, they are indivisible: victims who receive collective reparation are not able to enjoy the benefit on their own, but have to share it with other victims. Second, the benefits are diverse: while the most commonly awarded forms of individual reparation – that is, compensation and restitution – have a clearly defined content, collective reparation can take very different forms. As will be shown below, this has consequences for the question of whether collective reparation can be conceived of as a right.

Collective

Various collectives might be the beneficiaries of reparation.⁹ The collectives that truth commissions have dealt with have included women and children,¹⁰ village communities,¹¹ rural communities,¹² native communities,¹³ and groups of displaced persons.¹⁴ Examples of groups enjoying collective rights are found in the jurisprudence of the Inter-American Court of Human Rights (IACtHR).¹⁵ For purposes of legal categorization, the beneficiaries of collective reparation might be divided into

6 Peruvian Truth and Reconciliation Commission, *Programa Integral de Reparaciones*, paras. 2.2.3.2 and 2.2.4.3.3, available at: <http://www.cverdad.org.pe/ifinal/pdf/TOMO%20IX/2.2%20PIR.pdf> (last visited 12 August 2010).

7 Commission for Reception, Truth and Reconciliation in Timor-Leste (CAVR), *Chega!*, Final Report of the CAVR, para. 10.3.4, available at: <http://www.cavr-timorleste.org/en/cheгаReport.htm> (last visited 10 August 2010).

8 South African Truth and Reconciliation Commission (TRC), *Truth and Reconciliation Commission of South Africa Report*, March 2003, Vol. 6, Section 2, ch. 1, para. 14, available at: <http://www.justice.gov.za/trc/report/index.htm> (last visited 12 August 2010).

9 The adjective 'collective' specifies the subject that receives reparation, not the process of awarding reparation. Situations where individual claims are settled in a mass claims procedure are therefore not considered as collective reparation.

10 CAVR, above note 7, para. 11.4.

11 *Ibid.*, para. 10.2.

12 Peruvian Truth and Reconciliation Commission, above note 6, para. 2.2.2.2.2.

13 *Ibid.*

14 *Ibid.*

15 See IACtHR, *Mayagna (Sumo) Awas Tingi Community v. Nicaragua*, Judgment of 31 August 2001 (Merits, Reparations and Costs).

groups with legal personality on the one hand and aggregates of individuals on the other.

Collective harm

One of the most fundamental concepts of collective reparation is that it helps to undo what has been called ‘collective harm’.¹⁶ This term is intended to express the idea that the targeting of a collective can cause harm that differs from the harm caused by targeting the same number of individuals who are not part of a collective. The existence of collective harm is evident in cases such as the Holocaust or the genocide of the Tutsi in Rwanda. The systematic extermination of the Jews in Europe caused harm that transcended the harm that would have resulted from the killing of an equivalent number of people not belonging to that group. It would likewise have made a difference for a Tutsi whether he or she was attacked as a Tutsi or as a person. Thus the group of Tutsi or Jews might constitute a source of identity and a socialization mechanism whose disruption constitutes collective harm.¹⁷

The fact that international criminal law penalizes the destruction of groups as genocide confirms that the harm resulting from such a crime is greater than the harm resulting from the killing of an equivalent number of people not belonging to a group. Collective harm is not, however, restricted to cases of genocide. A widespread killing of members of a certain tribe who do not constitute a group in the sense of Article 6 of the Rome Statute of the International Criminal Court (ICC)¹⁸ might still cause collective harm. Nor does collective harm presuppose a violation of collective rights, as the example of the European Jews or the Tutsi in Rwanda shows. For collective harm to occur it is therefore sufficient that victims share certain bonds, such as common cultural, religious, tribal, or ethnic roots.¹⁹

Violation of international law

The collective harm must have been caused by a violation of international law. A regime of liability for lawful conduct has not yet developed in international law.²⁰

16 See the comprehensive analysis by Paul Dubinsky, ‘Justice for the collective: the limits of the human rights class action’, in *Michigan Law Review*, Vol. 104, 2004, p. 1182. See also Naomi Roth-Arriaza, ‘Reparations, decisions and dilemmas’, in *Hastings International and Comparative Law Review*, Vol. 27, 2004, p. 181.

17 On the effects that violations of international law can have on collectives, see Chris Dolan, *Social Torture: The Case of Northern Uganda, 1986–2006*, Berghahn, Oxford, 2009, p. 236.

18 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9 of 17 July 1998.

19 For an example of the jurisprudence of the Inter-American Court of Human Rights, see IACtHR, *Moiwana Community v. Suriname*, Judgment of 15 June 2005 (Preliminary Objections, Merits, Reparations and Costs).

20 This is problematic given the large number of incidental losses resulting from lawful conduct. For a discussion of a right to reparation in these situations, see Yaël Ronen, ‘Avoid or compensate? Liability for incidental injury to civilians inflicted during armed conflict’, in *Vanderbilt Journal of Transnational Law*, Vol. 42, 2009, p. 181, pp. 195ff.

The rules on collective reparation are thus secondary rules that govern the relationship resulting from the breach of primary rules.²¹ In this regard it should be noted that there are several primary norms that require states to act. In particular, there are an increasing number of positive human rights obligations.²² Conceptually, collective reparation has to be distinguished from these primary obligations. While positive obligations require states to act irrespective of a prior violation of international law, the obligation to make reparation presupposes such a violation.

Normative framework

The four characteristics of collective reparation as described above are fundamental to understanding the problems inherent in conceiving collective reparation as a right. These will be dealt with in the following part. It will first be explained that there are two ways of conceptualizing a right to collective reparation. It will then be shown that international law *de lege lata* leaves unclear whether groups have a right to collective reparation. Finally, some considerations *de lege ferenda* will be set forth.

Conceptualizing a right to collective reparation

There is heated discussion among scholars as to whether and, if so, to what extent public international law endorses the idea of group rights.²³ Some authors argue that international law already comprises certain group rights, which should therefore be accepted as a distinct category of rights.²⁴ Others take a rather critical stance towards group rights.²⁵ It would be beyond the scope of the present article to

21 For further reference, see James Crawford, *The International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries*, Cambridge University Press, Cambridge, 2002, p. 14; Jean Combacau and Denis Alland, "Primary" and "secondary" rules in the law of state responsibility: categorizing international obligations', in René Provost (ed.), *State Responsibility in International Law*, Ashgate, Aldershot, 2002, pp. 67–95.

22 See Cordula Droege, *Positive Verpflichtungen der Staaten in der Europäischen Menschenrechtskonvention*, Springer, Berlin, 2003.

23 See e.g. Joseph Raz, *The Morality of Freedom*, Oxford University Press, Oxford, 1986, pp. 208f.; Luis Rodríguez-Abascal, 'On the admissibility of group rights', in *Annual Survey of International and Comparative Law*, Vol. 9, 2003, pp. 103ff.; J. Angelo Corlett, 'The problem of collective moral rights', in *Canadian Journal of Law and Jurisprudence*, Vol. 7, 1994, pp. 252ff.; Nathan Brett, 'Language laws and collective rights', in *Canadian Journal of Law and Jurisprudence*, Vol. 4, 1991, pp. 353ff.; Leslie Green, 'Two views of collective rights', in *Canadian Journal of Law and Jurisprudence*, Vol. 4, 1991, p. 323.

24 Jeremy Waldron, *Liberal Rights*, Cambridge University Press, Cambridge, 1993, p. 361. Examples of group rights are Article 1 of the International Covenant on Civil and Political Rights, Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966; Articles 3ff. of the International Labour Organization (ILO) Convention (No. 169) concerning Indigenous and Tribal Peoples in Independent Countries; Articles 23ff. of the African Charter on Human and Peoples' Rights.

25 Michael Hartney, 'Some confusions concerning collective rights', in Will Kymlicka (ed.), *The Rights of Minority Cultures*, Oxford University Press, Oxford, 1995, p. 203. For further references, see Peter Jones,

engage in an in-depth analysis of this problem. It does, however, need to be highlighted that there are two ways of conceptualizing a right to collective reparation. On the one hand, one might conceive of a right that pertains to a group with legal personality. For the purposes of the present article, such rights will be designated as ‘group rights *strictu sensu*’. On the other hand, one might conceive of a right that pertains to an aggregate of individuals. Thus, the right at issue in such a situation is not a group right *strictu sensu* but a right that pertains to a multiplicity of obligees. Rights of a multiplicity of obligees are known from national legal systems. As an example, one might adduce Section 432 of the German Civil Code, which stipulates:

If more than one person is to demand indivisible performance, then to the extent that they are not joint and several creditors, the obligor may only effect performance to all of them jointly and each obligee may only demand performance for all of them.²⁶

In a similar vein, Article 10.201 of the Principles of European Contract Law envisages ‘communal claims’ where the ‘debtor must perform to all the creditors and any creditor may require performance only for the benefit of all’.²⁷ Such communal claims can result from the nature of the obligation.

In the following analysis of the legal framework for collective reparation, this distinction between group rights *strictu sensu* and rights of a multiplicity of obligees will play an important role.

Considerations *de lege lata*

Soft law

The most recent effort to delineate victims’ rights to reparation was finalized with the adoption by the UN General Assembly on 16 December 2005 of Basic Principles on the Right to a Remedy and Reparation (henceforth ‘Basic Principles’).²⁸ Though not binding, these principles give important insights into the right to reparation. Under the Basic Principles, victims are defined as

persons who individually or *collectively* suffered harm, including physical or mental injury, emotional suffering, economic loss or substantial impairment of their fundamental rights, through acts or omissions that constitute gross

‘Group rights’, in *The Stanford Encyclopedia of Philosophy*, Winter 2008 edition, available at: <http://plato.stanford.edu/entries/rights-group/> (last visited 10 August 2010).

26 Section 432 of the German Civil Code, available in English at: http://www.gesetze-im-internet.de/englisch_bgb/index.html (last visited 12 August 2010).

27 European Commission on Contract Law, *Principles of European Contract Law*, Part III, Art. 10.201, Kluwer Law, Dordrecht, 2002, pp. 77ff.

28 General Assembly Res. 60/147, 16 December 2005, Basic Principles and Guidelines on the Right to a Remedy and Reparation for Victims of Gross Violations of International Human Rights Law and Serious Violations of International Humanitarian Law (henceforth ‘Basic Principles’).

violations of international human rights law, or serious violations of international humanitarian law.²⁹

The remedies cited include adequate, effective, and prompt reparation.³⁰ Examples of reparation include measures such as commemorations and tributes to the victims.³¹ These typically constitute collective reparation in the sense of the definition given above.³²

In spite of this commitment to protect persons who are targeted collectively,³³ the Basic Principles leave unclear who is entitled to claim reparation. Some guidance can be found in the so-called 'Van Boven report'. This study, which preceded the adoption of the Basic Principles, explicitly demanded that groups of victims or victimized communities be entitled to present 'collective claims' for damages and to receive collective reparation accordingly.³⁴ This formulation is broad enough to cover group rights *strictu sensu* and rights of a multiplicity of obligees.

Collective reparation also plays a role in the Updated Set of Principles to Combat Impunity.³⁵ According to Principle 31, 'Any human rights violation gives rise to a right to reparation on the part of the victim or his or her beneficiaries'.³⁶ Principle 34 specifies that reparation shall include 'measures of restitution, compensation, rehabilitation, and satisfaction as provided by international law'.³⁷ It is noteworthy that a previous draft of Principle 34 contained the word 'individual' before the phrase 'measures concerning the right to restitution, compensation ...'. This restriction was deleted in order to make clear that reparation does not pertain solely to individual measures but also includes collective measures.³⁸ As regards the procedure of providing reparation, Principle 32 now stipulates that reparations may be 'provided through programmes ... addressed to individuals and to communities'.³⁹ The legal position of these communities is not specified in more detail.

29 *Ibid.*, 'V. Victims of gross violations of international human rights law and serious violations of international humanitarian law', Principle 8 (emphasis added).

30 *Ibid.*, 'VII. Victims' right to remedies', Principle 11(b).

31 *Ibid.*, 'IX. Reparation for harm suffered', Principle 22(g).

32 See also Cherif Bassiouni, 'International recognition of victims' rights', in *Human Rights Law Review*, Vol. 6, 2006, p. 261.

33 A similar commitment can be found in the preamble to the Basic Principles, above note 28, where the General Assembly points out that 'contemporary forms of victimization, while essentially directed against persons, may nevertheless also be directed against groups of persons who are targeted collectively'.

34 UN Sub-Commission on the Promotion and Protection of Human Rights, *Study Concerning the Right to Restitution, Compensation and Rehabilitation for Victims of Gross Violations of Human Rights and Fundamental Freedoms: Final Report*, submitted by Mr. Theo van Boven, Special Rapporteur, UN Doc. E/CN.4/Sub.2/1993/8, 2 July 1993, para. 14.

35 Updated Set of Principles for the Protection and Promotion of Human Rights through Action to Combat Impunity, Addendum to the 'Report of the independent expert to update the Set of Principles to Combat Impunity', Diane Orentlicher, UN Doc. E/CN.4/2005/102/Add.1, 8 February 2005.

36 *Ibid.*, Principle 31, 'Rights and duties arising out of the obligation to make reparation'.

37 *Ibid.*, Principle 34, 'Scope of the right to reparation'.

38 UN Commission on Human Rights, *Report of the independent expert to update the Set of Principles to Combat Impunity*, Diane Orentlicher, UN Doc. E/CN.4/2005/102, 18 February 2005, p. 18, para. 61.

39 Updated Set of Principles, above note 35, Principle 32, 'Reparation procedures'.

Treaty law

Compared to the soft law principles discussed above, treaty law is even more vague as regards the existence of a right to collective reparation. Provisions such as Article 3 of the 1907 Hague Convention (IV) or Article 91 of 1977 Additional Protocol I to the 1949 Geneva Conventions, which are often referred to as a basis for a right to reparation,⁴⁰ do not explicitly deal with collective reparation. Neither do human rights instruments.⁴¹

Some human rights conventions, however, implicitly recognize the existence of collective victims. Thus Article 2 of the Optional Protocol to the Convention on the Elimination of All Forms of Discrimination against Women provides a communications procedure, which allows either individuals or groups of individuals to submit individual complaints to the Committee established under Article 17 of the Convention. Communications may also be submitted on behalf of individuals or groups of individuals.⁴² Likewise, the European Convention on Human Rights stipulates that the

Court may receive applications from any person, non-governmental organization or group of individuals claiming to be the victim of a violation by one of the High Contracting Parties of the rights set forth in the Convention or the Protocols thereto.⁴³

A similar provision can also be found in the American Convention on Human Rights. Its Article 44 stipulates that groups of persons or non-governmental entities ‘may lodge petitions with the Commission containing denunciations or complaints of violations of the Convention by a State Party’.⁴⁴ What is striking about these examples is that there is a procedural norm giving groups a possibility to present a claim before the respective judicial authority. It is left unclear, however, whether groups can only assert a violation of primary norms or whether they can also claim collective reparation.

Finally, mention must be made of Article 75 of the Rome Statute of the ICC, which states that ‘The Court shall establish principles relating to reparations to, or in respect of, victims, including restitution, compensation and rehabilitation’.⁴⁵ The ICC’s Rules of Procedure and Evidence contain additional

40 See the comprehensive analysis by E. Schwager, above note 3.

41 See e.g. Article 41 of the Convention for the Protection of Human Rights and Fundamental Freedoms as amended by Protocol No. 11 and No. 14 (European Convention on Human Rights) of 4 November 1950; Article 63 of the American Convention on Human Rights, Adopted at the Inter-American Specialized Conference on Human Rights, San José, Costa Rica, 22 November 1969; Article 27 of the Protocol to the African Charter on Human and People’s Rights on the Establishment of an African Court on Human and People’s Rights.

42 Article 2 of the Optional Protocol to the Convention on the Elimination of All Forms of Discrimination against Women, General Assembly Res. 54/4, 15 October 1999.

43 European Convention on Human Rights, above note 41, Art. 34.

44 American Convention on Human Rights, above note 41, Art. 44.

45 Rome Statute of the ICC, above note 18, Art. 75(1).

information on reparation.⁴⁶ Rule 97 stipulates that ‘the Court may award reparations on an individualized basis or, where it deems it appropriate, on a collective basis or both’.⁴⁷ The formulation ‘on a collective basis’ is ambiguous. On the one hand, it could signify that the Court makes multiple awards without taking into account the particular circumstances of every single claim. In this case, Rule 97 would be interpreted as a norm paving the way for a mass claims procedure. On the other hand, it could be interpreted as a norm envisaging the award of reparation to collectives.⁴⁸ In light of Rule 98, this seems more convincing. According to the latter rule, ‘The Court may order that an award for reparations against a convicted person be made through the Trust Fund where the number of victims and the scope, forms and modalities of reparations makes a *collective award* more appropriate’.⁴⁹ Thus Rule 98 does not speak of several awards being made in a mass claims procedure, but of a single collective award. This might be interpreted as an implicit acknowledgement of a right to collective reparation – be it a group right *strictu sensu* or the right of a multiplicity of obligees. However, the wording of Rules 97 and 98 does not explicitly spell out such a right.

State practice

In state practice, collective reparation has seldom played an important role. The most relevant examples of such remedies can be found in the jurisprudence of the Inter-American Court of Human Rights and in recommendations by truth commissions.

In the jurisprudence of the Inter-American Court of Human Rights there are a few decisions indicating that the Court embraces the concept of collective reparation. A prominent example is the decision rendered in the *Mayagna (Sumo) Awas Tingi Community v. Nicaragua* case, in which the Court found that Nicaragua had violated the right to property protected by Article 21 of the American Convention on Human Rights to the detriment of the members of the said indigenous community.⁵⁰ According to the Court, the violation of this primary right had to be remedied by a measure that benefited the group as such. It therefore decided that Nicaragua had to adopt in its domestic law, pursuant to Article 2 of the American Convention on Human Rights, ‘the legislative, administrative and any other measures required to create an effective mechanism for delimitation, demarcation, and titling of the property of indigenous communities, in accordance with their customary law, values, customs and mores’.⁵¹ It must be emphasized that the Court considered the Mayagna (Sumo) Awas Tingi Community as holder of a

46 Rules of Procedure and Evidence of the ICC, Adopted by the Assembly of States Parties, New York, 3–10 September 2002, Official Records ICC-ASP/1/3.

47 *Ibid.*, Art. 97(1).

48 See e.g. Sarfaraz Ahmed Khan, *Rights of the Victims: Reparation by International Criminal Court*, APH Publishing, New Delhi, 2007, p. 25.

49 Rules of Procedure and Evidence of the ICC, above note 46, Rule 98(3), emphasis added.

50 IACtHR, above note 15.

51 *Ibid.*, para. 164.

collective right to property. Since this arguably presupposes – though only to a limited extent – legal personality, the reparative measure could be conceived of as a ‘group right’ *strictu sensu*. The Court did not, however, explicitly spell out such a right. Instead of using the language of rights, it used the language of obligations.

A further decision that addressed collective remedies was rendered in *Moiwana v. Suriname*. In this case, survivors of a massacre that took place in Moiwana village during the Surinamese civil war asserted a violation of their rights.⁵² Since the massacre had occurred before Suriname became party to the American Convention on Human Rights, the Court could only rule upon those violations that had still continued after the Convention’s entry into force for Suriname.⁵³ Having found that Suriname had violated Articles 5, 8, 21, 22, and 25 of the American Convention on Human Rights,⁵⁴ the Court made the following remark on reparations:

Given that the victims of the present case are members of the N’djuka culture, this Tribunal considers that the individual reparations to be awarded must be supplemented by communal measures; said reparations will be granted to the community as a whole⁵⁵

The collective reparation envisaged by the Court included measures such as an effective investigation,⁵⁶ the establishment of a development fund for health, housing, and educational programmes,⁵⁷ a public apology,⁵⁸ and the construction of a commemorative building.⁵⁹ This judgment is striking in that the decision to grant collective reparation was not based on the violation of any collective rights. Rather, it was the cultural bonds of the victims that, in the Court’s view, justified the award of collective reparation. Since the group concerned had no legal personality, a potential right to collective reparation was conceivable only as the right of a multiplicity of obligees. Again, the language used does not clearly support such an interpretation.

Yet another rationale for reparation with a collective dimension can be found in the decision rendered in ‘*Street Children*’ (*Villagrán-Morales et al.*) v. *Guatemala*.⁶⁰ In this case, the Court had to deal with crimes committed against street children by members of the security force, and the failure of state mechanisms to adequately respond to these violations. Ruling upon the question of reparation, the Court stressed the need to address not only the pecuniary damage

52 IACtHR, above note 19, para. 2.

53 *Ibid.*, para. 43.

54 *Ibid.*, para. 168.

55 *Ibid.*, para. 194.

56 *Ibid.*, para. 205.

57 *Ibid.*, para. 214.

58 *Ibid.*, paras. 216 f.

59 *Ibid.*, para. 218.

60 IACtHR, *The ‘Street-Children’ (Villagrán-Morales et al.) v. Guatemala*, Judgment of 26 May 2001 (Reparations and Costs).

but also those harmful effects that cannot be assessed in monetary terms.⁶¹ As one remedy responding to this kind of harm, the Court ordered Guatemala to designate an educational centre with a name allusive to the victims. It further ordered Guatemala to place in that centre a plaque with the victims' names. As a justification for this measure, the Court adduced two reasons. On the one hand, it should raise awareness to avoid the repetition of similar harmful acts. On the other hand, it should keep the memory of the victims alive.⁶²

There are good reasons for arguing that this judgment did not concern collective reparation in the sense of the definition given above. First, it is highly questionable whether the benefit at issue was intended to undo collective harm. Doubts arise because the Court ordered a very similar benefit in a case that concerned only one victim: in *Trujillo Oroza v. Bolivia*, the Court had to deal with the illegal detention, torture, forced disappearance, and death of a single person, José Carlos Trujillo Oroza.⁶³ It nevertheless ordered non-pecuniary reparation, including the assignment of the name of the victim to an educational establishment in Santa Cruz. As a justification, the Court argued that this measure would contribute to raising public awareness about the need to avoid the repetition of similar harmful acts and to keeping the victim's memory alive.⁶⁴ The fact that there was only one direct victim did not bar the Court from awarding almost the same kind of reparation as in the *Street Children* case mentioned above.⁶⁵

Second, it must be noted that, insofar as the reparative measures were designed to prevent the recurrence of similar violations in the future, the Court ordered measures that were typically owed under primary obligations. This blurring of primary and secondary obligations becomes even more evident in *Caracazo v. Venezuela*.⁶⁶ In this case, the Court had to deal with violations of human rights committed by Venezuelan armed forces and security agencies during public order disturbances.⁶⁷ Ruling upon the question of reparation, the Court ordered Venezuela to provide for training of all members of its armed forces and security agencies on the principles and provisions of human rights protection and regarding the limits to which the use of weapons by law enforcement officials is subject.⁶⁸ These measures are not typical reparative measures, since they are owed irrespective of a prior violation of rights.

The foregoing analysis shows that collective reparation plays a role in the jurisprudence of the Inter-American Court of Human Rights. In all the decisions examined, the Court awarded remedies that benefited not only a single person but also collectives. These collectives included a group enjoying primary rights, as well as aggregates of individuals without legal personality. It remains unclear whether

61 *Ibid.*, para. 84.

62 *Ibid.*, para. 103.

63 IACtHR, *Trujillo-Oroza v. Bolivia*, Judgment of 27 February 2002 (Reparations and Costs), para. 53.

64 *Ibid.*, para. 122.

65 Additional indirect victims were the next of kin of José Carlos Trujillo Oroza.

66 IACtHR, *El Caracazo v. Venezuela*, Judgment of 29 August 2002 (Reparations and Costs).

67 *Ibid.*, para. 66.

68 *Ibid.*, para. 127.

the Court considered these collectives as a holder of a right to reparation. The language used by the Court is not supportive of a group right. Thus the Court did not speak of a ‘right of the respective communities’ but of an obligation of the responsible state to take reparative measures.

Truth commissions have likewise dealt with collective reparation and, as mentioned above, have repeatedly recommended it.⁶⁹ Despite the various commitments to protect communities, truth commissions did not specifically address their legal status either. In that regard, all that can be found in their recommendations are definitions of the term ‘victim’. Truth commissions have pointed out that victims include persons who are harmed ‘collectively’,⁷⁰ ‘together with one or more persons’⁷¹ or ‘as part of a collective’.⁷² These formulations closely resemble the definition used in the Basic Principles. They do little to elucidate whether and, if so, to what extent there is a right to collective reparation.

Considerations *de lege ferenda*

This rather opaque picture of the normative framework *de lege lata* leads to the question of whether collective reparation is conceivable as a right *de lege ferenda*. I shall not provide a definite answer to this question but confine my analysis to setting out four dilemmas that the acknowledgement of a right to collective reparation might entail.

Determining the holder of the right

The first dilemma concerns the difficulty of determining the holder of a right to collective reparation. Our society consists of a huge variety of sub-groups. In many cases these groups lack clear delimitations, so that it is difficult – if not impossible – to ascertain who is a member of the group and who is not. It would not make sense for a legal order to grant all these groups collective rights. This is so because, for a norm to be effective, there must be clarity as to who can claim a right. Conversely, it must be clear to whom a duty is owed.

This objection might be countered by arguing that the group of victims who may claim collective reparation consists of those persons who have suffered collective harm. But this does not solve the problem, because it is difficult to determine who has suffered collective harm. In the wake of armed conflicts, different groups might claim to have done so. At one end of the spectrum, there could conceivably be a situation where an armed attack is directed against an already

69 See the section ‘Benefits’ above.

70 *Final Report of the Truth and Reconciliation Commission of Sierra Leone*, Vol. 2, ch. 4, ‘Reparations’, para. 27, referring to the Basic Principles, above note 28.

71 See South Africa, Promotion of National Unity and Reconciliation Act, Act 34 of 26 July 1995, Art. 1(xix), available at: http://www.info.gov.za/view/DynamicAction?pageid=545&sdate=%201995&orderby=act_no%20desc (last visited 10 August 2010). This Act is referred to by the TRC, above note 8, Vol. 6, Section 2, ch. 2, para. 5.

72 CAVR, above note 7, para. 10.1.2.

existing group of people with legal personality, which enjoys protection under a primary collective right. In this case it might be quite easy to determine the group of victims who have suffered collective harm. At the other end of the spectrum, there is the situation where no group existed at the time the armed conflict took place. In that case it is only the jointly suffered harm that unites the 'group' of victims. It is questionable whether this is sufficient to constitute collective harm.⁷³

Determining the benefit

The second dilemma arises from the fact that there are a wide variety of benefits that might be awarded as a form of collective reparation; as stated above, the benefits that have been recommended as collective reparation range from the construction of a memorial through the renaming of streets to the construction of hospitals. There are two ways to deal with this problem. On the one hand, the benefit could be determined in consultation with the victims, as has been recommended by several truth commissions.⁷⁴ This procedure might be a very useful policy option. From a legal perspective, however, it seems rather problematic to let the beneficiaries determine their own benefits. On the other hand, one might conceive of an abstract right that obligates the responsible party to confer upon victims a benefit that is not defined in more detail. This solution, too, seems problematic because the benefit would be highly unspecific. The creation of an ineffective right might weaken the concept of rights as such.⁷⁵

Enforceability

The third dilemma concerns the implementation of a right to collective reparation. The large majority of collectives that have been affected by armed conflicts have no legal personality. They tend to consist of groups that share certain bonds such as common cultural or tribal roots. Even if it is possible to conceive of a right of a multiplicity of obligees who do not enjoy legal personality, the problem of how to enforce such a right would still remain. Groups that want to exercise their rights need to be internally organized.⁷⁶ There must, for example, be an agent who is entitled to represent their interests. Typically, the groups that suffer collective harm do not meet these requirements.

73 In particular, there are no further common bonds between the victims; no source of identity is destroyed.

74 CAVR, above note 7, para. 12.7; see also Report of the Commission for Historical Clarification, *Guatemala: Memory of Silence*, Conclusions and Recommendations, Recommendations III, para. 11, available at: <http://shr.aaas.org/guatemala/ceh/report/english/toc.html> (last visited 10 August 2010).

75 See also Philip Alston, 'Conjuring up new human rights: a proposal for quality control', in *American Journal of International Law*, Vol. 78, 1984, pp. 607ff.

76 Viola Wenzel, *Das Spannungsverhältnis zwischen Gruppenschutz und Individualschutz im Völkerrecht*, Springer, Berlin, 2008, pp. 27f.

Interplay with individual reparation

Finally, there is a general problem about granting rights to groups, namely the risk of thereby undermining individual rights. Group rights and individual rights may in fact conflict in various ways.⁷⁷ Moreover, the rights of the group may not only encroach upon rights of its members but may also come into conflict with rights of outsiders.

Nonetheless, in the context of collective reparation, the significance of this problem seems rather limited. Above all, it must be borne in mind that collective reparation addresses collective harm alone, and not individual harm. In most cases it will therefore only have a supplementary function. Individual harm will still have to be remedied by individual reparation. An exception might only occur if there is exclusive violation of a group right *strictu sensu*. In such a situation there would probably be no need for individual reparation, because of the absence of individual harm. This would hardly pose any problems, as the secondary right to reparation would only ‘follow’ the primary group right. In other words, in order to challenge collective reparation in this case, the primary group right would need to be challenged as well. Apart from this, it is highly questionable whether the possibility of conflicts between group rights and individual rights is a valid objection to group rights. Conflicting claims to autonomy can be found in every legal system.⁷⁸ From a legal perspective, it makes hardly any difference whether a collective or an individual entity voices such a claim to autonomy: in both cases the conflict between the two claims has to be resolved.⁷⁹ Striking a balance between them seems the most suitable means of meeting this challenge.⁸⁰

Conclusion

The acknowledgement of a right to collective reparation poses several problems. The present article has no intention of suggesting that these problems warrant the rejection of a right to collective reparation. As shown above, there are situations in which one can conceive of such a right. In others, however, this seems hardly possible. Future discussion on a right to collective reparation should therefore be kept under particularly careful observation.

77 *Ibid.*, pp. 185ff.; see also Allen Buchanan, ‘The role of collective rights in the theory of indigenous peoples’ rights’, in *Transnational Law and Contemporary Problems*, Vol. 3, 1993, pp. 107f.

78 Immanuel Kant, *Die Metaphysik der Sitten*, Suhrkamp Verlag, Frankfurt-am-Main, 2005, p. 337.

79 An-Naim Abdullahi, ‘Human rights and the challenge of relevance: the case of collective rights’, in Monique Castermans-Holleman, Fried van Hoof, and Jacqueline Smith (eds), *The Role of the Nation State in the 21st Century: Human Rights, International Organizations and Foreign Policy: Essays in Honour of Peter Baehr*, Kluwer Law International, The Hague, 1998, pp. 3 f.; J. A. Corlett, above note 23, p. 256; Lesley A. Jacobs, ‘Bridging the gap between individual and collective rights with the idea of integrity’, in *Canadian Journal of Law and Jurisprudence*, Vol. 4, 1991, pp. 385f.

80 V. Wenzel, above note 76, pp. 236ff.

The need for collective reparation

The existing uncertainties as to the legal status of collective remedies should not detract from their high reparative capacity. Above all, collective reparation has a remedial function.⁸¹ By awarding a benefit to the collective that has suffered harm, collective reparation constitutes a form of acknowledgement of that collective. This helps to undo the harm that has been caused. Unsurprisingly, there is empirical data indicating that victims of armed conflict sometimes demand collective remedies.⁸²

Collective reparation is not limited to undoing the immediate effects of the harm suffered. Rather, it also contributes to the long-term goal of building up peaceful post-conflict societies.⁸³ Efforts to promote reconciliation in war-torn societies ultimately aim to create conditions for the coexistence of victims and perpetrators. Collective reparation can play an important role in this process, as has repeatedly been emphasized by truth commissions. Thus the Truth Commission for Timor Leste stated: 'Helping individuals and communities who had suffered to recover, and restoring their sense of dignity, was inseparable from the task of repairing relationships damaged by conflict and of building lasting reconciliation'.⁸⁴

Progress towards the objective of forging a new society might be hampered by an entirely individualized claims process.⁸⁵ This is not meant to suggest that collective reparation should replace individual reparation. However, certain disruptive effects that may go along with individual reparation can be avoided by having recourse to collective reparation. A distinguishing characteristic of collective remedies is notably that they reach every victim who has suffered harm during an armed conflict.⁸⁶ This avoids the negative side-effect of individual reparation that single victims might not receive any reparation at all.⁸⁷ Such an exclusion of individual victims from an individualized claims process can have several

81 On the remedial function of reparation, see e.g. Ethiopia–Eritrea Claims Commission, above note 2, para. 26; the passage cited refers to individual reparation.

82 Victor Espinoza Cuevas, María Luisa Ortiz Rojas, and Paz Rojas Baeza, *Truth Commissions: An Uncertain Path?, Comparative study of truth commissions in Argentina, Chile, El Salvador, Guatemala and South Africa from the Perspective of Victims, Their Relatives, Human Rights Organisations and Experts*, Corporación de Promoción y Defensa de los Derechos del Pueblo (CODEPU-Chile)/Association for the Prevention of Torture (APT-Switzerland), pp. 31ff., available at: <http://www.isn.ethz.ch/isn/Digital-Library/Publications/Detail/?ots591=CAB359A3-9328-19CC-A1D2-8023E646B22C&lng=en&id=103018> (last visited 12 August 2010).

83 Linda M. Keller, 'Seeking justice at the International Criminal Court: victims' reparations', in *Thomas Jefferson Law Review*, Vol. 29, 2007, p. 212.

84 CAVR, above note 7, para. 10.1.4; see also Report of the Commission for Historical Clarification, above note 74, para. 10.

85 Lisa Magarell, *Reparations in Theory and in Practice*, International Center for Transnational Justice, October 2007, pp. 5f., available at: <http://www.ictj.org/static/Reparations/0710.Reparations.pdf> (last visited 10 August 2010).

86 Stef Vandeginste, 'Reparation', in David Bloomfield *et al.*, *Reconciliation after Violent Conflict: A Handbook*, IDEA Handbook Series, Stockholm, 2003, pp. 145ff.

87 *Ibid.*; see also L. M. Keller, above note 83, p. 213.

reasons: they may not have the necessary funds or information to lodge a claim;⁸⁸ they may be unable to invoke the jurisdiction of a certain court;⁸⁹ and the number of compensatory awards may be restricted due to limited resources.⁹⁰

Collective reparations are thus a necessary response to collective harm. Irrespective of whether one can conceive of a right to these remedies, responsible parties should make every effort to develop robust programmes of collective reparation. The choice of the appropriate remedy should be made in consultation with the victims.

88 Peruvian Truth and Reconciliation Commission, above note 6, para. 2.2.1.3.

89 *Ibid.*

90 On the limitations of individual reparations schemes see N. Roth-Arriaza, above note 16, p. 181.

REPORTS AND DOCUMENTS

Framework for environmental management in assistance programmes

International Committee of the Red Cross (ICRC),
Assistance Division, September 2009

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Section 1: Assistance programmes and environmental management

ICRC Assistance Programmes aim to preserve or restore acceptable living conditions for people affected by armed conflict and other situations of violence. These victims can be highly vulnerable and are in most contexts highly dependant on their local environment for their livelihoods, health and security. As such, human health, livelihood and survival are intertwined with environmental concerns. Environmental concerns are thus directly relevant to ICRC assistance activities and must be part of them.

As a leading humanitarian organisation, the ICRC has a key role to play in issuing a clear message that allows for consideration of environmental issues that affect the victims of armed conflict while ensuring that the victims themselves remain central to ICRC Assistance Programmes.

This document aims to define environmental issues in the context of ICRC's operations. It also aims to provide useful and practical guidance to Assistance delegates and national staff on two levels:

- how to understand the relationship between Assistance activities and the environment upon which victims of armed conflicts depend; how to consider the potential positive or negative impacts of Assistance activities, without in any way compromising the rapidity and effectiveness of ICRC action;

- how to continue to develop an environmentally alert mindset and to enable environmental issues to be systematically integrated into the balance of factors that need to be considered to produce an efficient, effective and rapid ICRC response.

This framework for environmental management in Assistance Programmes is a first step towards formalizing an ICRC approach to environmental issues related to the victims of armed conflict and other situations of violence. The framework fits into the broader environmental concern of the institution as a whole. It encourages field operations to systematically assess, identify and understand the potential environmental impacts and implications of their activities and to take reasonable and feasible initiatives to reduce these impacts and enhance the efficiency, appropriateness and quality of Assistance Programmes.

1.1 Understanding environmental issues

This section explores some key questions regarding environmental issues from its definition to its linkage with humanitarian work.

A. Definitions

There are many different definitions and interpretations of the environment and environment-related terms. It is important to define a few terms related to the environment considered within the context of armed conflict and other situations of violence.

Environment: The definition of the environment in the context of ICRC activities focuses on human beings and their relationships with all the elements, natural or man-made, that directly or indirectly affect their living conditions. These include physical elements such as air, water, soil, natural resources, flora, fauna, but also consider socio-economic factors, beliefs, practices, political positions, law and policies that affect the livelihood.

Environmental impact: The direct and indirect effects of a project or ICRC presence on human beings (including social impact), fauna and flora, soil, water, air, climate and the landscape, the interaction of these factors, and on material assets and the cultural heritage.¹

Environmental impact assessment: The identification, description and assessment of environmental impacts, together with project alternatives and mitigation measures.

Environmental mitigation measures: Environmental mitigation measures encompass all the measures undertaken to reduce the negative environmental

1 Adapted from European Union, Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (85/337/EEC), Article 3.

impacts of a project. These measures can include the modification or elimination of some activities, the choice of alternatives or the implementation of compensation measures.

Environmental management plan: Process made of specific activities, built into the project to ensure the identification and implementation of environmental mitigation (and enhancement) measures. It can contain baseline data, analysis of the impacts, residual impacts, monitoring and reporting processes.

These definitions place the human being at the centre of all interactions between biological, inanimate and human factors. It includes available and accessible resources and their mode of exploitation, available assets, and existing relationships with other persons and groups.

The term climate change is frequently mentioned in parallel to the term environment. It is widely mentioned as one of the factors that could contribute to future conflicts and exacerbate existing ones. It is however important to note that climate change is only one of several causes to the degradation of the environment. Bad governance, corruption or deficiency in private and public sources, population growth and density, and competition over resources are and will remain key contributing factors.

B. Classification of environmental issues

Four different types of environmental issues are frequently mentioned within the scope of humanitarian work:

1) Environmental issues that fuel tension

These issues refer to competition over resources such as natural resources (water, farming land, grazing land, forest, mines, wildlife) and other strategic assets (communication routes, cities, etc).

It is the responsibility of national and international policy-makers to lay the foundations of comprehensive environmental management. The scope of most of these issues goes beyond the ICRC mandate and expertise but a good comprehension of the environmental issues fuelling the conflict can enable ICRC to avoid exacerbating these dynamics.

2) Environmental issues created by conflicts

These can be **direct impacts** affecting populations, perpetrated by armed forces. They include amongst others:

- destruction of water supply and irrigation systems;
- destruction of shelter and other civil infrastructures;
- disruption of health services and health related problems including death;
- weapon and chemical contamination;
- surface water and aquifer contamination;
- impacts on fauna and flora.

These impacts are of interest to the ICRC as they directly relate to its mandate. They have to be assessed and understood in order to design appropriate assistance programmes to assist the populations affected by them.

- These can also be **indirect impacts perpetrated by the victims of armed conflict themselves**, related to their displacement or the constraints caused by adaptation to a situation of conflict such as high population densities. They may include:
 - deforestation (firewood collection, charcoal production),
 - spread of diseases,
 - surface and subsurface pollution,
 - over-exploitation of water,
 - over-fishing,
 - over-grazing,
 - desertification.

As above, these issues must be assessed and understood in order to design appropriate assistance programmes to assist the displaced and host populations.

This framework provides insight into direct and indirect environmental issues caused by conflicts and highlights the importance of including these concerns into the design of assistance programmes.

3) Environmental issues created by humanitarian presence

Humanitarian agencies themselves can contribute to the overall degradation of the local environment as a consequence of their presence and activities. This includes:

- water and soil contamination from the poor disposal of waste;
- air pollution (exhaust fumes);
- fluctuation of price and availability of local products and services (including lodging);
- exacerbation of indirect issues listed above in contexts where the presence of humanitarian organisations encourages an increase in population density.

These issues are important and sensitive considerations, but are not covered in this document.

4) Environmental issues related to assistance programmes

Assistance Programmes aim to address the needs of populations affected by conflicts. By their very definition, they both depend on and affect the environment of these populations. How they affect the environment will depend on a careful assessment of all aspects of the situation at the beginning of ICRC's intervention, and a balance between immediate needs and longer-term consideration of the impacts on the local populations. If, for various reasons, the environmental issues surrounding the activity are not properly assessed or managed, it can potentially have a detrimental impact on the local environment and the beneficiary populations that the activities are designed to assist.

These impacts and interactions are complex and can include:

- overuse of farming land (fertility loss, deforestation, soil erosion);
- overgrazing / overfishing;
- overuse or pollution of water resources;
- pollution due to waste disposal (for example medical waste);
- loss of biodiversity or introduction of invasive species;
- detrimental effects on social or economical mechanisms.

Examples of environmental issues to consider during the design of a project, potential positive and negative impacts, suggestions to mitigate them and key points to consider as part of an overall assessment to find the most appropriate solution form part of Section 2, 3 and 4.

1.2 Rationale for the integration of environmental considerations into assistance programmes

According to the Assistance Policy paper,² the following principles guide all Assistance activities. This section explores how these principles relate to environmental considerations.

A. Taking the affected group and its needs into account

“The ICRC seeks to work in close proximity to the affected group. The organization must take account of the local value systems and the group’s specific vulnerabilities and perception of its needs”.³

The affected population will be best aware of its interactions with the local environment and consequences of any negative impact upon it. In cases of population displacement for example, the host community must be consulted to identify their main concerns relating to existing environmental issues and potential future environmental issues related to the displaced population.

- **Consult with victims of armed conflict, either displaced or host populations**

B. Effective humanitarian assistance of high quality

“ICRC programmes must be planned, implemented and monitored in accordance with the highest professional standards. If the ICRC is to preserve its capacity to provide high quality and effective assistance, it must analyse and develop

2 ICRC, *ICRC Assistance Policy*, adopted by the Assembly of the International Committee of the Red Cross on 29 April 2004, Public Version, in *International Review of the Red Cross*, Vol. 86, No. 855, September 2004, pp. 677–693.

3 *Ibid.*, General Principle 3.1., p. 680.

professional standards in conjunction with academic institutions and other relevant bodies”.⁴

This includes being aware of current issues and legislation related to the environment, natural resources and land management in the countries where ICRC is present and consulting with the appropriate authorities.

→ **Know and understand existing legislation and consult with relevant authorities**

C. Ethical norms

“When providing assistance, the ICRC must respect certain ethical standards, namely the applicable principles of the Movement, the principle of do no harm, and the principles set out in the relevant codes of conduct. The best interests of those suffering the consequences of armed conflict and other violent situations must always guide the ICRC’s activities”.⁵

The Red Cross/Red Crescent Code of Conduct, Principle 8, clearly states that “[w]e will pay particular attention to environmental concerns in the design and management of relief programmes. We will also endeavour to minimise the negative impact of humanitarian assistance ...”.⁶ As members of the movement, ICRC has a moral responsibility to set an example and ensure that it does everything possible and feasible, within the limits of each situation, to integrate key environmental issues into its programmes and activities.

→ **Integrate environmental concerns in the design and implementation of Assistance Programmes**

D. Responsibilities within the Movement

“As a component of the Movement, the ICRC must discharge its responsibilities in compliance with the Seville Agreement and the Statutes of the Movement currently in force. During armed conflict or internal disturbances and in their direct aftermath, the ICRC has a dual responsibility: its responsibility as a humanitarian organization for carrying out the specific activities arising from its mandate and its responsibility for coordinating the international action taken by any components of the Movement involved in an operation or wishing to contribute to it. The ICRC must provide effective coordination and information in relation to both types of responsibility”.⁷

4 *Ibid.*, General Principle 3.2., p. 680.

5 *Ibid.*, General Principle 3.3., p. 681.

6 *Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief*, Principle 8, available at: http://www.ifrc.org/publicat/conduct/index.asp?navid=09_08 (last visited 30 September 2010).

7 *ICRC Assistance Policy*, above note 2, General Principle 3.4., p. 681.

Communication and collaboration with National Red Cross societies is an opportunity to advocate for more respect for the local environment where needed and to build capacity in this field, where and when appropriate. National societies can also provide valuable information on local environmental issues and national legislation. It is also an opportunity for the ICRC to ensure that the impact of joint activities on the local environment is managed by all members of the Movement.

→ **Promote environmental advocacy and capacity building with National Societies**

E. Partnerships with other humanitarian actors

“The ICRC must take particular care to associate with humanitarian actors whose working methods and policies are compatible with its own principles and work”.⁸

Other humanitarian partners may share similar environmental concerns and be able to exchange useful additional information and advice.

→ **Exchange environmental information with other actors and share our environmental concerns**

1.3 Assistance strategies: Overall analysis of the situation and needs

“The ICRC conducts an overall analysis of each situation in which it is involved (security and economic, political, social, environmental and cultural aspects) in order to identify the problems and needs of the affected groups in terms of resources and services and their relationship with the various actors involved. ... This analysis, regularly updated at the local, regional and international levels, enables the ICRC to draw up, adapt or alter its operational strategies. Finally, the ICRC analyses each situation and assesses risks in relation to expected impact. This is the basis on which the organization determines its own course ...”.⁹

The ICRC adapts its response to the situation and consideration of environmental issues should be no exception to this rule:

Acute Crisis:

- In acute emergencies, the first priority is to address the immediate needs of the victims of armed conflict and ICRC seeks to maintain a rapid response operational capacity. Some environmental damage may be unavoidable due to time constraints and urgency of the situation. However, the implementation of mitigation measures should be considered as soon as feasible. Assistance delegates should be able to clearly justify their decisions and demonstrate the reasons behind them in an assessment report.

8 *Ibid.*, General Principle 3.5., p. 681.

9 *Ibid.*, Strategy 4.1., p. 681.

Pre-Crisis:

- ICRC supports existing systems or mobilises other entities to do so to prevent a disaster in humanitarian terms. Delegates should ensure that the delegation is aware of existing environmental issues at a local and national level, existing legislation and the relationships between populations and the environment.

Chronic Crisis:

- ICRC focuses on finding sustainable solutions to the problems it encounters, by handing over, and building capacities of authorities. Environmental issues and environmental management are key to finding sustainable solutions. Where national legislation does not exist or is not implemented, ICRC can use its experience to highlight the environmental issues that it encounters and build capacity where appropriate.

Post-Crisis:

- In contexts where it has a residual responsibility, the ICRC continues its activities and shoulders its responsibilities.

Consideration of environmental factors should not affect the above response patterns but should become a systematic, documented, and integral part of them.

1.4 Role of assistance programmes in addressing environmental issues

Humanitarian organisations as a whole cannot address environmental issues in a country without appropriate national environmental and natural resource management legislation and policies. However, there are measures that can be taken to enhance ICRC assistance response, to adhere to the “do no harm” principle and to reduce potential additional negative impacts on already vulnerable populations. A sound coordination done in consultation with local and national authorities, the affected populations as well as other national and international humanitarian agencies is essential.

Knowledge of the local environment, national environmental legislation and collaboration with local communities are essential. In many cases, national environmental legislation may exist and must be respected even if they are not respected locally by the local population.

Environmentally sound solutions are often logical, practical and feasible. It is not always necessary to be an environmental expert to find solutions that have the added benefit of being environmentally sustainable. It requires design and implementation of activities with an understanding of their environmental impact and active efforts to minimise these impacts wherever practical and feasible. A wide variety of activities can be developed expressly to contribute to improve the local environment while enhancing the situation of the local population. There is no sustainability of projects without a sustainable environment.

As a leading humanitarian organisation, the ICRC has a key role to play in issuing a clear message that allows for consideration of environmental issues that

affect the victims of armed conflict while ensuring that the victims themselves remain central to ICRC Assistance Programmes.

Section 2: Water and habitat and environmental management¹⁰

Water and Habitat programmes are designed to ensure access to safe water and to a healthy living environment. The ultimate aim is to help reduce the rates of mortality and morbidity and the suffering caused by the disruption of the water supply system, the lack of sanitation or damage to the habitat.

In a situation of acute crisis:

- ICRC ensures access to water and safe environmental sanitation conditions and helps basic health care facilities by means of emergency action and support for existing facilities.

In situations of emerging, chronic and post-crisis:

- ICRC's priority is to support and strengthen existing structures through specific programmes that meet the needs of the population in a viable, sustainable manner.

Water and Habitat field of activities are:

- supply, storage and distribution of drinking water;
- environmental sanitation and waste management;
- energy supply for key installations such as hospitals, water treatment plants and water distribution networks and appropriate technologies for cooking and heating;
- construction and reconstruction, including health structures and temporary shelter; rehabilitation of existing structures when destroyed;
- technical advice to administration department on ICRC premises interventions.

10 For key references from other agencies for environmental considerations in Water and Habitat activities see, T.H. Thomas and D.B. Martinson, *Roofwater Harvesting: A Handbook for Practitioners*, IRC International Water and Sanitation Centre, Technical Paper Series, No. 49, Delft, The Netherlands, 2007; Norwegian Refugee Council (NRC)/The Camp Management Project (CMP), *The Camp Management Toolkit*, 2008, Chapter 6: Environment; Office for the Coordination of Humanitarian Affairs (OCHA) / United Nations Environment Programme (UNEP), *Humanitarian Action and the Environment*, Leaflet; UNEP / Swiss Resource Centre and Consultancies for Development (SKAT), *After the Tsunami: Sustainable building guidelines for South-East Asia*, 2007; United Nations High Commissioner for Refugees (UNHCR), *Environmental Guidelines*, Geneva, 2005; UNHCR, *Refugee Operations and Environmental Management: Selected Lessons Learnt*, Geneva, 2001; UNHCR, *Refugee Operations and Environmental Management: Key Principles for Decision Making*, Geneva, 1998; UNHCR, *Cooking Options in Refugee Situations: A Handbook of Experiences in Energy Conservation and Alternative Fuels*, Geneva, 2002; U.S. Agency for International Development (USAID), *Environmental Guidelines for Small Scale Activities in Africa*, March 2009, Part II, Chapter 3: Construction; Chapter 5: Energy Sources for Development, Chapter 15: Solid Waste and Chapter 16: Water Supply and Sanitation, all chapters available at: <http://www.encapafira.org/egssaa.htm> (last visited 20 July 2010).

The above activities can take place in both urban and rural settings and in detention places.

2.1 Environmental challenges of water and habitat activities

Current Water and Habitat assistance activities do not only take the environment into account, but in many cases propose solutions that respect or enhance it in order to achieve their purpose of reducing the rates of mortality and morbidity of victims of armed conflict. In many instances, these activities are inherently environmentally friendly.

When supporting an urban water treatment and distribution authority, for example, the project will include rationalisation of the use of existing resources taking into account their yearly fluctuations in order to ensure an adequate and continuous supply to affected populations.

Participatory approaches in hygiene promotion and sanitation activities enhance local awareness and understanding of the interactions between the local environment and the health of the affected population; and encourage communities themselves to manage their local environment in a way that is beneficial to them.

However, Water and Habitat programmes can also on occasion have a negative impact on the environment. Provision of additional equipment to a community or a water distribution body can change water consumption habits that were well-adapted to local conditions. Extensive construction programmes can contribute to localised depletion of resources, such as excessive wood consumption for brick-making, and the disposal of waste generated from construction programmes can be hazardous to local communities. Spring catchments, if not properly assessed can dry up streams and have a detrimental impact on crops and fisheries.

The Water and Habitat delegate must take these positive and negative factors into account when designing and evaluating programmes; combine them with the local context and come up with a solution that meets the needs of the affected population.

Some environmental challenges and considerations faced by Water and Habitat delegates when designing and implementing Water and Habitat activities are detailed in Section 2.3. It is not an exhaustive list of potential impacts and mitigation measures for all Water and Habitat activities, but can be useful to address key issues.

2.2 Case studies

The following two Water and Habitat case studies highlight the variety of environmental considerations that might arise during projects.

A. Biogas in prisons, Nepal

During the armed conflict between Maoist rebels and government forces, many people were detained in relation to the conflict.

Since 2004, the ICRC Nepali delegation supported detention authorities to ensure that detainees held in civilian jails had access to improved infrastructure by providing technical expertise and assistance. To date, the WatHab department has carried out rehabilitation and improvement works in 21 jails in Nepal.

Nepali jails generate several different types of waste with poor waste treatment systems available. This has the potential to create health problems both inside the prison and for the surrounding population.

The consumption of traditional fuels such as wood and kerosene as energy sources are also problematic. The excessive use of wood contributes to local deforestation and environmental degradation. Wood used in inappropriate stoves and in the kitchen causes significant indoor air pollution, raising health risks such as acute respiratory infections and conjunctivitis. These diseases are among the top ten for medical consultation. Kerosene is subject to the increase of fuel prices and puts additional pressure on the daily allowance of the detainees.

Biogas systems are already well known in Nepal with over 1 million people served by biogas. Local knowledge and experts are available.

ICRC decided to install biogas systems in three district jails. These systems were completed in May 2008. Three additional biogas systems are planned.

A combination of factors led to the Wathab department choosing biogas systems as a solution:

- available local knowledge;
- reduce health risks by reducing use of wood in kitchens;
- reduce pressure on detainee daily allowance by reducing need to purchase traditional fuels;
- reduce environmental impact on surrounding areas and local livelihoods by reducing need to purchase wood.

The objective of the installation of the biogas plants were to:

- improve the waste water treatment and consequently reduce health risks for detainees and surrounding population;
- provide renewable energy sources to reduce dependency on traditional fuels such as wood, kerosene and reduce health risks by improving prison kitchen environments;
- use biogas slurry as fertiliser;
- promote construction of biogas plants at an institutional level.

ICRC used a local expert partner to install the three biogas systems in the three jails of a total population of approximately 484 detainees.

After installation of the biogas systems, ICRC contracted an international expert to evaluate their performance, cost-effectiveness and user acceptance of these systems. The study aimed to draw lessons learnt and recommendations. The methodology included site visits, sampling and interviews.

The conclusions of the study highlight that, where and when appropriate, environmentally friendly technologies can be effective and contribute to an

improved response from ICRC. Documented monitoring, evaluation and implementation of any ensuing recommendations will help ICRC to provide feedback and lessons learned from such projects.

B. Wells in Mali

ICRC has been working in Mali since 1991. A WatHab programme with the Belgian Red Cross began in 1996. The objective of the programme was to provide access to clean water to Health Centre users in Bougrem. The objectives were then widened to include provision of clean water to returnees following the end of the rebellion as well as to nomads who has to adapt their lifestyles and remain sedentary for part of the year.

A mission took place in 1997 to evaluate the WatHab programme objective and technical choices; to prioritise next steps; to support field programmes and to harmonise actions between the Belgian Red Cross, ICRC field delegation and ICRC head office in Geneva.

Providing water to semi-nomadic populations particularly in grazing areas, where water is essential to survival of populations and their livestock presents several logistical constraints, particularly difficulties finding workers to dig the wells due to:

- low population numbers;
- communities unused to participating in such manual work;
- populations are frequently on the move, following grazing land exploitation patterns so not necessarily present at all times.

In fact, consultation with nomadic populations revealed that grazing land and surrounding areas often do not have wells. This is out of choice to avoid overgrazing. They only move to these particular lands during the rainy season. The lack of water means that no one is able to stay year-round. Construction of water points and increasing access to water in these areas may in fact create additional tension between communities.

This example highlights the fact that populations adapt to their surrounding environment and that an effective ICRC response must consult with communities to accustom itself with local habits and consider this in the design of an appropriate solution.

2.3 Examples of potential impacts and mitigation measures for Water and Habitat activities

Note: It is the responsibility of the projects designers and implementers to strive to reduce the environmental impact of their activities. These activities, impacts and measures cannot be expected to cover each and every possible situation. Their users are expected use their common sense, environmental awareness, technical knowledge and creativity.

*Water and sanitation*¹¹

Activity/Technology	Potential impact	Mitigation measures P&D: Planning and design, C: Construction, O&M: Operation and maintenance.
General		
Site selection (D&P)	Damage sensitive ecosystems or endangered species (P&D)	Survey for, and avoid, wetlands, estuaries or other ecologically sensitive sites in the project area. Identify nearby areas that contain endangered species and get professional assessment of species' sensitivity to construction at site (P&D).
Construction of buildings and structures (C)	Damage sensitive ecosystems or endangered species (C). Cause erosion (C) and sedimentation	Follow guideline on Construction in this manual (P&D) (C). Train and monitor workers on best practices in construction of buildings and structures (P&D) (C). Gather data on soil type, slope and topography to determine the potential for significant erosion (P&D). Use silt screens, straw bales or similar erosion control measures (C). Avoid damaging vegetation (C). Revegetate areas damaged during construction. Do not remove erosion control measures until revegetation is complete (C). Use proper bedding materials for pipes (P&D) (C).
Soakways and drains	Cause erosion (O&M). Alter the natural flow of rainwater runoff (O&M). Create pools of stagnant water (O&M).	Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of (D&P) drainage structures (C). Monitor and keep drains and soakways clear (O&M).

11 USAID, above note 10, Chapter 16, Table 3: Impacts and mitigation measures for specific water and sanitation activities and technologies, pp. 15–19.

Activity/Technology	Potential impact	Mitigation measures P&D: Planning and design, C: Construction, O&M: Operation and maintenance.
Water Supply Improvements		
Hand-dug wells, seasonal ponds, improved springs, ground-level catchment and similar structures	Contaminate water with human pathogens (O&M). Contaminate water with animal manure (O&M). Create pools of stagnant water (O&M). Exhaust water supply (not applicable to improved springs or hand-dug wells) (O&M).	<p>Include focus on proper use and maintenance of the improvement as part of behaviour change and education program (P&D).</p> <p>Construct spigot or similar system that prevents people from touching impounded water with their hands or mouths (P&D) (C).</p> <p>Use fencing or equivalent that will keep live stock from grazing uphill or up gradient of the water supply improvement (P&D) (C).</p> <p>Do not allow animals to drink directly from the water source (O&M).</p> <p>Monitor drains and soakways and keep them clear of debris (see entry on soakways and drains above for more detail) (O&M).</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures (O&M).</p> <p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D).</p> <p>Give the community training in operating the improvement (P&D) (O&M).</p> <p>Monitor water levels in wells or impoundment structures to detect overdrawing (M&O).</p>
Wells	Provide water contaminated with nutrients and bacteria from animal waste (O&M). Create pools of stagnant water (O&M). Change groundwater flow (O&M). Create saltwater intrusions (O&M). Deplete	<p>Don't let animals graze or be watered up-gradient from wellhead (P&D) (O&M).</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures (O&M).</p> <p>On islands and coastal areas, keep withdrawals within safe yield limits to avoid overdrawing, possible salt water intrusion and contamination of the well (P&D).</p>

Activity/Technology	Potential impact	Mitigation measures
Standpipes	<p>aquifer (groundwater) (O&M). Cause land subsidence (impact from many wells) (O&M).</p> <p>Create pools of stagnant water (O&M). (This problem can be more severe when water table is high, clay soils are present, or population/tap density is high).</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D). Include a focus on proper use and maintenance of the improvement as part of the behaviour change and education program (O&M). Monitor water levels (O&M).</p> <p>Ensure that spilled water and rainwater drain to a soakway or equivalent structure and do not accumulate and create stagnant standing water (C). Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures.</p>
Treatment systems		
Pit latrine	<p>Increase transmission of vector-borne diseases (O). Contaminate groundwater supply with pathogens (O). Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing (O). Cause injury to people or animals.</p>	<p>Devote adequate attention to identifying and addressing social barriers to using latrine (P&D). Use the ventilated improved pit latrine design that traps insect vectors (P&D). Evaluate depth to water table, including seasonal fluctuations and groundwater hydrology. The size and composition of the unsaturated zone determine the residence time of effluent from the latrine, which is the key factor in removal and elimination of pathogens. Pit latrines should not be installed where the water table is shallow or where the composition of the overlying deposits make groundwater or an aquifer vulnerable to contamination (P&D).</p>

Activity/Technology	Potential impact	Mitigation measures
Composting toilets	<p>Increase transmission of vector-borne diseases (O). Contaminate groundwater supply with pathogens (O). Cause disease transmission to field workers and consumers of agricultural products (O).</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Ensure that a reliable system for safely emptying latrines and transporting the collected material off-site for treatment is used. This should include use of a small pit-emptying machine such as the vacutug that relies on an engine-driven vacuum pump. The vacutug was tested for UNCHS in low-income areas of Nairobi, Kenya, and was found to give workers much greater protection from disease than conventional methods. See Wegelin-Schuringa, <i>Small Pit-Emptying Machine: An Appropriate Solution in Nairobi Slum</i>, for more details) (O&M).</p> <p>Ensure that collected material is adequately treated and not directly applied to fields or otherwise disposed of improperly (O&M).</p> <p>Properly decommission pit latrines. Do not leave pits open. Fill in unused capacity with rocks or soil.</p> <p>Maintain humidity of composting material above 60% and supplement excreta with generous quantities of carboniferous material (dry leaves, straw, etc.). The pile should then remain aerobic, odour-free and insect-free (O&M).</p> <p>Construct sealed vaults to hold composting material if using fixed-batch systems. If using movable-batch systems check removable containers for leaks before installing (O&M).</p> <p>Test samples from active chamber and mature chamber after fallow period for <i>Ascaris</i> eggs and faecal coliforms (O&M).</p> <p>Allow sufficient residence time in mature chamber. This may vary from 6 months in warm climates to 18 months in cooler climates (O&M).</p>

Activity/Technology	Potential impact	Mitigation measures
Dry toilets	Increase transmission of vector-borne diseases (O). Cause disease transmission to field workers and consumers of agricultural products (O).	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Ensure that the systems will be properly operated and maintained so that the soil amendment taken out after the treatment period is truly sanitized (O&M).</p> <p>Maintain humidity of composting material below 20% and supplement excreta with alkaline material (ashes or lime). The pile should then remain both odour free and insect free (O&M). Generous applications of ashes will help ensure that pathogens are destroyed. pH is the most important factor for sterilization (O&M).</p> <p>Construct sealed vaults to hold dehydrating and curing material (C).</p> <p>Ensure that the systems will be properly operated and maintained so that the soil amendment taken out after the treatment period is truly sanitized (O&M).</p> <p>Test samples from active chamber and mature chamber after fallow period for <i>Ascaris</i> eggs and faecal coliforms to assess level of sterilization (O&M).</p> <p>Allow sufficient residence time in mature chamber. This may vary from 6 months in warm climates to 18 months in cooler climates (O&M).</p>
Septic tanks	Contaminate groundwater supply with pathogens (O&M). Contaminate surface water supplies with nutrients, biological oxygen demand	<p>Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line the tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C).</p> <p>Avoid direct discharge of effluent to waterways if possible.</p>

Activity/Technology	Potential impact	Mitigation measures
Upflow anaerobic Filters	<p>(BOD), suspended solids (SS) and pathogens. (Septic tank effluent generally contains relatively high concentrations of pathogens, BOD, and SS) (O&M). Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing (O&M).</p> <p>Damage ecosystems and degrade surface water quality. Sludge has high concentrations of nutrients, BOD, and solids (O&M). Cause disease transmission to field workers and consumers of agricultural products (Sludge may still contain pathogens) (O&M)</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Direct discharge to waterways with sufficient volume and flow to assimilate the waste may be acceptable. It is better to add a secondary treatment, such as passing effluent through an anaerobic filter, followed by discharge to an absorption field, or better yet, a constructed wetland (P&D).</p> <p>Ensure that a reliable system for safely removing sludge and transporting the collected material off-site for treatment is available. This should include use of a mechanized (probably vacuum-based) removal system (P&D) (O&M).</p> <p>Ensure that collected sludge is adequately treated and not directly applied to fields or otherwise improperly disposed of (See Sludge management below) (M&O).</p> <p>Treat sludge before secondary use (see Sludge management below). Do not allow disposal in or near water bodies (O&M). Provide workers servicing, transporting, and otherwise exposed to sludge with appropriate protective clothing including, at a minimum, rubber gloves. Train workers to wash hands and faces frequently with soap and warm water and make both available. (See Wastewater and sludge use in agriculture and aquaculture below) (O&M).</p>
Settled and simplified sewers	<p>Damage ecosystems and degrade surface water quality (O&M). Transmit diseases to field workers and consumers of agricultural products (O&M)</p>	<p>Ensure that collected sewage will be treated, e.g., in a wastewater stabilization pond, and not simply discharged to a river or stream or used directly in agriculture or aquaculture. This is especially important for simplified sewerage, since there is no interceptor tank (P&D) (O&M).</p>

Activity/Technology	Potential impact	Mitigation measures
Biogas reactors	Damage ecosystems and degrade surface water quality (O&M). Transmit diseases to field workers and consumers of agricultural products (O&M).	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Do not allow disposal of digested slurry in or near water bodies (O&M). Follow WHO or other national or international guidelines for use of sludge in wastewater in agriculture and aquaculture (see Sludge and wastewater reuse below (M&O) (D&P).</p>
Stabilization ponds (anaerobic, facultative, aerobic)	Damage ecosystems and degrade surface water quality (O&M). Transmit diseases to field workers and consumers of agricultural products (O&M).	<p>Avoid discharging single (facultative) pond systems directly into receiving waters. If this is unavoidable, construct hydrography-controlled release lagoons that discharge effluent only when stream conditions are adequate. Install secondary treatment such as a constructed wetland, if possible (P&D) (C) (O&M). Use two-, three- or five-pond systems if possible (anaerobic, facultative,maturation)) (P&D). Allow only restricted uses for agriculture and aquaculture of effluent from all but five-pond systems (O&M).</p>
Reed bed filter	Contaminate groundwater or surface water (O&M).	<p>Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C).</p>
Free water surface wetland. Floating aquatic macrophytes	<p>Provide breeding ground for disease vectors (O&M). Introduce invasive non-native species (O&M).</p>	<p>Use plant and animal species that are native to the region. Avoid introducing water hyacinth, water milfoil, or salvinia, which have proven extremely invasive outside of their natural range (P&D). If using water hyacinth, maintain dissolved oxygen at 1.0 mg/L, frequently harvest and thin plants and/or add mosquitofish (<i>Gambusia affinis</i>) to the wetland or use other plant species such</p>

Activity/Technology	Potential impact	Mitigation measures
Rapid infiltration	Contaminate groundwater or surface water (O&M).	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>as duckweed, water lettuce (<i>Pistia stratiotes</i>), water milfoil, or salvinia (<i>Salvinia spp.</i>) (M&O).</p> <p>Use only where soil textures are sandy to loam (P&D). Use only where groundwater is > 3 ft. below surface (P&D).</p>
Sludge management	Damage ecosystems and degrade surface water quality (O&M). Cause disease in handlers and processors (O&M).	<p>If possible, choose treatment technologies that do not generate sludge, such as wastewater stabilization ponds (P&D). Compost sludge, then use as soil amendment for agriculture (O&M).</p> <p>Provide workers with appropriate protective clothing, including rubber gloves, boots, long-sleeved shirts and pants. Train workers to wash hands and faces frequently with soap and warm water and make both available (O&M).</p>
Wastewater use in agriculture and aquaculture	Cause disease in field workers and consumers of agricultural products (O&M).	<p>WHO guidelines recommend (1) treat to reduce pathogen concentrations, (2) restrict use to crops that will be cooked, (3) use application methods that reduce contact with edible crops, and (4) minimize the exposure of workers, crop handlers, field workers and consumers to waste (P&D) (O&M).</p> <p>Wastewater used in aquaculture should have < 103 faecal coliforms per 100 ml to minimize risk to public health. (<i>See Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture: Measures for Public Health Protection</i>, 1989, WHO, Geneva (P&D) (O&M)</p> <p>http://www.who.int/environmental_information/Information_resources/documenpdf.wastreus/ts</p>

Irrigation¹²

Type of problem	Potential impact	Mitigation measures
Soil problems	Waterlogged soil	<p>Mitigation measures P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Use good irrigation management, matching water demand and supply by location. Provide drainage and line canals in highly permeable areas to prevent leaks. Redesign irrigation infrastructure to reduce waste; use sprinkler or drip irrigation systems instead of gravity-flow systems. Encourage farmers to value water resources by establishing a system of water user fees tied to consumption.</p>
	Salt buildup on irrigated land	<p>Design system to allowing leaching with excess water. Alternate irrigation methods and schedules. Install and maintain subsurface drainage system. Adjust crop patterns (fallow times, crop selections, etc.) to prevent further salt buildup. Incorporate soil additives. Add gypsum to either the irrigation water or the soil before irrigating. Plant salt-tolerant catch crops such as <i>Sesbania</i>.</p>
	Crops wilting or dying	<p>Monitor soil chemistry. Identify indicator plant species. Consult soil scientists. Apply soil nutrients, conditioners and chemicals where feasible.</p>

12 Adapted from USAID, above note 10, Chapter 1, Table 4: Mitigation and Monitoring Table for Irrigation Impacts, pp. 33–35.

Type of problem	Potential impact	Mitigation measures
Water problems	<p>Crops not growing over entire irrigated field</p> <p>Dry wells for drinking water and irrigation</p> <p>Salt water in wells for drinking water and irrigation</p> <p>Water quality problems for downstream users</p> <p>Reduced water quantity for downstream users, waterways and wetlands; intermittent streams run dry.</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>Maintain irrigation canals. Clear weeds. Line canals against leaks. Encourage farmers to value water resources by establishing a system of water user fees tied to consumption.</p> <p>Reduce off-take or pumping to allow natural aquifer recharge. Encourage farmers to value water resources by establishing a system of water user fees tied to consumption.</p> <p>Reduce groundwater pumping to allow natural freshwater to recharge the aquifer, in order to lower salt concentration in the aquifer.</p> <p>Treat irrigation drainage water before release.</p> <p>Reassess water available for irrigation; may need to irrigate a smaller area. Use pipes instead of open canals to prevent water loss from evaporation. Promote local and regional watershed management. If available, consider using treated wastewater for irrigation, leaving freshwater resources for other users.</p>
Health problems	<p>Increased incidence of water-related diseases</p>	<p>Periodically flush slow or stagnant waterways with water from dams to remove snails (which cause schistosomiasis). Note that this is effective only for a few hundred meters from where the water is released. Clear clogged irrigation canals. Control mosquitoes, snails and blackfly along reservoirs by periodically</p>

Type of problem	Potential impact	Mitigation measures
Social problems	Increased inequity	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance.</p> <p>fluctuating water levels, making shorelines steeper, and removing weeds. Periodically drain waterlogged fields to prevent mosquitoes.</p> <p>Train women in health issues.</p>
Water transport and storage problems	<p>Hinterland effect</p> <p>Weeds growing in reservoirs, irrigation canals, and drains</p> <p>Poor water quality downstream from a dam</p>	<p>Design and manage system to improve access by ‘tail-enders’ (users whose fields are farthest from the water source).</p> <p>Establish and enforce a volume-based water fee.</p> <p>Improve system management, including maintenance of main canals.</p>
Ecosystem problems	Damage to downstream ecosystems from reduced water quantity and quality	Ensure adequate social and other infrastructure to meet needs of immigrants.

Construction related activities¹³

Activity/Technology	Potential impact	Mitigation measures SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance
Site Selection (SS)		
Site occupied or used by local residents.	Displace untenured residents or reduce farmers' or pastoralists' lands.	Find alternative location (SS). If that is not possible: Provide equivalent land and/or accommodations or fair monetary compensation, provided these are accepted voluntarily and without coercion (SS).
Dwellings located close by.	Facility and/or construction disturbs neighbors, creating noise and dust.	Build as far as practical from neighbors (SS). Concentrate noisiest types of work into as short a period as possible, and during least disruptive times of the day. Take measures to keep dust to a minimum (P&D)(C). Screen facility with trees or fencing to control noise (P&D). Wet ground if water is abundant and/or leave natural cover intact as long as possible (C).
Site has historic, cultural, or social importance. Site would require road improvement or new road construction (Also consult "Rural Roads" section of the ENCAP Africa Guidelines).	Offend local population; damage local social fabric. Cause one or more of a set of adverse environmental impacts typical of roads, including erosion, changing water tables, or providing access for illegal land clearing, logging or poaching.	Find alternative site (SS). Find alternative site. Evaluate "minimum tool" alternatives (e.g. consider whether a foot or bicycle path might suffice (SS) (O&M). Follow guidance on design, construction, and operation and maintenance described in "Rural Roads" and resources listed there.

13 Adapted from USAID, above note 10, Chapter 3, Table 1: Environmental Mitigation and Monitoring Issues for Construction-Related Aspects of Development Projects, pp. 8–17.

Activity/Technology	Potential impact	Mitigation measures
Site contains habitat for important ecosystems, animals or plants.	Destroy or harm plants or animals of ecological, cultural, and/or economic importance.	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Find alternative location (SS). If that is not possible:</p> <ul style="list-style-type: none"> • limit access to the site, • design any infrastructure (if unavoidable) to create least impact (P&D), • minimize disturbance of native flora during construction (P&D) (C), • remove, without destroying, large plants and ground cover where possible (C), • replant recovered plants and other flora from local ecosystem after construction (C).
Site has important scenic, archeological or cultural/historical features.	Destroy or harm these sites.	<p>Find alternative location (SS). If that is not possible:</p> <ul style="list-style-type: none"> • limit access to site, • design any infrastructure (if unavoidable) to create least impact (P&D), • minimize disturbance of site during construction (P&D) (C), • remove important artifacts where possible (C), • provide worker incentives for discovery and safe removal of archeological or paleontological material. (SS) (C).
Site is wetland or abuts body of water	Destroy or harm valuable and sensitive ecosystems and organisms.	Find alternative site. Wetlands and <i>riparian</i> ecosystems (those sited next to a body of water) are extremely sensitive. Wetlands provide important environmental services such as water storage, bird and animal habitat,

Activity/Technology	Potential impact	Mitigation measures
Site is steeply sloped	Cause erosion and damage to terrestrial and aquatic ecosystems during construction or use.	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>flood control, and filtering toxins and nutrients from runoff (SS). If no alternative is available:</p> <ul style="list-style-type: none"> ● set back any infrastructure as far as possible from the water body/wetland and minimize the amount of wetland destroyed by infrastructure footprint or construction (SS) (P&D), ● revegetate as soon as possible (C), ● <i>if facility will include sanitation facility, find alternative site</i> (SS). <p>Find alternative site (SS). If that is not possible:</p> <ul style="list-style-type: none"> ● design facility and apply construction practices that minimize risk, e.g., use hay bales to control erosion during construction. Pay particular attention to potential erosion and redirection of water flows during design and construction (SS) (P&D) (C), ● revegetate as soon as possible (C), ● maintain design features (O&M).
Area is heavily wooded	Degrade forest, contributing to flooding potential.	<p>Find alternative location if area is old growth or relatively undergraded forest (SS). If that is not possible:</p> <ul style="list-style-type: none"> ● design so as to minimize clearing or disturbance (P&D),

Activity/Technology	Potential impact	Mitigation measures
Site prone to flooding	Be destroyed and/or subject workers or inhabitants to risk of injury or death. Cause environmental damage from accidental release of toxic, infectious or otherwise harmful material during flooding. Contaminate drinking water.	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <ul style="list-style-type: none"> • avoid destroying rare or unique species. Consult with local populations about current use of forest and preferences for preservation (SS) (P&D) (C). <p>Find alternative site or design infrastructure so it is raised above flood plain, if possible (SS):</p> <ul style="list-style-type: none"> • design infrastructure to minimize risk, e.g., design with proper grading and drainage (P&D) • maintain design features such as drainage structures (O&M), • avoid constructing sanitation or other facilities that will use and store harmful materials at flood-prone sites (SS). If that is not possible: • design storage area so that hazardous materials are above ground and/or in waterproof containers with locking lids that are kept closed. Ensure that facility operators follow these practices (P&D)(O&M), • chose dry sanitation options or closed disposal systems, instead of wet ones such as septic tanks or detention ponds (P&D).
Area and/site prone to landslides	Be destroyed and/or expose workers or inhabitants to risk of injury or death. Cause environmental damage from accidental release of toxic,	<p>Find alternative site on stable ground (SS). If that is not possible:</p> <ul style="list-style-type: none"> • design infrastructure to minimize risk, e.g., plant trees all around facility ((P&D),

Activity/Technology	Potential impact	Mitigation measures
<p>Planning and design</p> <p>Area experiences heavy rainfall, earthquakes</p>	<p>infectious or otherwise harmful material. Contaminate water supplies.</p> <p>Be destroyed and/or expose workers or inhabitants to risk of injury or death. Cause environmental damage and/or contaminate water supplies via accidental release of toxic, infectious or otherwise harmful material.</p>	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <ul style="list-style-type: none"> • maintain protective design features (O&M), • avoid constructing sanitation or other facilities that will use and store hazardous or biohazardous materials at landslide-prone sites (SS). If that is not possible: • design storage area so that hazardous materials are stored in durable leak- proof containers with locking lids, and that these are kept closed (P&D)(O&M), • chose dry sanitation options or closed disposal systems, instead of wet ones such as septic tanks or detention ponds (P&D). <p>Design infrastructure to minimize risk, e.g., in earthquake-prone areas, build structures with wood frames instead of concrete or brick (P&D). Maintain protective design features (e.g., drainage structures and vegetation on slopes). (O&M) Use material appropriate to the climate (e. g., stucco instead of adobe in areas with heavy rainfall) (P&D) (C). Design storage area so that hazardous materials are above the ground and/or in waterproof containers. Ensure that facility operators follow these practices (P&D)(O&M). Chose dry sanitation options or closed disposal systems, instead of wet ones such as septic tanks or detention ponds (P&D).</p>

Activity/Technology

Facility will generate solid waste (Also consult the “Management of Solid Waste from Residential, Commercial and Industrial Facilities” section of the ENCAP Africa *Guidelines*).

Facility will generate cooling waters, soaking waters, or water containing suspended organic mater, mercury, lead, soaps, etc. (Also consult the “Activities with Micro and Small Enterprises (MSEs)” section of the ENCAP Africa *Guidelines*).

Indirect effects on local populations.

Potential impact

Spread disease. Contaminate drinking water (ground and surface). Degrade aquatic ecosystems. Generate greenhouse gases.

Expose workers or local population to toxic, carcinogenic and teratogenic materials. Contaminate drinking water (ground and surface). Damage local ecosystems, animals or plants.

Damage or destroy natural resources. Increase in-migration. Damage local social and cultural integrity. Facilitate spread of disease to both people and animals.

Mitigation measures

SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance

Include space and features for source separation of recyclables and organic waste. Consider including space and/or constructing a compost bin or worm box if facility will produce organic waste (P&D) (C) (O&M).

Incorporate cleaner production technologies into design, operation and maintenance as described in the “Activities with Micro and Small Enterprises (MSEs)” section of these *Guidelines* and resources listed there (SS) (P&D) (C) (O&M).

Design with elements for storage, treatment and discharge of wastewater (P&D) (O&M).

Research indirect effects that may be associated with the particular type of facility being built and evaluate other possible impacts of this type. If the project falls into one of the sectors covered in the *Guidelines*, the relevant sector briefing and the resources listed therein are starting points for this research (SS) (P&D) (C) (O&M).

Activity/Technology	Potential impact	Mitigation measures
<p>Cumulative effects of one development project over time or many small developments built within a short time period.</p>	<p>Cause excessive extraction of building materials, multiply impacts associated with logging undergraded forest, quarrying and obtaining sand, gravel and fill (“borrowing”). (See below for more detail)</p>	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Develop logging, quarrying and borrowing plans that take into account cumulative effects and include reclamation plans (P&D). Monitor adherence to plans and impacts of extraction practices. Modify as necessary (C) (O&M).</p>
<p>Construction</p> <p>Construction crews and camps</p>	<p>Damage local habitat, compact soil and create erosion via building and occupation of construction camps. Contaminate surface water and spread disease via solid waste and feces generated by camps. Spread communicable diseases including malaria, tuberculosis, and HIV/AIDS via construction crews who come from outside the region. Introduce alcohol or other socially destructive substances via construction crews. Deplete local fauna and flora (especially game and fuelwood) via poaching and collection by construction crews.</p>	<p>Explore off-site accommodation for crew (P&D) (C). Keep camp size to a minimum. Require that crew preserve as much vegetation as possible, e.g., by creating defined footpaths (P&D) (C). Provide temporary sanitation on site, e.g., pit latrine (assuming the water table is low enough, with soil and geology of appropriate composition) (P&D) (C). Use local or regional labor, if possible. Screen potential crew members for HIV/AIDS and tuberculosis. Provide education and strict guidelines regarding contact with local residents, and enforce guidelines (P&D) (C). Set guidelines prohibiting poaching and collection of plants/wood with meaningful consequences for violation such as termination of employment. Provide adequate quantities of food and cooking fuel; both should be of good quality (C).</p>

Activity/Technology	Potential impact	Mitigation measures
Use of heavy equipment	Cause erosion due to machinery tracks, damage to roads, stream banks, etc. Compact soil, changing surface and groundwater flows and damaging future use for agriculture. Contaminate ground or surface water when machinery repairs result in spills or dumping of hydraulic oil, motor oil or other harmful mechanical fluids.	<p>Mitigation measures SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Minimize use of heavy machinery (P&D) (C). Set protocols for vehicle maintenance such as requiring that repairs and fueling occur elsewhere or over impervious surface such as plastic sheeting. Prevent dumping of hazardous materials. Burn waste materials that are not reusable/readily recyclable, do not contain heavy metals and are flammable (P&D) (C).</p>
Use of hazardous materials	Contaminate ground or surface water when hazardous construction materials are spilled or dumped. Put workers at risk from exposure to hazardous materials.	Prevent dumping of hazardous materials. Burn waste materials that are not reusable/readily recyclable, do not contain heavy metals and are flammable (P&D) (C). Investigate and use less toxic alternative products (P&D) (C).
Demolition of existing structures	Bother or endanger neighbors via noise, dust, and debris from demolition. Contaminate soil, groundwater or surface water from demolition waste containing residual amounts of toxic materials (e.g., leaded paint).	Recover all reusable material (this may be standard practice in many developing countries) (P&D) (C). Determine whether toxic materials are present. If possible, dispose of waste in lined landfill. Otherwise, explore options for reuse in areas where potential for contamination of surface and groundwater are small (e.g., consider the feasibility of use as roadbed material, if non-hazardous.). (See the “Management of Solid Waste from Residential, Commercial and Industrial Facilities”

Activity/Technology	Potential impact	Mitigation measures
Site clearing and/or leveling	<p>Damage or destroy sensitive terrestrial ecosystems in the course of site clearing/preparation. Produce areas of bare soil which cause erosion, siltation, changes in natural water flow, and/or damage to aquatic ecosystems.</p>	<p>SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>section of the Guidelines and references listed there for a more information) (P&D) (C).</p> <p>Design infrastructure so that it will create least impact (P&D).</p> <p>Minimize disturbance of native flora during construction (P&D) (C).</p> <p>Remove, without destroying, large plants and ground cover where possible (P&D) (C).</p> <p>Use erosion control measures such as hay bales (C).</p> <p>Replant recovered plants and local flora as soon as possible (C).</p>
Excavation	<p>Cause erosion, siltation, changes in natural water flow, and/or damage to aquatic ecosystems when excavated soil is piled inappropriately. Expose inhabitants and crew to risk of falls and injuries in excavation pits. Deprive down-gradient populations and ecosystems of water if higher regions of aquifer are blocked.</p>	<p>Cover pile with plastic sheeting, prevent runoff with hay bales, or similar measures (P&D) (C).</p> <p>Place fence around excavation (P&D) (C).</p> <p>Investigate alternatives allowing shallower or no excavation (P&D).</p>
Filling		

Activity/Technology	Potential impact	Mitigation measures
<p>Road improvement/new road construction (Consult the “Rural Roads” section of the ENCAP Africa <i>Guidelines</i> and resources listed there)</p>	<p>Block water courses when fill is inappropriately placed. Destroy valuable ecosystems when fill is inappropriately placed. Result in land subsidence or landslides later if fill is inappropriately placed, causing injuries or damage.</p> <p>Erosion and changes to water quality and natural water flows via poor road construction practices and maintenance. Provide access for clearing agricultural land, logging, poaching, mining, settlement or other development that destroys natural resources and/or harms local populations. Lead to the spread of human or livestock disease.</p>	<p>Mitigation measures SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Do not fill the flow-line of a watershed. Be aware that in arid areas, occasional rains may create strong water flows in channels. A culvert may not supply adequate capacity for rare high volume events such as flash floods. (SS) (P&D). Design so that filling will not be necessary. Transplant as much vegetation and groundcover as possible (SS) (P&D) (C). Use good engineering practices (e.g., do not use soil alone. First lay a bed of rock and gravel) (P&D) (C).</p> <p>Find alternative site. Evaluate whether an alternative mode of transport would suffice (e.g., rail, water, or footpath). (SS) (P&D). Adhere to specifications for road design and maintenance that keep water off road surfaces (P&D) (C) (O&M). Follow best practices for design, construction, and operation and maintenance described in the “Rural Roads” section of the ENCAP Africa Guidelines and resources listed there. These include practices such as developing quarry and borrow pit plans, following the contour line, using camber and turnout drains, training operations and maintenance personnel, etc. (SS)(P&D) (C) (O&M).</p>
<p>Source of building materials</p>	<p>Damage aquatic ecosystems through erosion and siltation.</p>	<p>Identify the most environmentally sound source of materials within budget (P&D).</p>

Activity/Technology	Potential impact	Mitigation measures
<p>Decommissioning</p> <p>Hazardous abandoned structures</p> <p>Eroded soils in the vicinity of abandoned infrastructure</p>	<p>Harm terrestrial ecosystems via harvesting of timber or other natural products. Spread vector-borne diseases when stagnant water accumulates in active or abandoned quarries or borrow pits and breeds insect vectors. Alter river/stream courses through sand and gravel extraction. Alter their ecosystems or pollute them.</p> <p>Buildings with collapsing roofs and walls, open latrines or septic systems, accumulation of rubble.</p> <p>Gulleying and siltation. Damage to aesthetics.</p>	<p>Mitigation measures SS: Site Selection, P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Develop logging, quarrying and borrowing plans that take into account cumulative effects (P&D). Monitor adherence to plans and impacts of extraction practices. Modify as necessary (C) (O&M). Fill in quarries and pits before abandoning (C). Control runoff into pit (C). Ensure lawfulness of extraction from rivers (P&D). Avoid working with machines in the water (C).</p> <p>Remove or bury all abandoned construction materials and rubble. Fill in and close all latrines and septic systems.</p> <p>Restore the site through replanting, reseeding and use of soil erosion control measures (hay bales, etc.).</p>

Activity/Technology	Potential impact	Mitigation measures
Site and design	<p>Change in land use pattern.</p> <p>Destruction of important ecological, archeological or historical areas.</p> <p>Contamination of soil and water from sewage and solid waste.</p> <p>Risk to residents due to possible natural dangers.</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Ensure that present land use at the proposed project site is not critical and that the present activities can be carried out on nearby land before the site is selected.</p> <p>Before the site is selected, verify that biodiversity, conservation of endangered or endemic species or critical ecosystems will not be adversely affected.</p> <p>Likewise, verify that no important archeological, historical or cultural sites will be adversely affected by the project.</p> <p>An alternative site should be used if the area is identified as critical.</p> <p>Site human waste and solid waste disposal systems to avoid surface and groundwater contamination, taking soil characteristics and historical groundwater and surface water conditions into account. Install adequate and appropriate sewage and solid waste disposal systems (e.g., use aboveground composting latrines in areas with high water tables).</p> <p>Ensure that proposed project site is not located in areas:</p> <ul style="list-style-type: none"> ● subject to fires, ● subject to flooding, ● with slopes over 20%, ● below areas likely to undergo significant deforestation or land clearing.

14 Adapted from USAID, above note 10, Chapter 9, pp. 12–14.

Activity/Technology	Potential impact	Mitigation measures
	<p>Risks to residents due to human activity near site.</p> <p>Excessive use and pressure on existing facilities such as schools and health centers</p> <p>Deforestation in order to implement project</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>If the site is in an area subject to these natural dangers, an alternate site should be used. If no appropriate alternative can be found, mitigation measures must be taken to minimize risk in areas where it is unavoidable (e.g., construct firebreaks, stabilize slopes, construct drainage, elevate housing units on pilings, etc).</p> <p>Before the site is selected:</p> <ul style="list-style-type: none"> ● ensure that the project will not be located within the area of influence (normally 1 km) of pollution and hazardous waste sources, including factories, mines, military bases, etc. ● insure that the project is not downwind of a contamination source. ● if groundwater is to be used for drinking, test it for chemical and microbial contamination if there is any reason to doubt its purity. ● identify and eliminate sources of noise pollution. ● use alternate site if risk to residents is high. <p>Include the expansion or construction of any necessary infrastructure in the layout and design of the project, if needed.</p> <p>If forest is dense or forms part of a critical habitat, an alternative site must be found. A forested area equal in size to one and a half to two times the area deforested must be established and maintained. The location and</p>

Activity/Technology	Potential impact	Mitigation measures
	<p>Excessive use of fuelwood as an energy source.</p> <p>Houses inappropriate for local climate; occupant comfort inadequate.</p> <p>Ventilation inadequate.</p> <p>Inadequate attention to type and location of solid waste disposal.</p> <p>Health hazards due to lack of sanitation facilities (water,</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>ultimate use of this protected area will be established in coordination with local municipal authorities. For each tree cut in a sparsely forested area, plant 20 new trees. This should be done no later than 6 months after the residents have moved in.</p> <p>Encourage use of alternative energy sources such as gas, electricity and solar where appropriate. If fuelwood is the dominant energy source, include the planting of fuelwood plots using local species in the project layout and design. Require all residents who cook with fuelwood to use improved stoves.</p> <p>Ensure that the design, construction materials, and siting of windows and doors takes local climatic conditions in cool and hot seasons and seasonal variation in precipitation and winds into account. Use local materials if possible.</p> <p>Design houses to ensure adequate ventilation for the potential heating and cooking sources to be used within the home. Take advantage of wind direction in design.</p> <p>Prepare and implement a <i>Solid Waste Disposal Management Plan</i> prior to resident occupancy. Include technology and funding for system maintenance and disposal, effects on groundwater, wind direction, etc. in the plan.</p> <p>Sanitation facilities <i>must</i> be included in the project design. Ensure that all sanitation facilities are installed and running before the occupants move in.</p>

Activity/Technology	Potential impact	Mitigation measures
	<p>sewage and solid waste disposal).</p> <p>Unsafe potable water supplies.</p> <p>Hazard due to inadequate earthquake resistance or inappropriate materials.</p> <p>Social impacts within and around the project site.</p> <p>Lack of compliance with mitigation measures.</p>	<p>P&D: Planning and design, C: Construction, O&M: Operation and maintenance</p> <p>Ensure siting of supply systems and choice of supply technologies to minimize health hazards.</p> <p>Conduct seasonal testing of water quality, particularly for coliform bacteria and arsenic. Assess long-term and seasonal shifts in water quantity and quality.</p> <p>Understand local risks of earthquake, floods and winds. Ensure that construction meets appropriate standards. Use locally available materials. Follow, or exceed, official design criteria.</p> <p>A social analysis of the beneficiaries and the communities around the proposed site must be conducted implemented before the project is designed.</p> <p>If the site's location generates too much social conflict, an alternative site must be selected.</p> <p>Community development programs must be implemented in each community before or during the construction process.</p> <p>Collect signed binding agreements from the collaborating organizations and contractors before the project begins.</p> <p>Each NGO or partner must have an environmental management plan to ensure compliance with the mitigation measures. Have an independent evaluation of the plan conducted annually.</p>

Activity/Technology

Potential impact

Mitigation measures

Habitation

Improper use of environmental and sanitary resources by householders.

P&D: Planning and design, C: Construction, O&M: Operation and maintenance

If applicable, the responsible NGOs and partners must provide environmental and sanitary training for all residents before they move in. Training should address all of the following:

- environmental education for children,
- care of domestic animals,
- reforestation of green areas,
- proper use and maintenance of latrines,
- social interactions in housing projects,
- proper use and conservation of water,
- construction and use of improved stoves,
- fuelwood plot management.

Lack of compliance with mitigation measures.

Collect signed binding agreements between the collaborating organizations and contractors before the project begins. Each responsible NGO or other partner must have an environmental management plan to ensure compliance with the mitigation measures. Have an independent evaluation of the plan conducted annually.

Section 3: Economic security and environmental management¹⁵

The Economic Security Unit held a seminar in Nairobi from September 29th to October 3rd 2008 on the topic of “Agro Programmes and the Environment”. Its objective was to raise awareness of environmental issues and include these issues, where possible, into its agricultural and other interventions. A report on the outcome of this seminar has been written and was made available in February 2009.¹⁶ The feedback from this seminar forms an important and integral part of this framework.

The main purpose of economic security programmes is to preserve or restore the ability of households affected by armed conflict to meet their essential needs.

Acute crisis:

- ICRC provides the relief (food and essential household items) needed to sustain life and resume production, mainly through the distribution of agricultural equipment and supplies.

Emerging crisis, chronic crisis and post-crisis:

- ICRC’s priority is to support and bolster the means of production through programmes tailored to the local economy. These programmes mainly concern: reviving agriculture, livestock health and management, and microeconomic initiatives.

Economic security main field of activities are:

- distribution of food rations;
- distribution of essential household items;
- distribution of seed, farming tools, fertilizer and fishing tackle;
- rehabilitation of agriculture and irrigation;
- livestock management;
- revival of small trades and handicrafts.

The above activities can be in both urban and rural settings and in detention facilities.

15 For key references see ICRC, *Regional Livestock Study in the Greater Horn of Africa*, ICRC, 2005; Norwegian Refugee Council, above note 10; UNHCR, *Environmental Guidelines*, above note 10; UNHCR *Refugee Operations ...*, above note 10; UNHCR, *Forest Management in Refugee Situations – A Handbook of Sound Practices*, UNHCR/The World Conservation Union (IUCN), Geneva, 2005; USAID, above note 10, Chapter 1: Agriculture and Irrigation; Chapter 7: Forestry: Reforestation, Natural Forest Management, and Agroforestry; and Chapter 11: Livestock.

16 See ICRC, *The Environment & Agro Programmes: Analysis and Recommendations*, Agro Workshop, Nairobi, 29 September to 3 October 2008.

3.1 Environmental challenges of economic security activities

Agricultural assistance activities for example, not only take the environment into account, but propose solutions to enhance it, in order to achieve their purpose of preserving or restoring the ability of households to meet their essential needs.

Improved seed multiplication programmes or the distribution of drought tolerant varieties enable greater production on less land. Irrigation programmes rationalise the use of water; and seed distributions reduce household dependency on unsustainable livelihoods such as charcoal production.

However, agro-programmes can also have negative impacts on the environment: irrigation programmes can accelerate soil salinisation process, large-scale seed distributions may reduce the local crop biodiversity, amongst others.

The Economic Security delegate must consider these positive and negative factors when designing and evaluating programmes, combine them with the local context and come up with a solution that meets the needs of the victims of armed conflict.

The environmental challenges and considerations faced by Economic Security delegates when designing and implementing main agro and agro-economic activities are detailed in Section 3.3. This is not an exhaustive list of potential impacts and mitigation measures for all Economic Security activities, but can be useful to address key issues.

3.2 Case studies

The following two case studies present two very different examples where the Economic Security Unit has dealt with environmental factors in its response.

They highlight the fact that the environment is indeed an integral part of all operations; that there is no unique solution to a particular problem and that the efficiency of a solution depends on the context and many other factors.

A. Cassava and conflict in Democratic Republic of Congo

This particular case study highlights how conflicts and the ensuing population movement can serve to propagate environmental problems that were originally specific to one area, to much larger areas.

Since 1993, conflicts in the Democratic Republic of Congo, Rwanda and Burundi have resulted in more than five million deaths and have generated hundreds of thousands of refugees and internally displaced people.

When people are displaced following conflict, their fields are abandoned or sometimes looted. They become overgrown with weeds, and crops die out. When villagers come back, the harvest is often very poor and they remain impoverished.

When displaced, people often take food and animals with them including cassava stems which can then be replanted. Cassava is particularly well adapted to times of crisis as stems can be replanted, fields demands relatively low

maintenance, the roots are energy-rich and leaves are protein rich. Cassava often represents people's only means of survival as well as a way back into fragile economic livelihoods.

However, the cassava plant traditionally used in eastern DRC was susceptible to the mosaic virus, which can decimate entire crops. The ongoing displacement and return of populations in this area has caused a spread of the disease and widely affected cassava crops.

ICRC provided a new mosaic-resistant type of cassava plant to local associations to plant in communal fields. Cassava leaves and roots were harvested as food, and 70% of the stems redistributed or sold within the respective associations, while the remaining 30% were returned to ICRC for distribution to other farmers associations in the area.

ICRC provided initial stems of the mosaic-resistant cassava plants as well as training and planting materials. The project was run with partners such as Research Institutes, national Red Cross societies and the Ministry of Agriculture. ICRC has been able to handover several such projects, entirely to individual associations where this activity has continued to sustain itself.

This project has had the following results:

- 1) significant improvement of economic security of association members through healthy and resistant cassava stem sales;
- 2) setting up a lucrative system (without need for further ICRC support) which encourages associations to continue to produce cassava plants and stems;
- 3) availability of healthy cassava plant stems to a large population over vast zones allowing each household to either start over or enhance their cassava production;
- 4) setting up a quality production system thanks to partnerships with research institutes and national organisations.

B. Pastoralists and livelihoods in the Horn of Africa

Emergencies in the Horn of Africa are related to natural, economic, political or social causes; livestock owners are vulnerable to all these factors.

The horn of Africa currently accounts for the ICRC's greatest operations in the world and half the region's population relies on animals to a significant extent for its survival. This region faces increasingly harsh climatic conditions. Where conflict in the past has often aimed at expanding the attacker's own herds and, thus, his power and influence, it is today aggravated by climatic parameters.

Competition over natural resources is widespread. The human population of sub-Saharan Africa is growing faster than the capacity of the livestock sector to support it and tensions are likely to escalate. However, conflict over natural resources is just one of the causes of conflict and many other causes have also been identified.

The ICRC Livestock study in the Greater Horn of Africa was conducted in 2005 order to contribute to ICRC's understanding of the circumstances and

current challenges faced by a significant proportion of the population in one of its major operational areas.

The main aims of the study were:

- 1) to provide a comprehensive picture of the current livestock / pastoralist situation and any anticipated future developments and a working basis / reference for the next five years.
- 2) to design and submit regional livestock assistance guidelines and a proposed course of action for the ICRC at both regional and country level.

The study provides background information, past interventions, lessons learned and proposes a course of action with specific recommendations for livestock interventions in each country. By undertaking a regional approach, considering environmental issues amongst others, and incorporating cross-border issues, this addresses ICRC's attempts to harmonise its approach to observed needs; to improve regional coherence and to reduce potential double standards in its response mechanisms in the Horn of Africa.

3.3 Examples of potential impacts and mitigation measures for economic security activities

The following table lists some succinct suggestions for mitigating potential negative impacts of agro-economic and agro activities. This is not intended to list all possible impacts and mitigation measure, rather to highlight some examples. These tables were compiled at the Nairobi Agro Workshop by Economic Security Coordinators.¹⁷

Note: It is the responsibility of the projects designers and implementers to strive to reduce the environmental impact of their activities. These examples, impacts and measures cannot be expected to cover each and every possible situation. Their users are expected use their common sense, environmental awareness, technical knowledge and creativity.

17 See ICRC, above note 16, pp. 12–21. The examples in the table below were compiled at the Nairobi Agro Workshop by Economic Security Coordinators and complemented by USAID, above note 10.

Agronomy and agro-economics

Activity/Technology	Potential impact	Mitigation measures
Seed distribution	<p>Overuse of land.</p> <p>Decreased soil fertility.</p> <p>Reduction of pasture land.</p> <p>Change of animal management, fencing necessary.</p> <p>Deforestation.</p> <p>Imbalance between agro and livestock.</p>	<p>Study of usual land use, introduce high yield varieties.</p> <p>Rotation with legumes, fertilizer application.</p> <p>Introduce varieties providing crop residue for fodder.</p> <p>Discuss field protection with local population and authorities, provide shrub seeds for living fence.</p> <p>Introduce intercropping and timber plantations.</p> <p>Develop integrated and sustainable approach after socioeconomic assessment.</p>
Seed multiplication / production		
Fishing kit distribution	<p>Unnatural increase in fishing activities.</p> <p>Decline of fish population due to overfishing.</p>	<p>Baseline assessment to estimate previous numbers and ongoing monitoring. Support alternative income generating activities.</p> <p>Follow national legislation, if existing. Independently assess fishing capacity of the area. Use appropriate fishing nets.</p>
Fish farming	<p>Introduction of 1 species, introduction of predatory species with impact on local species.</p>	<p>Consult and acquire full knowledge of local and proposed species.</p>
Chicken Programmes	<p>Biodiversity risk.</p> <p>Introduction of new diseases.</p>	<p>Limit importation. Preference for local species. Interbreeding with local species.</p> <p>Follow national policy. Consult with local veterinarians.</p>

Activity/Technology	Potential impact	Mitigation measures
Land clearing	<p>Health risk from chicken wastes.</p> <p>Land tenure issues.</p> <p>Erosion.</p>	<p>Identify local and introduced species vulnerability to diseases.</p> <p>Appropriate waste management training.</p> <p>Consult with authorities and local leaders. Design and follow-up programme with land committees.</p> <p>Encourage sound agricultural practices such as earth mounds, natural fences, mulching, where appropriate.</p>

Livestock activities

Activity/Technology	Potential impact	Mitigation measures
Animal vaccination	<p>Pollution due to used materials.</p> <p>Overgrazing due to large gathering of animals.</p> <p>Overgrazing due to higher survival rates.</p>	<p>Promote safe disposal / recycling.</p> <p>Mobile vaccination / decentralised vaccination / use traditional gathering points.</p> <p>More mobility, improve offtake, alternative livelihoods.</p>
Training of community animal health workers	<p>Disease mutation.</p> <p>Waste and poor drug disposal.</p>	<p>Surveillance.</p> <p>Focus on waste and drug disposal training to enhance the benefits of training.</p>
Restocking	<p>Overgrazing or resource competition.</p> <p>Spread of diseases</p>	<p>Consult communities and use traditional grazing points.</p> <p>Monitor new cases and parasites.</p>
Parasite control programmes	<p>Contamination of water points.</p>	<p>Avoid water points and ensure careful application by trained people.</p>

Activity/Technology	Potential impact	Mitigation measures
	Shifted concentration of parasites. Overgrazing.	Test first and treat accordingly. Mobile or decentralised treatment points / use traditional gathering points.

Section 4: Health and environmental management¹⁸

The health needs of people in armed conflict or other situations of violence are met according to defined minimum packages of health services/care. Curative and preventative health actions remain at the heart of our projects. Saving lives and alleviating suffering is the central objective of health assistance.

Emerging and acute crisis:

- the ICRC provides support for pre-hospital care (first aid and medical evacuation), basic health care and emergency hospital care (treatment of war wounded and other essential surgery), when access to medical facilities and the provision of health care are at risk.

Chronic crisis and post-crisis:

- the ICRC may consider providing support for a broader range of primary health care activities than those cited above. It may also take steps to strengthen other hospital services such as paediatrics, obstetrics and gynaecology (O&G), internal medicine and hospital management.

Main health activities are:

- first Aid;
- primary health care;
- emergency hospital care (war and essential surgery, paediatrics, O&G, internal medicine, hospital management);
- physical rehabilitation services;
- health in detention.

18 Health Care Without Harm (HCWH), *Environmentally Responsible Management of Health Care Waste with a Focus on Immunisation Waste*, Washington, 2002; A. Prüss, E. Giroult and P. Rushbrook (eds), *Safe management of wastes from health-care activities*, World Health Organization (WHO), Geneva, 1999; WHO, *Suggested Guiding Principles and Practices for the Sound Management of Hazardous Hospital Waste*, New Delhi: Regional Office for South-East Asia, WHO, 2000; WHO, *Guidelines for Safe Disposal of Unwanted Pharmaceuticals in and after Emergencies – Interagency Guidelines*, 1999; USAID, above note 10, Chapter 8 Healthcare Waste: Generation, Handling, Treatment and Disposal; Oliver Morgan, Morris Tidball-Binz and Dana von Alphen (eds), *Management of Dead Bodies after Disasters: A Field Manual for First Responders*, Pan American Health Organization/WHO/ICRC/International Federation of Red Cross and Red Crescent Societies, Washington D.C., 2009.

4.1 Environmental challenges of health activities

Human health is directly related to environmental conditions. The deterioration of the health of conflict-affected populations is linked to the deterioration of their local environment. ICRC health activities as listed above, more often provide support to existing medical facilities, and as such, do not generally directly consider environmental issues in the design of their activities.

Some primary health care activities, however, promote awareness of the link between local environmental conditions and health. The success of anti-malaria campaigns, for example, directly depends on community understanding and management of environmental conditions.

Health activities can also have direct negative impacts on the environment. Disposal of healthcare waste is of particular concern in countries where healthcare waste legislation does not exist or is not implemented, or where local practices may cause localised pollution to air, watercourses, aquifers or soils, thus further affecting the health of local populations.

The Health delegate must consider these factors when designing and evaluating programmes, particularly in the strengthening of hospital management, combine them with the local context and come up with a solution that meets the needs of the victims of armed conflict without, as far as possible, causing additional harm to the environment.

The environmental challenges and considerations faced by Health delegates when designing and implementing their main activities are detailed in the annexes of this document. This is not an exhaustive list, nor does it attempt to provide detailed healthcare waste management guidance. This would be best covered in a separate, specific document.

4.2 Case studies

The following case studies aim to highlight examples of how Health delegates in different situations have sought to deal with healthcare waste issues.

A. Lopiding Hospital waste management, Kenya

Lopiding was an independent ICRC hospital for conflict-wounded from South Sudan. It began to operate in 1987. The principal activity was war surgery and included services such as an orthopaedic workshop, physiotherapy, x-ray, pharmacy, laboratory, laundry, kitchen, maintenance and administration. In 2001 the ICRC commissioned the Institute of Occupational Health Sciences to conduct a waste management evaluation. In this case, the ICRC recognised that external expertise was required to identify the best possible solution.

The independent evaluation covered medical waste management from the creation of waste to its disposal. It made specific recommendations for improvements in several areas: waste minimization, separation and identification,

handling, collection, transport and storage, treatment, final disposal, assignment of responsibilities and workers training and safety. The recommendations were implemented.

The main objectives of the evaluation were to:

- 1) observe and describe current health-care waste management from the creation of the waste to their final disposal, including collection, transport, intermediate storage and treatment;
- 2) analyse the risks generated by the actual health care waste management to the general population and ICRC employees;
- 3) to provide recommendations for future improvements.

After the evaluation, observation and interviewing of key staff, local authorities and other local health centres; a final report was produced covering the following topics:

- 1) types and quantities of waste;
- 2) containers and labelling;
- 3) collection, transport and storage;
- 4) pre-treatment;
- 5) final disposal;
- 6) waste water treatment;
- 7) health and safety practices;
- 8) responsibilities and training;
- 9) legislation, regulation and policies.

Although it was concluded that waste management in Lopiding did not result in extreme hazardous situations for either the surrounding population or hospital staff; several recommendations for future improvement were issued on the different stages as listed above.

After the peace agreement in 2006, ICRC withdrew from Lopiding hospital and handed it over to the Kenyan Health Ministry.

Although these recommendations may have been followed, there is no documented evidence of any follow-up or implementation. This is something that should be considered in any future assessment or evaluation initiatives.

B. Physical rehabilitation – prosthesis recycling

ICRC has commissioned a study to find an improved design process for its polypropylene trans-tibial prosthesis in Cambodia. The study takes into account economic and technical constraints but also considers user needs and environmental impact of the product.

A Life-Cycle Assessment was used to evaluate the environmental effects of the production, use and recycling phases of the prosthesis. This will enable ICRC to decide which aspects of the different stages of the product life may need to be improved from an environmental perspective.

This project resulted from a cooperation agreement between a PhD student at the Norwegian University of Science and Technology and the ICRC Physical Rehabilitation Programme Health Unit and is still ongoing.

The researcher was asked to investigate the current polypropylene technology used by ICRC in Cambodia and to suggest further development of the current prosthesis for children to produce and user-test a prototype of the suggested solution.

A large majority of current ICRC supported projects are already recycling polypropylene scraps in crutches handles, however, there are no formalised schemes for ensuring recycling of the materials used in the production of prosthetic appliances and it is unknown how each ICRC supported centre is currently managing its material waste.

This study is currently investigating the following trends:

- current levels of collection / disposal and re-use of different components;
- existing efforts to find new ways of recycling or reusing materials from returned or used prosthesis.

The results of the study to date have indicated a general lack of awareness of possibilities of recycling or reuse and of proper disposal methods in physical rehabilitation centres in Cambodia.

This study will contribute to the overall effort of improving final product cost-efficiency, user satisfaction and well-being, and as such contributing to the improvement of the quality of ICRC assistance to victims of conflict in Cambodia.

4.3 Types of health waste arising and main impacts

As there is much in-depth guidance on disposal of healthcare waste, this section will not detail the impacts or mitigation areas. It is beyond the scope of this framework to provide specific healthcare waste disposal guidance. It defines the types of waste that can arise, types of disposal, main possible impacts and outline the minimum elements of a waste management plan.

Note: It is the responsibility of the projects designers and implementers to strive to reduce the environmental impact of their activities. These examples cannot be expected to cover each and every possible situation. Their users are expected use their common sense, environmental awareness, technical knowledge and creativity.

*Main impacts of healthcare waste*¹⁹

- Disease transmission, through infectious waste, sharps, and contaminated water.
- Chemical and toxic threats, through chemical and pharmaceutical exposure.

19 Adapted from USAID, above note 10, Chapter 8: Healthcare Waste: Generation, Handling, Treatment and Disposal.

Waste disposal method	Type of waste	Advantages	Disadvantages
Open air burning	Not effective for pathological waste. Not good for most pharmaceutical or chemical waste.	Disinfects reasonably well, destroying 99% of microorganisms. 80–90% burning efficiency.	Burning may be incomplete and residues still infectious. More hazardous to staff involved. Greater risk of scavenging by waste-pickers or of transfer of pathogens by vectors including insects. Sharps in ashes will still pose physical hazard.
Drum or brick incinerator	Infectious waste. Sharps waste. Pathological waste.	Disinfects reasonably well, destroying 99% of microorganisms. 80–90% burning efficiency.	Emits black smoke, fly ash, acid gases, and some toxins. May produce odours. Sharps in ashes will still pose physical hazard. Not good for most pharmaceutical or chemical waste.
Incineration	Infectious waste. Sharps waste. Pathological waste.	Disinfects effectively. Reduces waste volume by ~80%; burning efficiency of 90–95%. Low investment and operating costs.	Emits pollutants such as fly ash, acid gases, and some toxins. May produce odours (can be limited by not burning

Waste disposal method	Type of waste	Advantages	Disadvantages
Encapsulation	Sharps waste. Small amounts of chemical, and pharmaceutical waste.	Simple and safe. Low cost.	PVC plastics). Sharps in ashes will still pose physical hazard. Not good for most pharmaceutical or chemical waste. Not effective for non-sharps infectious waste.
Safe burial	Infectious waste. Sharps waste. Small amounts of chemical and pharmaceutical waste.	Provides some of human health and environmental protection by making waste inaccessible. Organic materials will eventually biodegrade.	Soil can become polluted if permeable. Difficult to prevent scavenging.

REPORTS AND DOCUMENTS

Strengthening Legal Protection for Victims of Armed Conflicts

The ICRC Study on the Current State of International Humanitarian Law

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Address by Dr. Jakob Kellenberger, President of the International Committee of the Red Cross, 21 September 2010

On the 12th of August last year, I had the opportunity of sharing with you some observations on the state of international humanitarian law. The sixtieth anniversary of the Geneva Conventions was an opportune moment, not only to look back at the progress that had been made since 1949, but also to assess the challenges before us, at present and in the future. On that occasion, I said that the nature of armed conflict, its causes and consequences, had evolved over the years and that the international community must expect and prepare itself for new protection needs for victims of armed conflict.

During the course of my address last year, I announced that the ICRC was about to complete an internal research study, two years in the making. The study had two main aims: identifying and understanding, more precisely and clearly, the humanitarian problems arising from armed conflict and devising possible legal solutions to them in terms of legal development or clarification. The research paid particular attention to non-international armed conflicts, but was not exclusively focused on such conflicts.

More than thirty issues of concern were analysed. In each case, the ICRC first assessed the actual humanitarian needs, drawing on its own experience and that of other organizations. Then it evaluated the responses provided by humanitarian law to these issues, with a view to identifying gaps or weaknesses in the law.

Our meeting today is a follow-up to the announcement last year of the impending completion of the study; its purpose is to give you an overview of the main conclusions of the study. This is also an occasion to open a broad dialogue on

developing new approaches for providing tangible legal protection to victims of armed conflict.

The study concluded that, with regard to most of the issues it examined, humanitarian law remains, on the whole, a suitable framework for regulating the conduct of parties to armed conflicts, international and non-international. Treaty and customary law have developed over the years: gaps have been filled in and ambiguities clarified. Recent experience has demonstrated the enduring relevance and adequacy of humanitarian law in preserving human life and dignity during armed conflict. What is required in most cases – to improve the situation of persons affected by armed conflict – is greater compliance with the existing legal framework, not the adoption of new rules. One can say with some certainty that if all the parties concerned showed perfect regard for humanitarian law, most of the humanitarian issues before us would not exist. All attempts to strengthen humanitarian law should, therefore, build on the existing legal framework. There is no need to discuss rules whose adequacy is long established.

In this regard, it bears reminding that strengthening the legal framework applicable to armed conflict also requires that other relevant legal regimes – besides humanitarian law – be taken into consideration. It is essential that any development or clarification of humanitarian law avoids all unnecessary overlapping with existing rules of human rights law. Any risk of undermining these rules must be avoided. However one essential fact must always be kept in mind: humanitarian law has to be respected in all circumstances whereas derogation from some provisions of human rights law is permitted during emergencies. The codification of humanitarian law may therefore help to prevent legal gaps in practice.

However, the study also showed that humanitarian law does not always respond fully to actual humanitarian needs. Some challenges that exist – in protecting persons and objects during armed conflict – are the result of gaps or weaknesses in the existing legal framework, which requires further development or clarification.

More precisely, the ICRC concluded that humanitarian law must develop new responses in four main areas.

The first involves **protection for persons deprived of liberty**, especially in situations of non-international armed conflict. The ICRC visits hundreds of thousands of detainees every year and this gives the organization a unique view of the legal and practical problems associated with deprivation of liberty. It is quite true that in some cases the lack of adequate infrastructure and resources hampers the establishment of a proper detention regime; but the dearth of legal norms applicable in non-international armed conflict is just as significant an obstacle to safeguarding the life, health and dignity of those who have been detained.

It goes without saying that poor material conditions of detention may, and often do, have direct and irreversible consequences for the physical and mental health of detainees. Lack of adequate food, water, clothing, sanitation and accommodation, and of access to medical care when needed are among the most common problems associated with detention. Because of their specific protection needs, some categories of person – women or children, for instance – may be at

greater risk than others. Yet, while international armed conflicts are governed by detailed binding rules on conditions of detention, non-international armed conflicts are not, especially those conflicts that are not covered by Additional Protocol II and therefore regulated only by Article 3 common to the four Geneva Conventions.

Another significant issue of humanitarian concern is the insufficient protection provided for internees, persons detained for security reasons during non-international armed conflict. Internment is widely practised, as a means of exercising control over certain persons without bringing criminal charges against them. There are simply no procedural safeguards in treaties of humanitarian law to deal with this during non-international armed conflicts. The consequences for internees are these: they may be subjected to long periods of internment without being properly informed of the reasons for which they have been deprived of their liberty, and there is no process available to them for challenging the lawfulness of their internment or for securing their release when such internment is not or no longer justifiable. The ICRC's experience confirms that not knowing the reasons for internment or its duration is one of the main sources of suffering for internees and their families.

Another serious issue of concern is the risks to which detainees are exposed when they are transferred from one authority to another, either during or after the transfer. In certain instances, such persons have endured serious violations of their rights: persecution, torture, forced disappearance, and even murder. Yet, the legal guidance available to detaining authorities in such situations is insufficient. There is an immediate need for a set of workable substantive and procedural rules for protecting the integrity and dignity of those who find themselves in these circumstances.

It is also crucial to ensure that detainees have access to visits by an independent and neutral body such as the ICRC. Such visits help those in authority identify problems and also serve as a basis for dialogue on improving the treatment of detainees and their material conditions of detention. The right to visit persons deprived of liberty is recognized under the law governing international armed conflicts; but, despite the fact that nowadays the capture and detention of the vast majority of detainees takes place during non-international conflict, no such right exists in the law governing that kind of armed conflict.

The ICRC believes, mainly on the basis of these considerations, that there is an urgent need to explore new legal ways for dealing exhaustively with the subject of protection for persons deprived of liberty during non-international armed conflict.

Implementation of humanitarian law and reparation for victims of violations is another area in which legal development is urgently required. Insufficient respect for applicable rules is the principal cause of suffering during armed conflicts. In recent years the emphasis has been on developing criminal law procedures to prosecute and punish those who have committed serious violations of humanitarian law; but appropriate means for halting and redressing violations when they occur are still lacking.

Most of the mechanisms provided under humanitarian law have proved to be insufficient so far. Procedures for the supervision of belligerent parties in international armed conflicts have not or have almost never been used in practice, usually for lack of consent from the parties to the conflicts. As regards non-international armed conflicts, such procedures simply do not exist.

Instead, monitoring activities in armed conflicts were made possible because of mechanisms developed outside the ambit of humanitarian law: for instance, within the framework of the UN Security Council, the UN Human Rights Council or regional human rights systems. The main advantage of these mechanisms is that, usually, they can be used without obtaining the consent of parties to conflicts. They also apply to all forms of armed conflict, international and non-international. However, these mechanisms, too, have their limitations. For instance, some of them focus on the conduct of States and do not address the responsibilities of non-governmental parties. In addition, some of them are legally obliged to apply human rights law; and this makes it difficult for them to take into account the pertinent provisions of humanitarian law when dealing with situations of armed conflict. Lastly, it has not always been possible to ensure the cooperation of parties to conflicts in conducting monitoring procedures.

Therefore, while an increase in regard for humanitarian law, by all parties to armed conflicts, is urgently needed, the current system of implementation offers only ineffectual or partial solutions. Clearly, what is required is a system that is capable of meeting the needs of victims.

Linked with the issue of implementation, reparation for victims of violations of humanitarian law is another crucial issue. Reparation is essential for victims, to overcome the deeply distressing experiences they have had to endure and to take up their lives once again. Reparation should be adapted to the circumstances and needs of the victims. It does not necessarily imply financial compensation: other forms of reparation include restitution, rehabilitation, 'satisfaction,' and the guarantee that the violations will not be repeated.

The third area of concern in which humanitarian law has to be reinforced is **protection of the natural environment**. The serious harm done to the natural environment during a number of armed conflicts has only added to the vulnerability of those affected by the fighting. The environment is intrinsically valuable; but human beings also depend on it, for their livelihood and well-being. The natural environment plays a vital role in ensuring the survival of present and future generations.

However, the law protecting the environment during armed conflict is not always clear; nor is it sufficiently developed. For instance, treaty law does not contain a specific requirement to protect and preserve the environment in hostilities during non-international armed conflict. It is true that customary international law contains certain pertinent provisions: for instance, the obligation not to attack the natural environment unless it is a military objective or the prohibition of attacks that may cause disproportionate incidental damage to the environment. However, to improve protection for the environment during armed

conflict, the precise scope and implications of these rules of customary law have to be worked out in greater detail.

There is also an urgent need to find better ways of addressing the immediate and long-term consequences of damage to the environment. The destruction of power stations, chemical plants and other industries, and of drains and sewers – even merely creating rubble – may result in serious contamination of water sources, arable land and the air, thus affecting entire populations. A new system should therefore be established to ensure that the areas affected are rapidly and effectively cleaned; this should include the development of international cooperation schemes.

Preventive action is also needed: for instance, studying the possibility of designating areas of great ecological importance as demilitarized zones before the commencement of armed conflict, or at least at its outset. Such zones may include areas containing unique ecosystems or endangered species.

The **protection of internally displaced persons** is the fourth area in which humanitarian law should be strengthened. Providing adequate protection for displaced persons is one of the most daunting tasks in humanitarian work; and the ICRC's long experience bears this out. Even so, specific legal protection continues to be deficient in this regard. It must be said, however, that the adoption in 1998 of the *Guiding Principles on Internal Displacement* was a significant step in fortifying the international legal framework for protecting internally displaced persons. The codification and development of some elements of this instrument would certainly help to increase its impact.

Having left their homes and land, internally displaced persons may be without the means to earn their livelihoods. They may be isolated and living in unsafe areas. They may become victims of violence: forcible recruitment into fighting forces, rape, and even murder. They may become separated from their families. Those who fled without documents attesting to their civil status may find it difficult to gain access to social services or to move freely within the country. Therefore legal development is necessary to ensure certain things: for instance, that family unity is preserved or that internally displaced persons have access to the documents they need in order to enjoy their rights.

The plight of internally displaced persons can be sharply worsened if their displacement is long-term and they are unable either to return to their homes or places of habitual residence or to find another lasting solution. Their property may have been destroyed or taken over by others, their land may be occupied or made unusable by the hostilities, and there may be reprisals against them if they return. Integration into the community where they have found refuge might also be an issue. Yet current international treaty law lacks the necessary provisions to deal with all these matters. Therefore, humanitarian law should develop measures that enable internally displaced persons to return to their homes or places of residence in satisfactory conditions.

This study conducted by the ICRC is just one of many steps that have to be taken until effective practical solutions are provided. Given the nature of its mandate, the ICRC is determined to take all necessary measures to ensure that this

initiative achieves positive results. However, the ICRC is also aware that this cannot be done without further cooperation and support. Ultimately, only States can influence the evolution of international law.

The ICRC would like to open a dialogue with States and other interested parties on the conclusions contained in the study and on any follow-up to it.

Comments or suggestions on this initiative, in terms of substance and process, will be gratefully received. We are particularly interested in knowing to what extent others agree with our reading of the daunting humanitarian issues before us and the related challenges for humanitarian law.

In order to foster this dialogue, the ICRC also intends to engage, in coming months, in bilateral discussions with a group of States. The ICRC will also stand ready to enter into dialogue with all States wishing to do so. On the basis of these consultations, it will then decide whether it will propose initiatives for strengthening the legal framework applicable to armed conflict and how to proceed.

States will be informed of the result of this process. In this regard, the International Conference of the Red Cross and Red Crescent next November will be an important step.

This endeavour may seem to be excessively ambitious. There are indeed numerous obstacles in our way. However, the suffering caused by armed conflict requires us to be ambitious. How else are we to ensure that humanitarian law will continue to respond effectively to the needs of those affected by armed conflict? Past experiences have convinced me that the obstacles before us can be overcome if there is a political will to do so. It is the ICRC's hope that States will make common cause, for the sake of the victims of armed conflict.

REPORTS AND DOCUMENTS

The Paul Reuter Prize 2009, Presentation Ceremony, Geneva, 15 July 2010. Recipient: Dr. Théo Boutruche

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Address by Dr. Toni Pfanner, member of the Paul Reuter Fund Committee

On behalf of the Chairman of the Paul Reuter Fund Committee, Professor Paolo Bernasconi, it is a pleasure and a great honour for me to present the Paul Reuter Prize for 2009 to Dr. Théo Boutruche. Dr. Boutruche is currently a consultant on international human rights and international humanitarian law; he has worked with the Office of the UN High Commissioner for Human Rights and was a member of the Independent International Fact-finding Mission on the Conflict in Georgia.

The Paul Reuter Fund was set up in 1983 through a donation made to the International Committee of the Red Cross by the late Paul Reuter, Professor Emeritus at the University of Paris, a member of the Institute of International Law, and former Chairman of the United Nations International Law Commission. Its main purpose is to encourage the publication of works on international humanitarian law and other initiatives in that field.

The jury for the prize consisted of Professor Paolo Bernasconi, who is also a member of the governing body of the International Committee of the Red Cross, Professor Alejandro Lorite Escorihuela of the American University in Cairo, and Professor Julio Jorge Urbina of the University of Santiago de Compostela. With the support of several members of the ICRC staff, they unanimously decided to award Dr. Théo Boutruche the Paul Reuter Prize for his work entitled *L'interdiction des maux superflus*, a study of the prohibition of superfluous injury or unnecessary suffering.

In 2008, Dr. Boutruche defended his PhD thesis on the same subject at the Graduate Institute of International and Development Studies in Geneva and at the Aix-Marseille Faculty of Law in France, and it is for this thesis that he is today receiving the Paul Reuter Prize for 2009. It was written under the direction of Professor Andrew Clapham from the Graduate Institute and Professor Marie-José Domestici-Met of the University Paul Cézanne in Aix-Marseille III.

The subject of his work is the ban on causing ‘superfluous injury or unnecessary suffering’ laid down in international humanitarian law. As early as 1868, the St. Petersburg Declaration condemned the use of weapons ‘which uselessly aggravate the sufferings of disabled men’, as did the Regulations respecting the Laws and Customs of War on Land, annexed to the Hague Convention No. IV of 1907. In its Advisory Opinion on Nuclear Weapons, the International Court of Justice called it a ‘cardinal principle ... constituting the fabric of international humanitarian law and an intransgressible principle of international customary law’. It is accordingly prohibited to cause unnecessary suffering to combatants and to use weapons causing them such harm or needlessly aggravating their suffering.

The object of Dr. Boutruche’s work is to clarify the principle’s content and purpose in international humanitarian law. His ambitious attempt to define a central notion of this law is successful: the book is clearly the result of serious academic work and painstaking research, both in primary sources (especially the examination of the domestic regulations of states) and in secondary sources, and provides the first comprehensive analysis of the entire spectrum of the often neglected prohibition on causing unnecessary suffering.

The text is divided into three parts. The first concerns the principle’s scope of application, both material and personal. The second part sets out the content of the principle, with the aim of clarifying how ‘suffering’ and ‘unnecessary’ should be interpreted. The third part deals with the implementation of the principle, discussing its application to regulated weapons and the relationship to technological advances.

The author defends the principle on legal and moral grounds, and associates it with the idea of ‘lesser evil’. He explicitly favours a realistic approach, both in form – by linking the principle to new developments on the battlefield – and in legal substance. This is reflected methodologically by his consistent recourse to state practice in support of the points he makes, refraining from simply rehashing secondary literature.

Decisive conclusions reached by the author are that the principle is also applicable in non-international armed conflicts; that it covers not only means of combat, such as weapons, but also methods of combat and specifically the tactical and strategic use of weapon systems; and that it furthermore covers civilians who directly participate in hostilities. The last part, on ‘Implementation’, is a major contribution in itself, in that it not only discusses new weapons, such as non-lethal ones, but also presents specific cases of implementation of the principle to highlight more general issues of humanitarian law.

Théo Boutruche’s thesis was chosen because it addresses a matter of great importance and examines virtually every case in which the prohibition on causing

superfluous injury or unnecessary suffering has been or could be applied and interpreted in an original way. The Paul Reuter Fund Committee is convinced that it will be a standard reference work on this subject.

The quality and usefulness of Dr. Boutruche's work render it worthy indeed of a prize that commemorates that great jurist, that generous and committed individual, the late Professor Paul Reuter, who contributed so much to the development of international law, as the members of the United Nations International Law Commission present will testify.

This is the ninth time that the Paul Reuter Prize has been awarded for outstanding work in the field of international humanitarian law. It is therefore my great pleasure to present the Paul Reuter Prize for 2009, and the accompanying diploma, to Dr. Théo Boutruche.

REPORTS AND DOCUMENTS

National implementation of international humanitarian law

Biannual update on national legislation and case law January–June 2010

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A. Legislation

Bangladesh

The International Crimes (Tribunals) (Amendment) Act, 2009

An amendment to the 1973 Bangladesh International Crimes (Tribunals) Act was adopted on 14 July 2009,¹ inserting modifications into the original Act's provisions on, *inter alia*, jurisdiction and the right to appeal. Regarding the former, the Act now provides that a tribunal shall have the power to try and punish any individual, irrespective of his or her nationality, who commits or has committed in the territory of Bangladesh crimes against humanity, crimes against peace, genocide, war crimes, violations of any humanitarian rules applicable in armed conflict laid down in the Geneva Conventions of 1949, and any other crimes under international law as defined in the Act. In relation to war crimes, the Act expressly lists murder, ill-treatment or deportation to slave labour, killing of hostages, wanton destruction of cities, towns, or villages, and other actions not justified by military necessity.² The crimes would be prosecutable when committed before or after the commencement of the 1973 Act.³

With regards to the right of appeal, the amendment provides that both the Government and any person convicted of any crime falling under the jurisdiction of the Tribunal have the right to appeal to the Appellate Division of the Supreme Court of Bangladesh against a conviction or order of acquittal.

Bosnia and Herzegovina

Law on Implementation of the Rome Statute of the International Criminal Court and Cooperation with the International Criminal Court, 19 October 2009

A law addressing issues of ‘cooperation and provision of legal assistance to the International Criminal Court as well as specific characteristics of the procedure referring to criminal offences under Article 5 of the Rome Statute’ was adopted by the Parliamentary Assembly of Bosnia and Herzegovina on 19 October 2009.⁴ The law also refers to ‘criminal offences against humanity and other values protected by international law regulated by the Criminal Code of Bosnia and Herzegovina’,⁵ namely, genocide, crimes against humanity, war crimes, and aggression, as defined in the International Criminal Court (ICC) Statute.

On the issue of complementarity, the law provides that the Prosecutor’s Office and the Court of Bosnia and Herzegovina shall have jurisdiction⁶ to conduct the criminal proceedings against alleged perpetrators of criminal offences under the Law. The ICC, however, would obtain jurisdiction to conduct criminal proceedings against the perpetrators of criminal offences ‘provided that the requirements under Article 17 of the Rome Statute have been met’.⁷

Regarding co-operation, the law provides that all State authorities shall cooperate fully with and provide legal assistance in a *bona fide* way to the ICC. It also states that Bosnia and Herzegovina shall accept the transfer of persons convicted and sentenced by the ICC in accordance with agreements to be concluded for each individual case.

Burkina Faso

Law Regarding the Competences and Procedures Required for the Implementation of the Rome Statute of the International Criminal Court by National Courts (No. 52), 31 December 2009

Law No. 52-2009 regarding the national implementation of the ICC Statute was adopted on 31 December 2009.⁸ It provides for national courts to exercise criminal jurisdiction over genocide, crimes against humanity, and war crimes, including

1 *The International Crimes (Tribunals) (Amendment) Act, 2009* (Act No. LV of 2009).

2 *The International Crimes (Tribunals) Act, 1973*, Art. 3(d), as amended.

3 *Ibid.*, Art. 3(1).

4 *Law on Implementation of the Rome Statute of the International Criminal Court and Cooperation with the International Criminal Court*, passed by the House of Representatives on 30 September 2009, followed by the House of Peoples on 19 October 2009.

5 *Ibid.*, Art. 1.

6 *Ibid.*, Art. 3(5).

7 *Ibid.*, Art. 9(2).

8 Decree N. 2009, 894/PRES, promulgating Law No. 052-2009/AN, 31 December 2009.

grave breaches of the 1949 Geneva Conventions; violations of international humanitarian law (IHL) committed in international armed conflicts such as, *inter alia*, directing attacks against the civilian population and intentionally directing attacks against buildings dedicated to religion, education, art, or science and other cultural property; violations of Article 3 common to the 1949 Geneva Conventions; and other violations of IHL committed in non-international armed conflicts.⁹

The law also emphasizes national courts' primacy of jurisdiction over the ICC, thus reaffirming the principle of complementarity.¹⁰ Different forms of criminal responsibility are penalized, such as complicity, ordering, inciting, and aiding and abetting, and under given circumstances even the attempt to commit certain offences. The defence of 'superior orders', as in the Statute, would be accepted in court under strict conditions, among them that the order was not manifestly illegal. Orders involving genocide or crimes against humanity would always be considered manifestly illegal. Article 7 establishes that no distinction shall be made in the exercise of jurisdiction regarding government officials, including the head of state, thus rejecting the possibility of immunities.

Article 9 of the law refers to grounds for exclusion of criminal responsibility, such as self-defence and duress. The law also provides for a number of judicial guarantees, including *ne bis in idem*¹¹ and the right to not testify against oneself. Finally, it establishes the available penalties for all offences, including fifteen to thirty years' imprisonment, a monetary fine, and confiscation of property.

Ecuador

Law Amending the Penal Code for the Penalisation of Offences Committed during Military and Police Service, Official Register No. 196, 19 May 2010

A Law amending the Penal Code regarding military and police offences was adopted on 10 May 2010,¹² and entered into force nine days later upon publication in the Official Register. Though inserted into the civil Penal Code, its provisions only apply to acts and omissions committed by police or military officers, members of the reserve forces incorporated into active service, or civilians carrying out voluntary military service.¹³

Besides some common military crimes such as insubordination, sedition, or false alarm,¹⁴ the amendment added into the Penal Code a specific chapter on

9 *Ibid.*, Art. 19.

10 *Ibid.*, Art. 2.

11 *Ibid.*, Art. 5.

12 *Ley reformatoria al Código Penal para la Tipificación de los Delitos cometidos en el Servicio Militar Policial* (Registro Oficial No. 196, de 19 de mayo de 2010).

13 Article 114.3 of the Penal Code, as amended.

14 *Ibid.*, Arts. 602.3, 602.4, and 602.7, respectively.

offences against persons and property protected by IHL, specifically Chapter IV, Articles 602.37 and following. The law provides a definition of protected persons, covering, *inter alia*, the civilian population, those no longer participating in hostilities, sanitary and religious personnel, and any others holding such status under the four 1949 Geneva Conventions and their Additional Protocols. As for the crimes listed, the Penal Code now includes homicide of protected person, torture of protected person, collective punishment, mutilations, denying judicial guarantees to protected persons, failing to provide help and humanitarian assistance, recruiting children, attacking protected property including civilian objects not military objectives, employing prohibited methods of warfare, and prohibited weapons, including anti-personnel mines and cluster munitions.¹⁵ The unlawful use of the protective emblems and signs, together with simulating being a protected person (a form of perfidy), is also penalized.

The offences as provided may be committed in times of peace or during either an international or non-international armed conflict, as stated in Article 114.4. The law allows for findings of responsibility for commanders for the orders they give, as well as for the consequences arising from omissions in the fulfilment of their duties. According to Article 114.7, superior orders are not allowed as a defence from individual criminal responsibility for the executor. The law also establishes that actions and penalties for the crimes of genocide, crimes against humanity, war crimes, enforced disappearances, torture, or the crime of aggression shall not be subject to statutes of limitations.¹⁶

With regards to jurisdictional matters, the law establishes that the above military offences now fall under civilian courts. The amendment as adopted derogated both the Police and Military Penal Codes, and should prevail against any other law contradicting its provisions.

United Kingdom

Cluster Munitions (Prohibitions) Act 2010

The United Kingdom (UK) enacted the Cluster Munitions (Prohibitions) Act 2010¹⁷ on 25 March 2010, incorporating the prohibitions and other provisions from the Convention into domestic law. After defining the type of munitions falling under the scope of the law,¹⁸ Section 2 makes the use, development or production, acquisition, possession, or transfer of prohibited munitions, and making arrangements for another person to acquire or transfer prohibited munitions, a punishable offence with up to fourteen years' imprisonment, a fine, or both. The offence may be punishable if committed in the UK or elsewhere, provided that it is committed by a UK national, a Scottish partnership, or a body

15 *Ibid.*, Art. 602.58, paras. 10 and 11, respectively.

16 *Ibid.*, Art. 114.8.

17 *Cluster Munitions (Prohibitions) Act* (c.11), 25 March 2010.

18 *Ibid.*, Section 1.

incorporated under the law of the UK.¹⁹ The Act allows as defences against a charge under Section 2, *inter alia*, to show that the accused carried out the prohibited conduct with the intention of destroying the prohibited munitions, or with the intention that the munitions only be used for permitted purposes, as allowed for in the Convention.²⁰

The Act also nominates the responsible authority for, and provides for the procedure on, the seizure and destruction of prohibited munitions. According to Sections 12(1) and (2), the secretary of state may authorize a person to enter and search premises should there be reasonable cause to believe that, first, prohibited munitions would be found; second, the person in possession of such prohibited munitions would not have a defence under Section 5 or 6; and third, that the premises are publicly accessible.

United States

Military Commissions Act of 2009

A Military Commissions Act of 2009, amending some of the provisions of the 2006 Act, was signed on 28 October 2009.²¹ While keeping the basic structure of existing military commissions unaltered, the 2009 Act replaces the term ‘unlawful enemy combatant’ with that of ‘unprivileged enemy belligerent’ and lists three alternative criteria under which a person would be qualified as such: the person in question

- a) has engaged in hostilities against the United States or its coalition partners;
- b) has purposefully and materially supported hostilities against the United States or its coalition partners; or c) was a part of *Al Qaeda* at the time of the alleged offence under this chapter.²²

The amendment also provides for increased judicial guarantees. In particular, Section 948r establishes that no statement obtained by the use of torture or cruel, inhuman, or degrading treatment, whether or not ‘under color of law’²³ and as defined in Section 1003 of the Detainee Treatment Act of 2005, would be admissible in a military commission. Also, the Act provides the right of defendants to attend their entire trial and examine all evidence presented against them, to cross-examine witnesses, and to call their own witnesses. Military prosecutors are required to disclose the existence of any exculpatory evidence, as well as any evidence that might impeach the credibility of a government witness. Finally, the new law makes it possible to appeal to the US Court of Military Commission Review, the federal appeals court in Washington, and the US Supreme Court.²⁴

19 *Ibid.*, Section 4(3).

20 *Ibid.*, Sections 5 and 6, respectively.

21 Military Commissions Act of 2009 (amending some of the provisions of Military Commissions Act of 2006), Public Law 111-84, 28 October 2009.

22 *Ibid.*, Section 948a(7).

23 *Ibid.*, Section 948r (a).

24 *Ibid.*, Sections 950a and following.

B. Case law

Bosnia and Herzegovina

Suljo Karajic, Trial Chamber, The Court of Bosnia and Herzegovina, Case X-KR-07/336, 13 April 2010

On 13 April 2010, the Trial Chamber of the Criminal Division, Section I for War Crimes of the Court of Bosnia and Herzegovina found the accused Mr. Suljo Karajić guilty of the criminal offence of War Crimes against Civilians, as defined in Articles 173(1)(c) and (e) of the Criminal Code (namely, the ordering or perpetrating of killings, torture, and other bodily harm; and taking of hostages, unlawful detention, among other offences, respectively) and the criminal offence of War Crimes against Prisoners of War, under Articles 175(1)(a) and (b), namely killing and causing serious bodily harm.

The Chamber found Karajić responsible as direct perpetrator and accomplice to the crimes, determining that he committed and ordered to be committed, incited, and assisted subordinate military police officers to arbitrarily apprehend civilians from the village of Todorova Slapnica, Municipality of Velika Kladusa, allegedly supporting the autonomy of West Bosnia, later subjecting those apprehended to inhumane treatment and mental torture, and in some cases followed by summary execution at the village elementary school. A similar finding of responsibility was imposed for the murder and inhuman treatment of prisoners of war, from August 1994 to February 1995, when he was in command of a platoon of the military police within the 5th Corps of the Army of the Republic of Bosnia and Herzegovina.

He was sentenced to a single term of eighteen years' imprisonment for all counts.

Ante Kovać, Appellate Division Panel of the Court of Bosnia and Herzegovina, Case X-KRŽ-08/489, 4 March 2010

On 4 March 2010, the Appellate Division Panel of the Court of Bosnia and Herzegovina granted the appeal presented by the defence of Mr. Ante Kovac and ordered a new trial be carried out before the Appellate Panel of Section I for War Crimes. The defence had argued the appeal on the grounds of grave violations of the criminal procedure, the erroneous and incomplete account of facts, and violations of the Criminal Code.

Mr. Kovac, a commander for the Military Police Squad with the Vitez HVO Brigade, was found guilty in the first instance and sentenced to thirteen years' imprisonment for having ordered and approved the illegal capture and detention in inhumane conditions of more than 250 Bosnian civilians in Vitez in 1993. They were then transferred to the frontlines and obliged to dig trenches, and some of them executed. He was charged with War Crimes against Civilians, as per Articles 173(1)(e) and (f) of the Criminal Code, covering sexual offences, taking of

hostages, and unlawful detention, among others; and forced labour, pillage, and others, respectively.

Ljubo Tomić and Krsto Josić, State Court of Bosnia and Herzegovina, Case X-KR-07/346, 12 March 2010

On 12 March 2010, the Court of Bosnia and Herzegovina, Section I for War Crimes, acquitted the two accused, Mr. Ljubo Tomić and Mr. Krsto Josić, former members of the Republika Srpska Army, who were indicted for the shooting and killing of three Bosniak civilians on 26 June 1992 in Marhoši, Municipality of Zvornik. The Prosecutor had charged them with War Crimes against Civilians under Article 173(1)(c) of the Criminal Code (dealing with murder of protected persons), under the form of complicity in committing a criminal offence (Article 29 of the Criminal Code), and referring as well to Article 180(1) of the same Code, according to which a person who planned, instigated, ordered, perpetrated, or otherwise aided and abetted in the planning, preparation, or execution of certain criminal offences could be personally responsible for the criminal offence. Tomić and Josić had denied participation in the killings.

The Trial Panel found the Prosecutor had failed to prove the charges against the accused beyond reasonable doubt, as the case had been based entirely on the testimony of a single individual. As stated by the Court, the Panel had to evaluate the testimony in a critical and circumspect manner, since there was only one direct witness, and to look for its corroboration in other presented evidence, but did not find it in this specific case. In order to establish the criminal responsibility for such a severe criminal offence on the basis of a single direct witness, the Court argued that single witness testimony should be so clear and indisputable that other witness testimonies could shed no doubt on it but rather corroborated it. This was found not to be the case.

Ćerim Novalić, Court of Bosnia and Herzegovina, Case X-KR-09/847, 24 May 2010

Mr. Ćerim Novalić, a former member of the Army of Bosnia and Herzegovina, was found guilty in the first instance by the Court of Bosnia and Herzegovina, Section I for War Crimes, on 24 May 2010, of the charge of War Crimes Against Civilians committed in the Konjic area, in violation of Article 173(1)(e) of the Penal Code, which penalizes ‘coercing another by force or by threat of immediate attack upon his life or limb, or the life or limb of a person close to him, to sexual intercourse or an equivalent sexual act (rape) or forcible prostitution’.²⁵

According to the Court, in September 1992, during the armed conflict between the Army of the Republic of Bosnia and Herzegovina and the Army of the Republika Srpska, the accused entered a house in the village of Dzepa, Konjic

25 Article 173(1)(e) of *Penal Code of Bosnia and Herzegovina*, 1 March 2003.

Municipality, together with one unidentified soldier, and raped a woman. He was sentenced to seven years' imprisonment.

Colombia

Geiber José and Mario José Fuentes Montaña, Criminal Chamber, Supreme Court of Justice, 27 January 2010

The Supreme Court of Justice passed final judgment on 27 January 2010 for the criminal case against Geiber José and Mario José Fuentes Montaña, siblings and members of the Autodefensas Unidas de Colombia (AUC), finding them guilty of 'homicide of protected person' (as per Article 135 of the Penal Code) and 'concerting to commit a crime' (Article 340 of the Penal Code), for participating in a raid against an indigenous village in the province of Valledupar, which resulted in at least four civilians being kidnapped and executed. The Court sentenced both to forty years' imprisonment and a fine of 10,000 'minimum legal wages'.

Acting as third and final review, the Court was required to rule on two issues: first, on whether the lower courts of Valledupar had erred in typifying the main offence as homicide, aggravated by the victims being 'internationally protected persons' as per Article 104(9) of the Penal Code, rather than 'homicide of protected person', a war crime found in Article 135 of the Code; secondly, whether certain witnesses' testimonies had been erroneously discarded by the lower courts and could, in effect, contribute to proving beyond reasonable doubt the participation in the killings of Mr. Geiber Fuentes, and thus reverse his previous acquittal on that count.

With regards to the first issue, the Court first clarified that the phrase 'internationally protected persons', as referred to by Article 104 of the Penal Code, was already defined in Law No. 169 of 1994, referring to heads of state, ministers of foreign affairs, or other persons granted immunities or other special protection under international law. 'Protected persons under IHL', however, referred to members of the civilian population, protected by IHL in times of armed conflict. The victims – indigenous civilians from the *Kankuamos* community – were found to fall under the latter category and not the former.

The Court also found it necessary, in rejecting the lower courts' arguments against the use of Article 135, to clarify certain points of law relative to IHL. The first of these was the fact that the legislation covering serious violations of IHL was applicable in times of 'armed conflict' generally, and was not restricted to acts committed during or as a result of direct 'combat', as argued by the lower courts. Secondly, the fact that the state had previously recognized the existence of a non-international armed conflict, in itself a political act, and had incorporated this recognition into Colombian law, also recognizing the AUC as one of the conflict's warring parties, meant that the issue was, thus, no longer open to interpretation or question. Thirdly, the Court rejected the notion that IHL was inapplicable to armed groups lacking an ideology, an argument used by the lower courts in an

apparent attempt to avoid providing the AUC with belligerent status. In this the Supreme Court stressed the fact that IHL provided no legitimacy or status nor granted favourable treatment to non-state actors; on the contrary, in the case of Colombian domestic law, it allowed for harsher sentences (as established under Article 135 of the Penal Code).

As for the second issue, related to the use of certain witnesses' testimonies, again the Supreme Court found the lower courts in error, admitting the evidence as a contributing element toward a finding of guilt, beyond reasonable doubt, against Mr. Geiber Fuentes as co-author of 'homicide against protected persons'.

Croatia

Prosecutor v. Nedeljko Jankovic, Zadar District Court, 15 March 2010

On 15 March 2010, the Zadar District Court of Croatia delivered a guilty verdict against Mr. Nedeljko Jankovic, a former member of the Yugoslav People's Army (JNA), and sentenced him to six years' imprisonment for War Crimes against the Civilian Population, in the forms of pillage and destruction of civilian property, and brutal intimidation of and spreading terror among the Croatian population. The offences were committed in the villages of Zemunik Gornji and Jagodnja Donja, in October and November 1991. The accused was charged on the basis of Article 158(1) of the Croatian Criminal Code. References were also made, however, to Article 3(1)(c) common to the 1949 Geneva Conventions (which refers to armed conflicts not of an international character), Articles 146 and 147 of the Geneva Convention IV (dealing with grave breaches applicable in international armed conflicts), and Articles 4(2)(d) and (g) of Additional Protocol II (again applicable only in non-international armed conflicts).

As for a qualification of the conflict, the Court described it as between the JNA and Serb paramilitary troops on one side and armed forces of the Republic of Croatia on the other. It did not determine in explicit terms whether it considered the conflict as international or non-international.

In determining the final term of imprisonment, the Court took into consideration the fact that Mr. Jankovic had already been tried by a JNA Military Court in 1991, serving two years in prison, together with the time spent in detention awaiting trial. This reduced the final sentence to three years.

Norway

Prosecutor v. AAAA Toyen Tannlegevakt AS, Supreme Court of Norway, Case No. 2010/253, 12 May 2010

The Supreme Court of Norway passed down a judgment on 12 May 2010, setting aside a Court of Appeals decision regarding whether the logo of a dental clinic could be easily confused with the emblem of the Red Cross. Both the District Court

and the Borgarting Court of Appeals had ruled in favour of the defendant, finding no violation under Section 328, second subsection, letter C of the General Civil Penal Code. Such provision prohibits, under penalty of a fine or short-term imprisonment, the use for an unlawful purpose of any sign or designation that could be easily mistaken for those determined for use in connection with aid to the wounded and sick in times of war, as established by an international agreement binding on Norway.

After briefly reviewing the history behind Section 328 and the current obligations arising from the four 1949 Geneva Conventions, to which Norway is a party, the Supreme Court gave significant importance to the fact that, given that the Conventions were intended to apply particularly in situations of conflict, it was in such context that the expression ‘can be easily confused with’ had to be read. Similarly, in order for the logo not to be covered by Section 328, confusion would need to not take place ‘easily’.

With this in mind, and considering the logo was to be found, *inter alia*, above the entrance door to the company’s premises, the Court found the basic feature of the logo, the red cross, was indeed a prominent element and thus inappropriate. Interpreting the Court of Appeal’s application of the law to be incorrect, the case was returned to the District Court for retrial.

Prosecutor v. Mirsad Repak, Appellate Chamber, Oslo, 11 March 2010

On 11 March 2010, the Appellate Chamber of the District Court in Oslo confirmed a lower court’s finding of guilt against Mr. Mirsad Repak, a former member of the Croatian Armed Forces (HOS), charged with war crimes in the form of unlawful deprivation of liberty of civilians, committed in 1992, at the Dretelj detention camp, Bosnia and Herzegovina.

Mr. Repak, who had been living in Norway for more than ten years and holds Norwegian citizenship, was initially brought to trial in 2008, charged with war crimes and crimes against humanity, in the form of illegal imprisonment of civilians of Serbian identity, torture, and rape. He was then sentenced to five years in prison and ordered to pay monetary compensation of up to 51,000 Euros to at least eight victims. The case at the time was deemed significant due to the application of recently adopted war crimes legislation, which the court found to apply to past events despite the constitutional guarantee of non-retroactivity.

In confirming the original finding of guilt, the Appeals Court reduced Mr. Repak’s sentence from five years’ to four years and six months’ imprisonment, but increased the amount of compensation and the number of individuals to whom he would need to pay it. Justifying its decision, the Court argued that, even after reviewing Norwegian as well as Bosnian and international jurisprudence, it found it difficult to draw definitive conclusions on sentencing criteria, and was bound to consider other mitigating circumstances under Norwegian law (primarily the fact that eighteen years had passed since the commission of the offences). As for the compensation, it took guidance from Norwegian jurisprudence involving serious crimes.

United States

Ghaleb Nassar Al-Bihani v. Barack Obama, US Court of Appeals, District of Columbia Circuit, 5 January 2010

The United States Court of Appeals dismissed, on 5 January 2010, the appeal filed by Mr. Ghaleb Nassar Al-Bihani, a Yemeni citizen detained in the US naval base at Guantánamo Bay, thus affirming the denial of his petition for a writ of habeas corpus. The Court concluded that Al-Bihani's detention is lawful under the authority of the Authorization for Use of Military Force (AUMF),²⁶ and the Military Commissions Acts of 2006 and 2009.

Mr. Al-Bihani challenged the legitimacy of his detention by advancing a number of arguments based on IHL. First, he argued that 'support', or even 'substantial support', of Al Qaeda or the Taliban as an independent basis for detention violated international law and thus should be read into the AUMF. He also interpreted IHL to mean that anyone not belonging to an official state military is a civilian, and civilians, he argued, would need to commit a direct hostile act before they could be lawfully detained. Not having committed such an act, his detention was unlawful. The Court, however, rejected all references to the laws of war, arguing that 'their lack of controlling legal force and firm definition render their use both inapposite and inadvisable when courts seek to determine the limits of the President's war powers',²⁷ and that thus there was no need to 'quibble over the intricate application of vague treaty provisions and amorphous customary principles'.²⁸

This was further supported, in view of the Court, by the fact that the 1949 Geneva Conventions had not been implemented domestically by Congress, and, even if they had been, Congress would still retain the power to authorize the President to use force that may exceed the bounds contained in IHL.

As for Mr. Al-Bihani's actions, the Court concluded that he had purposefully and materially supported enemies engaged in hostilities against the US since he was engaged as a cook with the 55th Arab Brigade – a Taliban unit that included Al Qaeda members within its command structure – and took part in hostilities against the Northern Alliance. In the Court's view, 'purposeful and material support' clearly included traditional food operations essential to a fighting force and the carrying of arms.

Regarding the release of Al-Bihani, the Court stated that IHL requires release and repatriation of prisoners of war at the 'cessation of active hostilities' as opposed to 'conflict' or 'state of war', thus differentiating the physical violence of war from any formal beginning and end of a conflict. The decision as to when

26 The Authorization for Use of Military Force Against Terrorists (Public Law 107-40, p. 115, Stat. 224, enacted 18 September 2001).

27 *Ghaleb Nassar Al-Bihani v. Barack Obama*, US Court of Appeals, District of Columbia Circuit, 5 January 2010, p. 7.

28 *Ibid.*, p. 8.

active hostilities have ceased, however, remained a political decision and thus for the Executive to determine.

Al-Zahrani et al. v. Rumsfeld et al., US District Court for the District of Columbia, 16 February 2010

On 16 February 2010, the US District Court for the District of Columbia dismissed a civil suit against the United States, Mr. Donald Rumsfeld, and other US officials, brought by Mr. Talal Al-Zahrani and Mr. Ali Abdullah Ahmed Al-Salami, in their individual capacities and on behalf of their sons, Mr. Yasser Al-Zahrani and Mr. Salah Ali Abdullah Al-Salami, who committed suicide while detained at the US naval base in Guantánamo, Cuba, in 2006.

The plaintiffs claimed that the detainees were arbitrarily detained and subject to torture and cruel and inhuman treatment, in violation of the 1949 Geneva Conventions, and sought reparation under the Alien Tort Claims Act. The plaintiffs also alleged that the detention and treatment of Mr. Al-Zahrani and Mr. Al-Salami constituted cruel punishment and deprived them of their life and liberty interests in violation of their constitutional rights under the Eighth and Fifth Amendments to the US Constitution. The amended complaint alleged that the individual defendants were liable for these violations in that defendants ‘participated in, set the conditions, directly and/or indirectly facilitated, ordered, acquiesced, confirmed, ratified, aided and abetted, and/or conspired together’²⁹ in the detention and treatment of Mr. Al-Zahrani and Mr. Al-Salami. Finally, the plaintiffs challenged the US under the Federal Tort Claims Act for negligence, medical negligence, medical malpractice, intentional infliction of emotional distress, battery, and wrongful death. Regarding the legality of the detention regime, the plaintiffs argued that their claim was not barred by Section 7 of the Military Commission Act of 2006, which bars all US courts from exercising jurisdiction in cases involving persons detained by the US and determined to be enemy combatants, because of flaws and lack of guarantees of due process of the Combatant Status Review Tribunal (CSRT), allegedly established by the US Supreme Court in *Boumediene v. Bush*, and which would result in the invalidity of their status as enemy combatants.

The Court, however, found that Section 7 of the Military Commissions Act 2006 was not invalidated by the Supreme Court in *Boumediene v. Bush*, and determined both that the CSRTs were validly constituted and that the status of Mr. Al-Zahrani and Mr. Al-Salami had therefore been properly determined. The Court then declined to hear further challenges to the Military Commission Act, including claims of unconstitutionality.

Regarding claims against the individual defendants under the Alien Tort Claim Act, the Court agreed with the US government’s argument that the officials

29 As cited in *Al-Zahrani et al. v. Rumsfeld et al.*, US District Court DC, Alien Torts Act, 2010 WL 535136 (D.D.C.), 16 February 2010, p. 3.

were acting within the scope of their duties when they detained and interrogated Mr. Al-Zahrani and Mr. Al-Salami, and therefore dismissed the claims under this Act.

Finally, the Court also concluded that Cuba maintains sovereignty over Guantánamo, and therefore dismissed the claims under the Federal Tort Claims Act as they would be barred by the Act's exception concerning claims 'arising in a foreign country'.³⁰

C. National IHL Committees

Lebanon

The Lebanese National International Humanitarian Law Committee was created on 21 June 2010 by the entry into force of Presidential Decree No. 4382. Chaired by the deputy prime minister, it is composed of representatives from the Ministries of Justice, Foreign Affairs and Immigrants, Interior and Municipalities, Finance, National Defence, Higher Education, and Culture. Membership is completed by representatives of the Lebanese Red Cross Society, the Parliamentary Commission for Human Rights, Bar Associations in Beirut and Tripoli, the Lebanese Order of Physicians in Beirut and Tripoli, and others. The Secretariat is attached to the General Secretariat of the Prime Minister's Office.

The Committee will follow up an implementation plan to incorporate IHL into national legislation by, in particular, drafting the necessary provisions and measures to adapt national legislation; drawing up an annual plan of action for the appropriate dissemination of the law; co-ordinating between all the stakeholders involved in dissemination and implementation of IHL; exchanging information and expertise to strengthen relations at national, regional, and international level; and monitoring and documenting IHL violations at the domestic level. It will report annually to the prime minister. Finally, the Committee will provide proposals and recommendations for the national plan.

Serbia

The Serbian International Humanitarian Law Committee was officially established on 29 April 2010 for a period of five years.³¹ The Committee consists of representatives of different ministries, namely the Ministry of Foreign Affairs (acting as President), Interior, Justice, and Health, as well as the International Law Association and the Serbian Red Cross.

The Committee's purpose is to follow up developments in the field of IHL, propose measures for the implementation of IHL, give advisory opinions to the

30 *Federal Tort Claims Act (FTCA)*, 28 U.S.C., paras. 1346(b), 2680(k).

31 *Official Gazette of the Republic of Serbia*, No. 30, 7 May 2010.

relevant bodies of the state administration on the fulfilment of state obligations, consider and propose measures regarding dissemination of IHL, and finally consider issues related to international co-operation and implementation with other National IHL Committees, the International Committee of the Red Cross, and other national and international organizations.

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