

## International Security Through Environmental Challenges

Mossalanejad, A.

Faculty of Law and Political Sciences, University of Tehran, Tehran, Iran

Received 10 Jan. 2009;

Revised 15 April 2009;

Accepted 27 April 2009

---

**ABSTRACT:** During the 1960s, the relatively new approaches like environmental warfare and intentional environmental deterioration came in to the global security and strategic literature. Till now, through different conventional and unconventional wars, the governments have imposed intentional and unintentional adverse effects on the environment some of which are lasting for decades. The application of weapons, the destruction of structures and oil fields, fires, military transport movements and chemical spraying are all examples of the destroying impact war may have on the environment. 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. Several United Nations treaties have provisions to limit the environmental impacts of war or military activities. The daily generated waste that is discharged to the environment by the military troops all around the world, the imperfect disposal of different radioactive, chemical and microbial weaponry in different locations of the planet and even the space are among the numerous proved evidences of the theory that militaries are the main environmental threats directly - during the war time- and indirectly - during the peace time- Besides the war, the energy and its relative issues are among the most significant challenges threatening the global security. Most civil and between-countries conflicts all around the world have been occurred with direct or indirect relations to the energy resources. Providing a dependable source of energy is considered as a major principle in the defensive potential of different countries. Increasing the level of dependency of different countries to each other, a global commercial energy market would result in a remarkable decrease in the number of conflicts caused by energy crisis. Shifting the global focal attention from the fossil fuels towards the renewable clean sources of energy would play a key role in preparing the required infrastructure for achieving the global energy and environmental security.

**Key words:** Environment, Security, War, Energy, Law

---

### INTRODUCTION

During the 1960s, the relatively new approaches like environmental warfare and intentional environmental deterioration came in to the global security and strategic literature. National industrial infrastructures like atomic, chemical and power plants as well as water and oil resources are mainly exposed to destructive attacks. A thorough look on the background and consequences of recent wars indicates that there has been no environmental caution within the period of conflicts (Westing, 1989; Blakemore and Reddish, 1996). Till now, through different conventional and unconventional wars, the governments have imposed intentional and unintentional adverse

\*Corresponding author E-mail: mossalanejad@ut.ac.ir

effects on the environment some of which are lasting for decades.

The application of weapons, the destruction of structures and oil fields, fires, military transport movements and chemical spraying are all examples of the destroying impact war may have on the environment (Percival and Homer-Dixon, 1995). Air, water and soil are polluted, man and animal are killed, and numerous health affects occur among those still living. Regarding the increase of weaponry destructive power, such adverse effects have been sharply ascended (Grandahan and Murray, 2003). Entering the water, air and soil as well as the food chain,

chemical, microbial and radioactive elements would seriously endanger the healthy life of different creatures including human beings for even tens of decades. Existing evidences indicate that unless the governments should be thoroughly limited by international widely approved regularities and conventions, the process of environment deterioration will go on.

### **Background of environmental conventions**

The war and industrial development have had a close interrelationship in causing adverse environmental consequences (Richelson, 1986). Initially, during the first decades of nineteenth century, environmental affairs started coming in to the international policy; Rheine and Danube Rivers commissions which stipulated the socio-economic security of the concerned area during the war time may be considered as focal points in such process. The first international convention regarding plants health was regulated in 1889 in Switzerland in order to control the phylloxera epidemics that threatened the Europe grapevines. Afterwards, during the 1920s and 1950s similar conventions were considered regarding plants care and diseases control.

Regarding the animals preservation, the first convention is related to the year 1902 which was regulated to care the birds useful for agriculture. Similar regulations relating the survival of seals and whales were documented in 1911 and 1946 respectively. The World War II may be considered as a launching pad in the formation of different environmental conventions. The treaty of radioactive testing prevention in the space in 1964, the conference of man and environment in 1972 in Stockholm, the conventions of Baltic and Mediterranean Seas in 1970s and 80s run by UNEP, the London dumping convention for limiting the discharge of hazardous wastes in to the seas in 1972, the air pollution treaty for controlling the emission of SOX and other air pollutants which cause the acidic rains in 1979, Wine convention for ozone layer protection in 1985 and Montreal protocol for limiting the use of CFCs for ozone layer protection in 1987 are among the most important international environmental treaties that are stipulated after the world war II.

Coming towards such conventions indicates the governments' awareness of a new kind of hazards called environmental threats; such hazards

are generated through human socio-economic and military activities and threat all kinds of life on the planet. Environmentalism, by the aim of reducing the destructive human actions and reactions - causing temporal and lasting hazards for current and next generations- and making global security has focused on the major factors threatening the environmental sustainable development. Uncontrolled developing process by changing the identity of such process from an instrument to the final goal is considered as a major threat. Industrialization by the emphasis on productivity is a clear example of such process in recent decades. Emission of different man-made pollutants to the air, soil and water bodies as a result of various industrial cycles has intensified the mentioned catastrophic situation.

### **War and environment**

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 (Percival and Homer-Dixon, 1995). Congo war (II), Ethiopia & Eritrea, Rwanda civil war, Somalia civil war, Sudan (Dartford & Chad) in Africa, Pearl Harbour (during the world war II), World Trade Centre explosion in America (Gavett *et al.*, 2004; Liouy *et al.*, 2002), Afghanistan war (UNEP, 2003), Cambodia civil war, Hiroshima & Nagasaki nuclear explosions (VPN, 2005), Iraq & Kuwait, Iraq & the United States, Russia & Chechnya, Vietnam war in Asia and Kosovo war (UNEP, 1991), World War I: Trench Warfare, World War II in Europe are among the main destructive wars all around the world during the last century (CACI, 2006; Cousin, 2005; Mannion, 2003; WHO, 2003). In Africa many civil wars and wars between countries occurred in the past century, some of which are still continuing (Sullivan, 2006). Most wars are a result of the liberation of countries after decades of colonialization. Countries fight over artificial borders drawn by former colonial rulers. Wars mainly occur in densely populated regions, over the division of scarce resources such as fertile farmland. It is very hard to estimate the exact environmental impact of each of these wars. Here, a summary of some of the most striking environmental effects, including biodiversity loss, famine, sanitation problems at refugee camps and over fishing is given for different countries.

### **Vietnam War**

The Vietnam War started in 1945 and ended in 1975. It is now entitled a proxy war, fought during the Cold War between the United States and the Soviet Union to prevent the necessity for the nations to fight each other directly (Pearce, 2004). North Vietnam fought side by side with the Soviet Union and China, and South Vietnam with the United States, New Zealand and South Korea. It must be noted that the United States only started to be actively involved in the battle after 1963. Between 1965 and 1968 North Vietnam was bombed under Operation Rolling Thunder, in order to force the enemy to negotiate. Bombs destroyed over two million acres of land. North Vietnam forces began to strike back, and the Soviet Union delivered anti-aircraft missiles to North Vietnam. The ground war of US troops against the Viet Cong began. The United States would not retreat from Vietnam until 1973, and during those years extremely environmentally damaging weapons and war tactics were applied.

A massive herbicidal programme was carried out, in order to break the forest cover sheltering Viet Cong guerrillas, and deprive Vietnamese peasants of food. The spraying destroyed 14% of Vietnam's forests, diminished agricultural yield, and made seeds unfit for replanting. If agricultural yield was not damaged by herbicides, it was often lost because military on the ground set fire to haystacks, and soaked land with aviation fuel and burned it. A total of 15,000 square kilometres of land were eventually destroyed. Livestock was often shot, to deprive peasant of their entire food supply. A total of 13,000 livestock were killed during the war. The application of 72 million litres of chemical spray resulted in the death of many animals, and caused health effects with humans. One chemical that was applied between 1962 and 1971, called Agent Orange, was particularly harmful. Its main constituent is dioxin, which was present in soil, water and vegetation during and after the war. Dioxin is carcinogenic and teratogenic, and has resulted in spontaneous abortions, skin and lung cancers, lower intelligence and emotional problems among children. Children fathered by men exposed to Agent Orange during the Vietnam War often have congenital abnormalities. An estimated half a million children were born with dioxin-related abnormalities. Agent Orange continues to threaten the health of the Vietnamese today.

### **Iraq & Kuwait war**

The Gulf War was fought between Iraq, Kuwait and a number of western countries in 1991. Kuwait had been part of Iraq in the past, but was liberated by British imperialism, as the Iraqi government described it. In August 1990, Iraqi forces claimed that the country was illegally extracting oil from Iraqi territory, and attacked. The United Nations attempted to liberate Kuwait. Starting January 1991, Operation Desert Storm began, with the purpose of destroying Iraqi air force and anti-aircraft facilities, and command and control facilities. The battle was fought in Iraq, Kuwait and the Saudi-Arabian border region. Both aerial and ground artillery was applied. Late January, Iraqi aircraft were flown to Iran, and Iraqi forces began to flee.

The Gulf War was one of the most environmentally devastating wars ever fought. Iraq dumped approximately one million tons of crude oil into the Persian Gulf, thereby causing the largest oil spill in history. Approximately 25,000 migratory birds were killed. The impact on marine life was not as severe as expected, because warm water sped up the natural breakdown of oil. Local prawn fisheries did experience problems after the war. Crude oil was also spilled into the desert, forming oil lakes covering 50 square kilometres. In due time the oil percolated into groundwater aquifers. Fleeing Iraqi troops ignited Kuwaiti oil sources, releasing half a ton of air pollutants into the atmosphere. Environmental problems caused by the oil fires include smog formation and acid rain. Toxic fumes originating from the burning oil wells compromised human health, and threatened wildlife. A soot layer was deposited on the desert, covering plants, and thereby preventing them from breathing. Seawater was applied to extinguish the oil fires, resulting in increased salinity in areas close to oil wells. It took about nine months to extinguish the fires. During the war, many dams and sewage water treatment plants were targeted and destroyed. A lack of possibilities for water treatment resulting from the attacks caused sewage to flow directly into the Tigris and Euphrates rivers. Additionally, pollutants seeped from bombed chemical plants into the rivers. Drinking water extracted from the river was polluted, resulting in widespread disease. For example, cases of typhoid fever have increased tenfold since 1991.

Movement of heavy machinery such as tanks through the desert damaged the brittle surface, causing soil erosion. Sand was uncovered that formed gradually moving sand dunes. These dunes may one day cause problems for Kuwait City. Tanks fired Depleted Uranium (DU) missiles, which can puncture heavy artillery structures. DU is a heavy metal that causes kidney damage and is suspected to be teratogenic and carcinogenic. Post-Gulf War reports state an increase in birth defects for children born to veterans. The impact of Depleted Uranium could not be thoroughly investigated after the Gulf War, because Saddam Hussein refused to cooperate. Its true properties were revealed after the Kosovo War in 2001 (description below). DU has now been identified as a neurotoxin, and birth defects and cancers are attributed to other chemical and nerve agents. However, it is stated that DU oxides deposited in the lungs of veterans have not been thoroughly researched yet. It was later found that this may cause kidney and lung infections for highly exposed persons.

After the Gulf War many veterans suffered from a condition now known as the Gulf War Syndrome. The causes of the illness are subject to widespread speculation. Examples of possible causes are exposure to DU (see above), chemical weapons (nerve gas and mustard gas), an anthrax vaccine given to 41% of US soldiers and 60-75% of UK soldiers, smoke from burning oil wells and parasites. Symptoms of the GWS included chronic fatigue, muscle problems, diarrhoea, migraine, memory loss, skin problems and shortness of breath. Many Gulf War veterans have died of illnesses such as brain cancer, now acknowledged as potentially connected to service during the war.

### **Environmental impact of war**

War and military activities have obvious detrimental impacts on the environment. Weaponry, troop movements, land mines, creation and destruction of buildings, destruction of forests by defoliation or general military usage, poisoning of water sources, target-shooting of animals for practice, consumption of endangered species out of desperation etc., are just some of the examples of how both war and peacetime military activities (such as training, base construction, and transportation of weaponry) harm the environment (Gieick, 1997). From a legal standpoint, environmental protection during times of war and military activities is addressed partially by

international environmental law. Further sources are also found in areas of law such as general international law, the laws of war, human rights law and local laws of each affected country. However, this article is chiefly focused on the environment and as soon as two countries are battling it out, the issue becomes one of international concern. Thus, international environmental law is the appropriate focus here. The law of armed conflict is not very well developed in comparison to other areas of international law. This is because there are no international institutions in place to deal with its development and implementation, or to monitor its observance. Relying on the parties to implement it during the most heated time of a country's history is a little like asking the thief to guard a jeweller store - the temptation to ignore the obligation and to overstep the mark is enormous. Military restraint is often theoretical rather than real and the promise of punishment for environmental damage does not appear to weigh heavily on the minds of military commanders.

National laws dealing with environmental degradation caused by military activities during peacetime are also not very strong. Many countries regard military activities as sacrosanct, permitting environmental destruction in the name of country protection. However, there are indications in some countries that national governments are taking their environmental responsibilities more seriously in relation to military activities and it is perhaps from these national experiences in controlling excesses that future international controls may be better modelled and implemented. Several United Nations treaties, including the Fourth Geneva Convention, the 1972 World Heritage Convention and the 1977 Environmental Modification Convention have provisions to limit the environmental impacts of war or military activities.

### **Armed Conflict and the Environment**

All too frequently, armed conflict is inextricably entwined with the environment. Natural resources can contribute to conflict, fuel armed conflict, and be targeted by combatants; natural resources can also facilitate post-conflict peace building and recovery. Shortages of water and other natural resources can exacerbate existing ethnic and political tensions, and may contribute to the causes of war. The burning oil fields of Kuwait and Lebanese oil spills are but some of the vivid images of the environmental consequences

of war, which include deliberate, incidental, and accidental effects. Since the 1990s, peace building efforts are increasingly incorporating natural resource management to ensure the transition to a durable peace. For the past decade, The Environmental Law Institute (ELI) has been a leading source of information on the environmental consequences of war (Mannion, 2003).

Maintaining and building peace in fragile post-conflict societies requires consideration of natural resource management (WHO, 2003). Some conflicts have related directly to - or been fuelled by - valuable natural resources such as timber or minerals, as in Liberia, Sierra Leone, and other countries. In many instances, old animosities can flare up over control or use of land and other natural resources. Similarly, an inability to deliver key services (water, food, shelter, and other resource-dependent essentials for life) can destabilize fragile societies. Natural resources can also provide an opportunity for confidence-building measures, as with the 1994 peace treaty between Jordan, and the Palestinian Authority. Improved governance of natural resources may provide models for more effective and equitable governance.

Peace-building entails a broad variety of initiatives, ranging from negotiation of the peace settlement, to post-conflict reconstruction and other measures to facilitate the transition to peace, and the ultimate shift from post-conflict reconstruction to long-term economic and social development. Transitioning to peace can help countries prevent a return to conflict, meet the basic needs for life (water, food, shelter, and livelihoods), decommission armed forces, address underlying causes of tension, and strengthen governance. Experience shows that transparent and sustainable natural resource management can improve each of these peace-building measures.

## **CONCLUSION**

From a critical point of view, militaries are the main environmental threats directly - during the war time- and indirectly - during the peace time- (Westing, 1980; Lanier-Graham, 1993; Westing, 1997; Myers, 1993). Critics who accept such theory believe that the military training, maintenance and manoeuvres during the peace time may be considered as destructive as the direct deterioration of the environment through war time. Such theory is strongly confirmed by taking a look on the history of the cold war by the end of the last century. The daily generated waste that is discharged to the

environment by the military troops all around the world, the imperfect disposal of different radioactive, chemical and microbial weaponry in different locations of the planet and even the space are among the numerous proved evidences of such theory. The severity of such condition by the end of the cold war finally made the United States secretary of defence found an office under the title of environmental security for dealing with environmental precautions related directly or indirectly to the war by the end of the last century.

The process of edition and development of international environmental rights may be categorized to three distinct periods; during the first period which commenced in the second half of nineteenth century and ended by the Stockholm conference of the man and environment in 1972, paying attention to the wildlife and endangered and rare species were considered. Furthermore because of the wide environmental deteriorations caused by industrialization and population growth, environmental protection agencies appeared. Conventions of global protection unity in 1948, Ramsar in 1971, free waters intervention in 1969 and oil pollution penalties in Brussels in 1971 are among the most important achievements of this period. Starting from 1972 and terminating by the Rio de Janeiro conference held by the United Nations in 1992, the second period was an unsuccessful experience regarding environmental protection. Catastrophic incidents like the chemicals leakage in Bhopal, India, the explosion of Chernobyl atomic power plant and burning of Kuwait oil wells during the Persian Gulf War are among the most terrible occurrences in this period. The third period started by the Rio conference in 1992. The process of international environmental rights development was continued through the conventions of climate change and biodiversity, the announcement of forests principals and Rio declaration. Generally, most of the decisions made through the cold war regarding the human and environmental rights were partially executed during this period.

Besides the war, the energy and its relative issues are among the most significant challenges threatening the global security (Cullet, 1999). Depletion of major fossil fuels in the forthcoming decades has highlighted the different aspects of the so-called energy security in recent years (Beschornel, 1992; Boutwell and Rathjens, 1993). The fluctuations of energy price in recent years, the increased share of the countries like China and India in the global energy market (which was

formerly exclusive for some specific countries), the severe restrictions regarding the green house gases emission to the atmosphere and the ever increasing demand for new renewable energy sources as a substitution for the current ones are considered as the major global energy challenges.

One of the most important goals of developed countries is maintaining their continual progress despite environmental restrictions. Such ideal indicated the close relation among energy, environment and global security in near future. Most civil and between-countries conflicts all around the world have been occurred with direct or indirect relations to the energy resources. Providing a dependable source of energy is considered as a major principle in the defensive potential of different countries. Increasing the level of dependency of different countries to each other, a global commercial energy market would result in a remarkable decrease in the number of conflicts caused by energy crisis. Shifting the global focal attention from the fossil fuels towards the renewable energy and also energy efficiency tools could lead to global energy and environmental security.

## REFERENCES

- Beschornel, N. (1992). Energy and Instability in the Middle East, Adelphi Paper 273, London: International Institute for strategic studies, 27- 44.
- Blakemore, R. and Reddish, A. (1996). Global Environmental Issues, (London: Hodder and Stoughton), 63-65.
- Boutwell, J. and Rathjens, G. (1993). Environmental Change and violent conflict, (Toronto: Canadian Institute of International Affairs), 268.
- Central Asia Caucasus Institute, (2006). Environmental ramifications of the Russian war on Chechnya, Johns Hopkins University, <http://www.cacianalyst.org/view>.
- Cousin T. L. (2005). Case study: Eritrean and Ethiopian Civil War, ICE Case Studies No 2, <http://american.edu/ted/ice/eritrea.htm>.
- Cullet, P. (1999). Equity and Flexibility Mechanisms in the Climate Change Regime: Conceptual and Practical Issues. *RECIEL.*, **8(2)**, 34-36.
- Gleick, P. (1991). Environment and security: the clear connection. *Bulletin of Atomic scientists*, **47(3)**, 16-21.
- Grandahan, G.M. and Murray, F. (2003). Air Pollution and Health in Rapidly Developing Countries, (London: Earth scan, 2003), 227.
- Landrigan P.J., Lioy P.J., Thurston G, Berkowitz G, Chen L.C., Chillrud S.N., Gavett S.H, Georgopoulos P.G, Geyh AS., Levin S., Perera F., Rappaport S.M., and Small, C. (2004). Health and Environmental Consequences of the World Trade Center Disaster. *Environmental Health Perspectives*, **112(6)**, 731-739.
- Lanier-Graham, S.D. (1993). The Ecology of War: Environmental Impacts of Weaponry and War, (New York: Walker), 11-15.
- Lioy P.I, Weisel c.P., Millette I.R., Eisenreich S., Vallero D. and Offenbergl L. (2002). Characterization of the dust/smoke aerosol that settled east of the World Trade Center (WTC) in Lower Manhattan after the collapse of the WTC 11 September 2001, *Environmental Health Perspectives*, **110**, 703-714.
- Mannion, A. M. (2003). The Environmental Impact of War and Terrorism. Geographical paper No 169, Department of Geography, University of Reading, White knights, UK.
- Myers, N. (1993). Ultimate security: the Environmental Basis of Political stability. New York and London: Norton, 72- 76.
- Pearce F. (2004). From Vietnam to Rwanda: war's chain reaction. *The New Scientist*, [http://www.unesco.org/courier/2000\\_05/uk/planet.htm](http://www.unesco.org/courier/2000_05/uk/planet.htm)
- Percival V. and Homer-Dixon T. (1995). Environmental Scarcity and Violent Conflict: The Case of Rwanda. American Association for the Advancement of Science and the University of Toronto.
- Richelson, B. (1986). Strategic Nuclear Targeting Ithaca. (NY/London: Cornell University Press), 250-66.
- Suliman, M. (2006). Civil War in Sudan: The impact of ecological degradation, Environment and Conflicts Project, University of Pennsylvania, <http://www.africa.upenn.edu>.
- United Nations Environment Programme, (1991). The Kosovo conflict - Consequences for the environment and human settlements. UNEP and UNCHS, United States, <http://www.grid.unep>.
- United Nations Environment Programme, (2003). Afghanistan: Post-Conflict Environmental Assessment. UNEP, Switzerland.
- Westing, A.H. (1980). Warfare in a Fragile World: Military Impact on the Human Environment, (London: Taylor and Francis, for SIPRI), 14-19
- Westing, A. H. (1989). Warfare in a fragile world: Conventional Nuclear and Environmental weapons. *Bulletin of Peace Proposal*, **17(3-4)**, 360-365.
- Westing, A.H. (1997). Weapons of Mass Destruction and the Environment, (London: Taylor and Francis, For SIPRI), 31-32.
- World Health Organization, (2003). Depleted Uranium -Fact sheet, <http://www.who.int/mediacentre/factsheets/fs257/en/print.html>.