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Armed conflicts and the environment

Report[1]
Committee on the Environment, Agriculture and Local and Regional Affairs
Rapporteur: Mr Rafael HUSEYNOV, Azerbaijan, Alliance of Liberals and Democrats for Europe

Summary

Armed conflicts have disastrous consequences for the environment: destruction of infrastructure, pollution of water supplies, poisoning of soils and fields, destruction of crops and forests, and over-exploitation of natural resources. In this way, the environment can be used as a formidable weapon in military operations.

In order to preserve the environment, it is essential to prevent the emergence of a vicious circle linking armed conflict, environmental damage and poverty.

The governments of Council of Europe member and observer states are called on to comply scrupulously with the legal instruments on the relationship between armed conflicts and the environment and to organise awareness-raising programmes aimed in particular at those in charge of military planning.

Following an analysis of the consequences of armed conflicts on the environment in different parts of the world, the report puts forward a number of recommendations for improving the protection of the environment in times of war and encourages states to draft legislation relating more specifically to ecological crime.

1. Reference to the committee: Doc. 11741, Reference 3505 of 26 January 2009.

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A. Draft resolution[2]

1. The Parliamentary Assembly notes with concern that armed conflicts have disastrous consequences for the environment: destruction of infrastructure, pollution of water supplies, poisoning of soils and fields, destruction of crops and forests.

2. Natural resources can in themselves be a source of conflict when they are a main target of military operations.

3. The Assembly also notes that conflicts generate over-exploitation of natural resources, leading to food shortages, deforestation, soil erosion and the disappearance of wildlife.

4. Moreover, environmental damage is often more serious at the end of the conflict, when the population returns and the country is reconstructed. The return of refugees leads to over-exploitation of resources to meet their food and energy needs, but also high economic, social and political costs.

5. In this context, the Assembly recalls its Recommendation 1495 (2001) on the environmental impact of the war in Yugoslavia on South-East Europe, in which it clearly stated that "as was the case for operations in Bosnia and Chechnya, states involved in these operations disregarded the international rules set out in Articles 55 and 56 of Protocol I (1977) to the Geneva Conventions of 1949 intended to limit environmental damage in armed conflict".

6. The Assembly regrets that the natural environment is not defined in Article 52 of Protocol I to the Geneva Conventions.

7. In this connection, the Assembly deplores that despite the various existing international texts such as the Convention on the prohibition of military or any hostile use of environmental modification techniques (the ENMOD Convention), which came into force in 1978 and is regarded as the leading reference text on environmental protection during armed conflicts, and the Additional Protocol to the Geneva Conventions of 1949 prohibiting the use of ecological warfare, armed conflicts unquestionably still have adverse effects on the environment which may persist for years or decades.

8. The Assembly urges the governments of Council of Europe member and observer states to comply scrupulously with the legal instruments on the relationship between armed conflicts and the environment and to organise awareness-raising programmes aimed in particular at those in charge of military planning.

9. The Assembly is convinced that greater international environmental accountability, coupled with international enforcement of war crimes and human rights violations, could prevent any future armed conflicts.

10. The Assembly also considers that the international and humanitarian organisations which are directly involved in post-conflict management have an important role to play in environmental assessments. Devising strategies to deal with population movements, emergency planning and setting up refugee camps would help them pinpoint rapid solutions acceptable in both social and environmental terms.

11. The Assembly stresses the important role of the media in drawing public attention to the environmental impact of armed conflicts.

12. In the light of these considerations, the Assembly recommends that member and non-member states of the Council of Europe:

12.1. ensure the training of civilian and military personnel and military headquarters in environmental issues in times of armed conflict;

12.2. implement the 1994 Red Cross Guidelines for Military Manuals and Instructions in national military training programmes;

12.3. promote exchange of information among Council of Europe member states on environmental management in periods of armed conflict and the harmonisation of existing legislation on this subject;

12.4. appoint a "sustainable development" correspondent within the European Defence Agency;

12.5. relaunch the ENMOD Convention in order to restrict military climate control programmes;

12.6. integrate ecodesign into arms programmes;

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2. Draft resolution adopted unanimously by the committee on 21 June 2011.

12.7. assess the risks to the environment posed by military exercises, such as noise and threats to wildlife;

12.8. encourage humanitarian organisations to undertake pre-conflict assessments where possible, in order to improve the humanitarian planning of conflicts and, in particular, the siting of refugee camps;

12.9. release funds so that international organisations, such as the United Nations Environment Programme (UNEP) can carry out pre-conflict environmental assessments;

12.10. ratify the treaty banning cluster munitions which entered into force on 1 August 2010 and encourage partner states such as Israel and Afghanistan to do the same;

12.11. support the drafting of a treaty to ban phosphorous weapons.

13. The Assembly calls on the parliaments of member states to take the lead and introduce legislative measures on the environment, particularly during armed conflicts, paying special attention to the issue of ecological crime.

B. Explanatory memorandum by Mr Huseynov, rapporteur

1. Introduction

1. Wars are first and foremost human dramas, but they also all have economic, political and social consequences, some of them linked directly to the environment. Such environmental factors are often less obvious than the death and destruction that are the immediate consequences of war. Nevertheless, from the planning of armed conflicts to the reconstruction of a country, the environment is playing an increasingly significant role.

2. Armed conflicts have disastrous consequences for the environment. However, environmental protection only became a matter of international concern with the defoliation of the Vietnamese jungle by the American army in the 1960s. This war showed that in times of armed conflict the environment could be simultaneously a victim of military operations and a weapon.

3. Preserving the environment cannot be the main preoccupation when human lives are threatened, but the recent Gulf wars, disfigured by the burning of oil wells and the use of weapons containing depleted uranium, have shocked the collective conscience and shown that the impact of military conflicts on the environment is sometimes more dramatic than the fighting itself.

4. Environmental damage is inevitable in time of conflict. Infrastructure is destroyed, political destabilisation weakens environmental governance, crop-growing cycles are disturbed and so on. In the medium term, the environmental destruction is reflected in very high economic, social and political costs. The impact of war is sometimes extremely long-lasting. Certain First and Second World War sites still cannot be farmed and continue to pose a threat to the neighbouring population due to unexploded bombs and munitions.

5. Media coverage of wars helps to exert pressure on governments and their armies, but also to a lesser extent on the arms industry, which is encouraged to develop less polluting weapons. Images of the environmental ravages of conflicts also show that such actions are often more akin to acts of vengeance than to proportionate military tactics. Here, the media can play a crucial role.

6. Rehabilitation of the environment, infrastructure and housing is essential to any resumption of economic, social and political activity in countries ravaged by war. Safeguarding the environment should help to prevent the appearance of a vicious circle linking armed conflict, environmental damage and poverty.

2. Legal framework

2.1. Treaties and customs indirectly protecting the environment in times of armed conflict

7. Environmental protection in time of war does not necessarily rely on specific environmental legislation. Numerous precepts of war, often dating back decades or centuries, offer potentially considerable protection for the environment in time of conflict, even if they are not explicitly concerned with that subject. Examples include the limitation principle, military necessity, discrimination between military and civilian objectives, the ban on causing superfluous injury or unnecessary suffering and proportionality. As well as these customary rules that may indirectly protect the environment there are the regulations governing certain weapons, such as incendiary, chemical and bacteriological weapons and mines.

2.1.1. Limitation

8. The limitation principle is one of the basic precepts of the rules of war. It reflects the idea that not everything is permitted. Hostile acts must not be pushed too far. This concept is embodied in numerous international treaties, in particular the Hague and Geneva conventions.

9. Article 22 of the Hague Convention states that “the right of belligerents to adopt means of injuring the enemy is not unlimited”. Article 35 of Protocol I to the 1949 Geneva Conventions states that “in any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited”.

10. The limitation offers the environment at least basic protection in time of war. According to this principle, acts of war that harm the environment are not all acceptable and any party that grants itself the right to damage the environment with no regard for the consequences is in breach of a fundamental rule of war.

2.1.2. Military necessity

11. The military necessity principle seeks to limit belligerent states' capacity to choose the means and methods used to attack their enemies. It offers a way of establishing how far any particular form of military action can be deemed to be an acceptable act of war.

12. Article 23 of the Hague Convention forbids states from taking steps to "destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war".

13. Article 53 of the Geneva Convention (IV) prohibits "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 or co-operative organisations … except where such destruction is rendered absolutely necessary by military operations". Article 53 is more exhaustive in terms of the types of property protected, which include individually, collectively, privately and state-owned property.

14. This article offers minimal protection to the environment in the event of occupation.

15. Together, these two articles encapsulate the doctrine of military necessity, which as one of the factors limiting damage to property may also increase the protection of the environment in time of conflict.

16. However, further consideration is needed of the types of environmental damage that are militarily necessary. Were the defoliation of the Vietnamese forests or the burning of oil wells in the first Gulf War necessary in terms of military strategy? In certain circumstances environmental concerns should take precedence over military necessity.

2.1.3. Discriminating between military and civilian objectives

17. Under the customary rules of war, belligerents must distinguish between military and civilian targets. Article 52 of Protocol I to the Geneva Conventions, which forbids attacks or reprisals on civilian objects, identifies four categories of such objects: cultural objects and places of worship, objects indispensable to the survival of the civilian population, the natural environment[3] and works and installations containing dangerous forces.

18. The protocol does not define the natural environment and its treatment is a lot vaguer than that of the other three categories of civilian object. This nebulous character of the "natural environment" makes it difficult to view the environment as an object per se and thus, from a military standpoint, to grant it the status of civilian object.

19. Like many other objects, such as bridges, oil wells and transport systems, the environment is thus deemed, according to circumstances, to have either civilian or military status.

20. Unfortunately, the difficulty of defining it makes its total exclusion from military objectives impracticable. However, it is possible to say what type of environmental degradation does not constitute a decisive military advantage. Thus the widespread condemnation of the burning of Kuwaiti oil wells in 1991 showed that public opinion considered these acts to be quite disproportionate and militarily pointless.

2.1.4. Causing the enemy superfluous injury or unnecessary suffering

21. The idea of preventing unnecessary suffering is closely bound up with military necessity and proportionality. Protocol I strongly suggests that environmental damage in time of war is fundamentally at variance with the laws of war and causes unnecessary suffering.

22. Article 35 sets out three rules governing the methods and means of warfare. Article 35.1 states that the methods and means of warfare are not unlimited, while Article 35.2 prohibits the use of "weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering" and Article 35.3 that of "methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment".

3. Article 55: "1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population. 2. Attacks against the natural environment by way of reprisals are prohibited."

23. The decision to place Article 35.3 alongside these two long-established principles of the law of armed conflict may possibly be based on the belief that by associating environmental damage with these humanitarian legal principles, this provision will be granted the same status as a rule of law.

24. In so far as environmental degradation, whether as a result of military objectives or as collateral damage, causes unnecessary suffering, it is in breach of another established principle of humanitarian law.

2.1.5. Proportionality

25. In the laws of war, proportionality means that any military action must be proportionate to its anticipated results and therefore that the damage caused must not be disproportionate to the military results.

26. This doctrine introduces the notion of excessive losses. Indiscriminate (and disproportionate) attacks are defined as ones "which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated" (Article 51.5.*b*).

27. Proportionality is closely linked to the principle of military necessity. Military actions that have a significant impact on the environment and endanger the civilian population are incompatible with the concept of proportionality.

28. The proportionality principle was reaffirmed by the International Criminal Court, in its advisory opinion of 8 July 1996 on the legality of the threat or use of nuclear weapons. The court stated that the principle was applicable and covered collateral damage caused to the civilian population that was excessive as compared to the military advantage offered. It confirmed that proportionality extended to respect for the environment and that as a result belligerents were not entitled to cause such damage in this area.

2.2. Specific legal provisions protecting the environment in times of armed conflict

2.2.1. The ENMOD Convention

29. The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, or Environmental Modification Convention (ENMOD), which is the basic treaty on environmental protection in time of armed conflict, came into force on October 1978, when it had been ratified by 20 countries. Since 1978, 74 states have ratified or acceded to the convention and 16 have signed it.

30. Under Article 1, "each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party".

31. The convention was concluded under United Nations auspices in response to fears arising from the use of means of combat during the Vietnam War which were extremely harmful to the environment. Article 2 prohibits the use of "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".

32. The convention is thus concerned with so-called geophysical war and the use of geo-, or climate, engineering, based on the deliberate manipulation of natural processes that could lead to earthquakes, tsunamis or hurricanes, as well as torrential rain and heavy snow. Changes to atmospheric and climatic conditions, and ecological balances, are strictly forbidden.

33. The convention is the only legal instrument to ban the use of the environment as a weapon of war.

34. Its main weakness is that it is confined to weapons that sometimes come within the realm of science fiction. It focuses on what in the English-speaking world is referred to as "active environmental warfare", as opposed to "passive environmental warfare", in which the environment is a victim rather than a weapon of war.

35. Nevertheless, it is still one of the main legal instruments for protecting the environment in wartime. Its existence should help to restrict military programmes aimed at climate control, such as the HAARP programme.[4] It should also be noted that a 1996 report to the US Air Force spoke of the need for it to take steps locally to affect the climate, either to improve visibility by dissipating clouds and fog or, in contrast, encouraging the formation of unstable conditions to generate, to its advantage, clouds and storms.

2.2.2. Protocol I of the 1977 Geneva Conventions

36. This protocol contains two articles specifically concerned with protecting the environment in periods of armed conflict. It bans ecological warfare, that is the use of combat methods likely to jeopardise certain essential natural balances, thus posing a threat to human safety and survival.

37. Article 55.1 states that “care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population”.

38. Paragraph 2 also states that “attacks against the natural environment by way of reprisals are prohibited”. Like most of the principles of international law, this article is essentially anthropocentric; the general obligation to protect the natural environment is based on the need to protect the civilian population.

39. Article 35.3, however, is designed to protect the environment as such. It prohibits the use of “methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment”.

40. Two other provisions of the protocol contribute indirectly to protecting the environment in time of armed conflict. Article 54 (“Protection of objects indispensable to the survival of the civilian population”) includes “agricultural areas for the production of food-stuffs, crops, livestock, drinking water installations and supplies and irrigation works”. The protection of crops and livestock offers limited collateral protection to the fauna and flora.

41. Article 56 (“Protection of works and installations containing dangerous forces”) prohibits attacks on “dams, dykes and nuclear electrical generating stations”. The environmental implications of this provision derive from its ancillary prevention of collateral damage arising from attacks on such installations. For example, the destruction of a dam during a conflict would be in breach of Article 56 not only on account of civilian losses but also because of the undesirable environmental consequences of the resulting flooding.

2.2.3. The Red Cross 1994 Guidelines for Military Manuals and Instructions

42. These guidelines produced by the International Committee of the Red Cross also constitute customary rules of law that are applicable in wartime. They are intended to “facilitate the instruction and training of armed forces in an often neglected area of international humanitarian law: protection of the natural environment”.

43. The guidelines are an awareness-raising instrument. The aim is to persuade armed forces to protect the environment and to ban the use of means and methods that are harmful to the natural environment during conflicts. They are not concerned with establishing new provisions but with ensuring that existing law is properly implemented and respected.

44. They should be included in military manuals and instructions on the laws of war.

45. They also refer back to the principles set forth in the Rio de Janeiro Declaration on the Environment and Development of June 1992. According to Principle 24: “Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and co-operate in its further development, as necessary.”

46. Finally, on 5 November 2001, the United Nations General Assembly decided that 6 November each year would be the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict.[5] The international day highlights the international community's growing awareness that the harm caused to the environment by armed conflicts can significantly impair ecosystems.

4. HAARP: High Frequency Active Auroral Research Program. An American programme dating from the 1990s financed by the Navy, the Air Force and the Defence Department to undertake research into the atmosphere for military purposes.

5. Resolution 56/4 was adopted, "considering that damage to the environment in times of armed conflict impairs ecosystems and natural resources long beyond the period of conflict, and often extends beyond the limits of national territories and the present generation" (United Nations website).

2.3. The application of existing environmental protection

47. There are still problems with the application of existing rules and standards, even though the law as it stands, if correctly applied and respected, does offer adequate protection. Stricter enforcement of existing international obligations is therefore highly desirable.

48. The conclusion to be drawn is that there is no need for a new convention on environmental protection in time of war. The time and effort required to draft such a document would require too many human and financial resources that could be devoted to the more important task of persuading armed forces and governments to respect and implement the existing legislation.

3. Impact of armed conflicts on the environment

3.1. Environmental impact

49. Any analysis of the environmental impact of armed conflicts should focus on three main phases, namely pre-conflict, the conflict itself and post-conflict.

3.1.1. Pre-conflict

50. During this phase, the main environmental risks posed by the future conflict need to be identified and defined. The environmental issues have to be considered at this stage so that they can be taken into account when planning operations.

51. A certain number of specific impacts can be identified even before fighting starts. If local inhabitants anticipate the start of hostilities the result may be an irrational depletion of plant and animal resources, such as illegal woodcutting and the killing of wild animals, population movements, food shortages and so on.

52. The preparatory phase may also lead to greater use of natural resources by the armed forces, involving deforestation, the construction of dams, the establishment of camps and the creation of infrastructure in the form of roads, bridges, feeding arrangements and sewage systems. The arrival of armed forces may cause local inhabitants to abandon productive land in occupied areas. This leads to degradation of farmland and the environment.

53. The activities of the defence industry are also a matter of concern in the pre-conflict phase. Since the 1991 Gulf War there have been growing concerns about the effects on health and the environment of depleted uranium weapons. Depleted uranium is an extremely dense metal derived from low-level radioactive waste and is mainly used by the United States and the United Kingdom in their conventional weapons and missiles and in the armour plating of some of their vehicles. Its ability to penetrate the armour plating of tanks and other enemy vehicles has made it an extremely valuable material for the US army, which has systematically minimised the potential threat to health and the environment posed by prolonged exposure to depleted uranium. Members of armed forces and civilians exposed to this substance face an increased risk of lung cancer and kidney failure.

54. The defence industry must bear part of the responsibility for weapons manufacture. Research efforts should now focus on programmes which have the least negative effect on the environment.

55. Another factor to note in the preparation for war phase is the negative effect of military training on the environment. When there is no major crisis, military training and exercises account for about 70% of armed forces' activities. Their environmental impact is by no means negligible and has a noticeably negative effect not only on local inhabitants but also on animal life. For example, low-frequency sonars used to detect submarines affect marine mammals. The NATO naval exercises between the Canaries and the Straits of Gibraltar in September 2002 caused the death of some 15 beaked whales. Autopsies revealed lesions of the inner ear and showed that very powerful sounds can cause the death of large cetaceans that are already threatened by whaling and fishing.

56. Regrettably, there have been no strategic environmental assessments comparable to the post-conflict assessments carried out by the United Nations Environment Programme. Governments should be more aware of the need to avoid irreversible environmental losses that threaten rehabilitation and reconstruction efforts, particularly in the case of external operations such as Iraq and Afghanistan. International and humanitarian organisations that are directly involved in post-conflict management and reconstruction should also commission environmental assessments with a view, in particular, to identifying the most sensitive areas requiring increased protection and suitable locations to settle refugees and displaced persons. Impact

forecasting does not raise any particular methodological problems. The major difficulty lies rather in the fact that conflicts cannot always be anticipated and that it is sometimes a complex operation to mobilise the necessary funding. However such studies could be of interest to funding agencies anxious to optimise their investments and make them more secure.

3.1.2. During conflicts

57. Conflicts tend to exacerbate already existing environmental problems. For example, they can aggravate bad agricultural practices and deforestation, and can also lead to desertification, drought, erosion and loss of soil fertility, reduced flow in rivers and the disappearance of wild fauna.

58. Conflicts often result in over-exploitation of natural resources for both subsistence and commercial purposes. The irrational removal of resources results in food shortages and deforestation. In the recent Iraq conflict, for example, many people were forced to cut down trees to use the wood for cooking and heating.

59. Deforestation sometimes takes the form of environmental manipulation as part of military strategy, in which case it becomes a weapon. Thus the massive use of herbicides such as Agent Orange during the Vietnam war resulted in the destruction of more than two million acres, or 14% of South Vietnam's forests.

60. Agent Orange contained dioxin, a cancer-causing substance, which contaminated the food chain through river sediment and the fish that local inhabitants ate. Numerous cases of cancer and malformation remain to this day. A more recent case concerns Saddam Hussein, who deliberately drained the marshes in eastern Iraq as a reprisal against the local population who had risen up against him during the first Gulf War.

61. During the same war, the burning of oil wells polluted both the air and the soil. The deliberate dumping of millions of litres of oil into the Persian Gulf killed tens of thousands of birds and caused damage to the coral and the coastline. It was the largest oil spillage the world has ever known, equivalent to fifty times the pollution caused by the tanker *Prestige* off the coast of Spain. The bombing of Iraqi industrial plant in 1991 also resulted in large chemical spillages into the Tigris and Euphrates.

62. During periods of conflict, damage to the infrastructure has a major effect on the local environment and public health services. Water supplies can be damaged and contaminated by bombing. In Afghanistan, the destruction of the water supply infrastructure, coupled with a weakened system of public governance, has resulted in bacteriological contamination and considerable loss of water, compounded by leaks and illegal use. The main consequence has been a drop in the quantity of drinking water available in the country. Similarly, in the former Yugoslavia, the destruction of villages by Serb forces also destroyed drinking water and sewage systems.

63. Water shortages lead to inadequate irrigation of farmland. Agricultural production is also adversely affected by intensive bombing and the passage of military vehicles over crops. In some countries, anti-personnel mines can make vast tracts of agricultural land unusable. When residents can no longer farm their land they turn to non-cultivated food products and collect or pick local natural resources. Even in the short term, such large-scale exploitation of resources is not sustainable.

64. Humanitarian organisations themselves use huge quantities of wood for building purposes. In the long term, deforestation and excessive use of natural resources can have a very negative impact on the means of subsistence of local populations.

65. The collapse of environmental governance leads to faster, and even irreversible, environmental degradation. Conservation activities suffer greatly from conflicts. Government offices are often looted. Institutional systems of protection such as protected areas and national parks become the focus for displaced persons or combatants.

66. People abandon productive areas occupied by armed forces and settle in refugee camps which, in a state of emergency, do not comply with the standards necessary for long-term protection of the environment. Unfortunately, a badly chosen site or inadequately designed sanitation systems can contaminate the soil and water. These harmful effects often appear once camps have been dismantled.

67. The absence of environmental governance in times of conflict places the onus for managing and mitigating their impact on international organisations, which must take all possible steps to apply the international regulations (see the first part of this report). Failure to comply with the customary rules of war discussed earlier may give the International Criminal Court a role in protecting the environment during conflicts.

68. Nor should we forget the media, which must play a part in drawing public attention to the environmental impact of armed conflicts. The press can help to restrain belligerents, by warning them against abuses of the civilian population and the environment.

3.1.3. Post-conflict

69. The environmental impacts continue and may even become more serious once a conflict is over, particularly on account of the requirements of resettling people and reconstructing the country. The return of refugees to their place of origin leads to over-exploitation of resources to meet food and energy needs.

70. The collapse of economic and environmental governance leads to breakdowns in waste collection arrangements, followed by pollution and the risk of infectious diseases.

71. Such situations are regularly accompanied by the appearance of slums and shanty towns, which lead to social vulnerability and insecurity.

72. Communities may come into conflict over access to and control of resources, threatening the delicate balance of the peace settlement.

73. Military waste, the subject of a separate report,[6] may pollute countries or regions for decades. Munitions that have not been defused, rusting ships and unexploded mines may contaminate the soil and water for years to come. In Vietnam, several generations of children have been affected by cancers and malformations caused by polluting chemicals such as Agent Orange.

74. The damage to local enterprises and the environment also has long-term economic and social effects.

3.2. The link between environment and development

75. War and the environment can form part of a vicious circle. Environmental degradation can lead to increased poverty, which in turn increases political instability and thus the risk of armed conflict.

76. The exhaustion of basic natural resources thus poses a threat to local inhabitants' prospects for peace and their long-term livelihood. Environmental damage generates poverty and provides favourable circumstances for a vicious circle of depleted resources, political instability, intensification of armed conflicts, further environmental degradation and more poverty.

77. In this way, the environment becomes a source of conflict. Sometimes the aim is to gain control over resources, or alternatively the resources may serve to finance a struggle. However, there is not always a precise relationship between natural resources and armed conflict. The links may be purely circumstantial. It would often be more correct to see a shortage of resources as a symptom of more significant social problems rather than as a direct cause of fighting. Conflicts tend to exacerbate existing conditions rather than create new problems.

3.3. Responsibilities

3.3.1. States

78. It is states who are first and foremost responsible for their armies and their training.

79. Governments, whether or not they are based on coalitions, must draw up contingency plans similar to those for natural disasters. The main aim is to avoid irreversible environmental losses. Unfortunately, when belligerent states operate as a coalition they may not necessarily have the same military culture and will rarely be concerned with the environmental impact of their co-ordinated strategies.

80. Nevertheless, organisations with a permanent joint structure could benefit from environmental awareness training. One example is the European Union, which has started such awareness-raising activities after seeing the impact of the first European Security and Defence Policy operations in the Balkans.

81. NATO also offers a useful basis for consideration of the environmental impact of conflicts, since the member countries are part of a long-term alliance in which such a programme could be one element of the headquarters' training in time of peace.

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6. See report on "Military waste and the environment", Doc. 12354.

82. The main problem concerning responsibility in time of conflict is that when several parties are involved none of them accepts exclusively environmental liability and each tends to act as a form of “freeloader”, in full awareness of the fact that it is subsequently difficult to determine who was responsible for what.

3.3.2. International and non-governmental organisations

83. Humanitarian organisations have an important role to play in environmental planning. To deal with population movements, emergency planning and the establishment of refugee camps they have to come up with rapid solutions that are both socially and environmentally acceptable.

84. The United Nations High Commission for Refugees and the International Committee of the Red Cross should be able to commission strategic environmental assessments based on the data at their disposal on particular countries or regions. Such studies should identify sensitive areas and suitable locations for refugee camps.

85. The United Nations Environment Programme (UNEP) has taken a particular interest in post-conflict environmental assessment. Nevertheless, it could well benefit from equivalent pre-conflict reviews.

86. Finally, funding agencies such as the World Bank, which want to make sure that their money is properly used, have every interest in ensuring in advance that their investment and reconstruction programmes are based on favourable conditions.

87. Similarly, in the post-conflict period, international financial institutions need to deal carefully with the authorities responsible for collapsing national economies. Demands for the immediate repayment of outstanding debt could lead indirectly to the over-exploitation of natural resources.

3.3.3. The arms industry

88. The defence industry has primary responsibility for arms manufacture, particularly when polluting materials are used.

89. Many weapons likely to be used in conventional warfare have a long-term impact on the environment. Examples include anti-personnel mines and cluster bombs, chemical, bacteriological or nuclear weapons, incendiary devices containing phosphorus and weapons containing heavy metals, such as uranium and tungsten. Most of these weapons are covered by international treaties.

90. In recent times there has been increased awareness of the environmental consequences of the use of certain materials in weapons production. Even so, there is still much to be done before real action is taken to protect the environment and it is recognised as a key factor. Armed forces are still primarily concerned with the operational performance of their weapons. They worry about the extra cost and delays of developing cleaner materials. One of the main problems of ecodesign[7] is that the weapons industry wants to remain export competitive and is afraid that taking account of environmental issues will be an additional constraint on an already complex process.

91. However, it is important for the design, manufacture, use and disposal processes to take account of the principles of sustainable development. Environmental concepts need to be taken into account at the earliest possible stage in product design.

92. Research needs to be carried out into finding replacements for substances that could be prohibited and that cause the long-term pollution of environments that have already been ravaged by wars.

4. Examples

4.1. Afghanistan and Iraq

4.1.1. Afghanistan

93. A country ravaged by several decades of war has seen its natural resource base depleted and has a very limited national capacity to deal with the resulting problems.

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7. Ecodesign is concerned with all the factors to be taken into account as from the first stages of the development of a product which will minimise its environmental impact throughout its whole life cycle. This involves the materials used, the manufacturing process, the product's use and its disposal by means of recycling.

94. The war, which began in 2001, has severely reduced the capacity for environmental management, destroyed infrastructure, and hindered agricultural activities. These effects, coupled with three to four years of drought affecting most of the country, have caused serious and widespread damage to land and other resources, including lowered water tables, desiccation of wetlands, deforestation and widespread loss of vegetative cover, erosion and loss of wildlife populations.

95. These problems are compounded by the increasing numbers of people who are being displaced due to insecurity arising from degraded environments and loss of livelihoods. The lack of effective environmental management and extensive environmental damage is increasing human vulnerability to natural disasters. With the widespread loss of forest and vegetation cover, fragile soils are now exposed to both wind and water erosion. This reduces or even destroys land productivity. Without vegetation to act as a sponge to absorb rainwater, extensive flooding is also likely to occur, eroding both river channels and key agricultural lands downstream. Sedimentation of irrigation canals and river basins will further exacerbate the situation.

96. In late July 2010, torrential rain and floods in central and eastern Afghanistan left several thousands homeless close to the Pakistan border. Nearly 80 persons were killed. It is to be feared that more such floods will follow.

97. With the return of refugees, additional pressures on urban infrastructure and natural resources will make the situation still worse. Desperation could result in increased environmental degradation, including further loss of forest cover, overgrazing, un-co-ordinated water use and unsustainable dry land cultivation.

98. Scarcity of resources could cause an influx of millions of refugees into urban areas or neighbouring countries, causing increased tensions and continued instability, and setting the stage for renewed conflicts.

99. A long-term improvement in environmental conditions will require significant regional co-operation and considerable technical and financial assistance from the international community. The torrential rain that has affected thousands of Afghans in the conflict zones threatens the livelihood of an already highly vulnerable population and has increased the health risks to them. The social and economic impact on the country is a source of great concern and the political and security repercussions threaten its stability.

4.1.2. Iraq

100. The Iran-Iraq war of the 1980s, the 1991 Gulf War, the Saddam Hussein regime, the economic impact of UN sanctions and the recent Gulf conflict have seriously damaged the Iraqi environment.

101. The Iran-Iraq war from 1980 to 1988 was characterised by the use of chemical and biological weapons and the dumping of oil in the Gulf. The use of tabun, a nerve gas, and mustard gas against the Iranians and the Kurds caused major environmental pollution, in addition to their clearly horrendous effects on health. For the first time during this conflict, the UN Security Council intervened to call on the belligerents to protect the marine environment and "refrain from any action that may endanger peace and security as well as marine life in the region of the Gulf" (Resolution 540 of 1988).

102. The first Gulf War in 1991 was the scene of the most significant marine oil pollution in history. Setting fire to some 600 Kuwaiti oil wells resulted in major atmospheric pollution in the form of acid rain and the destruction of vegetable cover. Attacks on the electrical power system and industry resulted in increased desertification, as a result of water shortages, and the release of polluting waste. There was also considerable military waste left over after this war, with a large number of unexploded shells and the use of depleted uranium. The conflict also led to another legal landmark in the form of unprecedented claims for compensation for environmental damage resulting from, in the words of Security Council Resolution 687 (1991), "Iraq's unlawful invasion".

103. The environmental damage resulting from the 2003 conflict was the logical consequence of the earlier problems, which were never resolved and which were made worse by the combined effects of UN sanctions[8] and the low priority given to environmental issues by the former Iraqi Government. The major effects on the environment were the disruption of energy, water supply, sanitation and waste disposal systems, with the associated rise in health problems among the general population.

104. Far fewer oil wells were burnt than in the 1991 war, so there was less of an environmental impact.

8. Major restrictions were placed on imports of chemical products needed for certain environmental activities, such as sanitation and the supply of water, because of their possible military uses.

105. The coalition forces confirmed the use of depleted uranium weapons, which could lead to:

– the inhalation of depleted uranium dust when bombs explode, which poses a potentially serious additional health risk for anyone in the immediate vicinity who has survived the explosion;

– general contamination, if at a low level, of the soil surface, by depleted uranium;

– the presence in certain locations of intact depleted uranium shells;

– the possible contamination of drinking water from underground sources through the corrosion of depleted uranium shells or fragments of these shells.

106. A population that has already suffered greatly from the absence of certain forms of infrastructure has been further affected by the increasing number of dust storms, an indication of the human damage caused to the country's ecosystem. Coupled with several years of drought, the war has transformed what was recently arable land into desert, destroying trees and other vegetation. According to certain experts, what was once the breadbasket of the Middle East has now become a dust bowl. This generates respiratory problems and Iraq now imports 80% of its food supplies.

107. The desertification process has been speeded up by the passage of combat vehicles, which destroy the plant cover. Water shortages have led to the shutting down of certain power stations so people are forced by necessity to cut down trees for cooking and heating purposes, which also contributes to desertification.

108. The Tigris, which was the main source of water, food and leisure activities, has been transformed into a stagnant ditch. The river has become a cemetery, the water level of which is falling and where fishing is forbidden. Industrial emissions and discharges which lack proper government oversight have contributed to the river's pollution, as does a large quantity of hospital and depleted uranium waste. This pollution is hindering local economic development.

4.2. Israel, Lebanon and Gaza

4.2.1. Lebanon (2006)

109. The July-August 2006 conflict had a significant impact on Lebanon. The fighting resulted in a large quantity of debris from demolished buildings. Traditional waste management sites became rapidly saturated so that temporary sites had to be set up as a matter of urgency, in inappropriate locations.

110. Polluting hospital waste following the large number of deaths and injuries was not properly dealt with and poses a serious risk to public health.

111. Before the conflict started, water distribution networks were being upgraded across Lebanon. They were badly affected by the war, with the resulting risks of water pollution and contamination. Bad management of waste water also poses a serious risk to the environment.

112. Military waste can also be a threat to public safety. In November 2006, UNMACC (the UN Mine Action Coordination Centre of South Lebanon) identified nearly 815 sites where cluster bombs had been dropped and estimated that there were still nearly a million items of unexploded ordnance on Lebanese soil. These pose a serious threat to the Lebanese population and are a major obstacle to reconstruction. Agricultural land has also been significantly contaminated by cluster bombs.

113. The United Nations Environment Programme found evidence of the use of shells containing white phosphorus. Their use was confirmed by the Israeli military authorities.

114. There was also an oil slick in the eastern Mediterranean following the Israeli bombing of storage tanks at the Jiyeh power plant in 15 July 2006. The spillage of 20 to 30 000 tonnes of oil had a severe impact on coastal settlements and affected a third of the Lebanese coast. The slick killed fish, threatened the natural habitat of green turtles and could increase the cancer risk for the local population.

115. According to the United Nations Development Programme, “fifteen years of work have been wiped out in a month”. It estimates the cost of the war as at least $15 billion, with 15 000 dwellings, 80 bridges and 94 roads destroyed or damaged. The efforts made since the end of the civil war have been “annihilated”.

4.2.2. The Gaza Strip (2008-2009)

116. The recent conflict in which Israel and the Palestinians confronted each other between December 2008 and early 2009 has had a profound and lasting effect on the environment in the Gaza Strip.

117. A report published by the United Nations Environment Programme highlighted the catastrophic environmental consequences of the armed conflict. Groundwater reserves could fall dramatically because of massive levels of extraction and pollution, which have been aggravated by the recent conflict. More than 1.5 million Palestinians depend on these underground reserves for drinking water and agriculture.

118. It is therefore becoming necessary to find alternative sources of water and allow the groundwater sources time to recover. Water shortages could have consequences over several decades. The Palestinian Territories and Egypt share the same aquifers so there has to be a compromise between the two countries.

119. The annual level of extraction of water of about 160 million cubic metres has exceeded the replacement level for several years. This has led to a rise in groundwater salinity from saltwater intrusion caused by over-abstraction of the groundwater, alongside pollution from sewage and agricultural run off. Pollution levels are such that infants in the Gaza Strip are at risk from nitrate poisoning. It is likely that some of the spillage of sewage from treatment plants, the result of power cuts, has filtered through the porous soil into the underground aquifer. The very nature of the soils in the Gaza Strip means that sewage from overwhelmed and unsealed landfills can easily percolate down into the aquifer.

120. Air strikes have generated 600 000 tonnes of demolition debris. An estimated 17% of cultivated land, including orchards and greenhouses, has been severely affected, with adverse consequences for farmers' livelihoods and those of the population at large. Destruction of vegetation cover and compacting of soil by strikes and tank movements has degraded the land and made it vulnerable to desertification. It is possible that this land will be difficult to revegetate.

121. There has also been soil contamination from petroleum-based substances often exceeding internationally recognised limits. These fuel spills could percolate into the groundwater.

122. Humanitarian action is no substitute for a peace process. Reconstruction is very unlikely to be successful unless there is a lasting peace. Gaza's isolation must be brought to an end if its people are to have any real prospects of lasting economic development.

4.3. Refugees and the environment: examples of Kosovo and the South Caucasus

4.3.1. Kosovo

123. In March 1998, a flood of refugees started to arrive in Albania and “the former Yugoslav Republic of Macedonia”. An estimated 260 000 persons found refuge in Albania and 460 000 in “the former Yugoslav Republic of Macedonia”.

124. This sudden influx presented a major humanitarian challenge for these states and the international community. It was above all a logistical problem that called for host families, tents and reception centres. Some 92 000 refugees were also sent to 29 other host countries.

125. Lack of time, owing to the urgency of the situation, prevented appropriate environmental planning, yet humanitarian crises inevitably have a major environmental dimension. While support for the refugees is the absolute priority, it is still necessary to consider the resulting environmental damage to draw lessons for the future.

126. Vast quantities of solid waste are inevitable when the elementary needs of displaced persons are satisfied. Effective waste management is largely a function of the host country's infrastructure. In the case of Albania, certain locations, such as beaches and coastal forests, were the scene of illegal dumping.

127. Water supplies are also critical if displaced persons are to have acceptable living conditions. In the case of “the former Yugoslav Republic of Macedonia”, the peak of the humanitarian crisis coincided with very high summer temperatures, which increased the demand for water and pressure on the supply system. There were shortages in certain camps and some local communities.

128. Steps were also taken to minimise the risk that aquifers would be contaminated by sewage. Sewage management is a priority in refugee camps and other collective accommodation centres. The additional volume of used water often threatens to overwhelm urban treatment facilities. It increases the volume of untreated chemical and biological pollutants that then contaminate the drinking water supply. In “the former Yugoslav Republic of Macedonia”, during the humanitarian crisis, huge quantities of untreated sewage were discharged into Lake Prespa.

129. Refugee camps can also affect biodiversity and cause deforestation, since refugees have no other choice than to cut down trees to meet their basic needs for heating and food preparation. Although minor incidents were reported in the two countries concerned, the camp managers were able to respond rapidly by supplying hot meals and heating fuel.

130. Finally, flat open land is generally preferred for locating refugee camps. Agricultural land is often ideal. In “the former Yugoslav Republic of Macedonia”, several camps were installed on agricultural land. Although these sites were cleaned by the UNHCR after their closure, part of the land continued to be covered for a long time by gravel, preventing its cultivation. The loss of this agricultural land has important financial repercussions for the families that farm it.

131. Kosovo itself has been relatively stable for several months. Nevertheless, the north is still a flashpoint. Relations between the Serb and Albanian communities remain tense, particularly in connection with electricity distribution and the reconstruction of homes. Efforts to persuade displaced persons and refugees to return home continue, but with limited success because of the lack of economic prospects.

4.3.2. The South Caucasus

132. The situation of refugees and displaced persons in the South Caucasus (Armenia, Azerbaijan and Georgia) continues to pose a challenge for these three countries' economic stability and is a serious obstacle to their economic and social development.

133. Most of the persons displaced by force from the conflict zones are still refused the right to return to their homes. These refugees are often used as political tools in the conflicts. Hundreds of thousands of refugees and persons who fled their homes during the war in Nagorno-Karabakh or on account of it still remain far away and are deprived of their rights, in particular the rights to return, to their property and to individual security. They are condemned to isolation and poverty with no prospect of eventually leading decent and peaceful lives.

134. Poverty and malnutrition, the lamentable state of some of the infrastructure, schools used to house refugees and displaced persons and inadequate health facilities are all obstacles to the success of programmes to reintegrate and improve the situation of refugees in the three countries of the South Caucasus.

135. The refugees are economically, socially and politically vulnerable. Cases are reported of displaced persons living in public buildings in an advanced state of decay. Numerous persons have been shockingly abandoned, in unsuitable dwellings that are breeding grounds for tuberculosis.

136. The military conflicts which have continued since the late 1980s in various parts of the South Caucasus have had a serious, adverse impact on the ecological balance not only in the territories where those conflicts are taking place, but also in the entire region.

137. Research has shown that the movement of just one tank leads to the destruction of 70 shrubs, two river beds, five springs and 20 trees within an area of 50-70 metres. The dropping of small bombs adversely affects the atmospheric conditions in the surrounding area within sixteen days. Projectiles dropped by just one helicopter irreversibly damage the layer of soil, resulting in an infertile area of land (within fifteen days if there is rain and within nine days in totally dry weather) in which no plants can grow for twenty years. The incidence of tuberculosis is 2.5 times higher in the surrounding settlements. This gives some idea of the scale of the lasting damage to the environment. The most damaged zones in this regard are the Nagorno-Karabakh region and seven adjacent Azerbaijani districts covering a total area of 17 610 km2. Since the early 1990s, these territories, most of which are suitable for agriculture, have become depopulated and no longer cultivated. This, in addition to all the other consequences, has rapidly led to their erosion.

138. The cultivation of narcotics in these territories, subject to no international control whatsoever, stubble burning following the harvest, the burial of nuclear waste from other states and the merciless destruction of the forest cover have all contributed to the prospect of long-term environmental damage. The use of the Bazarchay, Hakary, and Basitchay rivers and other waterways has become impossible as a result of the constant polluting with military, industrial and water-born waste.

139. Furthermore, as a result of the military conflict in the Nagorno-Karabakh region and the fires regularly started over the last twenty years, some 47 species of plants and 19 species of trees have been eradicated once and for all.

5. Conclusions and recommendations

140. It is important to recognise the link between the environment and development, a link sometimes encapsulated in the notion of “sustainable development”. What makes environmental protection in periods of armed conflict even more significant is the fact that most of the conflicts in which Council of Europe member states take part are external operations in which the reconstruction of the country and political stability are the keys to success.

141. It is not necessary to draw up a new convention concerned exclusively with protecting the environment in time of war. What is really important is to make proper use of existing treaties. The rigorous application of laws and regulations already in force would provide effective protection to the natural environment during armed conflicts.

142. In terms of environmental protection, anticipatory action is the most promising. This will entail profound changes, not so much in the legal framework as in the very way in which military strategies are conceived.

143. It is therefore recommended that member and non-member states of the Council of Europe:

– ensure the training of civilian and military personnel and military headquarters on environmental issues in times of armed conflict;

– exchange information on environmental management in periods of armed conflict and the harmonisation of existing legislation on this subject;

– appoint a “sustainable development” correspondent in the European Defence Agency;

– relaunch the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) to restrict military climate control programmes;

– integrate ecodesign into arms programmes;

– assess the risks to the environment posed by military exercises, such as noise and threats to wildlife;

– encourage NGOs to undertake pre-conflict assessments where possible, to improve the humanitarian planning of conflicts and, in particular, the siting of refugee camps;

– release funds so that international organisations such as the United Nations Environment Programme can carry out pre-conflict environmental assessments;

– ratify the treaty banning cluster munitions, which entered into force on 1 August 2010 and encourage partner states such as Israel and Afghanistan to do the same;

– support the drafting of a treaty to ban phosphorous weapons.