

Key environmental and resource constraints, including health risks, climate change, water scarcity and increasing energy needs will further shape the future security environment in areas of concern to NATO and have the potential to significantly affect NATO planning and operations.

Active Engagement, Modern Defence. Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization adopted by Heads of State and Government in Lisbon, 19 November 2010

While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world.

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Emerging Environmental Security Issues

Environmental security is increasingly dominating national and international agendas, shifting defense and geopolitical paradigms. Climate change and unconventional security issues—impervious to national sovereignty, ideology, and military power—are now recognized as top threats to peace, political stability, and prosperity. The role of environmental diplomacy is growing and environmental security–related concerns are becoming defining factors in international political and military negotiations.

The dynamics of security strategies are changed by the new circumstances and forecasts, demanding cooperation on non-traditional threats such as natural disasters; potential biological, nuclear, or chemical terror; water, food, and energy security; and increasing environmental and social problems, as well as the deepening gap between those who could cope with the effects of climate change and those who could not. These challenges are so complex and changing so fast that it is increasingly difficult to design realistic long-term strategies and impossible for any single nation to address them alone.

International law systems and organizations are adjusting to better support environmental security, from the protection and management of natural resources to liability for environmental damages. The ability to identify environmental threats and crimes has been strengthened by increasingly powerful detection and monitoring technologies and by environmental jurisprudence supported by improved enforcement mechanisms. Environmental damages that people and organizations got away with in the past are less likely to escape exposure and punishment in the future.

The Millennium Project defines environmental security as environmental viability for life support, with three sub-elements:

- preventing or repairing military damage to the environment
- preventing or responding to environmentally caused conflicts
- protecting the environment due to its inherent moral value.

This chapter presents a summary of recent events and emerging environmental security–related issues organized around this definition. Over the past several years, with support from the U.S. Army Environmental Policy Institute, The Millennium Project has been scanning a variety of sources to produce monthly reports on emerging environmental issues with potential security or treaty implications.

More than 300 items have been identified during the past year and over 2,500 items since this work began in August 2002. The full text of the items and their sources as well as other Millennium Project studies related to environmental security are included in Chapter 9 on the CD and are available on The Millennium Project’s Web site, www.millennium-project.org.

Preventing or Repairing Military Damage to the Environment

Since conflict and environmental degradation exacerbate each other, their spectrum and severity could expand unless they are addressed together. Defense experts increasingly argue that environmental security should be on a par with and an integral part of conventional security. Including environmental factors in military actions gives strategic advantages in combat and post-conflict operations, protects the health, safety, and security of the troops, and develops diplomatic relations and the confidence of local populations and neighboring countries, thus increasing any mission's success.

NATO's Strategic Concept for the next decade stipulates that the world's security environment and the organization's planning and operations will be increasingly shaped by key environmental and resource challenges such as climate change, water and food scarcity, and growing energy needs. The roadmap has been also updated to consider modern threats such as energy security, cyber attacks, and the security impacts of emerging technologies, along with and in the context of the spread of terrorism and extremist groups.

The U.S. Army's Strategy for the Environment and new special projects show military leadership in protecting the environment, increasing energy efficiency through procurement and operations, R&D centers of excellence, and the transfer of knowledge. The *National Security Implications of Climate Change for U.S. Naval Forces* report by the National Research Council argues that climate change raises challenges to America's current naval capabilities, requiring serious changes to the design of their fleets, training, and ships' deployment.

Environmental factors are affecting both resource-scarce and resource-abundant countries. The most critical situation is in 40 or so fragile and conflict-affected states, where a growing young population compounded with scarce resources and unstable political systems deteriorate environmental security, further

aggravating the vulnerability to violence.

The Global Peace Index 2011 shows that the world's peacefulness decreased for the third year in a row, mostly due to internal unrests rather than warfare between countries; the likelihood of terrorist attacks increased in 29 of 153 countries, while violent demonstrations increased in 33 countries. The cost of violence to the global economy was estimated to be over \$8.12 trillion in 2010. USAID notes that over the past 60 years, at least 40% of all interstate conflicts had a link to natural resources. UNEP reports that since the mid-twentieth century more than 90% of major armed conflicts took place in countries that contained biodiversity hotspots and over 80% occurred directly within a hotspot area, further threatening biodiversity. The Pacific Institute's Water Conflict Chronology Map identifies more than 100 conflicts over the past 20 years that were water-related. While conflicts involving natural resources are twice as likely to relapse in the five years following a peace agreement, UNEP notes that fewer than 25% of relevant peace agreements address environmental or resource aspects. The 2010 Environmental Performance Index reveals that most lower-ranked nations are also vulnerable states.

The UN Security Council's focus on the environment-security-development nexus is increasing, as several countries are urging that climate change be addressed as a global security threat, with issues ranging from loss of livelihoods and illegal exploitation of minerals to the impacts of climate change on national sovereignty.

The UN Convention to Combat Desertification suggests adopting the concept "securitize the ground" in order to create a wider global political awareness of the social, environmental, and economic consequences of desertification, land degradation, and drought.

Lawyers and human rights activists are assessing legal instruments for prosecuting the pillage of natural resources as a war crime. While



this would primarily apply to companies profiting from the trade of “conflict minerals” and to cases that use resulting revenue to fund armed conflict, concerns also include environmental degradation and social aspects. The most notorious situation is the Democratic Republic of the Congo, but other countries on the “watch list” include Brazil, China, India, Mexico, and Turkey. The U.S. Dodd-Frank Act (H.R. 4173) that became effective in April 2011 includes a clause requiring companies to report on their use of certain minerals from the DRC and neighboring countries, with non-compliance being fined.

In the eastern DRC, illegal timber logging and rare mineral extraction have historically fueled conflict. UN aid workers estimate that 890,000 people are internally displaced in the provinces, while security forces in the region have difficulty maintaining their peacekeeping mandate, which includes the protection of civilians and, by extension, control of natural resources through training and other military assistance to the government.

Defense officials in developing countries increasingly see security in terms of food and water security and natural disasters. Often, there might be a dilemma of allocation of forces and funds between traditional and environmental security. In 2010, Pakistan’s defense budget rose by about 17%, to \$5.2 billion, while the July 2010 flooding that affected one-fifth of the country’s land and about 20 million people, with a death toll of close to 2,000 and total economic loss of \$43 billion, arguably had a higher impact than anything the Taliban could accomplish.

Measuring Progress in Conflict Environments, a project developed by a consortium of organizations working in development, security, and policy, provides a framework for analyzing the peace progress during stabilization and reconstruction in order to identify the drivers that impede or facilitate the end of conflict. The system was tested in Afghanistan and Sudan and is currently being applied to crisis cases for further improvements.

Although Protocol 1 of the Geneva Conventions contains text protecting the natural environment, UNEP notes that there are no mechanisms in place to protect natural resources during armed conflict and no permanent international authority to monitor violations and to address liability and redress claims for environmental damage in those situations.

The Convention on Cluster Munitions entered into force in August 2010, two years after its adoption. It bans the use, production, and transfer of cluster munitions and sets deadlines for stockpile destruction and clearance of contaminated land, as well as prescribing responsibilities toward affected communities. As of mid-2011, a total of 57 countries had ratified and 108 had signed the convention. This sets a precedent on how a “coalition of the willing” can successfully lead to international regulations, and it might trigger similar negotiations and be emulated for other weapons.

The first Review Conference on the Rome Statute of the International Criminal Court added the criminalization of the use of certain weapons in non-international conflicts under Article 8 (paragraph 2, e) and includes poison, poisoned weapons, asphyxiating, poisonous or other gases and all analogous liquids, materials, or devices, as well as the use of bullets that expand or flatten in the body. It also reached agreement on the definition of the crime of aggression and the framework for the Court’s jurisdiction over this type of crime.

UNEP recommends that the Permanent Court of Arbitration and its “Optional Rules for Conciliation of Disputes Relating to the Environment and/or Natural Resources” should be considered for addressing disputes related to environmental damage during armed conflict and that a summary report on the environmental impacts of armed conflicts should be presented annually to the UN General Assembly.

INTERPOL’s 79th General Assembly resolution recommends that the world police organization form an Environmental Crime Committee. It underlines that since environmental crime is multidisciplinary in nature and not restricted by borders, it has to be addressed at the global level, with INTERPOL and the National Central Bureaus playing a leading role. INTERPOL also created a Radiological and Nuclear Terrorism Prevention Unit for expanding its current anti-bioterrorism activities to address chemical, biological, radiological, and nuclear threats.

Environmental degradation and hazardous ordnance leftovers in many post-conflict areas around the world threaten the livelihoods and health of current and future generations and may constitute an impediment for lasting peace. Leaking abandoned ordnance since World War II and dangerously high levels of heavy metals and

other toxic chemicals related to military exercises are contaminating the oceans, endangering the marine ecosystem and human health.

The war in Libya makes it impossible for that country to meet the deadlines of May 2011 to destroy its cache of mustard gas and December 31 to eliminate its precursor agents, as requested by the Chemical Weapons Convention. Japan's nuclear and environmental disasters might further delay efforts to complete its obligations to dispose of the chemical munitions in China. The U.S. and Russia are also unlikely to meet the 2012 deadline for eliminating their respective stockpiles of chemical warfare materials. As of end of April 2011, the U.S. had destroyed about 86% of the warfare agents it held when the treaty entered into force in 1997, while Russia had destroyed about 49% of its stockpile as of February 2011, according to authoritative sources.

INTERPOL's Project Geiger database launched in 2005, developed in collaboration with the IAEA and other organizations, lists over 2,500 incidents linked to illegal radiological and nuclear trafficking. Meanwhile, with the entry into force of the Pelindaba Treaty for an African Nuclear-Weapon-Free Zone, nuclear weapons are being banned throughout the entire southern hemisphere. The new Strategic Arms Reduction Treaty was signed by the U.S. and Russia (together holding more than 90% of the world's nuclear weapons), requiring each to reduce their strategic nuclear arsenal, although critics note that the treaty does not address the disposal of the nuclear material contained in the weapons. The UN Security Council resolution aiming to advance global nuclear disarmament stipulates that non-compliance with the Nuclear Nonproliferation Treaty would be referred directly to the Security Council rather than to the IAEA.

While the chemical and nuclear weapons conventions have enforcement mechanisms, the Biological Weapons Convention does not, but negotiations continue. Meantime, the threats of

bio-error and bio-terror increase. Developments in synthetic biology, cognitive science, nanotechnology, electromagnetic pulses, and other high-tech fields, combined with the availability of information and low-cost components needed to produce WMDs as well as the increase of terrorism and social unrest (often exacerbated by environmental factors), are increasing the threat of terrorism and single individuals who could use bioweapons to be massively destructive.

After land, sea, air, and space, cyberspace became the "fifth battlespace" on the agenda of security experts. Disruptions of critical infrastructure, such as water or electricity by cyberattacks in an IT-dependent world, call for new legal and policy frameworks. Cybersecurity challenges include cybercrime, cyberespionage and reconnaissance, and cyber-leveraged and information warfare. The EU will create a new cyber-defense unit that will pull together IT departments from the European Commission, Parliament, and Council to share intelligence and address attacks on all EU bodies. The U.S. has released its plan to protect the nation's cyber infrastructure, while the Pentagon's planned new strategy could qualify a cyber-attack from a foreign nation as an act of war that may result in military retaliation.

New technologies are offering unprecedented detection, cleanup, monitoring, and surveillance possibilities for environmental security. Intelligent battlefield robots will have elements of the rules of engagement and the Geneva Convention built into their programming. A NASA project tested the concept of "spiderbots" that can be placed into a hazardous environment to communicate among themselves and with the outside world, including satellites, to monitor an environmental situation. Ultra-sensitive portable chemical and biological devices offer increasing accuracy in detection, monitoring, and cleanup, with rapid response time.



Preventing or Responding to Environmentally Caused Conflicts

The UN identifies five channels through which climate change can have security implications: impacts on livelihoods and vulnerable people, economic development, population migration and/or conflict over scarce resources, displacement of whole communities due to sea level rise and consequent statelessness, and access to internationally shared resources.

The WMO notes that 2001–10 was the warmest decade on record, with the global average temperature 0.46°C above the 1961–90 average. Meteorological organizations forecast that the intensity and frequency of extreme weather events will grow worldwide, and climate patterns are changing. By mid-2011, there were over 1,000 confirmed tornadoes in the U.S., causing an estimated 523 deaths (almost as much as the total for the previous 10 years).

According to the Centre for Research on the Epidemiology of Disasters, in 2010 there were 373 disasters registered, affecting 207 million people—89% out of whom were in Asia. In 2011, disasters had already caused more than \$300 billion in losses by May, almost the same as in all of 2010. The UN estimates that the amount of global wealth exposed to natural disasters risk has nearly tripled from \$525.7 billion 40 years ago to \$1.58 trillion today. The risk of economic losses in OECD countries due to floods has increased by 160% and for tropical cyclones by 262% over the past 30 years. Calling for improved adaptation policies and funding, officials forecast that for every \$1 invested in resilience and prevention, \$4–7 are saved in response.

A Humanitarian Emergency Response Review estimates that around 375 million people will be affected by climate-related disasters every year by 2015 and many more by other “rapid onset” emergencies and the impact of conflicts. Climate Risk Index 2011 by Germanwatch shows that developing countries are among the nations most affected by extreme weather.

The Social Conflict in Africa Database includes over 6,300 social conflict events for the period 1990–2009. The pattern reveals more social conflicts in years that were extremely wet or dry than in years of normal rainfall. The Food Security Risk Index 2010 reveals that the countries most at risk from shocks to food supplies are also among the countries with serious security problems. Rated at most “extreme risk” are

Afghanistan, DRC, Burundi, Eritrea, Sudan, Ethiopia, Angola, Liberia, Chad, and Zimbabwe.

Turning around the increases in world food prices will become increasingly important for stability. World food prices have more than doubled since 1990. Oxfam predicts that the average cost of key crops could further increase by 120–180% by 2030. This may understate the severity, since 16 factors that directly or indirectly increase food prices all look like they will be rising: population growth, rising affluence especially in India and China, diversion of corn for biofuels, soil erosion, aquifer depletion, the loss of cropland, falling water tables and water pollution, increasing fertilizer costs (rising prices for oil, phosphorus, and nitrogen), market speculation, diversion of water from rural to urban, increasing meat consumption, global food reserves at 25-year lows, climate change that increases droughts and desertification (in dry areas), flooding (in wet areas), melting mountain glaciers that reduce water flows, and eventually saltwater invading croplands.

While genetically engineered seeds adapted to a harsher climate could help increase yields, researchers warn that increasing corporate control over seeds is reducing the diversity of traditional seed varieties and traits that help farmers adapt to the effects of climate change, jeopardizing poor farmers’ livelihoods and strongly influencing food prices.

The World Bank estimates that up to 30 million hectares (74 million acres) of farmland are lost each year due to severe degradation, conversion to industrial use, and urbanization. Additionally, large-scale land acquisitions in regions that are already food- and water-scarce, as well as the allocation of land to produce agrofuels rather than food, risk increasing poverty and social unrest. Within Africa’s Sahel, a region of approximately 60 million inhabitants, extreme drought and unpredictable weather patterns continue to worsen food and water security and interregional migration.

If current trends continue, most glaciers in the mountains of tropical Africa will disappear by 2030, and those in the Pyrenees will be gone by 2050. Since 70% of fresh water is trapped in glaciers, once they are gone the situation for human survival will become critical. The 2011 *Water Stress Index* reinforces that Africa and the

Middle East, especially countries on the Persian-Arabian Gulf, are most vulnerable to serious water shortages, increasing the likelihood of resource-based conflicts in these areas. The UN estimates that 18 of the 30 water-scarce nations will be in the Middle East and North Africa by 2025. The capital of Yemen is expected to run out of water much sooner.

Food and water issues are also considered to be exacerbating factors in the 2011 Arab Spring uprisings. The political turmoil could further affect living standards in the region, fueling tension in an already conflict-prone region. As the scope and spectrum of the protests expanded, energy security concerns around the world increased. Fear of extended interruptions in oil supplies from these countries rapidly drove up prices. Unreliable production and exports of oil from the region would cause greater demand on oil supplies from the North Sea and Africa.

The scale of the Japanese disasters (in a relatively well-prepared country) and the potential increase in the number and intensity of natural disasters around the world due to climate change trigger important reexaminations regarding preparedness and resilience, as well as the management of nuclear and other hazardous material. Political leaders are calling for a review of the IAEA's nuclear safety convention and for efforts to make the standards mandatory and enforceable, while restricting reactor construction in earthquake-prone areas. Many nations are changing their nuclear policies, with Germany and Switzerland now planning to completely phase out nuclear power.

Russia is building "ecological barriers" on its borders to reduce the impacts of future international disasters such as the oil spill in the Gulf of Mexico and the Fukushima nuclear disaster. A sensor network will monitor air and water pollution on the Russian borders, thus giving early warning of danger.

The annual demand for rare earth elements has skyrocketed over the last decade from 40,000 tons to 120,000 tons, and by 2014 this might increase to 200,000 tons, assuming green and IT

technologies continue to increase. China, which controls over 90% of known rare earth supplies, has been gradually reducing export quotas since 2005 and might completely stop exports by 2012.

Disputes over deep-water oil territorial claims in the South China Sea and the Arctic are potential areas for conflict. The Arctic is warming faster than forecast, and human activities—from navigation to exploitation of natural resources—are increasing. The Seventh Ministerial Meeting of the Arctic Council, in May 2011, adopted the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, the first legally binding agreement negotiated by the Council.

A report by the Arctic Monitoring and Assessment Programme predicts that by 2100 sea level could rise 0.9–1.6 meters, depending on the rate of melting of the Arctic and Greenland's ice sheets, while new research found that ice loss from Antarctica and Greenland has accelerated over the last 20 years and is occurring faster than models predicted. This puts in danger the very existence of small island states such as Kiribati, the Marshall Islands, and Tuvalu in the Pacific and the Maldives and Seychelles in the Indian Ocean. The President of Kiribati says that in the country's outer islands the situation is already critical, as an increasing number of coastal villagers need to be relocated because of rising sea levels.

Experts are assessing existing formal and informal rules that would apply to shifting maritime baselines due to climate change. Such situations range from delimitation of maritime economic exploitation zones to the continued existence of some nations as legal and sovereign entities even if their entire population was forced to relocate elsewhere. Some potential options are updating UNCLOS with a concept of moving maritime baselines or making today's baselines and boundaries of maritime zones permanent.

WMO is developing the concept of hydrometeorological security with a global framework for climate services for better integration of global observing, information systems, and disaster risk reduction.



Protecting the Environment Due to Its Inherent Moral Value

UNEP asserts that an investment of 2% of global GDP per year in 10 key sectors could trigger “greener, smarter growth,” removing the inherent risks and crises associated with the current “brown economy” model, while investing about 1.25% of global GDP per year in energy efficiency and renewable energies could cut global primary energy demand by 9% in 2020 and close to 40% by 2050.

While there is general agreement that there are gaps in the current environmental governance system, views differ about potential solutions. Some countries favor creating a global policy organization with universal membership to manage the global environmental agenda, while others advocate a new specialized UN agency on the environment or argue for an umbrella organization on sustainability. However, there is general support for other broad reforms, such as setting up an all-encompassing global information network, establishing a tracking system on environmental finance, and enhancing UNEP presence within existing UN country offices.

There are more than 700 multilateral environmental agreements, and the focus of international negotiations is switching from designing new treaties to reinforcing existing ones and strengthening international environmental governance. Following the successful synergies developed among the three conventions on chemicals and waste—the Basel, Rotterdam, and Stockholm Conventions—a framework for coordination of all biodiversity-related MEAs and UN bodies is being created. Considering impediments, six conventions form a potentially manageable and coherent cluster: CBD, CITES, CMS, Ramsar, WHC, and ITPGRFA, while the CBD, UNFCCC, and UNCCD cluster would assure a better integration of biodiversity with climate change issues.

These synchronizations would improve global environmental governance by increasing coherence in decisionmaking and monitoring at international, regional, and national levels. Integration is also being initiated among regional regulations. For example, China, Japan, and South Korea have set a broad framework for adapting their chemical regulatory systems to the EU Registration, Evaluation, Authorization and Restriction of Chemicals (or REACH) system, and in May 2011 they decided to foster cooperation on non-traditional threats such as nuclear safety,

disaster prevention, and food, energy, and environmental security.

Evaluation mechanisms of the effectiveness of agreements are improving, and increasingly powerful analytical tools are being created to compare national environmental status. New international watchdog bodies have emerged, and others are being proposed to assist legal action against environmental crimes. And indexes are being created to measure progress and assess policy efficiency or to set priorities.

There is a growing trend for an ecological democracy, with people demanding active participation in decisions that have ecological impact. The Protocol on Strategic Environmental Assessment to the UNECE Espoo Convention sets the legal framework for better integration of environmental and health assessments, as well as public participation in decisionmaking at the earliest stage of projects and programs. The Lima Declaration on mining calls on governments to enact measures limiting (or revoking) transnational companies’ rights to mine on indigenous land without previous consultation with the indigenous people. It calls on the UN to declare indigenous peoples “the rightful owners since the ancient times of the soil, subsoil and natural resources” of their territories, and also attests indigenous people are “committed to instrumentalize the International Court of Justice Climate” and the “construction of a national and regional agenda for climate justice.”



Bolivia is preparing a draft UN treaty on the Rights of Mother Earth, similar to that on human rights. The treaty aims to institute 11 rights protecting nature from human intervention, ranging from the right to clean water and air to unaltered vital cycles and equilibrium and the right to not be genetically modified. It builds on President Evo Morales’s proposal in January 2010 for an international court for environmental crimes and the “Rights of Mother Earth,” as well as a Bolivia-led UN resolution in 2009 that proclaimed April 22nd International Mother Earth Day.

An International Consortium on Combating Wildlife Crime was formed by INTERPOL, CITES, UNODC, the World Bank, and the World Customs Organization. It will improve coordination of the five organizations' work to curb wildlife crime, which is generally transnational and involves several types of criminal organizations.

The 2011–20 Strategic Plan for Biodiversity identifies 20 targets, including expanding the world's protected areas to include 17% of terrestrial surface and 10% of the marine surface; the restoring of a minimum 15% of ecosystems already degraded; and halving, or bringing as close as possible to zero, the rate of loss of the world's natural habitats. Supplementary new protocols to the CBD provide international rules and procedures for liability and redress related to living modified organisms, geoengineering, and use of genetic resources.

Although global agreement for a post-Kyoto treaty has not been achieved, more local progress is being made. China is drafting a national law dedicated to climate change and its latest Five-Year Plan (2011–15) is switching its focus from GDP quantity to sustainable quality. After the EC plan to increase energy efficiency by 20%, increase renewable energies to 20%, and reduce greenhouse gas emissions by 20% (20/20/20 plan), the Community put forward a “roadmap” for achieving a low-carbon economy by 2050 in the EU. The EU is also considering creating a “coalition of the willing” to continue the fight to reduce GHG emissions in the absence of an international treaty.

The emergence of nanotechnology and synthetic biology and the proliferation of personal electronics bring new international environmental security requirements. The International Organization for Standardization publishes a globally harmonized methodology for classifying nanomaterials. The EU is exploring how to include nanomaterials within the REACH context.

Many research activities around the world are evaluating health and environmental implications of nanotechnology as well as mechanisms to reduce their negative impacts.

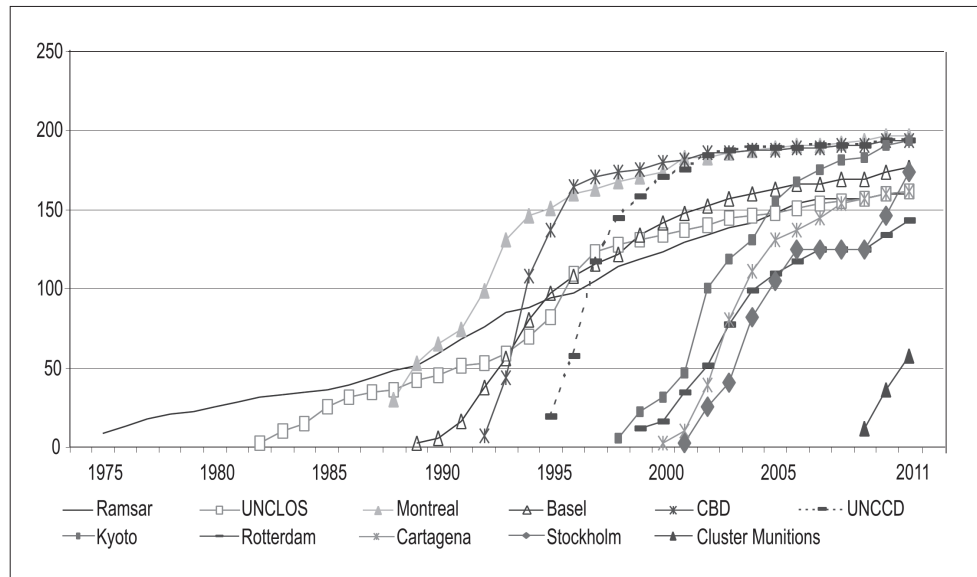
Since synthetic biology could one day be misused to create bioweapons and potentially even WMDs, international agreements to regulate this new technology seem both likely and warranted. The scale and scope of the expected future biological revolutions may one day require an international regulatory agency similar to the International Atomic Energy Agency.

Electronic waste is an extremely serious problem that is not getting adequate attention. It grows by 40 million tons a year around the world, and it is expected to rise dramatically in developing countries, which are vulnerable to illegal trafficking of hazardous waste unless regulations are strengthened and enforced. Computer waste in India alone is projected to grow by 500% by 2020 compared with 2007 levels. China, Brazil, and Mexico are also among the countries highly vulnerable to rising environmental damage and health problems from hazardous waste. Groundwater could be seriously polluted over many years from slow-motion seepage of toxic e-waste. An exercise coordinated by the International Network for Environmental Compliance and Enforcement and the Seaport Environmental Security Network revealed that 54% of the 72 total targeted inspections showed infringements, mostly related to e-waste. The European Parliament has adopted amendments for strengthening the WEEE Directive on waste electrical and electronic equipment, further encouraging recovering and recycling.

In view of increased threats of conflicts triggered by environmental factors, enforcement of international multilateral agreements should be strengthened. Figure 39 reveals significant efforts on ratifications, but more is needed in the area of implementation of the regulations, as well as in developing a global environmental consciousness.



Figure 39. Number of parties to selected multilateral environmental agreements, 1975–2011



Source: MEA Web sites, with compilation by The Millennium Project

Environmental security analysis should include the impacts of new kinds of weapons; asymmetrical conflicts and warfare; increasing demands on natural resources; urbanization (which makes more people dependent on

vulnerable public utilities); environmental degradation and climate change; continued advances in environmental law, with escalating environmental litigations; and the globalization that is increasing interdependencies.

