

WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY
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Note to Readers: Pages 1-16 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 17.

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Item 1. Environmental Security Focus of the Nobel Peace Prize for 2007

The Nobel Committee said it wanted to bring into sharper focus the “increased danger of violent conflicts and wars, within and between states”, posed by climate change. As a result, the Intergovernmental Panel on Climate Change (IPCC) and Al Gore were awarded the Nobel Peace Prize 2007 “for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change.” Awarding this year’s Nobel Peace Prize for climate change work and the 2004 Prize to Wangari Maathai “for her contribution to sustainable development, democracy and peace” compellingly acknowledges the importance of the environmental issue to international security.

Military Implications:

It is likely that this Nobel Peace Prize will focus more political and public attention and action on environmental matters. This presents opportunities to raise awareness of the Army Strategy on the Environment. Military public relations officers should be tasked to explore how to connect this Army strategy with the Nobel Peace Prize, noting efforts to reduce the military environmental footprint, the environmental dimensions in its operations, its role in developing adaptation and mitigation plans, and the inclusion of environment-related factors in conflict prevention strategies.

Sources:

The Nobel Peace Prize 2007

http://nobelprize.org/nobel_prizes/peace/laureates/2007/

Gore shares Nobel Peace Prize with U.N. panel

<http://www.cnn.com/2007/WORLD/europe/10/12/nobel.gore/>

Ban Ki-moon hails Nobel laureates Al Gore, Intergovernmental Panel on Climate Change

<http://www.un.org/apps/news/story.asp?NewsID=24275&Cr=climate&Cr1=change>

Global warming recast as security issue

http://www.ft.com/cms/s/0/3027a992-78f2-11dc-aaf2-0000779fd2ac.html?nclick_check=1

(registration required; full text in the [Appendix](#))

Item 2. Space-based Solar Power Has Significant Environmental Security Potential

A US National Security Space Office (NSSO) report, *Space-Based Solar Power: As an Opportunity for Strategic Security*, states that Space Based Solar Power (SBSP) can reduce half a trillion dollars a year in military costs by stopping energy-related wars before they start, and that SBSP can be tested in orbit within five years. SBSP has the potential to provide base load electricity on a global basis without producing greenhouse gases or nuclear waste. Geostationary satellites could convert solar energy into electromagnetic beams that are transmitted to receivers around the world that feed local electric grids. The report argues that military leadership in development and demonstration is probably necessary to speed civilian commercialization, as was the case with the Internet. One hundred and seventy academic, scientific, technical, legal, and business experts around the world participated in the study. The Executive Summary of the NSSO report states that, “...perhaps the greatest military benefit of SBSP is to lessen the chances of conflict due to energy scarcity by providing access to a strategically secure energy supply.”

Military Implications:

Military personnel with energy and environmental security responsibilities should study this report to identify how SBSP could change their operations. Such implications should be transmitted to NSSO, which expects to continue to update this report periodically. The Army Strategy on the Environment calls for leadership in sustainability; SSP furthers energy security sustainability, and sustains the mission with wireless energy transmission for more flexible, mobile, and reliable energy supply and transmission, with a smaller environmental footprint than other energy options. It also reduces vulnerabilities of energy delivery via ground and oceans. Large-scale electricity on demand anywhere in the world will speed post-conflict and post-natural disaster recovery. Large military posts have both power needs and space for safety buffers that might be required for prototype power receiving stations.

Sources:

NSSO Report: *Space-Based Solar Power: As an Opportunity for Strategic Security*

<http://www.nss.org/settlement/ssp/library/final-sbsp-interim-assessment-release-01.pdf>

Power from space? Pentagon likes the idea

<http://www.msnbc.msn.com/id/21253268>

Orbiting solar panels' day may be near

Item 3. France Could Add Teeth to the Kyoto Protocol

France's President Nicolas Sarkozy is proposing a tax revision that would favor environmentally friendly practices and lower labor taxes, while increasing taxes on highly polluting vehicles and imports from countries that do not respect the Kyoto Protocol. Sarkozy's proposals are expected to be passed by parliament early next year. France also intends to expand its strategy to the EU, urging Brussels to consider EU tariffs for imports from non-Kyoto protocol countries.

Military Implications:

The military should consider the effects of this increased taxation and restrictions on any operations in France and their potential for expansion throughout the EU.

Sources:

Sarkozy Promises Green Revolution for France

<http://www.dw-world.de/dw/article/0,2144,2847015,00.html>

Paris suggests EU tax on imports from non-Kyoto states

<http://euobserver.com/9/25047/?rk=1>

Item 4. President Putin Cites Environmental Security as Key Criterion for Caspian Energy Projects

During the summit of five Caspian nations in Iran, Russian President Vladimir Putin said "Environmental security must become a yardstick for measuring the safety of all projects", and "projects that may inflict serious environmental damage to the region cannot be implemented without prior discussion by all five Caspian nations," suggesting that each country should have a virtual veto on energy projects in the region. Note: in September 2006, Russia threatened to revoke environmental authorization for the Sakhalin II project. However, in April 2007, when Gazprom

(state owned company) gained 50%+1 share in the Sakhalin Energy Investment Company, the President announced that the alleged environmental problems were adequately addressed.

Military Implications:

There are signs that in some cases environmental security could become a political tool to achieve non-environmental objectives, which could create significant tensions (e.g. Russia stopping the natural gas pipeline to Ukraine/Europe because of its alleged environmental impact). The military should increase efforts to identify the areas where environmental issues could develop into security issues, and should work to prevent their escalation to eventual conflict.

Sources:

No Deal at Caspian Summit on Sharing Sea

<http://ap.google.com/article/ALeqM5ihjRIJLEWgmjJgq1JUFXfoSFGX6wD8SAHU9G0>

A summit of postponed problems

<http://en.rian.ru/analysis/20071017/84254518.html>

Caspian Sea leaders sign declaration

http://www.tehrantimes.com/index_View.asp?code=155078

Sakhalin issues 'settled' - as Russia takes 50% stake

<http://business.guardian.co.uk/story/0,,1977430,00.html>

Item 5. To Join the EU, Balkan Countries Should Increase Environmental Efforts

Balkan countries wanting to join the EU—Croatia, Bosnia, Serbia, FYR Macedonia, Montenegro and Albania—must pay as much attention to environmental protection as they do to economic development if they want to join the bloc, says the UNDP report *Balkan Vital Graphics: environment without borders*. Spending on environmental protection should increase from the present share of less than 0.1% to 0.7% of the GDP, to at least 1.5-2%. The six Balkan countries are working on a joint environmental strategy, but an agreement is yet to be reached.

Military Implications:

Military components operating in this region should be prepared for the possibility that these countries might adopt more stringent environmental restrictions, which may not have military exemptions.

Sources:

Environment Protection Key to Balkan EU Path – UNDP

<http://www.planetark.com/dailynewsstory.cfm/newsid/44784/story.htm>

Balkan Vital Graphics: environment without borders

<http://www.grida.no/Newsroom.aspx?m=54&pressReleaseItemID=1082>

Item 6. UN Secretary-General on the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict

In advance of the November 6th International Day for Preventing the Exploitation of the Environment in War and Armed Conflict, UN Secretary-General Ban Ki-moon urged all nations to renew their commitments preventing environmental exploitation in war and armed conflict. “Taking ecological considerations into account is crucial if we are to avoid longer-term

environmental problems that can undermine security and development, and lead to further cycles of conflict and displacement,” he said in a message and added that massive migrations caused by conflicts also severely damage the environment. UNEP found that more than 2 million displaced people since 2003 had caused severe deforestation, land degradation, and overexploitation of groundwater resources around the larger camps for displaced persons.

Military Implications:

Relevant military personnel might use the November 9th International Day for initiating and/or furthering relations with such UN organizations as UNEP and its partners to help find approaches for improved sustainability for displaced communities to prevent re-conflicts.

Sources:

Preventing the Exploitation of the Environment in War

http://www.un.org/depts/dhl/environment_war

Massive displacement disrupts economic activities: Ban

http://timesofindia.indiatimes.com/World/Massive_displacement_disrupts_economic_activities_Ban/articleshow/2501999.cms

UN Resolution 56/4

<http://daccessdds.un.org/doc/UNDOC/GEN/N01/475/24/IMG/N0147524.pdf?OpenElement>

(alternate link: <http://www.un-documents.net/a56r4.htm> or see Resolution text in the [Appendix](#))

Item 7. Call for Global Ban on Lead-based Paints

Scientists are calling for international regulations to ensure that paints have lower than critical lead levels, with the ultimate goal of eliminating all lead from paint. The call comes as a result of a study on consumer paint lead levels in Africa, conducted by a multinational team of environmental and occupational health researchers. Note: The *Budapest Statement on Mercury, Lead and Cadmium* adopted at the fifth session of the Intergovernmental Forum on Chemical Safety held in September 2006 invites the UNEP GC “to give high priority to considering [...] measures, as appropriate, on lead and cadmium, by assessing the need for further action and considering a range of options, including the possibility of establishing a legally binding instrument.”

Military Implications:

It is likely that a binding instrument on lead will emerge – as on mercury [See *Progress on Global Mercury Ban* in February 2007 environmental security report] and as the Restriction of Hazardous Substances (RoHS) Directive in the EU. For personnel and dependent preventive health reasons, as well as in preparation for compliance with eventual international regulation, the military should consider eliminating—where possible—the use of heavy metals in paints.

Sources:

Scientists Call For Global Ban on Lead-Based Paints

<http://www.ens-newswire.com/ens/sep2007/2007-09-27-03.asp>

Consumers: Chinese toys containing lead from Fisher Price recalled in Europe

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1217&format=HTML&aged=0&language=EN&guiLanguage=en>

US recalls more Chinese-made toys; lead paint mars bobble heads

http://ca.news.yahoo.com/s/afp/071025/usa/us_china_company_consumer_toys_recall_mattel_1

China governance system faulted in U.S. toy debate

<http://www.reuters.com/article/domesticNews/idUSN1221109720070912>

Agenda item 8: Heavy Metals: need for further global action? The Budapest Statement on Mercury, Lead and Cadmium

http://www.chem.unep.ch/mercury/GC24/HeavyMetalsBudapestStatement290906_revised_3.pdf

Item 8. Updates on Previously Identified Issues

8.1 Problems with Destruction of Chemical Weapons and Potential Proliferation

Only 30% of known chemical weapons stocks have been destroyed over the past ten years. The remaining 70% are supposed to be totally destroyed by 2012 to meet the Chemical Weapons Convention. Also during the UN First Committee (Disarmament and International Security) session, it was reported that while reliable safeguards structures have been established in many countries, moving chemical and biological production to Africa, Asia, Eastern Europe, and Latin America, where industrial regulations are inadequate, creates new verification challenges. The first Industry and Protection Forum to promote the implementation of the Chemical Weapons Convention and to discuss practical implementation issues will be held at the World Forum Convention Center in The Hague, November 1-2. [See also *New Concerns Rising over Chemical Weapons* in April 2007 and other related items in previous environmental security reports.] Concerning nuclear disarmament, Mexico's representative introduced a draft resolution on behalf of the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden): "Towards a nuclear-weapon-free world, accelerating the implementation of nuclear disarmament commitment."

Military Implications:

[Similar to previous on the same issue] The need to speed chemical weapons destruction should be raised on the international agenda. New efforts are needed. The state of current and potential weaponizable chemicals and of chemical plants should continue to be reviewed in light of possible violations of the CWC or of eventual amendments to the CWC. Those with responsibilities in this area should consider new ways to speed international compliance and improve efficiency of the CWC regulations.

Sources:

Chemical Weapons' Convention Deadline of 2012 for Destruction of Remaining Chemical Weapons Stockpiles 'Enormous Challenge', First Committee Told

<http://www.un.org/News/Press/docs/2007/gadis3348.doc.htm>

1-2 November: A global convention to ban chemical weapons

<http://www.cefic.be/Templates/shwNewsFull.asp?HID=1&NSID=662&P=1&NID=1>

EU Presidency Statement - United Nations 1st Committee: Other Weapons of Mass Destruction

http://www.europa-eu-un.org/articles/en/article_7424_en.htm

8.2 EU Advances the Inclusion of Airlines into the Emissions Trading System to 2010

The EU criticized the recent 36th Assembly of the International Civil Aviation Organization for failing to adopt a framework to reduce greenhouse gas emissions from international aviation. In turn, EU lawmakers proposed to move ahead—to 2010—the inclusion of all airlines flying to, from, and within the EU into the Emission Trading Scheme. The original proposal suggested 2011

for the inter-EU flights and 2012 for international flights landing in or departing from the 27 EU countries. The European Parliament is expected to vote on the bill in November. [See also *Europe to Propose Emissions Targets for All Flights to/from or within Europe* in November 2006, and *EC Proposed Strategy to Curb Greenhouse Gas Emissions from Air Travel* in September 2005 environmental security reports.]

Military Implications:

It is not clear at this point if the proposed EU regulation concerns just commercial and private flights, or all. The military should explore impacts on its European operations and consult with allied military forces on the status of military exemptions.

Sources:

Europe stands firm on ambitious action to cut Aviation Emissions

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1420&format=HTML&aged=0&language=EN&guiLanguage=en>

Written statement of reservation on behalf of the member states of the European Community (EC) and the other states members of the European Civil Aviation (ECAC) [made at the 36th Assembly of the International Civil Aviation Organization in Montreal, 18-28 September 2007]

<http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/391&format=HTML&aged=0&language=EN&guiLanguage=fr>

Lawmakers say airline emissions have to be cut

<http://www.neurope.eu/articles/78405.php>

MEPs vote to tighten emission limits on aircraft

<http://www.euractiv.com/en/transport/meps-vote-tighten-emission-limits-aircraft/article-167332>

8.3 EC Enforces Compliance of National Legislation with EU Environmental Regulations

The European Commission opened several infringement procedures against Member States for not complying with EU environmental legislation. Some of the EC legal actions include: referring Ireland to the European Court of Justice over inadequacy of its national legislation for the implementation of the Environmental Impact Assessment Directive; legal action against the UK for not fully complying with ECJ judgments in two separate cases; Luxembourg and Belgium for non-compliance with the EU Directive on urban waste water treatment; final written warning to 12 EU Member States for failing to adopt emergency plans for chemical plants; action against several EU countries for exceeding EU limits on ambient concentrations of SO₂; “Letter of Formal Notice” to Estonia, Latvia, and Lithuania for not correctly transposing certain provisions of the WEEE Directive into national legislation, and to Belgium, Denmark, Lithuania, Malta, Finland, and Sweden for inadequate implementation of the RoHS Directive into national law. [See also *E-waste Management Directive Came into Effect on August 13, 2005* in August 2005, and *RoHS Closer to Deadline* in May 2006 environmental security reports.]

Military Implications:

EC efforts to enforce environmental regulations will trigger further changes in EU Member States’ national legislation. Military stationed in the EU countries should increase vigilance in compliance with EU environmental regulations.

Sources: [each source below refers to another case]

Ireland: Commission to bring environmental impact assessment case to the European Court of Justice
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1524&format=HTML&aged=0&language=EN&guiLanguage=en>

United Kingdom: Commission takes legal action for non-compliance with Court decisions
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1531&format=HTML&aged=0&language=EN&guiLanguage=en>

Waste water treatment: Commission gives Luxembourg final warning, seeks clarifications from Belgium
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1533&format=HTML&aged=0&language=EN&guiLanguage=en>

Major industrial accidents: Commission continues infringement proceedings against 12 Member States over failure to adopt emergency plans for chemical plants
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1534&format=HTML&aged=0&language=EN&guiLanguage=en>

Air pollution: Commission takes action over levels of sulphur dioxide and PM10 in member states
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1537&format=HTML&aged=0&language=EN&guiLanguage=en>

Waste: Commission starts legal action against eight Member States over electronic waste and hazardous substances
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1513&format=HTML&aged=0&language=EN&guiLanguage=en>

8.4 EU Integrated Maritime Policy

The European Commission has adopted an Integrated Maritime Policy for the EU. The new policy will build on Europe's strengths in marine research, technology, and innovation, as well as space technology, for ensuring maximum environmental sustainability. [See also *Political Agreement Reached on the European Marine Strategy Directive* in December 2006, *Europe to Harmonize Marine Pollution Legislation* in July 2005, and *International Maritime Organization wants global rather than many different local or regional rules* of January 2003 environmental security reports.]

Military Implications:

Military and civilian contractors with marine resources should review the EU Integrated Maritime Policy for eventual implications for its activities in the region.

Source:

EC unveils new EU maritime policy
http://www.esa.int/esaEO/SEM6DE2PL7F_environment_0.html

8.5 China May Restructure Environmental Effort

Chinese President Hu Jintao, opening the ruling Communist Party's five-yearly Congress, called the environment key to "the survival and development of the Chinese nation" and said that China should improve its economic/environment balance. There are speculations that China's State Environmental Protection Administration may be given more status and power as early as next year. "It is still under discussion how the new organization should be," said Xia Guang, director of the Policy Research Center for Environment and Economy, a think tank within SEPA, during a recent talk at Brown University. [See also *China's Climate Change and S&T Action Plan* in June

2007, *China's President Hu Ordered Environmental Regulations for Military Activities* in April 2006, and other related items in previous environmental security reports.]

Military Implications:

Falling water tables and water pollution in China could lead to increasing internal migration causing a variety of socio-economic instability conditions for the foreseeable future, making this a major environmental security issue to address. Relevant military personnel should consider increased cooperation with their Chinese counterparts to offer them and SEPA the benefit of U.S. experience in environmental security efforts.

Source:

China vows to rebalance economy, nurse environment

<http://www.alertnet.org/thenews/newsdesk/PEK288516.htm>

China May Expand Environmental Watchdog Early '08

<http://www.planetark.com/dailynewsstory.cfm/newsid/44818/story.htm>

8.6 Disputes over Polar Regions Expands

The race for claiming polar territories expands from the Arctic to Antarctica. The Antarctic should be protected by the 1959 Antarctic Treaty and related agreements that protect the continent against activities relating to mineral resources except scientific ones. Nonetheless, Britain's Foreign Office plans to claim 1million sq km (386,000 sq miles) of seabed off the coast of the British Antarctic Territory. Greenpeace and WWF warned that Britain's possible oil, gas, and mineral exploration in the region would represent an environmental disaster for the fragile ecosystem. Similar claims for seabed areas might also be submitted by Chile and Argentina, which might overlap some of the British territorial claims.

Meantime, the Arctic disputes continue. Encouraged by the prospect of increased oil and minerals access due to global warming, Greenland is contemplating eventual independence from Denmark. Warning that climate change is becoming a threat to worldwide peace and security, German Foreign Minister Frank-Walter Steinmeier noted with concern that the rival territorial claims in the Arctic could turn into a Cold War. "Policies to fight climate change can, and will, become an important part of peace policies," he added. Note: On August 21st this year, for the first time on record, the Northwest Passage was opened to ships not accompanied by or armored as icebreakers. [See also *Arctic Debate Intensifies* in August 2007, *Arctic Access, Territorial Claims, Energy Resources and Environmental Management* in July 2007, and other similar items in previous environmental security reports]

Military Implications:

[Similar to previous on related issues] It is likely that discussions for clear international regulations concerning the Polar Regions will increase rapidly, opening the potential for new military roles in those regions to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in other countries and international organizations in developing timely, adequate national and international regulations and enforcement procedures regarding the Polar Regions.

Sources: (see a more expanded list in the [Appendix](#))

Britain Joins Race to Grab Seabeds

<http://www.msnbc.msn.com/id/21351573/>

Steinmeier: Climate Change Growing Threat to Peace

<http://www.planetark.com/dailynewsstory.cfm/newsid/44972/story.htm>

Melting ice cap brings diamond hunters and hopes of independence to Greenland

<http://www.guardian.co.uk/environment/2007/oct/04/1>

Arctic Moving Toward Tipping Point

<http://www.thedailygreen.com/2007/10/17/arctic-moving-toward-tipping-point/7874/>

8.7 New Strategies Needed to Deal with Global Displacement and Migration

The annual meeting of the UN High Commission for Refugees (UNHCR) governing Executive Committee concluded that new strategies are needed to deal with increasing global displacement and migration, as well as approaches to tackle their causes, scale, and complexity. In addition to conflict and persecution, environmental degradation, and frequency and magnitude of natural disasters, are among the main causes of increased numbers of refugees. After several years of decline, in 2006 the number of refugees began rising again and continues to mount, remarks UNHCR. The difference between categories of migrants is increasingly blurry. “War is many times driven by scarcity of resources; scarcity of resources can be driven by climate change,” said UN High Commissioner for Refugees, António Guterres. Note: A study by Rafael Reuveny from Indiana University, *Climate Change-induced Migration and Violent Conflict*, reveals that of 38 cases of migration directly attributable to climate change during the 20th century, half led to conflicts, some of which were violent. [See also *Climate Change Refugees* in May 2007, *UNU Calls for International Framework for Environmental Refugees* in October 2005, and other similar items in previous environmental security reports.]

Military Implications:

[Similar to previous on this issue] It is important that the military community participates in the design of an eventual international framework addressing global displacement and migration; continuously reviews the possible causes of refugee flows and preventive measures; and cooperates with civilian agencies in preparing contingency plans for those circumstances when their assistance is needed.

Sources:

UNHCR Executive Committee concludes annual meeting

<http://www.unhcr.org/news/NEWS/470651c94.html>

UN refugee chief calls for new strategies to tackle global displacement

<http://www.un.org/apps/news/story.asp?NewsID=24093&Cr=refugees&Cr1=>

People on the Move. Woodrow Wilson Center, October 10 2007 (live webcast)

http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=274776

Is this what the world's coming to?

<http://www.nature.com/climate/2007/0710/full/climate.2007.56.html>

8.8 Climate Change

8.8.1 Intensified Disasters

The International Federation of Red Cross and Red Crescent Societies have stated that more than 250 million people a year are now affected by so-called natural catastrophes, a third more than ten years ago. The federation has already responded to more than 100 floods in 2007; in 2006, the humanitarian groups responded to 482 disasters, up from 278 in 2004.

Climate change is cited as one of the causes that led to 60% of Georgian farmers losing all of their crops. Australia's first bush fires also triggered fears over the intensifying effects of climate change. By 2030, the already dry continent might get warmer by about 1.8 degrees Fahrenheit, and drier due to estimated 3% annual rainfall reduction, forecasts the *Climate Change in Australia* report produced by the Commonwealth Scientific and Industrial Research Organization and the Bureau of Meteorology. Note: a survey of 1,213 people conducted in July showed that 40% of Australians consider global warming a greater threat to security than Islamic fundamentalism; only 20% deemed it less. In Southern Africa, environmental degradation and global warming change rainfall patterns, decreasing in some regions—thus causing drought, and increasing in others, which might produce floods, warned scientists attending the Southern Africa Development Community meeting at mid-September. They also discussed adaptation strategies.

8.8.2 Melting Glaciers and Sea Ice

Many studies are showing greater warming in the Arctic than in the rest of the world and that the reduction in the sea ice extent has been much faster than global climate models predict. Douglas Bancroft, Director of the Canadian Ice Service, notes that the “overall extent was similar to what some of the models envisioned but decades in advance of when they expected that would occur. In fact, the summer of 2007 looked very similar to some climate model forecasts for 2030 to 2050.” One research station in the Canadian High Arctic recorded temperatures as high as 22°C on Melville Island, where the long-term average is 5°C. According to Walt Meir of the US National Snow and Ice Data Center in Colorado, the wider polar region may have experienced its hottest summer on record.

ESA's Earth Explorer ice mission, CryoSat-2, to be launched in 2009, will be specifically designated for polar region research, with observations over three-years, providing conclusive data on the rates at which ice cover is diminishing. To complement submarine and satellite measurements and determine with highest accuracy how rapidly Arctic ice is thinning, next year three British polar explorers will chart sea ice melt to better estimate when Arctic summer sea ice will vanish due to global warming.

8.8.3 Rising Sea Levels

Bangkok, Thailand's sprawling capital of more than 10 million people might be submerged within the next 15 to 20 years, due to sinking ground and the seawater rising, warn experts. Bangkok is one of 13 of the world's 20 largest cities at risk of being swamped as sea levels rise in coming decades, according to the Intergovernmental Panel on Climate Change.

8.8.4 Adaptation

Asia, being one of the continents most affected by climate change, is increasing its efforts for adaptation and disaster management. The UN University launched a 14-week pilot program to help Asian countries in flood risk assessment and planning for and managing floods. A Japanese initiative using satellite data to provide disaster information in Asia could extend its coverage to other developing countries. The Sentinel Asia project, a Japanese initiative using satellite data to provide disaster information in Asia will be expanded to cover more end users in Asia and could be extended to other developing countries in Africa and Latin America. China also offers its expertise and technology for disaster forecasting and management to other developing countries.

8.8.5 Post-Kyoto Negotiations

As a prelude to the December Bali summit, environment ministers from about 40 nations held an informal meeting in Indonesia, agreeing that the world must finalize a climate change treaty by 2009, to leave enough time for countries to ratify it before the Kyoto Treaty expires in 2012.

Countries key for the negotiations were represented in the meeting—low-lying countries such as the Maldives, OPEC such as Saudi Arabia, the U.S., Australia, China, and India. Also in preparation for the Bali Summit, in November the Government of Maldives will be hosting an international conference, “The Human Dimension of Global Climate Change,” with the theme “Recognizing environmental security as a fundamental human right,” said Maldives President, Maumoon Abdul Gayoom.

Contributions to accelerating atmospheric CO₂ growth from economic activity, carbon intensity, and efficiency of natural sinks, a study conducted by the Global Carbon Project in cooperation with other research institutions, reports that increase in atmospheric CO₂ is due to faster economic growth coupled with slowing improvements in carbon intensity, and decreasing efficiency of natural sinks in removing emissions from human activities. The paper says that 2006 CO₂ releases were 35% above the 1990 level. “The longer we delay reducing emissions, the more restorative capacity will be lost,” added CSIRO scientist Dr Mike Raupach, co-chair of the Global Carbon Project.

Military Implications:

[Same as previous on similar issues] Increasingly more compelling evidence and warnings on climate change amplify international discourse and increase the emergence of international policies trying to tackle the causes and develop strategies to mitigate climate change effects. Hence, the military should be active in reducing greenhouse gas emissions and preparing to help mitigate the human-made and natural catastrophes that could ensue.

Sources: (see a more expanded list in the [Appendix](#))

UN Urges Preparedness for More Frequent Disasters

<http://www.planetark.com/dailynewsstory.cfm/newsid/44773/story.htm>

Many states seen facing water shortages

<http://www.chron.com/dispatch/story.mpl/ap/nation/5249847.html>

Too late to avoid warming: report

<http://www.smh.com.au/news/environment/too-late-to-avoid-warming-report/2007/10/02/1191091074799.html>

The Big Dry. Prolonged drought threatens Australia's people, wildlife, and economy

<http://www.sciencenews.org/articles/20071027/bob9.asp>

Forecasts predict 'rainfall divide' in Southern Africa

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3920&language=1>

Arctic Moving Toward Tipping Point

<http://www.thedailygreen.com/2007/10/17/arctic-moving-toward-tipping-point/7874/>

Rising seas inch toward Thailand's capital

http://www.sptimes.com/2007/10/21/Worldandnation/Rising_seas_inch_towa.shtml

Asian countries learn flood defence

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3979&language=1>

Environment ministers target 2009 climate treaty

<http://www.alertnet.org/thenews/newsdesk/JAK103022.htm>

A clog in the world's carbon dioxide 'sinks'

<http://www.theglobeandmail.com/servlet/story/RTGAM.20071023.wclimate23/BNStory/Science/home>

8.9 Nanotechnology Safety Issues

Some noteworthy nanotechnology safety-related activities in October 2007 include:

UK Government Nanotechnology Policy Workshop for Industry held on October 19, 2007, organized by the Department for Environment, Food and Rural Affairs (Defra) and the European Nanotechnology Trade Alliance (ENTA) to provide updates from the UK government regarding: research progress from the nanotechnology research coordination group; Defra's voluntary reporting scheme; Council for Science and Technology report on government progress against nanotechnology commitments; overview of the international efforts; and industry perspectives.

BSI British Standards is publishing nine documents addressing nanotechnology health and safety issues for UK industry; seven deal with terminology—from fabrication to labeling— and two provide guidance for safe handling and disposal of free engineered nanoparticles, and for specifying nanomaterials.

Indian scientists warn that India faces serious nanotech environmental health and safety issues due to absence of guidelines on nanoparticle toxicity and biosafety regulations in India and worldwide. Scientists from the Energy Resources Institute in Delhi launched a study this year to investigate the opportunities and risks associated with the technology.

Military Implications:

[Same as previous on related issues] Relevant military personnel should review the information generated by such activities to improve military and contractor practices, as well as to assist and cooperate with the organizations working on those issues for enriching their studies.

Sources:

UK Government Nanotechnology Policy Workshop for Industry

<http://www.euronanotrade.com/index.php?option=content&task=view&id=631&Itemid=30>

BSI New Publications. Nine documents for nanotechnology terminology and guidance for UK industry are due to be published by BSI British Standards.

<http://www.bsi-global.com/upload/Standards%20&%20Publications/Nanotechnologies/Nanotechnology%20flyer.pdf>

India 'must regulate nanotechnology' urgently

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3967&language=1>

Item 9. Reports Suggested for Review

9.1 Bioviolence; Preventing Biological Terror and Crime

Bioviolence: Preventing Biological Terror and Crime, by Barry Kellman is a very well written and documented analysis of the increasing threat of bioterrorism. He argues that the international community is not prepared to counter these dangers, and makes many recommendations that are carefully explained, including strengthening international law.

Military Implications:

Key military personnel with bio-security responsibilities should study this book to identify possible new policy and training requirements.

Sources:

Bioviolence: Preventing Biological Terror and Crime. Excerpt from the book

http://assets.cambridge.org/97805218/83252/excerpt/9780521883252_excerpt.pdf

Book launch at the Wilson Center

http://www.wilsoncenter.org/index.cfm?fuseaction=events.event&event_id=276519

BIOVIOLENCE; Preventing Biological Terror and Crime. Barry Kellman, Depaul University

<http://www.cambridge.org/us/catalogue/catalogue.asp?isbn=9780521709699>

International Weapons Control Center (IWCC)

<http://www.law.depaul.edu/centers%5Finstitutes/iwcc/>

9.2 GEO-4

UNEP's fourth *Global Environment Outlook: environment for development* (GEO-4) warns once more that changing temperatures, rapid rates of species' extinction, and unsustainable depletion of the world's scarce resources are the most important threats to human survival. The report reiterates that in order to avoid catastrophe, a new proactive policy approach is needed, since environmental problems worsen faster than response policies are presently adopted. An analysis by region shows that in Africa, the biggest problem is caused by land degradation due to unsustainable use and climate change; in Asia and Pacific, despite improvements in many domains, the environment is further threatened by increasing consumption and associated waste—including hazardous waste; Europe, although a leader in environmental policy, has to make greater efforts to reduce greenhouse gas emissions and change its unsustainable patterns of production and consumption; the Latin America and Caribbean environment is threatened by lack of land-use planning—including urbanization and deforestation, and high income inequality; in North America, high energy consumption and low efficiency, low fuel economy standards, and urban sprawl are the main environmental problems.

Military Implications:

Military planners should review these reports on a regular basis. The *Global Environment Outlook* reports provide important indicators of the UN's environmental concerns and policy directions, as well as essential planning information.

Sources:

Global Environment Outlook: environment for development (GEO-4)

<http://www.unep.org/geo/geo4/media/index.asp>

Planet's Tougher Problems Persist, UN Report Warns

<http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=519&ArticleID=5688&l=en>

UN Planetary Report Paints Bleak Regional Picture

<http://www.planetark.com/dailynewsstory.cfm/newsid/45012/story.htm>

Humanity's survival at stake: UN

<http://www.thestar.com/sciencetech/Environment/article/270709>

9.3 Human Ecological Footprint Increasing Each Year

The 2007 'Ecological Debt Day' was on October 6, three days earlier than in 2006, noted the New Economics Foundation. 'Ecological Debt Day' marks the day of the year when human consumption begins surpassing the Earth's ability to sustain it. The point has been reached earlier every year since the 1980s, when the world began to live beyond its means. The results of a study using the ecological footprint index also revealed that the world is developing very unsustainably. The study is looking at how the lifestyles and ecological footprints of 93 nations have changed in the last 30 years. It is the first study of this kind and was conducted by an international team of the Global Footprint Network.

Military Implications:

The military should increase efforts to reduce its ecological footprint and consider the creation of indicators to show progress. Use of these indicators would materially assist long-range planning for force management and possible conflict outbreaks.

Sources:

October 6 is Ecological Debt Day

http://www.footprintnetwork.org/gfn_sub.php?content=overshoot

World moves into the ecological red

<http://www.enn.com/ecosystems/article/23676>

World failing on sustainable development

<http://environment.newscientist.com/channel/earth/mg19626243.100;jsessionid=HCBMNDHLHPFG>

(abstract; full article by subscription only; graph in the [Appendix](#))

9.4 Demographics and Destiny: Trends We Need to Understand in the 21st Century

Demographics and Destiny: Trends We Need to Understand in the 21st Century by Endy Zemenides, argues that demographics is one of the important factors framing the 21st century security agenda, and points out 10 key demographic trends: 1) aging of the developed world; 2) youth bulges in the Islamic world; 3) long term population decline in Russia; 4) rise of urbanization/megacities in the developing world; 5) negative birth rates in Europe; 6) developed world's reliance on immigration; 7) Islamization of Europe; 8) steep increase in the number of Chinese and Russians with lung cancer, heart disease and other pollution-related health problems; 9) population growth around limited renewable resources; and 10) high fertility rates in the developing world. Demographics, the article argues, can change the way we fight war and add reasons for fighting wars. The author concludes that the U.S. must recognize the looming demographic issue and develop a comprehensive demographic strategic plan.

Military Implications:

These points should be included in any global assessment by military personnel concerned with demographic trends as they affect force planning.

Source:

Demographics and Destiny: Trends We Need to Understand in the 21st Century. National Strategy Forum Volume 16, Issue 4 (Fall 2007)

<http://www.nationalstrategy.com/Programs/NationalStrategyForumReview/CurrentNSFRIssueFall2007V16Issue4/Fall2007NSFRDemographicsandDestiny/tabid/104/Default.aspx>

9.5 Asia's Progress Jeopardized by Environmental Degradation

The Millennium Development Goals: Progress in Asia and the Pacific 2007 report by the Asian Development Bank and UNDP hails progress in Asia, showing that the continent might reach the UN Millennium Development Goals for poverty, gender parity, and primary education coverage before the 2015 plan. However, the report warns that this might be jeopardized by environmental degradation (including deforestation and land degradation), poor water management (including flooding), rising pollution in urban areas, and CO₂ emission contributing to climate change.

Military Implications:

The military should look for opportunities to collaborate with counterparts in addressing the Millennium Development Goals.

Sources:

“The Millennium Development Goals: Progress in Asia and the Pacific 2007”

<http://www.adb.org/Documents/Reports/MDG-Update-2007/MDG-Update-2007.pdf>

Asia's Growth can Provide Economic, Social Benefits to All - Joint MDG Report

<http://www.adb.org/Media/Articles/2007/12186-growing-asia-economies/default.asp>

Item 10. Green Initiatives**10.1 "Green Un-building" Becomes Major Environmental Goal**

The practice of "green un-building" – environmentally friendly demolition – is becoming a major goal of environmental groups worldwide. Reuse or recycling of materials from destroyed structures can save enormous amounts of scarce resources.

Military Implications:

The military should ensure that all activities, installations, and civil works are aware of the importance of this concept, and are carrying it out to the maximum practical extent.

Source:

The House That Love Un-Built. Green un-building catching on in the U.S.

<http://www.grist.org/news/2007/10/18/recycHouse/>

10.2 "Green Information Technology" Is Forecast as 2008 Top IT Strategy

Gartner, Inc., a leading news source in information technology (IT), is predicting that concern for environmental issues will have a most significant impact on IT planning and operations over the next three years. The major factors involved here are energy conservation and efficiency, material conservation and recycling, and “green building” of data processing installations. UN-GAID will co-sponsor a conference and exhibit, *The Positive Impact of ICT (Information and Communications Technology) on the Environment and Climate Change*, on 27-28 November 2007, at the United Nations. Tutorials will focus on the role of information and communication technologies in assuring environmental sustainability. They will address the broader issue of information and communication technologies’ impact on the environment and climate change.

Military Implications

Military components responsible for IT installations should be sure that adequate attention is being paid to environmental considerations in planning future developments. Military personnel should consider attending the Conference, to hear the views of a large panel of distinguished experts.

Sources:

Conference site: <http://www.aitglobal.com/>

Green IT Will Be 2008's Top Strategic Technology: Gartner

http://www.greenercomputing.com/news_third.cfm?NewsID=36071

10.3 New Biological Discovery Should Bring More Efficient Water Treatment

Scientists at the Environmental Biotechnology Cooperative Research Centre (EBCRC), Eveleigh NSW, Australia, have discovered a cell signaling pathways that can control bacterial slime on membranes, which will lead to more efficient desalination and water recycling plants. According to the project leader, “Membrane fouling is one of the greatest contributors to increased energy

usage and cost in the desalination and water recycling processes. Reducing fouling will significantly decrease operating costs through reduced energy consumption, a reduction in chemical usage and an overall reduction in a plant's environmental footprint". This signaling system initiates dispersal in established fouling biofilms and prevents the formation of new biofilms. EBCRC is developing a range of biofilm control formulations that will stimulate natural bacterial dispersal events.

Military Implications:

The military might consider this technology for applications in environmentally friendly field and installation water supply systems.

Source:

Natural slime control aids desalination

<http://www.sciencealert.com.au/news/20072410-16490-2.html>

APPENDIX

Reference Details

This Appendix contains expanded background information on some items.

Item 1. Environmental Security Focus of the Nobel Peace Prize for 2007

Global warming recast as security issue

By Fiona Harvey in Deauville

Published: October 12 2007 19:41 | Last updated: October 12 2007 19:41

http://www.ft.com/cms/s/0/3027a992-78f2-11dc-aaf2-0000779fd2ac.html?nclick_check=1 (free registration required)

Awarding the peace prize to the UN climate change panel shows how global warming has been recast from an environmental issue to one of international security.

It is the latest attempt to highlight the potential for conflict that climate change will bring, and once again broadens the definition of peace.

Last year, Bangladesh's microcredit pioneer Muhammad Yunus and his Grameen Bank won the peace prize for "efforts to create economic and social development from below".

Climate change was brought before the United Nations Security Council for the first time in April by the UK government. Margaret Beckett, then British foreign minister, labelled the issue as one of the key factors behind the conflict in Darfur, because desertification had forced people from their traditional homes and into areas where they competed with others for scarce resources such as water.

Around the same time, a group of 11 influential retired US generals produced a report on the military implications of climate change, warning it could prolong the war on terrorism and foster political instability that some governments would be unable to handle.

The move to reframe climate change started with Kofi Annan, former UN secretary-general. Shortly before he left office, he warned: "Climate change is not just an environmental issue, as too many people still believe. It is an all-encompassing threat."

The Intergovernmental Panel on Climate Change, a body of the world's leading scientists convened by the UN, received the Nobel Peace Prize on Friday in recognition of its work on the potential consequences of climate change, including the possibility of conflict.

In the most comprehensive survey of climate change science yet produced, the IPCC warned earlier this year that global warming would cause widespread food shortages in the developing

world. Other destabilising results would include increased flooding, particularly in Asia, as well as fiercer storms and prolonged droughts.

John Ashton, special representative of the UK government on climate change, told the Financial Times there were signs of the problem already. He pointed to the recent record rises in the price of grain, which showed that droughts in grain-growing areas were pushing up prices and forcing governments to look at ways of tackling the problem.

Another risk to international security is that the disastrous consequences of climate change will be spread unevenly around the world. Northern regions such as parts of the US, Canada, Russia and Europe may benefit from climate change in the form of increased agricultural productivity, but the regions least able to cope – southern Africa, southern Asia and parts of South America – would be hardest hit.

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Item 6. UN Secretary-General on the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict

United Nations A/RES/56/4

Distr: General

5 November 2001

Original: English

Fifty-sixth session

Agenda item 171

Resolutions adopted by the General Assembly

[without reference to a Main Committee (A/56/L.8 and Add.1)]

56/4. Observance of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict

The General Assembly,

Recalling the United Nations Millennium Declaration,¹ which emphasized the necessity of safeguarding nature for the sake of future generations and working for the protection of our common environment,

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,

Recalling Article 2, paragraph 4, of the Charter of the United Nations, which states that all Member States shall refrain from the threat or use of force against the territorial integrity of any State in their international relations,

1. *Declares* 6 November each year as the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict;
2. *Invites* Member States, entities of the United Nations system and other international and regional organizations to observe 6 November each year as the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict;
3. *Requests* the Secretary-General to ensure the implementation of the present resolution and to promote it in the international community.

*37th plenary meeting
5 November 2001*

Item 8. Updates on Previously Identified Issues

8.6 Disputes over Polar Regions Expands

Sources: (a more expanded list)

Britain Joins Race to Grab Seabeds

<http://www.msnbc.msn.com/id/21351573/>

Britain to claim more than 1m sq km of Antarctica

<http://www.guardian.co.uk/news/2007/oct/17/antarctica.sciencenews>

Green groups condemn UK's claim in Antarctica

<http://www.guardian.co.uk/environment/2007/oct/18/climatechange.fossilfuels>

Steinmeier: Climate Change Growing Threat to Peace

<http://www.planetark.com/dailynewsstory.cfm/newsid/44972/story.htm>

Record 22C temperatures in Arctic heatwave

http://environment.independent.co.uk/climate_change/article3021309.ece

Melting ice cap brings diamond hunters and hopes of independence to Greenland

<http://www.guardian.co.uk/environment/2007/oct/04/1>

Warming Revives Flora and Fauna in Greenland

<http://www.nytimes.com/2007/10/28/world/europe/28greenland.html>

Arctic Report Card 2007

<http://www.arctic.noaa.gov/reportcard/about.html>

Arctic Moving Toward Tipping Point

<http://www.thedailygreen.com/2007/10/17/arctic-moving-toward-tipping-point/7874/>

Security in 21st Century Arctic - Claudia McMurray. Remarks at the International Conference, Tromsø, Norway. Press Release: US State Department, Friday, 5 October 2007, 7:27 am

<http://www.scoop.co.nz/stories/WO0710/S00150.htm>

8.8 Climate Change

Sources: (a more expanded list)

UN Urges Preparedness for More Frequent Disasters

<http://www.planetark.com/dailynewsstory.cfm/newsid/44773/story.htm>

The parched country

http://www.economist.com/world/na/displaystory.cfm?story_id=10024708

The fires of October

http://www.economist.com/world/na/displaystory.cfm?story_id=10024904

California Turns Corner on Wildfires

<http://www.planetark.com/dailynewsstory.cfm/newsid/45017/story.htm>

3 States Compete for Water From Shrinking Lake Lanier

<http://www.washingtonpost.com/wp-dyn/content/article/2007/10/26/AR2007102602452.html>

Many states seen facing water shortages

<http://www.chron.com/disp/story.mpl/ap/nation/5249847.html>

Water levels fall; drought fears on rise

http://www.boston.com/news/local/massachusetts/articles/2007/10/28/water_levels_fall_drought_fears_on_rise/

Too late to avoid warming: report

<http://www.smh.com.au/news/environment/too-late-to-avoid-warming-report/2007/10/02/1191091074799.html>

Australian Fires Add to Fears on Climate Change

<http://www.nytimes.com/2007/10/04/world/asia/04australia.html>

Australia Votes: Scorecard Fails Major Parties on Environment

<http://www.ens-newswire.com/ens/oct2007/2007-10-17-02.asp>

The Big Dry. Prolonged drought threatens Australia's people, wildlife, and economy

<http://www.sciencenews.org/articles/20071027/bob9.asp>

Forecasts predict 'rainfall divide' in Southern Africa

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3920&language=1>

Less Arctic ice means higher risks, experts warn

http://www.esa.int/esaEO/SEMVLJVH48F_planet_0.html

Record 22C temperatures in Arctic heatwave

http://environment.independent.co.uk/climate_change/article3021309.ece

Dragonflies, open water reveal rapid Arctic change

<http://www.theglobeandmail.com/servlet/story/RTGAM.20071003.wwarm1004/BNStory/ClimateChange/home>

Arctic Report Card 2007

<http://www.arctic.noaa.gov/reportcard/about.html>

Arctic Moving Toward Tipping Point

<http://www.thedailygreen.com/2007/10/17/arctic-moving-toward-tipping-point/7874/>

Arctic Explorers to Chart Sea Ice Melt

<http://www.planetark.com/dailynewsstory.cfm/newsid/44863/story.htm>

Rising seas inch toward Thailand's capital

http://www.sptimes.com/2007/10/21/Worldandnation/Rising_seas_inch_towa.shtml

Asian countries learn flood defence

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3979&language=1>

Asian disaster management project to expand

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3931&language=1>

China to share disaster expertise

<http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=3937&language=1>

Environment ministers target 2009 climate treaty

<http://www.alertnet.org/thenews/newsdesk/JAK103022.htm>

Contributions to accelerating atmospheric CO₂ growth from economic activity, carbon intensity, and efficiency of natural sinks

<http://www.globalcarbonproject.org/activities/AcceleratingAtmosphericCO2.htm>

A clog in the world's carbon dioxide 'sinks'

<http://www.theglobeandmail.com/servlet/story/RTGAM.20071023.wclimate23/BNStory/Science/home>

Carbon sinks failing to keep up with emissions. mongabay.com, October 22, 2007

<http://news.mongabay.com/2007/1022-carbon.html>

The President announces that the Maldives was going to open a resident diplomatic mission in Singapore shortly

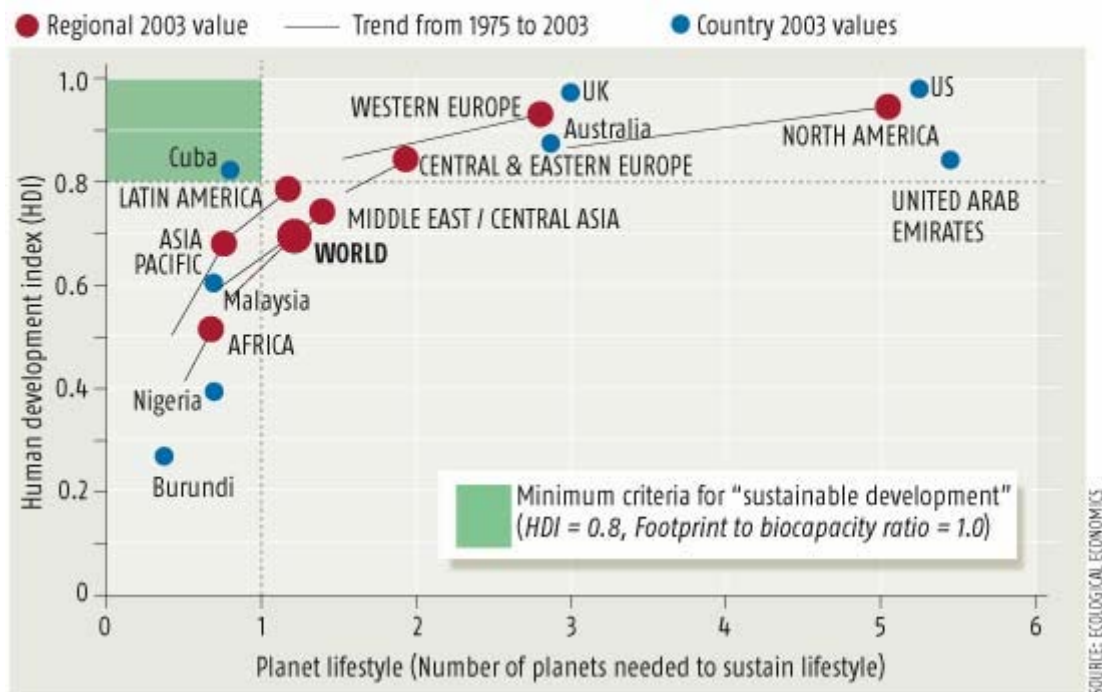
http://www.maldivesinfo.gov.mv/info/include/news.php?id_news=854

Item 9. Reports Suggested for Review

9.3 Human Ecological Footprint Increasing Each Year

ROAD TO ECOLOGICAL RUIN?

Only Cuba provides a decent standard of living for its people without consuming more than its fair share of resources



Source: *World failing on sustainable development*. From issue 2624 of New Scientist magazine, 03 October 2007, page 10

<http://environment.newscientist.com/channel/earth/mg19626243.100?DCMP=NLC-nletter&nsref=mg19626243.100> (abstract; full text by subscription only)