CLIMATE CHANGE WEBLIOGRAPHY: ARTICLES AND WEBSITES:
APRIL 25, 2011 edition

ONGOING ARTICLES AND REPORTS UPDATED AT REGULAR INTERVALS may be found through the:

CLIMATE COMPARED: PUBLIC OPINION ON CLIMATE CHANGE IN THE UNITED STATES AND CANADA by Christopher P. Borick and others. Brookings Institution, April 2011 (13 pages). http://www.brookings.edu/~/media/Files/rc/papers/2011/04_climate_change_opinion/04_climate_change_opinion.pdf (Brookings has ongoing articles on Climate Change, the above is one example)

CLIMATE CHANGE POSES MAJOR RISKS FOR UNPREPARED CITIES. News release, National Science Foundation, April 7, 2011 (the scope of this reference is worldwide) http://www.nsf.gov/news/news_summ.jsp?cntn_id=119165&org=NSF&from=news (The National Science Foundation has ongoing articles on Climate Change, the above is one example)

CRS REPORTS [Congressional Research Service] via the Foreign Press Center: [**http://fpc.state.gov/c22679.htm**]

CARBON OFFSETS: RESEARCH AND EDUCATION: http://www.co2offsetresearch.org/

ELDIS [http://www.eldis.org] has a section on **CLIMATE CHANGE** that is updated regularly [**http://www.eldis.org/go/topics/resource-guides/climate-change**] and a separate section on **CLIMATE CHANGE ADAPTATION**:
[**http://www.eldis.org/go/topics/dossiers/climate-change-adaptation**]
Eldis covers all areas of the world.

The **COUNCIL ON FOREIGN RELATIONS** issues regular, updated reports on the Environment in general and Climate Change specifically:
http://www.cfr.org/issue/17/energyenvironment.html

An ongoing CFR BLOG ON CLIMATE CHANGE can be found here:
http://blogs.cfr.org/levi/

CLIMATE MONITORING, from the NOAA National Climatic Data Center. Climate Monitoring is a service of NOAA's National Climatic Data Center, the "world's largest archive of climate data." NOAA has a policy of providing open access to physical climate data, and as such, this Web site provides a vast amount of information, much of it updated monthly, weekly, or daily. Navigation and visual presentation are simple and utilitarian. Climate Monitoring is divided into 12 sections, each offering links to reports, data, maps, and other resources. The first section, State of the Climate, appears to be the site's premier offering and is very easy to use. Users may select from drop-down menus to retrieve national and international reports on the climate for any month of the year from 1998 to 2010. Users may also subscribe to an RSS feed. *The U.S. Products and Global Products sections include Climate at a Glance and other useful features.* Climate Information Record Data allows users to download data as text files, and the Special Reports section covers events from 1998 to the present, including Hurricane Katrina.

GLOBAL CLIMATE CHANGE from NASA. http://climate.nasa.gov/
Climate Change in Factoids and Pictures; a heavily visual web site.

THE CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (CSIS) also maintains regular reporting on the Environment and Climate Change, specifically focusing on Climate Change and Security Concerns: **http://csis.org/category/topics/energy-and-climate-change**

NOAA: THE NATIONAL OCEAN AND ATMOSPHERIC AGENCY has a special web page on GLOBAL CLIMATE CHANGE, with reports, events, publications:
http://www.ncdc.noaa.gov/oa/climate/climateextremes.html

NATIONAL RESEARCH COUNCIL STUDIES: CLIMATE CHANGE:
http://www.nap.edu/catalog.php?record_id=13111
Understanding Earth's deep past: Lessons for Our Climate Future. Report by a committee of the National Research Council, March 2011 (212 pages)

The **U.S. ARMY WAR COLLEGE** has published several reports on Climate Change; one can now check their online catalog for the latest full-test reports: we suggest doing a title search and in the search field provided, simply type "Climate Change." Catalog at:
http://www.dtic.mil/dtic/search/tr/str/guided-tr.html

Check the **OES STATE DEPARTMENT SITE** for the most current USG Policy Statements as well as the latest remarks and speeches by State Department Officials:
http://www.state.gov/g/oes/climate/index.htm

ENVIRONMENTAL NEWS NETWORK. http://www.enn.com/

A highly comprehensive site, *Environmental News Network* (ENN) has aggregated environmental news for more than 16 year and now, ENN takes its original concept one step further by providing input from subject experts, offering current awareness tools and links to other environment-related Web sites as well as news, thus creating an online presence that strives to "inform, educate, enable, and create a platform for global environmental action." In addition to relying on information sourced from a series of Web sites from its Editorial Affiliates, ENN covers environmental issues all over the globe, provides RSS feeds, and sends out a daily e-newsletter. Users can also follow ENN via *Twitter* This site is particularly valuable for schools with environmental study programs.

CONTENTS:

FACEBOOK:

Become a Fan of the ***Global Conversations: Climate*** Facebook Page!

Come tell us what concerns you most about the environment. We are creating an ongoing dialogue about global environmental challenges that are affecting people around the globe. What will it cost to confront the problem? What are the environmental, social and economic costs of inaction?

Share your thoughts and raise you voice in our online community. Our site will provide you with a place to:

Access high-level climate change experts from government, civil society and the private sector

Share and learn practical steps everyone can take to reduce their carbon footprint on the planet

CLIMATE CHANGE FACEBOOK PAGE: http://www.facebook.com/ConversationsClimate?ref=mf

AMERICA.GOV, IIP AND STATE DEPARTMENT RESOURCES: (NOTE: America.gov is now an archived site and no longer being updated, but the links below still work.)

ARTICLE ALERT SERIES: http://www.america.gov/publications/article-alert.html (Many articles are on Climate Change.)

IIP SITE ON CLIMATE CHANGE AND CLEAN ENERGY:
http://science.america.gov/science/environ/energyandclimate.html

STATE DEPARTMENT (OES) CLIMATE CHANGE PAGE
http://www.state.gov/g/oes/climate/index.htm

AMERICA.GOV ARTICLES ON CLIMATE CHANGE
http://www.america.gov/climate_resources.html

AMERICA.GOV ENERGY AND ENVIRONMENT PAGE:
www.america.gov/global/environ.html

AMERICA AT COP 15: http://www.america.gov/cop_15.html

CLIMATE CHANGE RESOURCES: http://www.america.gov/climate_resources.html

UNDERSTANDING THE CARBON CYCLE: http://www.america.gov/carbon.html

CLEAN COAL: BOTH SIDES OF THE DEBATE: WHO's RIGHT? http://www.america.gov/e-exchange_coal.html

PROTECTING THE WORLD'S OCEANS: http://www.america.gov/oceans.html

EIGHT TECHNOLOGIES THAT MITIGATE CLIMATE CHANGE
(http://www.america.gov/multimedia/photogallery.html#/4110/mitigation/)

UNDERSTANDING THE ATMOSPHERE
(http://www.america.gov/multimedia/photogallery.html#/30145/understand_atm/)

ADAPTATION: IDEAS TO SAVE THE PLANET
(http://www.america.gov/multimedia/photogallery.html#/4110/adaptation/)

SMART-GRID PLANET (http://www.america.gov/multimedia/photogallery.html#/4110/grid/)

ADAPTING TO A CHANGING CLIMATE: http://www.america.gov/climate_change.html
http://www.america.gov/climate_resources.html

U.S STATE DEPARTMENT, BUREAU OF OCEANS AND INTERNATIONAL ENIRONMENTAL and SCIENTIFIC AFFAIRS (OES) as a sección en Climate Change:
http://www.state.gov/g/oes/climate/index.htm with official policy links, as well as statements, speeches and remarks by leading State Department Officials.

COP-15:

AMERICA AT COP 15: http://www.america.gov/cop_15.html

U.S. DEPARTMENT OF STATE ANNOUNCES U.S. CENTER AT COPENHAGEN CLIMATE CHANGE NEGOTIATION AND LAUNCHES COP-15 WEBSITE.
http://www.state.gov/r/pa/prs/ps/2009/nov/132439.htm
Press release, U.S. Dept of State, November 25, 2009.

REVIEWING AND VERIFYING INTERNATIONAL CLIMATE ACTION.
World Resources Institute. November 11, 2009.
As the U.S. Congress develops a domestic climate and energy package, the United States seeks assurance that other countries will also act and a means to track the progress of commitments by verifying that actions have been implemented.
http://pdf.wri.org/countdown_to_copenhagen_reviewing_and_verifying.pdf

AWAITING CLIMATE ACCORD, GOVERNMENTS TOY WITH DUBIOUS MEASURES.
YaleGlobal. November 6, 2009.
In the lead up to the Copenhagen Climate Summit in December, developed and developing nations are already preparing themselves for the outcome, a multilateral deal or not.
http://yaleglobal.yale.edu/content/awaiting-climate-accord-governments-toy-dubious-measures
[HTML format, various paging].

A ROOKIE'S IMPRESSIONS OF COP-15. Carnegie Endowment for International Peace.
Therese Miranda. January 11, 2010.
The Copenhagen Accord represents a small but imperfect step forwards. If efforts are not made to pass Senate legislation, fill in details within the existing U.N. tracks, and bridge the growing divide between developed and developing countries, success will be elusive in Mexico as well,

endangering the future of the planet.
http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=24679

NOAA'S SCIENCE ON A SPHERE is centerpiece of *U.S. Center in Copenhagen*: U.S. Dept of State, December 7, 2009 (International SphereCast set for December 8).
http://www.state.gov/r/pa/prs/ps/2009/dec/133261.htm

THE COP-15 WEBSITE IS AT http://www.cop15.state.gov
and the State Department also has a **COP-15 PAGE ON FACEBOOK** at
http://www.facebook.com/usdos.cop15

COPENHAGEN'S MANY AGENDAS. Council on Foreign Relations. December 4, 2009. This backgrounder looks at some of the positions.
http://www.cfr.org/publication/20906/copenhagens_many_agendas.html?breadcrumb=%2Fpublication%2Fby_type%2Fbackgrounder

THE PROSPECTS FOR COPENHAGEN: MORE REALISM CAN SMOOTH THE WAY U.S. Chamber's Institute for 21st Century Energy. November 2009 [PDF format, 20 pages]
http://www.energyxxi.org/reports/15347_Copenhagen.pdf
According to the report, how rapidly advanced energy technologies are developed and adopted will be the single most important factor in determining how quickly—and at what cost—greenhouse gas emissions can be reduced. The report explores the areas of discussion among the parties in the negotiations, primarily developed and developing nations.

MEMO TO COPENHAGEN: COMMENTARY IS MISINFORMED – CHINA'S COMMITMENT IS SIGNIFICANT. Carnegie Endowment for International Peace. December 8, 2009. According to the author, criticism of China's pledge to reduce its carbon intensity by 45 percent by 2020 is ill-founded; it only serves to provide cover for U.S. opponents to climate change action, and risks blocking effective progress.
http://www.carnegieendowment.org/files/Memo_to_Copenhagen_final_2.pdf [PDF format, 7 pages].

BARCELONA POSTSCRIPT. International Institute for Sustainable Development. November 2009. John Drexhage examines the developments between the climate change meetings held in Barcelona in November 2009 and those to be held in Copenhagen in December 2009.
http://www.iisd.org/pdf/2009/com_barcelona_postscript.pdf

CURRENT ENVIRONMENT NEWSLETTER FROM IRC BUDAPEST, HUNGARY WITH MANY NEW THINK TANK PIECES ON COP 15 AND CLIMATE CHANGE: ENVIRONMENT NEWSLETTER FROM IRC BUDAPEST:
http://newsletters.usembassy.hu/environmental/envidecember09shared.doc

COP-15: THE U.S. MISSION IN GENEVA HAS TEXTS AND PHOTOS
http://geneva.usmission.gov/category/environment/climate/

COP 15: TWELVE DAYS TO SAVE THE PLANET. World Wildlife Fund. December 3, 3009. According to the brief, the climate conference in Copenhagen is the best opportunity to agree on a climate deal that can save the planet from devastating climate change.
http://www.panda.org/?182482/COP-15-twelve-days-to-save-the-planet

CLIMATE CHANGE: THE U.S. FOUNDATION RESPONSE. Foundation Center. December 2009. The December 2009 Climate Conference in Copenhagen will be the final meeting of parties to the United Nations Framework Convention on Climate Change (UNFCCC) prior to its requiring renewal

in 2012. The Foundation Center has prepared the brief overview of U.S. foundation support focused on the global climate crisis to provide context about philanthropy's efforts to address climate issues.
http://foundationcenter.org/gainknowledge/research/pdf/researchadvisory_climate.pdf [PDF format, 4 pages].

THE PROSPECTS FOR COPENHAGEN: MORE REALISM CAN SMOOTH THE WAY. U.S. Chamber's Institute for 21st Century Energy. November 2009. When more than 190 nations gather in Copenhagen, Denmark next month, the U.S. Chamber of Commerce will be among the organizations pushing for a strong international agreement to reduce greenhouse gas emissions. The report details just how challenging the task will be.
http://www.energyxxi.org/reports/15347_Copenhagen.pdf

POLLS:

PUBLIC ATTITUDES TOWARD CLIMATE CHANGE: FINDINGS FROM A MULTI-COUNTRY POLL. World Bank, December 3, 2009 (40 pages).
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/09/000333037_20091209011700/Rendered/PDF/520660WP0Publi1und0report101PUBLIC1.pdf

There is a summary at http://go.worldbank.org/g3179IRB20 and a press release at http://go.worldbank.org/HNUZ98V8P0

POLLS ON THE ENVIRONMENT AND GLOBAL WARMING. American Enterprise Institute for Public Policy Research. December 8, 2009. The study is a compilation of public opinion data on the quality of the environment, which political party is better on the issue, the handling of the environment by the Bush and Obama administrations, priorities for President Obama and Congress, the political importance of the environment, environmental activism, and global warming. The study includes the latest polling data as well as important historical trends for comparative purposes. http://www.aei.org/docLib/PublicOpionStudyEnvironment.pdf [PDF format, 61 pages].

GLOBAL WARMING SEEN AS A MAJOR PROBLEM AROUND THE WORLD; LESS CONCERN IN THE U.S., CHINA AND RUSSIA. PEW GLOBAL ATTITUDES PROJECT, December 2, 2009
http://pewresearch.org/pubs/1427/global-warming-major-problem-around-world-americans-less-concerned

GLOBAL SURVEY: CONCERN FOR CLIMATE CHANGE COOLS OFF. NIELSEN WIRE, DECEMBER 6, 2009. http://blog.nielsen.com/nielsenwire/global/global-survey-concern-for-climate-change-cools-off/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+NielsenWire+(Nielsen+Wire)

THE RESEARCH, BY THE NIELSEN COMPANY AND THE OXFORD UNIVERSITY INSTITUTE OF CLIMATE CHANGE, is at http://blog.nielsen.com/nielsenwire/wp-content/uploads/2009/12/global-climate-change-survey.pdf

GLOBAL WARMING SEEN AS A MAJOR PROBEM AROUND THE WORLD.
Pew Global Attitudes Project. December 2, 2009. The survey, conducted May 18 to June 16 2009 reveals that majorities in 23 of 25 countries agree that protecting the environment should be

given priority, even at the cost of slower economic growth and job losses. And many are willing to make sacrifices, such as having to pay higher prices, to address global warming. http://pewresearch.org/pubs/1427/global-warming-major-problem-around-world-americans-less-concerned

ONGOING BLOGS:

AMERICA.GOV'S SCIENCE WRITER, CHERYL PELLERIN'S BLOG ON CLIMATE CHANGE, including commentary on recent events: http://blogs.america.gov/climate/

CLIMATE DEBATE DAILY: A NEW WAY TO UNDERSTAND DISPUTES ABOUT GLOBAL WARMING: http://www.climatedebatedaily.com/

Includes Key Resources, Essential Sites and Dissenting Voices (Pro and Con about Global Warming, essential resource for those trying to understand Global Warming.)

In the **CLIMATE Q&A BLOG**,the NASA Earth Observatory offer answers to some of the questions people ask about the science of global warming and climate change. All posts are written or reviewed by Earth and climate scientists. The questions picked for responses are based on several factors, including how frequently they are received, how relevant they are to NASA Earth science research, and how unique they are.

CLIMATE PROGRESS: http://climateprogress.org/
Climate Progress began as a hobby but quickly became a full-time passion for Joe Romm, a physics Ph.D. from MIT who worked for the Rockefeller Foundation during the Cold War, focusing on global security threats, and later at the Department of Energy. Viewing climate change through the prism of national security, Romm analyzes breaking energy news and the relevant research, but most important, he challenges the beliefs and conclusions of the mainstream media on climate-change issues.

EARTH SKY SCIENCE PODCASTS. INTERNET RESOURCE. REVIEWED IN 2009 DEC CHOICE. **http://www.earthsky.org/**

TED TALK:

THE SCIENCE BEHIND A CLIMATE NEWS HEADLINE:
http://www.ted.com/talks/rachel_pike_the_science_behind_a_climate_headline.html

(A short TED talk on Video) In 4 minutes, atmospheric chemist Rachel Pike provides a glimpse of the massive scientific effort behind the bold headlines on climate change, with her team -- one of thousands who contributed -- taking a risky flight over the rainforest in pursuit of data on a key molecule.

About Rachel Pike
Rachel Pike studies climate change at the molecular level -- tracking how emissions from biofuel crops react with the air to shape weather trends globally. Full bio and more links

ONLINE E-JOURNALS and NEWSLETTERS:

CLIMATE CHANGE PERSPECTIVES, the September 2009 edition of *eJournal USA*, explores how governments, international agencies, nongovernmental organizations, communities, and individuals working together might effectively mitigate and adapt to the impacts of climate change. State Department Special Envoy for Climate Change Todd Stern outlines the crises and

remedies from the perspective of the Obama administration. Award-winning journalist Michael Specter discusses the reality of global warming. And local experts and activists from Brazil, Canada, China, Germany, India, Indonesia, Jamaica, Kenya, Russia, and the United States present their perspectives **http://www.america.gov/publications/ejournalusa/0909.html**

CLIMATE CHANGE PARTNERSHIPS: AN IIP EJOURNAL: APRIL 2010
http://www.america.gov/cc_partnerships.html

CLIMATE OF THE PAST http://www.climate-of-the-past.net/
Started in 2005, the journal is published under the auspices of the European Geosciences Union and it is "dedicated to the publication and discussion of research articles, short communications and review papers on the climate history of the Earth." Look at the "Recent Papers" area on the right-hand side of the homepage to get a better sense of their latest accepted submissions. Visitors can click on the "Online Library CP" area to search for articles of interest and also sign up for paper alerts and RSS feeds

CLIMATE DEBATE DAILY http://climatedebatedaily.com/
Climate Debate Daily is intended to deepen our understanding of disputes over climate change and the human contribution to it. The site links to scientific articles, news stories, economic studies, polemics, historical articles, PR releases, editorials, feature commentaries, and blog entries.

CLIMATECHANGECORP.COM: http://www.climatechangecorp.com/
"ClimateChangeCorp.com is an independent news website, dedicated to providing high quality news and analysis on climate change to companies around the world. We run a regular news feed, in-depth articles and opinions from the world's leading climate change and business experts."

INTERNATIONAL JOURNAL OF GLOBAL WARMING: http://www.inderscience.com/ijgw
The primary mission of IJGW is to bring all disciplines together for both local and global solutions to combat global warming and its consequences. IJGW focuses around nine main pillars: better remediation, better avoidance, better efficiency, better cost effectiveness, better design, better resource utilisation, better environmental quality, better energy security, and better sustainable development. It also address strategies for adaptation to such changes.

LESSON PLANS FOR TEACHERS AND STUDENTS ON CLIMATE CHANGE:

CLIMATE CHANGE, WILDLIFE, WILDLANDS LESSON PLANS
The United States Global Change Research Program has published a series of lesson plans and learning activities about climate change, wildlife, and wildlands. Lesson plans and activities are available for eleven ecoregions. Click on a region, displayed on an interactive map, to locate lesson plans and activities. The lesson plans are available for download as PDFs. When you're on the resources page, make sure you also click on toolkit materials to find stand-alone educational activities.

CLIMATE CHANGE LESSON PLANS:
http://www.smithsonianeducation.org/educators/professional_development/conference/2009/climate_change/schedule.html

Includes Free Lesson Plans and resources for teachers.

CLIMATE CHANGE AND YOUTH:
http://www.un.org/esa/socdev/unyin/documents/WYR2010Final%20online%20version.pdf

CLIMATE ENGINEERING CHALLENGES:

ENGINEERING THE CLIMATE: RESEARCH AND STRATEGIES FOR INTERNATIONAL COORDINATION Chairman Bart Gordon, Committee on Science and Technology U.S. House of Representatives, October 2010 ☐ "Climate engineering, also known as geoengineering, can be described as the deliberate large scale modification of the earth's climate systems for the purposes of counteracting and mitigating climate change. As this subject becomes the focus of more serious consideration and scrutiny within the scientific and policy communities, it is important to acknowledge that climate engineering carries with it not only possible benefits, but also an enormous range of uncertainties, ethical and political concerns, and the potential for harmful environmental and economic side effects. I believe that reducing greenhouse gas emissions should be the first priority of any domestic or international climate initiative. Nothing should distract us from this priority, and climate engineering must not divert any of the resources dedicated to greenhouse gas reductions and clean energy development. However, we are facing an unfortunate reality. The global climate is already changing and the onset of climate change impacts may outpace the world's political, technical, and economic capacities to prevent and adapt to them. Therefore, policymakers should begin consideration of climate engineering research now to better understand which technologies or methods, if any, represent viable stopgap strategies for managing our **changing climate** and which pose unacceptable risks."
http://democrats.science.house.gov/Media/file/Reports/EngineeringTheClimate_StaffReport.pdf

A QUICK FIX FOR CLIMATE CHANGE? YaleGlobal. Michael Richardson. November 8, 2010. Spewing particles into the skies to block sunlight, releasing chemicals into the oceans to encourage plankton growth and carbon absorption, are just two examples of how geo-engineering technologies might ease impacts of climate change. The interventions, still being tested, would be temporary and costly, warns the author. The technologies could also cross borders, damage habitat, make some regions too hot or cold, disrupt industries that depend on clear skies or oceans, and pose other unintended consequences. Unchecked emissions could eventually cost about 5 percent of global GDP. http://yaleglobal.yale.edu/content/quick-fix-climate-change.

WATER, AGRICULTURE and DEFORESTATION ISSUES:

EFFECTS OF CLIMATE CHANGE ON AGRICULTURE, LAND RESOURCES, WATER RESOURCES, AND BIODIVERSITY IN THE UNITED STATES. 2008 Study.
http://www.climatescience.gov/Library/sap/sap4-3/final-report/default.htm

EARTH'S WATER CYCLE AND CLIMATE CHANGE: READING LIST. SCIENCE REFERENCE SERVICES, LIBRARY OF CONGRESS, JULY 1, 2008
http://www.loc.gov/rr/scitech/SciRefGuides/watercycle.html

WATER: CAUSE FOR COOPERATION OR CONFLICT?
Article in SCIENCE AND WORLD AFFAIRS: Online at:
http://www.scienceandworldaffairs.org/PDFs/VanDerMolenHildering_Vol1.pdf

Still, Douglas R. "**WATER SCARCITY AS A CAUSE OF CONFLICT IN THE NILE, EUPHRATES, AND JORDAN RIVER BASINS. "** Change and Water Supply)
Full text available online at: http://handle.dtic.mil/100.2/ADA463714

MELTING GLACIERS THREATEN PERU ON MANY FRONTS: W POST 1/17/2011
http://www.washingtonpost.com/wp-dyn/content/article/2011/01/16/AR2011011604900.html

MANAGING AFRICA'S WATER DURING A CHANGING CLIMATE:
http://www.alin.net/downloads/Joto%20Afrika%20Issue%202.pdf

WATER AND CLIMATE CHANGE: **(COLUMBIA UNIVERSITY**

MIDDLE EAST STUDIES DEPARTMENT)
http://www.columbia.edu/cu/lweb/indiv/mideast/cuvlm/water.html

NATIONAL WATER PROGRAM STRATEGY: RESPONSE TO CLIMATE CHANGE. EPA, March 2008 http://www.epa.gov/water/climatechange/

GLOBAL WATER ISSUES: HOW CLIMATE CHANGE IS AFFECTING WATER SUPPLIES:
http://www.america.gov/publications/books-content/global-water-issues.html
Global Water Issues explores from an international perspective the many interrelated aspects of how humanity manages water quality and supply, how water relates to environmental concerns, and how this most fundamental substance affects even mankind's social and political arrangements. This abridged First Look edition includes several chapters."

IN DEAD WATER: MERGING OF CLIMATE CHANGE WITH POLLUTION, OVER-HARVEST, AND INFESTATIONS IN THE WORLD'S FISHING GROUNDS Produced by: United Nations [UN] Environment Programme (2008)
The world's oceans are already under stress as a result of overfishing, pollution and other environmentally-damaging activities in the coastal zones and now on the high seas. Climate change is presenting a further and wide-ranging challenge with new and emerging threats to the sustainability and productivity of a key economic and environmental resource.
http://www.eldis.org/cf/rdr/?doc=42246&em=030409c=enviro

CLIMATE CHANGE AND THE GLOBAL WATER CRISIS: WHAT BUSINESSES NEED TO KNOW AND DO. Pacific Institute and United Nations Global Impact. May 2009. The report explores the linkages between climate change and water, from both the scientific and corporate management perspectives.
http://www.pacinst.org/reports/ungc_climate_water/report.pdf

UN-WATER TASK FORCE ON CLIMATE CHANGE
http://www.unwater.org/TFclimate.html

U.N. DEVELOPMENT PROGRAM CLIMATE CHANGE ADAPTATION AND WATER
http://www.undp.org/water/crosscutting/climate.html

INTERNATIONAL RESEARCH INSTITUTE FOR CLIMATE AND SOCIETY
WATER RESOURCES MANAGEMENT
http://portal.iri.columbia.edu/portal/server.pt?open=512&objID=500&parentname=CommunityPage&parentid=0&mode=2&in_hi_userid=2&cached=true

CONFRONTING CLIMATE CHANGE: AN EARLY ANALYSIS OF WATER AND WASTEWATER ADAPTATION COSTS. National Association of Clean Water Agencies October 28, 2009. The

report details the impacts climate change can have on wastewater and drinking water utilities and estimating the adaptation costs for these critical facilities to be between $448 billion and $944 billion through 2050. http://www.nacwa.org/images/stories/public/2009-10-28ccreport.pdf [PDF format, 104 pages].

PACIFIC INSTITUTE CLIMATE CHANGE AND WATER
http://www.pacinst.org/topics/water_and_sustainability/climate_change/

CLIMATE INSTITUTE
Less than 1% of freshwater resources worldwide is available for human consumption
http://www.climate.org/topics/water.html

U.S. ENVIRONMENTAL PROTECTION AGENCY OFFICE OF WATER - CLIMATE CHANGE AND WATER http://www.epa.gov/ow/climatechange/

VIDEO: WATER & CLIMATE CHANNEL
UNDERSTANDING THE VITAL LINKS BETWEEN WATER AND CLIMATE CHANGE
http://www.thewaterchannel.tv/index.php?option=com_content&view=article&id=76&Itemid=98

WATER SUPPLY: GLOBAL WARMING'S WAKE-UP CALL FOR THE SOUTHEASTERN UNITED STATES. National Wildlife Federation. November 2008. The second major drought of the last decade is a wake-up call for the Southeast United States, showing the region's vulnerability due to its reliance on scarce supplies of fresh water.
http://www.nwf.org/nwfwebadmin/binaryVault/NWF_SEWaterSupply_FINAL2.pdf

COOPERATIVE PROGRAMME ON WATER AND CLIMATE (CPWC)
CLIMATE CHANGES THE WATER RULES (PDF, 9 PAGES)
http://www.waterandclimate.org/UserFiles/File/Chapter1_1_9.pdf

WATER RESOURCES, CLIMATE CHANGE AND HUMAN VULNERABILITY
2009 This paper focuses on the impact of climate change on water resources and the affect it has on human society. http://www.eldis.org/cf/rdr/?doc=44496&em=030909⊂=clim

WATER POLICY – WATER POLITICS. SOCIAL ENGINEERING AND STRATEGIC ACTION IN WATER SECTOR REFORM (2008) The key challenge in the water sector is not a lack of water, knowledge, financial resources or technology. In general, it is the political sphere that determines if water problems are solved or not, if people get access to water or not, if our natural resource base is sustainably developed or overexploited.
http://www.eldis.org/cf/rdr/?doc=50410&em=170210⊂=enviro

U.N. FOOD AND AGRICULTURE ORGANIZATION
Climate change, water and food security (PDF, 18 pages)
http://www.fao.org/nr/water/docs/HLC08-FAOWater-E.pdf

AGRICULTURE AND CLIMATE CHANGE: AN AGENDA FOR NEGOTIATION IN COPENHAGEN
Authors: Nelson,G.
Thttp://www.eldis.org/cf/rdr/?doc=44894&em=221009⊂=clim

CLIMATE CHANGE: IMPACT ON AGRICULTURE AND COSTS OF ADAPTATION. Report by the International Food Policy Research Institute, October 2009 (30 pages).
http://www.ifpri.org/publication/climate-change-impact-agriculture-and-costs-adaptation

There is a press release, September 29, 2009, at http://www.ifpri.org/pressrelease/new-report-climate-change-projects-25-million-more-malnourished-children-2050

and related material at http://www.ifpri.org/pressroom/briefing/impact-climate-change-agriculture

THE OCEAN AND CLIMATE CHANGE TOOLS AND GUIDELINES FOR ACTION
International Union for Conservation of Nature and Natural Resources (World Conservation Union) (2009) http://www.eldis.org/cf/rdr/?doc=45280&em=270110⊂=clim

COOPERATIVE PROGRAMME ON WATER AND CLIMATE
Perspectives on Water and Climate Change Adaptation - new publication series
http://www.waterandclimate.org/index.php?id=5thWorldWaterForumpublications810

CLIMATE CHANGE AND WATER RESOURCES MANAGEMENT: A FEDERAL PERSPECTIVE. [U.S. Geological Survey]. February 2, 2009. http://pubs.usgs.gov/circ/1331/Circ1331.pdf
WATER POLICY – WATER POLITICS. SOCIAL ENGINEERING AND STRATEGIC ACTION IN WATER SECTOR REFORM The key challenge in the water sector is not a lack of water, knowledge, financial resources or technology. In general, it is the political sphere that determines if water problems are solved or not, if people get access to water or not, if our natural resource base is sustainably developed or overexploited. Politics (the process of decision-making for groups of people, involving the authoritative allocation of values) – the actors, their interests and interactions determine if progress is made or hindered. The outcome of water politics is then reflected in water politics, the substantive outcome of the political interplay in terms of regulations, action programs or spending priorities of the respective public or private entities. The contribution maps the 'politics of water' as a field of research. Water control is understood as *politically contested resource use*.
http://www.eldis.org/cf/rdr/?doc=50410&em=19032010⊂=enviro

UN WATER SITE: http://www.unwater.org/worldwaterday/flashindex.html

Media Kit at: http://www.unwater.org/worldwaterday/flashindex.html (ALSO IN FRENCH!)

U.N. DEVELOPMENT PROGRAM CLIMATE CHANGE ADAPTATION AND WATER
http://www.undp.org/water/crosscutting/climate.html

AMERICA.GOV WATER ISSUES SITE: http://www.america.gov/publications/books-content/global-water-issues.html

The March 2010 issue of *eJournal USA*, ***21st Century Agriculture*.** It explores how technical prowess and agricultural skill hold the key to feeding the growing populations of the future. Discusses the use of water in Agriculture.

For World Water Day March 22, a first look edition of our *Global Water Issues* book. Included are chapters on climate change, food security, health, and challenges in Pakistan. The entire book in both electronic and print editions is expected to become available this summer.

Also for World Water Day, an America.gov feature *Impacts of Climate Change: Water*, accessible at http://www.america.gov/global/environ.html. Included are the "Water & Climate Change" chapter from *Global Water Issues,* an Adaptation! blog entry, the *Today's Web Picks* RSS climate feed, and the three *Who's Right?* climate debates.

WORLD BANK: WATER AND CLIMATE CHANGE
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTWAT/0,,contentMDK:21723353~pagePK:148956~piPK:216618~theSitePK:4602123,00.html

CLIMATE INSTITUTE WATER
http://www.climate.org/topics/water.html

COOPERATIVE PROGRAM ON WATER AND CLIMATE BRIDGING WATER & CLIMATE FOR DEVELOPMENT
http://www.climate.org/topics/water.html

C-SPAN VIDEO LIBRARY: CLIMATE CHANGE AND WATER SUPPLY
http://www.c-spanvideo.org/program/id/215843
U.S. FOREST SERVICE: CLIMATE CHANGE AND WATER: PERSPECTIVES FROM THE U.S. FOREST SERVICE http://www.fs.fed.us/biology/resources/pubs/.../water-climate-brochure.pdf

RAMSAR CONVENTION ON WETLANDS
Water, Wetlands, Biodiversity and Climate Change
http://www.ramsar.org/pdf/wn/w.n.climate_change_poster.pdf

WEBCAST: LIBRARY OF CONGRESS: EARTH'S WATER CYCLE IN A CHANGING CLIMATE
Dr. Peter Hildebrand, NASA (42 minutes & transcript)
http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=4339

ATLAS: INTERNATIONAL WATER MANAGEMENT INSTITUTE, WORLD WATER AND CLIMATE ATLAS
http://www.iwmi.cgiar.org/WAtlas/Default.aspx

UNESCO: CLIMATE CHANGE AND WATER
An overview from the World Water Development Report 3: Water in a Changing World (PDF, 28 pages) http://unesdoc.unesco.org/images/0018/001863/186318e.pdf

GLOBAL PUBLIC POLICY NETWORK ON WATER MANAGEMENT, WATER AND CLIMATE CHANGE ADAPTATION: Water World: Why the global climate challenge is a global water challenge (PDF, 25 pages) http://gppn.stakeholderforum.org/fileadmin/files/GPPN_2008-9/Papers/Water_World_Why_the_global_climate_challenge_is_a_global_water_challnege.pdf

WATER MARKETS: AUSTRALIA'S MURRYA-DARLING BASIN AND THE U.S. SOUTHWEST. National Bureau of Economic Research. R. Quentin Grafton et al. March 2010. Fresh water supplies increasingly are under stress in many parts of the world due to rising populations, higher per capita incomes and corresponding consumption, greater environmental concerns, and the effects of climate change. Water rights and markets are part of the institutional menus for responding to these problems. The report examines water markets in both Australia's MDB and the western U.S. and their prospects for addressing water scarcity. http://www.nber.org/papers/w15797.pdf

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
Technical Paper: Climate Change and Water (PDF, 214 pages)
http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf

DEFORESTATION AND CLIMATE CHANGE: 2010 (A CRS REPORT):
http://fpc.state.gov/documents/organization/140767.pdf

DEFORESTATION AND GREENHOUSE-GAS EMISSIONS.
BACKGROUNDER Council on Foreign Relations, November 30, 2007
http://www.cfr.org/publication/14919/deforestation_and_greenhousegas_emissions.html

INTERNATIONAL DEFORESTATION AND CLIMATE CHANGE: A HEARING BEFORE THE U.S. SENATE COMMITTEE ON FOREIGN RELATIONS (APRIL 22, 2008)
http://foreign.senate.gov/hearings/2008/hrg080422a.html

DEFORESTATION AND CLIMATE CHANGE. Congressional Research Service, Library of Congress. Ross W. Gorte and Pervaze A. Sheikh. March 24, 2010.
Efforts to mitigate climate change have focused on reducing carbon dioxide (CO2) emissions into the atmosphere. The report provides basic information on forests and climate change.
http://www.fas.org/sgp/crs/misc/R41144.pdf

ARCTIC:

ICTS, ADAPTATION TO CLIMATE CHANGE, AND SUSTAINABLE DEVELOPMENT AT THE EDGES. AN IISD COMMENTARY (2008)
Using the Arctic as a case study, the author asserts that in addition to the harmful impacts of climate change, beneficial opportunities can also result, even in some of the most vulnerable regions of the world. http://www.eldis.org/cf/rdr/?doc=39357&em=170908&sub=clim

CLIMATE CHANGE AND THE ARCTIC: NEW FRONTIERS OF NATIONAL SECURITY. Hearing before the U.S. House Committee on Foreign Affairs,
http://foreignaffairs.house.gov/hearing_notice.asp?id=1059
March 25, 2009. http://foreignaffairs.house.gov/schedule.asp and scroll down.

NOT JUST FOR POLAR BEARS: NEW CLIMATE REPORT DOCUMENTS GROWING EXTINCTION RISK FOR ARCTIC WILDLIFE
"A new report offers a dramatic look at Arctic species being pushed toward extinction by rapid climate change. **Extinction: It's Not Just for Polar Bears** documents 17 Arctic animals, from Arctic foxes to whales to plankton, struggling to survive the effects of climate change and ocean acidification. It was produced by the Center for Biological Diversity and Care for the Wild International. "The **polar bear** is the best-known victim of rapid melting in the Arctic, but if we don't slash greenhouse pollution, many more creatures will follow it down the path to extinction," said Shaye Wolf, the Center's climate science director and lead author of the report. Some Arctic species have already experienced widespread die-offs and population declines after losing key habitats and food sources; others face extreme weather events or suffer new pressure from predators and pathogens moving northward. Today's report comes as Arctic summer sea ice approaches another near-record minimum. Rapid disappearance and thinning of the sea ice is having devastating effects on the many species that depend on it for rearing young, hunting, resting and avoiding predators. Sea-ice loss forces Pacific walrus mothers and calves to come to shore, where young are sometimes trampled to death in stampedes. Early sea-ice breakup prematurely separates ringed and harp seal mothers from their pups before the pups are big enough to survive. Eight of the world's 19 polar bear populations are declining as they struggle to raise young and hunt for food on shrinking ice sheets. The oceans have absorbed more than a quarter of all of society's carbon dioxide emissions, and the addition of this vast quantity of CO2 is changing the chemistry of ocean water, turning it more acidic. The Arctic ocean is becoming corrosive to shell-building creatures like plankton and clams more quickly than temperate waters. It could become lethal to the most sensitive shell-builders by 2050, threatening the marine ecosystem with collapse."

Kucera, Joshua **THE BIG THAW** (Wilson Quarterly, vol. 32, no. 4, Autumn 2008 pp. 36-42) A warming climate is melting Greenland's ice sheet, which contains 10 percent of the world's fresh water, and which is disappearing at a rate of 57 cubic miles a year. In 2007, the Northwest Passage, which runs south of Greenland and along Canada's northern coast, was free of ice for the first time since scientists began monitoring it. The Greenland ice sheet melt is unlocking mineral and petroleum resources, offering the prospect of considerable wealth to Greenland's citizens, who are seeking independence from Denmark. *The seas off northeastern Greenland were among the most promising, with an estimated 8.9 billion barrels of oil and 86.2 trillion cubic feet of natural gas. The author chronicles how climate change is altering the Greenlanders' way of life, and the how the newly-accessible mineral resources are changing political relations.* http://www.wilsoncenter.org/index.cfm?fuseaction=wq.essay&essay_id=500524

ICE MELTS 2009 DATA
http://www.earth-policy.org/index.php?/indicators/C50/ice_melting_2009
http://www.cfr.org/content/publications/attachments/ClimateChange_CSR32.pdf

There is a **news release** at
http://www.cfr.org/publication/14917/council_report_argues_for_new_policies_to_protect_national_security_interests_from_consequences_of_climate_change.html

EARTH POLICY INSTITUTE: **ICE MELT ACCELERATES AROUND THE WORLD**
Ice Melt Accelerates Around the World, Frances C. Moore: "With atmospheric carbon dioxide concentrations at new record highs and global average temperature now some 0.8 degrees Celsius above pre-industrial levels, the frozen regions of the earth are showing us just how rapidly climate change can take effect. Recent years have seen ice melt accelerate and spread to new, previously unaffected regions. In many areas, the pace of melting has surprised even the scientists studying it most closely, providing a strong early indication that the consequences of climate change could come faster and be more severe than previously believed." Additional Data:

- ☐ Selected Examples of Ice Melt Around the World (table and map)
- ☐ Average September Arctic Ocean Sea Ice Extent (figure)
- ☐ Average Global Temperature, 1880-2007 (figure and table)
- ☐ Atmospheric Concentration of Carbon Dioxide, 1000-2007 (figure)
- ☐ Related postings on climate change

UNCERTAINTY IN CLIMATE MODEL PROJECTIONS OF ARCTIC SEA ICE DECLINE: AN EVALUATION RELEVANT TO POLAR BEARS. Eric DeWeaver. U.S. Geological Survey, U.S. Department of the Interior. Web posted September 7, 2007. This report describes the uncertainties in climate model simulations of Arctic sea ice. It proposes a selection criterion for models for polar bear habitat loss projections. Of the 10 models that satisfied the criteria, all lost at least 30% of the September ice; 4 lost over 80% percent; and by the end of the 21st century, 7 are practically ice free.
http://www.usgs.gov/newsroom/special/polar_bears/docs/USGS_PolarBear_DeWeaver_GCM-Uncertainty.pdf

PREPARED REMARKS: THE GLOBAL IMPLICATIONS OF A WARMING ARCTIC. [COUNCIL ON FOREIGN RELATIONS]. May 5, 2009.
http://www.cfr.org/content/publications/attachments/Borgerson_SFRC_RT.pdf [The author participates in the roundtable discussion on "The Global Implications of a Warming Arctic" with members of the Senate Foreign Relations Committee. He testifies about the climate change driving the Arctic's transformation; then paints a future of the current state of international relations in the Arctic. **He also provides specific policy recommendations the U.S. should take to advance its interests in this strategic region**.

CLIMATE CHANGE: PROMOTING THE DIALOGUE: CLIMATE CHANGE AND THE MARITIME SERVICES. Center for New American Security. Christine Parthemore.
March 11, 2010. Climate change carries broad implications for U.S. interests. Scientists forecast, *and in some regions are already observing, an increasingly accessible Arctic,* sea level rise, *melting glaciers and ice sheets*, changing patterns of natural disasters and alterations to ocean conditions." http://www.cnas.org/files/documents/publications/Promoting_Dialogue_ClimateChange_MaritimeServices_Parthemore_Mar2010_code408_workingpaper_0.pdf [PDF format, 18 pages].

ARCTIC REPORT CARD: UPDATE FOR 2009. National Oceanic and Atmospheric Administration. October 22, 2009. Despite the fact that summer 2009 had more sea ice than in 2007 or 2008, scientists are seeing drastic changes in the region from just five years ago and at rates faster than anticipated, according to the report, a collaborative effort of 71 national and international scientists. http://www.arctic.noaa.gov/reportcard/ArcticReportCard_full_report.pdf

ARCTIC TREASURE: GLOBAL ASSETS MELTING AWAY. Pew Charitable Trusts. February 2010. Ice and snow are defining features of the Arctic. At no point in at least 800,000 years has the Arctic been without sea ice. By some projections the region may lose summer sea ice as soon as 2030. In a sense, the value of this ice is incalculable. Arctic ice defines the homelands and cultures of indigenous peoples and ecosystems that harbor species which are uniquely adapted to this environment.
http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/Arctic_Summary_FINAL.pdf?n=1822 [PDF format, 12 pages].

CLIMATE CHANGE: PEW ENVIRONMENT REPORT SAYS MELTING ARCTIC COULD COST $2.4 TRILLION BY 2050 News release: "The Pew Environment Group released a report that for the first time quantifies the global cost of the Arctic's declining ability to cool the climate, indicating that the rapid melting of the region could carry a minimum price tag of $2.4 trillion U.S. by 2050. The report...estimates that this year alone the climate cooling value lost by retreating Arctic sea ice and snow and thawing permafrost could be an estimated $61 billion U.S. to $371 billion U.S. On the low end of its projections, the report estimates that these costs could accumulate to almost $5 trillion U.S. by the end of the century if climate change is not abated."

- ☐ An Initial Estimate of the Cost of Lost Climate Regulation Services Due to Changes in the Arctic Cryosphere, February 2010
- ☐ Related postings on climate change

ARCTIC, ANTARCTIC: POLES APART IN CLIMATE RESPONSE. NOAA, May 2, 2008 (contrasts in the response to global warming are noted)
http://www.noaanews.noaa.gov/stories2008/20080502_arctic.html

SPECIFIC REGIONS OF THE WORLD:

STATE OF THE CLIMATE: 2010 GLOBAL ANALYSIS; BY NOAA
http://www.ncdc.noaa.gov/sotc/?report=global

CLIMATE CHANGE AND DISPLACEMENT
In response to growing climate change pressures on landscapes and livelihoods, people are moving and adapting. Evidence points towards climate and environmentally induced migration becoming one of the major policy challenges of this century. This review, made of 31 articles, analyses a range of climate and migration related issues which focus on case studies in *Central Asia, Kenya, Kiribati, Ghana, Alaska and Bangladesh*, among others.
http://www.eldis.org/cf/rdr/?doc=39919&em=161008&sub=clim

CLIMATE CHANGE AND LATIN AMERICA: THE LONG WAY TO COPENHAGEN:
http://www.brookings.edu/opinions/2009/1023_climate_change_latin_america_cardenas.aspx
(OPINION PIECE FROM BROOKINGS)

CLIMATE CHANGE AND POVERTY IN LATIN AMERICA AND THE CARIBBEAN: A CONSULTATION PROCESS Authors: Dumas,J.; Kakabadse,Y.; Andrade,M.
Produced by: Fundacion Futuro Latinoamericano (2008) This report is the product of a regional consultation project initiated by IDRC and DFID, and carried out by the Fundacion Futuro Latinoamericano, a non-profit organisation based in Quito, Ecuador. The objective of this project is to identify the information gaps, knowledge requirements of relevant stakeholders, and the state of existing capacity and needs of the most vulnerable populations in Latin America and the Caribbean (LAC), to cope with the impacts of climate change.
http://www.ffla.net/images/stories/PDFS/PUBLICACIONES/CCLAC_REPORT.pdf

MELTING GLACIERS THREATEN PERU ON MANY FRONTS: article from the WASHINGTON POST 1/17/2011 http://www.washingtonpost.com/wp-dyn/content/article/2011/01/16/AR2011011604900.html (EFFECTS OF CLIMATE CHANGE IN PERU)

JOTO AFRIKA 3: DISASTER RISK AND CLIMATE CHANGE IN AFRICA
How can communities in Africa manage the increasing risk of, and vulnerability to, disasters resulting from climate change?

THE PERCEPTION OF AND ADAPTATION TO CLIMATE CHANGE IN AFRICA. David Maddison. Development Research Group, Sustainable Rural and Urban Development Team, Policy Research Working Paper, World Bank.
Using a large-scale survey of agriculturalists in 11 African countries, this paper tries to determine farmers' abilities to detect climate change and to adapt to any change that has occurred. The findings show that a significant number of farmers have already witnessed an increase in temperatures and a decrease in precipitation. Additionally, farmers living in different locations adapted to these changes even though they may have encountered institutional obstacles.
http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2007/08/06/000158349_20070806150940/Rendered/PDF/wps4308.pdf

INSTITUTIONAL MAPPING FOR CLIMATE CHANGE ADAPTATION IN EASTERN AFRICA
Authors: Kituyi,E. Produced by: International Development Research Centre (2008)
http://www.idrc.ca/uploads/user-S/12472192231Institutional_Mapping_for_Climate_Change_Adaptation_in_Eastern_Africa.pdf

CLIMATE CHANGE IN EASTERN AND SOUTHERN AFRICA: IMPACTS, VULNERABILITY AND ADAPTATION
Produced by: Global Environmental Change and Human Security International Project Office (2008) In its most recent assessment, the Intergovernmental Panel on Climate Change reported that all of Africa is likely to warm during this century, with the drier subtropical regions warming more than the moist tropics. This report highlights five key themes that are important efforts aimed at addressing climate change impacts, vulnerability and adaptation in eastern and southern Africa. http://www.eldis.org/cf/rdr/?doc=39897&em=161008&sub=clim

CLIMATE RESILIENT CITIES: 2008 PRIMER. World Bank.
Web posted August 6, 2008. From the World Bank preface: "Climate change is a current reality when loss from flooding and hurricanes is too frequent occurrence in many countries in the East Asia Region, particularly in cities where people and assets are concentrated. Urban centers need to be prepared with specialized tools to deal with climate change impacts and early warning systems.

Moreover, given the potential devastation associated with future climate change-related disasters, it is vital to change the way people build and manage the cities, which account for 80 percent of greenhouse gas emissions today. The report is a tool for city governments in the East Asia Region to better understand how to plan for climate change impacts and impending natural disasters through sound urban planning to reduce vulnerabilities."
http://siteresources.worldbank.org/EASTASIAPACIFICEXT/Resources/climatecities_fullreport.pdf
[176 pages]

CLIMATE CHANGE: COMPETITIVENESS CONCERNS AND PROSPECTS FOR ENGAGING DEVELOPING COUNTRIES. Peterson Institute for International Economics.
http://www.petersoninstitute.org/publications/papers/hufbauer0308.pdf

THE IMPACT OF CLIMATE CHANGE AND ADAPTATION ON FOOD PRODUCTION IN LOW-INCOME COUNTRIES: EVIDENCE FROM THE NILE BASIN, ETHIOPIA
This paper presents an empirical analysis of the impact of climate change on food production in a typical low-income developing country. It provides an estimation of the determinants of adaptation to climate change and the possible implications.
http://www.eldis.org/cf/rdr/?doc=41877&em=030609⊂=clim

ECONOMY WIDE IMPACTS OF CLIMATE CHANGE ON AGRICULTURE IN SUB-SAHARAN AFRICA Produced by: International Food Policy Research Institute (2009) This report takes cognizance of the fact that agriculture is very important to *sub-Saharan Africa* and there is potential to increase agricultural productivity through irrigation. It employs two possible adaptation options to climate change. http://www.gtz.de/de/dokumente/gtz2009-8-en-factsheet-ifpri.pdf

CLIMATE CHANGE AND INDIGENOUS PEOPLES
This manual has been written to empower indigenous peoples to participate more effectively in shaping relevant policies and actions taken to address issues related to climate change.
The manual provides an overview of climate change and then looks at:

- ☐ impacts of climate change on indigenous people
- ☐ climate change, biodiversity and indigenous people
- ☐ indigenous peoples: approaches to adaptation
- ☐ the Reducing Emissions from Deforestation and Forest Degradation (REDD) initiative and indigenous people
- ☐ indigenous women and climate change

http://www.eldis.org/cf/rdr/?doc=43515&em=030609⊂=clim

THE IMPACT OF CLIMATE CHANGE ON INDIGENOUS AND TRADITIONAL PEOPLES: 2008 DOCUMENT: http://www.eldis.org/go/home&id=36325&type=Document

SOLVING THE PUZZLE: RESEARCHING THE IMPACTS OF CLIMATE CHANGE AROUND THE WORLD. [National Science Foundation]. May 2009.
http://www.nsf.gov/news/nsf09202/nsf09202.pdf [PDF format, 114 pages].

WORLD DEVELOPMENT REPORT 2010: DEVELOPMENT AND CLIMATE CHANGE. World Bank. September 15, 2009. According to the report. developing countries can shift to lower-carbon paths while promoting development and reducing poverty, but this depends on financial and technical assistance from high-income countries.
http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/WDR10-Full-Text.pdf

ARAB ENVIRONMENT: CLIMATE CHANGE AND THE IMPACT OF CLIMATE CHANGE ON ARAB COUNTRIES Produced by: Arab Forum for Environment and Development (2009)
Although greenhouse gas emissions from the Arab world amount to 4.2% of global emissions, the impact of climate change on the fragile environment of the region and its people is expected to be immense.
http://www.eldis.org/cf/rdr/?doc=45567&em=030210⊂=enviro

CLIMATE CHANGE THREATENS CRADLE OF CIVILIZATION:
http://www.spiegel.de/international/world/0,1518,druck-547763,00.html
The Middle East's famous Fertile Crescent was the birthplace of agriculture, the first settlements and civilization. But a new study shows that climate change will dry up the area's rivers and destroy its agriculture -- with devastating effects for the region.

VULNERABILITY THROUGH THE EYES OF THE VULNERABLE: CLIMATE CHANGE INDUCED UNCERTAINTIES AND NEPAL'S DEVELOPMENT PREDICAMENTS Authors: Dixit,A.; Gyawali,D.; Upadhya,M. Produced by: Institute for Social and Environmental Transition Nepal (2009)
The Intergovernmental Panel on Climate Change (IPCC) depicts the Hindukush-Himalaya, including Nepal, as a "white spot," a region about which scientific information on climate change is limited or lacking altogether. Given that the rise of this mountain range, the world's highest, has had a considerable influence on global wind circulation and climate dynamics, this knowledge gap does not speak well of our ability to understand climate change or its potential impact. This report is a first attempt to synthesise existing scientific and socio-economic information on the likely impacts of climate change in the Nepal Himalaya and to assess the complex patterns of vulnerability such changes will expose its citizens to. It has three goals: http://i-s-e-t.org/images/pdfs/Climate%20Scenarios%20Report%20(High)_10%20November%2009.pdf

THE EFFECTS OF CLIMATE CHANGE ON U.S. ECOSYSTEMS
The Effects of Climate Change on U.S. Ecosystems, November 2009
http://civileats.com/wp-content/uploads/2009/12/EffectsofClimateChangeonUSEcosystem.pdf

A CHANGING CLIMATE: THE ROAD AHEAD FOR THE UNITED STATES - Global warming, after many years as an also-ran, has arrived at center stage, not only as an environmental issue but also increasingly as a major concern of economics and national security.
http://www.brookings.edu/articles/2007/winter_climate_change_antholis.aspx

REGIONAL IMPACTS OF CLIMATE CHANGE: FOUR CASE STUDIES IN THE UNITED STATES.
Pew Center on Global Climate Change. Web posted December 4, 2007.
This report provides information about climate change and its impact on different regions of the U.S. The report is based on the following four studies:

- The Heat Is On: Climate Change and Heatwaves in the Midwest;
- The Importance of Climate Change for Future Wildfire Scenarios in the Western United States;
- Gulf Coast Wetland Sustainability in a Changing Climate; and
- Ramification of Climate Change for Chesapeake Bay Hypoxia.

The study looks at the differences in climate, topography, land use, and infrastructure in these regions.
http://www.pewclimate.org/docUploads/Regional-Impacts-FullReport.pdf [pdf format, 80 pages]

NORTH AMERICAN 2008 COOLING ATTRIBUTED TO NATURAL CAUSES: COOL SEA SURFACE TEMPERATURES OVERRODE WARMING. NATIONAL OCEANIC AND ATMOSPHERIC

ADMINISTRATION (NOAA), U.S. Dept of Commerce, December 4, 2009http://www.noaanews.noaa.gov/stories2009/20091204_cooling.html

POTENTIAL IMPACTS OF CLIMATE CHANGE IN THE UNITED STATES, MAY 2009 "This paper summarizes the current state of scientific understanding of the potential effects of projected changes in climate and related developments. http://www.cbo.gov/ftpdocs/101xx/doc10107/05-04-ClimateChange_forWeb.pdf

THE NORTH AMERICAN MOSAIC: AN OVERVIEW OF KEY ENVIRONMENTAL ISSUES. [Commission for Environmental Cooperation]. June 2008. http://www.cec.org/files/PDF//Mosaic-2008_en.pdf [66 pages]. Includes a discussion of Climate Change and the impact it might have.

EXPOSED: SOCIAL VULNERABILITY AND CLIMATE CHANGE IN THE U.S. SOUTHEAST. Oxfam America. October 21, 2009. A number of "hotspots" of vulnerability to climate-related hazards exist in the U.S. southeast, according to the report. http://www.oxfamamerica.org/files/Exposed-Social-Vulnerability-and-Climate-Change-in-the-US-Southeast.pdf [PDF format, 24 pages].

BRUSSELS MEDIA HUB: THE GREENING OF AMERICA: http://hosting.fluidbook.com/The-Greening-Of-America/

BOLIVIA: CLIMATE CHANGE, POVERTY AND ADAPTATION. Oxfam International. Web posted November 3, 2009. Bolivia is a country particularly vulnerable to the impacts of climate change. In July 2009, a team of Oxfam researchers travelled to three areas of Bolivia, Trinidad in Beni, the Cochabamba valleys and Khapi under Mount Illimani, in La Paz, to take a snapshot of how poor families are experiencing the changing climate, and how they are adapting to it. http://www.oxfam.org/sites/www.oxfam.org/files/bolivia-climate-change-adaptation-0911.pdf

CLIMATE WITNESS COMMUNITY TOOLKIT *The South Pacific region* is among the most vulnerable to the effects of climate change. With an almost complete reliance on natural resources for subsistence living and economic development, the changes occurring in sea levels, weather and rainfall patterns will have an enormous impact on local communities. This toolkit was developed to help local communities in the Pacific region identify and participate in appropriate adaptation measures. The toolkit is comprised of a series of participatory activities which are broken down into segments. http://www.eldis.org/cf/rdr/?doc=36056

CLIMATE CHANGE IN INDONESIA: IMPLICATIONS FOR HUMANS AND NATURE. WWF (World Wildlife Fund), web-posted November 28, 2007 http://assets.panda.org/downloads/inodesian_climate_change_impacts_report_14nov07.pdf

THE COST OF CLIMATE CHANGE: THE STORY OF THORTHORMI GLACIAL LAKE IN BHUTAN. World Wildlife Fund. Sameer M. Singh. December 1, 2009. The first phase of an international project to reduce the risk to a Bhutan valley from the threatening bursting of a growing and increasingly unstable glacial lake is emphasizing the huge costs of climate change adaptation in the Himalayas. http://assets.panda.org/downloads/the_cost_of_climate_change__24_nov.pdf

HAITI: 'A GATHERING STORM' CLIMATE CHANGE AND POVERTY. Oxfam International November 30, 2009. The report discusses how poor people are experiencing climate change in Haiti, already one of the poorest countries in the world, and what challenges they are currently facing, and will continue to face in the future. http://www.oxfam.org/sites/www.oxfam.org/files/haiti-gathering-storm-en-0911.pdf

[PDF format, 50 pages].

CHINA, THE UNITED STATES, AND THE CLIMATE CHANGE CHALLENGE. World Resources Institute policy brief, October 2009 (19 pages)
http://pdf.wri.org/china_united_states_climate_change_challenge.pdf

REACHING TIPPING POINT?: CLIMATE CHANGE AND POVERTY IN TAJIKISTAN. Oxfam International. February 17, 2010.Tajikistan's glaciers are retreating and could lead to greater water shortages and disputes in the wider region in the future, says the report. The painful blow of climate change has been sharply felt in rural areas of Tajikistan in recent years where 1.4 million people are already food insecure. http://www.oxfam.org/sites/www.oxfam.org/files/tipping-point-climate-poverty-tajikistan.pdf

NATIONAL CLIMATE CHANGE STRATEGIES: COMPARATIVE ANALYSIS OF DEVELOPING COUNTRY PLANS. World Resources Institute. June 2009.
This chart is intended to help policymakers compare the National Climate Change plans of five developing countries: *India, Brazil, China, Mexico, and South Africa.* Full Text: http://pdf.wri.org/working_papers/developing_country_actions_table.pdf [PDF format, 4 pages].

CLIMATE CHANGE: THE BELFER CENTER: Climate Change Adaptation in the Middle East and North Africa Author: Jeannie Sowers Date: September 2010:
http://belfercenter.ksg.harvard.edu/files/Sowers-Weinthal_DI_Working-Paper-2.PDF

POLICY:

U.S STATE DEPARTMENT, BUREAU OF OCEANS AND INTERNATIONAL ENIRONMENTAL and SCIENTIFIC AFFAIRS (OES) has a section on Climate Change:
http://www.state.gov/g/oes/climate/index.htm with official policy links, as well as statements, speeches and remarks by leading State Department Officials.

CLIMATE CHANGE: OBSERVATIONS ON FEDERAL EFFORTS TO ADAPT TO A CHANGING CLIMATE. [Testimony, U.S. Government Accountability Office]. March 25, 2009.
http://www.gao.gov/new.items/d09534t.pdf

GLOBAL CLIMATE CHANGE: THREE POLICY PERSPECTIVES.
Congressional Research Service, Library of Congress]
January 3, 2009 http://www.fas.org/sgp/crs/misc/98-738.pdf [PDF format, 37 pages].

THREE PILLARS OF POST-2012 INTERNATIONAL CLIMATE POLICY
Harvard Project on International Climate Agreements. October 23, 2009 [PDF format, 7 pages]
http://belfercenter.ksg.harvard.edu/files/stavins_olmstead%20_viewpoint.pdf
The authors present a proposal for a post-2012 international global climate policy agreement that contains three essential elements: meaningful involvement by key industrialized and developing nations; an emphasis on an extended time path of targets; and inclusion of market-based policy instruments. *Sheila M. Olmstead is Associate Professor of Environmental Economics at the School of Forestry and Environmental Studies, Yale University. Robert N. Stavins is Albert Pratt Professor of Business and Government at the John F. Kennedy School of Government, Harvard University.*

COMPETITIVENESS AND CLIMATE POLICY: AVOIDING LEAKAGE OF JOBS AND EMISSIONS.
Hearing before a subcommittee of the U.S. House Committee on Energy and Commerce, March 18, 2009

http://energycommerce.house.gov/index.php?option=com_content&task=view&id=1539&Itemid=95

CLEAN AIR ISSUES IN THE 111TH CONGRESS
http://fpc.state.gov/documents/organization/120611.pdf
Congressional Research Service report, updated January 16, 2009

THE FUTURE OF U.S. CLIMATE POLICY. INTERVIEW WITH EILEEN B. CLAUSSEN, PRESIDENT OF THE PEW CENTER ON GLOBAL CLIMATE CHANGE. Council on Foreign Relations, August 12, 2009 http://www.cfr.org/publication/20026/

CLIMATE CHANGE TRADE ISSUES: CONSIDERATIONS FOR U.S. POLICY MAKERS. GAO, July 8, 2009 (50 pages) http://www.gao.gov/new.items/d09724r.pdf

THREE PILLARS OF POST-2012 INTERNATIONAL CLIMATE POLICY.
Harvard Project on International Climate Agreements. Sheila M. Olmstead and Robert N. Stavins. October 23, 2009. The authors present a proposal for a post-2012 international global climate policy agreement contains three essential elements: meaningful involvement by key industrialized and developing nations; an emphasis on an extended time path of targets; and inclusion of market-based policy instruments. They believe the architecture is consistent with fundamental aspects of the science, economics, and politics of global climate change.
http://belfercenter.ksg.harvard.edu/files/stavins_olmstead%20_viewpoint.pdf

EMERGING U.S. CLIMATE POLICY: WHERE WE ARE AND HOW WE GOT HERE Geoffrey Clemm, Mark Griffin Smith April 2009 Department of Economics and Business, Colorado College
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1440339
N.B. This paper is being submitted in the midst of a dynamic legislative process. It ends with what the authors know now, but much will happen in the next three months. We will continue to follow these developments closely as to present the workshop with the most up-to-date account of legislative activity in the United States.

FEDERAL CLIMATE CHANGE PROGRAMS: FUNDING HISTORY AND POLICY ISSUES A CBO STUDY http://www.cbo.gov/ftpdocs/112xx/doc11224/03-26-ClimateChange.pdf

THE FUTURE OF U.S. CLIMATE POLICY. Interview with Eileen B. Claussen, president of the Pew Center on Global Climate Change. Council on Foreign Relations, August 12, 2009
http://www.cfr.org/publication/20026/

CLIMATE CHANGE: THE ROLE OF THE U.S. AGRICULTURE SECTOR AND CONGRESSIONAL ACTION. CONGRESSIONAL RESEARCH SERVICE, June 19, 2009
http://assets.opencrs.com/rpts/RL33898_20090619.pdf

CLIMATE CHANGE TRADE ISSUES: CONSIDERATIONS FOR U.S. POLICY MAKERS. GAO, July 8, 2009 (50 pages) http://www.gao.gov/new.items/d09724r.pdf

CLIMATE CHANGE LITIGATION: A SURVEY. Congressional Research Service, updated April 15, 2009 http://assets.opencrs.com/rpts/RL32764_20090415.pdf

INTEGRATING U.S. CLIMATE, ENERGY, AND TRANSPORTATION POLICIES: PROCEEDINGS OF THREE WORKSHOPS. RAND, 2009
http://www.rand.org/pubs/conf_proceedings/2009/RAND_CF256.pdf (54 pages).
There is a summary at http://www.rand.org/pubs/conf_proceedings/CF256/

CONFRONTING CLIMATE CHANGE: A STRATEGY FOR U.S. FOREIGN POLICY. [COUNCIL ON FOREIGN RELATIONS]. June 2008.
http://www.cfr.org/content/publications/attachments/Climate_ChangeTF.pdf

CLIMATE CHANGE: EXPERT OPINION ON THE ECONOMICS OF POLICY OPTIONS TO ADDRESS CLIMATE CHANGE. GAO report, May 2008
http://www.gao.gov/new.items/d08605.pdf

ADAPTATION PLANNING FOR CLIMATE CHANGE: WHAT U.S. STATES AND LOCALITIES ARE DOING. Pew Center on Global Climate Change, November 2007, updated April 2008 (27 pages) http://www.pewclimate.org/docUploads/State_Adapation_Planning_04_23_08%20_2_.pdf
CLIMATE CHANGE: MANAGING THE IMPACTS OF CLIMATE CHANGE ON HUMAN MIGRATION Climate and environmentally induced migration may be one of the major policy challenges of this century. This review analyses a range of climate and migration related issues through a series of case studies. http://www.eldis.org/go/topics/resource-guides/environment/climate-change&em=081008&sub=wnew

CLIMATE WRONGS AND HUMAN RIGHTS. PUTTING PEOPLE AT THE HEART OF CLIMATE-CHANGE POLICY (OXFAM)
http://www.eldis.org/cf/rdr/?doc=39624&em=011008&sub=clim

FINANCING THE GLOBAL CLIMATE CHANGE RESPONSE: SUGGESTIONS FOR A CLIMATE CHANGE FUND (CCF)
http://www.eldis.org/cf/rdr/?doc=39621&em=011008&sub=clim

SUMMARY FOR POLICYMAKERS OF THE SYNTHESIS REPORT OF THE IPCC FOURTH ASSESSMENT REPORT. Intergovernmental Panel on Climate Change (IPCC), United Nations.
http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf [pdf format, 23 pages]

POLITICAL INTERFERENCE WITH CLIMATE CHANGE SCIENCE UNDER THE BUSH ADMINISTRATION.
Report of the U.S. House Committee on Oversight and Government Reform, December 2007 (38 pages)
http://oversight.house.gov/documents/20071210101633.pdf

LATEST NEWS ARTICLES, WEB SITES and U.S. GOVERNMENT HEARINGS:

COMBATING CLIMATE CHANGE THROUGH QUALITY EDUCATION. By Allison Anderson. Brookings Institution, September 2010, 16 pp
http://www.brookings.edu/~/media/Files/rc/papers/2010/09_climate_education/09_climate_education.pdf

CASE STUDIES ON CLIMATE AND WORLD HERITAGE:
http://whc.unesco.org/en/othermaterials/CLT/WHC/07/30

EARTH AND ATMOSPHERIC SCIENCE EXPERTS: A VERY INCONVENIENT TRUTH ABOUT CLIMATE CHANGE
A Very Inconvenient Truth, By Charles H. Greene, D. James Baker, and Daniel H. Miller. Oceanography March 2010 Vol.23, No.1
http://www.tos.org/oceanography/issues/issue_archive/issue_pdfs/23_1/23-1_greene.pdf

"Studies conducted after those that contributed to the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (FAR) suggest that human society may be facing a very inconvenient truth—that emission reduction efforts alone are unlikely to stabilize greenhouse gas concentrations at levels low enough to prevent dangerous anthropogenic interference with the climate system."

GLOBAL CLIMATE CHANGE AND WILDLIFE. Pervaze A.Sheikh, M. Lynne Corn,.
http://www.nationalaglawcenter.org/assets/crs/RS22597.pdf [6 pages]

ADAPTING TO CLIMATE CHANGE: A BUSINESS APPROACH.
Pew Center on Global Climate Change, April 2008 (40 pages)
http://www.pewclimate.org/docUploads/Business-Adaptation.pdf
There is a summary and related materials at http://www.pewclimate.org/business-adaptation

GEO: GLOBAL ENVIRONMENT OUTLOOK OVERVIEW. United Nations Environment Program (UNEP), United Nations. Web posted May 24, 2007.**Individual Chapters:**
http://www.unep.org/geo/yearbook/yb2007/

OVER 400 PROMINENT SCIENTISTS DISPUTED MAN-MADE GLOBAL WARMING CLAIMS IN 2007
Report of the ranking minority member, U.S. Senate Committee on Environment and Public Works, December 20, 2007.
http://epw.senate.gov/public/index.cfm?FuseAction=Minority.SenateReport#report

There is news release at
http://epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord_id=f80a6386-802a-23ad-40c8-3c63dc2d02cb

and the report, including an introduction, is at
http://epw.senate.gov/public/index.cfm?FuseAction=Minority.SenateReport

NOBEL LECTURE BY AL GORE JR IN OSLO, December 10, 2007
http://nobelprize.org/nobel_prizes/peace/laureates/2007/gore-lecture_en.html
The Nobel Lecture given by The Nobel Peace Prize Laureate 2007, Al Gore (Oslo, December 10, 2007)

> "...In the last few months, it has been harder and harder to misinterpret the signs that our world is spinning out of kilter. Major cities in North and South America, Asia and Australia are nearly out of water due to massive droughts and melting glaciers. Desperate farmers are losing their livelihoods. Peoples in the frozen Arctic and on low-lying Pacific islands are planning evacuations of places they have long called home. Unprecedented wildfires have forced a half million people from their homes in one country and caused a national emergency that almost brought down the government in another. Climate refugees have migrated into areas already inhabited by people with different cultures, religions, and traditions, increasing the potential for conflict. Stronger storms in the Pacific and Atlantic have threatened whole cities. Millions have been displaced by massive flooding in South Asia, Mexico, and 18 countries in Africa. As temperature extremes have increased, tens of thousands have lost their lives. We are recklessly burning and clearing our forests and driving more and more species into extinction. The very web of life on which we depend is being ripped and frayed...."

ESSENTIAL TOOLS FOR NEGOTIATING ENVIRONMENTAL AGREEMENTS
Increasingly, the work in the international environmental field
is focused on implementation. This UNFCC handbook provides a practical
introduction to negotiating or working on Multilateral Environmental Agreements,

providing guidance for negotiating practical issues and technical rules.
http://www.eldis.org/go/topics/resource-guides/manuals-and-toolkits&id=34519&type=Document

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC) The United Nations maintains this website "to support arrangements For meetings organized under the [Climate Change] Convention, [and] to transmit official documents and reports. ...Features background about climate change science and what can be done, discussion of methodologies and tools to evaluate global warming impacts, reports and data (such as greenhouse gas emissions data)and related material. http://unfccc.int/

Jenkins, Philip **BURNING AT THE STAKE: HOW GLOBAL WARMING WILL INCREASE RELIGIOUS STRIFE** (**New Republic**, vol. 237, no. 11, December 10, 2007, pp. 14-15) "By mid-century, water shortages could force countries already suffering from generations of ethnic and religious conflict to explode," warns Jenkins, author of GOD'S CONTINENT: CHRISTIANITY, ISLAM AND EUROPE'S RELIGIOUS CRISIS. This prediction of religious strife induced by climate change has precedent, Jenkins says. The "Little Ice Age" of the 14th century and the famines that resulted exacerbated bigotry and increased the violence against religious minorities in Europe, Jews especially. In today's world, he writes, "The resource-driven genocide in Darfur, for example, although it involves competing Muslim communities and not Muslim-Christian warfare, is a foretaste of conflicts that could soon be sweeping the whole area, as nations implode in sectarian violence, pulling neighboring countries down with them." According to Jenkins, the greater globalization of Christianity, while heightening some religious tensions in resource-poor countries, could also help prevent some of the worst abuses. He notes that the National Association of Evangelicals, an umbrella organization whose affiliate groups claim 30 million members, has recognized global climate change as a clear and present danger

MIGRATION AND CLIMATE CHANGE. INTERNATIONAL ORGANIZATION FOR MIGRATION (IOM), 2008 (64 pages) http://www.iisd.org/pdf/2008/migration_climate.pdf

PRELIMINARY REVIEW OF ADAPTION OPTIONS OF CLIMATE-SENSITIVE ECOSYSTEMS AND RESOURCES (SAP 4.4). EPA, June 2008 (910 pages)
http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=180143

RANKING PORT CITIES WITH HIGH EXPOSURE AND VULNERABILITY TO CLIMATE EXTREMES. [OECD ENVIRONMENT WORKING PAPERS]. April 2008
http://oberon.sourceoecd.org/vl=1705792/cl=11/nw=1/rpsv/cgi-bin/wppdf?file=5kzssgshj742.pdf

CLIMATE CHANGE VIDEO AND TEACHING RESOURCES AND LESSON PLANS
http://www.oercommons.org/courses/climate-change

CLIMATE CHANGE AGREEMENTS: Companion website to a 2008 PBS Frontline documentary that looks at the factors behind "the [failure of the] executive branch of the U.S. government ... to join in climate change agreements adopted by much of the rest of the world." Features investigative reports, a timeline of scientific and political developments concerning global warming, interviews, readings and links, a teacher's guide, and more.
http://www.pbs.org/wgbh/pages/frontline/hotpolitics/

MAKING SENSE OF CLIMATE CHANGE: NATURAL DISASTERS AND DISPLACEMENT: BROOKINGS INSTITUTION DECEMBER 2007:
http://www.brookings.edu/speeches/2007/1214_climate_change_ferris.aspx

WHAT TO DO ABOUT CLIMATE CHANGE?. *Cato Institute*, February 5, 2008 (28 pages)

http://www.cato.org/pubs/pas/pa-609.pdf
There is a *summary* at http://www.cato.org/pub_display.php?pub_id=9125

BREATHING EARTH [MACROMEDIA FLASH PLAYER]
http://www.breathingearth.net/
Visual simulation and representation programs and applications have been popping up online in greater numbers, and **this recent find is one that will pique the interest of scientists, policy makers, and others who are concerned about carbon dioxide emission rates across the Earth**. The Breathing Earth site was created by David Bleja, and he draws on a number of resources (such as the World Factbook and the United Nations) for the data that is utilized to create this site. Visitors can scroll over different countries to learn about their population, their emissions, and their birth and death rate. This interactive map and educational resource also contains a legend in the right-hand corner which explains the various symbols in use.

REFLECTIONS ON THE SCIENCE AND POLICY OF ENERGY AND CLIMATE CHANGE.
Address by John Marburger, Director, White House Office of Science and Technology Policy, December 10, 2007 http://www.ostp.gov/html/jhm%20AGU%2012-10-07%20refs.pdf

GLOBAL WARMING: WHO WINS AND WHO LOSES? An article from the ATLANTIC MONTHLY by Gregg Easterbrook.: http://www.theatlantic.com/doc/200704/global-warming

ADAPT OR DIE:
http://www.economist.com/world/international/displaystory.cfm?story_id=12208005
Environmentalists have long said the world should concentrate on preventing climate change, not adapting to it. That is changing.

GENDER PERSPECTIVES: INTEGRATING DISASTER RISK REDUCTION INTO CLIMATE CHANGE ADAPTATION GOOD PRACTICES AND LESSONS LEARNED
Produced by: United Nations International Strategy for Disaster Reduction (2008)
http://www.eldis.org/cf/rdr/?doc=39355&em=170908&sub=clim

HOT OR NOT?: RECOGNIZING AND PREPARING FOR CLIMATE-INDUCED ILLNESS.
[American Sociological Association. Web posted August 23, 2008.http://works.bepress.com/cgi/viewcontent.cgi?article=1003&context=sabrina_mccormick

Leake, Jonathan **CAPTAINS' LOGS YIELD CLIMATE CLUES** (Sunday Times/London, August 3, 2008) "Thousands of British Royal Navy logbooks that have survived from the 17th century onward are emerging as one of the world's best sources for long-term weather data. The discovery was made by a group of British academics and U.K. Meteorological Office scientists who are seeking new ways to plot historic changes in climate. *A preliminary study of 6,000 logbooks has produced results that raise questions about climate change and whether natural variations or people are responsible for short-term warming and cooling.* The ships' logs also shed light on extreme weather events like hurricanes." Currently available online at http://www.timesonline.co.uk/tol/news/environment/article4449527.ece?print=yes&randnum=1217852177312

CLIMATE CHANGE AND TOURISM'S WINNERS AND LOSERS: TRACES THE IMPACT OF CLIMATE CHANGE ON THE WORLDWIDE TOURISM INDUSTRY:
http://yaleglobal.yale.edu/display.article?id=10729

CLIMATE CHANGE: THE U.S. FOUNDATION RESPONSE http://digbig.com/5bbema

ENVISIONING CLIMATE CHANGE USING A GLOBAL CLIMATE MODEL
http://serc.carleton.edu/eet/envisioningclimatechange/
How do climatologists and others model climate change?

A WARMING WORLD: GLOBAL TEMPERATURE UPDATE. There is a news release on this new NASA web page, February 23, 2010, at http://climate.nasa.gov/warmingworld/

AND: http://www.nasa.gov/home/hqnews/2010/feb/HQ_M10-036_Warming_World_page.html

A U.S.-CENTRIC CHRONOLOGY OF THE INTERNATIONAL CLIMATE CHANGE NEGOTIATIONS. Congressional Research Service, January 7, 2010
http://assets.opencrs.com/rpts/R40001_20100107.pdf

ALTERNATIVE VIEWS ON CLIMATE CHANGE. Backgrounder by Toni Johnson. Council on Foreign Relations, February 23, 2010 http://www.cfr.org/publication/14318/

Roman, Joe; Ehrlich, Paul et al. **FACING EXTINCTION: 9 STEPS TO SAVE BIODIVERSITY** (Solutions, No. 1, January-February 2010) four distinguished authors outline conservationists' responsibility to defend and restore ecosystems in a world where biodiversity is increasingly compromised by climate change and human activity.
http://www.thesolutionsjournal.com/feature_article/2009-02-24-facing-extinction-nine-steps-save-biodiversity

RESOURCE GUIDE ON GENDER AND CLIMATE CHANGE
United Nations Development Programme (2009) Poor women's limited access to resources, restricted rights, limited mobility and muted voice in shaping decisions make them highly vulnerable to climate change. This guide aims to inform practitioners and policy makers of the linkages between gender equality and climate change and their importance in relation to the achievement of the Millennium Development Goals.
http://www.eldis.org/cf/rdr/?doc=45069&em=270110⊂=clim

STATE OF THE CLIMATE: GLOBAL ANALYSIS: ANNUAL 2009. NATIONAL CLIMATIC DATA CENTER, JANUARY 2010
http://www.ncdc.noaa.gov/sotc/?report=global&year=2009&month=13

CLIMATE 1-STOP: http://arcserver4.iagt.org/climate1stop/ Designed as a "single location to access proven climate change tools, resources and information."

RELATED CLIMATE CHANGE RESOURCES MAY BE FOUND HERE: FANTASTIC RESOURCES HERE ON ALL SIDES OF THE DEBATE: http://tinyurl.com/yen8zrn

STATE OF WORLD POPULATION 2009: FACING A CHANGING WORLD: WOMEN, POPULATION AND CLIMATE. U.N. Population Fund. November 2009. Climate is always changing, but never in known human experience more dramatically than it is likely to change in the coming century. And, if the world is to avoid dangerous climate change, there may be little room left in the atmosphere for poor countries to develop economically through the same carbon-intensive energy patterns the industrialized countries relied upon in their own development over the last two centuries, according to the report. Climate change's influence on people is also complex, spurring migration, destroying livelihoods, disrupting economies, undermining development and exacerbating inequities between the

sexes. http://www.unfpa.org/webdav/site/global/shared/swp/englishswop09.pdf [PDF format, 104 pages].

http://www.unfpa.org/webdav/site/global/shared/swp/frenchswop09.pdf In French [PDF format, 104 pages].

http://www.unfpa.org/webdav/site/global/shared/swp/russianswopP09.pdf In Russian [PDF format, 116 pages].

http://www.unfpa.org/webdav/site/global/shared/swp/arabicswop09.pdf In Arabic [PDF format, 104 pages].

CAN WE BE PLEASED WITH THE PROGRESS WE HAVE MADE IN THE DEVELOPMENT OF ENERGY EFFICIENCY AND THE MITIGATION OF CLIMATE CHANGE?
International Institute for Sustainable Development. Mark Halle. November 2009. The author responds to the question posed by *Comment: Visions* and *European Voice* for their December 2009 issue, saying, "On the eve of the Copenhagen COP, we have lowered expectations so far that it recalls the pop culture title by Richard Fariña: Been Down So Long It Looks Like Up to Me. We all hope to be pleasantly surprised by Copenhagen, but we are all secretly girding ourselves to explain away a disappointment. But pleased with the progress we have made...? C'mon."
http://www.iisd.org/pdf/2009/energy_efficiency_climate.pdf [PDF format, 3 pages].

CLIMATE CHANGE: IMPACT ON AGRICULTURE AND COSTS OF ADAPTATION. International Food Policy Research Institute. Gerald C. Nelson et al. October 2009**.**
"The unimpeded growth of greenhouse gas emissions is raising the earth's temperature, according to the study. The consequences include melting glaciers, more precipitation, more and more extreme weather events, and shifting seasons. The accelerating pace of climate change, combined with global population and income growth, threatens food security everywhere**.**
http://www.ifpri.org/sites/default/files/publications/pr21.pdf

EMISSIONS OF GREENHOUSE GASES IN THE UNITED STATES 2008. Energy Information Administration, U.S. Dept of Energy, December 2009 (68 pages)
ftp://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/ggrpt/057308.pdf

RECONCILING CLIMATE CHANGE AND TRADE POLICY. Center for Global Development. November 10, 2009. There is growing clamor in industrial countries for additional border taxes on imports from countries with lower carbon prices.
http://www.cgdev.org/content/publications/detail/1423204/

REVIEWING AND VERIFYING INTERNATIONAL CLIMATE ACTION. World Resources Institute. Paul Joffe. November 11, 2009. Climate change is a global issue that requires action from all countries. As the U.S. Congress develops a domestic climate and energy package, the United States seeks assurance that other countries will also act and a means to track the progress of commitments by verifying that actions have been implemented.
http://pdf.wri.org/countdown_to_copenhagen_reviewing_and_verifying.pdf

CLIMATE CHANGE: COMPARISON OF THE CAP-AND-TRADE PROVISIONS IN H.R. 2454 AND S. 1733. Congressional Research Service, Library of Congress.
This report provides a comparison of the cap-and-trade provisions of H.R. 2454 and S. 1733.
http://assets.opencrs.com/rpts/R40896_20091105.pdf

THE BOTTOM LINE ON INTERNATIONAL CLIMATE NEGOTIATIONS. World Resources Institute. Robert Heilmayr and Chris Lau.September 2009.

In December 2009, diplomats from around the world will convene in Copenhagen, Denmark to decide on a new international agreement on climate change.
http://pdf.wri.org/bottom_line_international_climate_negotiations.pdf

GLOBAL CLIMATE CHANGE POLICY TRACKER: AN INVESTOR'S ASSESSMENT. Columbia Climate Center, Columbia University and Deutsche Bank Climate Change Advisors. October 26, 2009.
http://www.dbcca.com/dbcca/EN/_media/Global_Climate_Change_Policy_Tracker_Exec_Summary.pdf

http://www.dbcca.com/dbcca/EN/_media/Detailed_Summary_of_Targets_by_Region_and_Country.pdf
Detailed Summary of Targets by Region and Country [PDF format, 38 pages].

http://www.dbcca.com/dbcca/EN/_media/Detailed_Analysis_of_Targets_by_Region_and_Country.pdf
Detailed Analysis of Targets by Region and Country [PDF format, 378 pages].

MORE CARROT AND LESS STICK NEEDED TO FIGHT GLOBAL WARMING. YaleGlobal. Emmanuelle Ganne. October 28, 2009. With the convention on climate change in Copenhagen in December fast approaching, countries tend to be focusing on measures that punish carbon users.
http://yaleglobal.yale.edu/content/more-carrot-and-less-stick-needed-fight-global-warming [HTML format, various paging].

POWER, RESPONSIBILITY, AND ACCOUNTABILITY: RE-THINKING THE LEGITIMACY OF INSTITUTIONS FOR CLIMATE FINANCE. World Resource Institute. November 2, 2009.
http://pdf.wri.org/working_papers/power_responsibility_accountability.pdf

GETTING TO YES ON CLIMATE CHANGE – ACTION OF OTHER COUNTRIES: HEARING BEFORE THE UNITED STATES SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS. Testimony of Jonathan Lash, World Resources Institute. October 29, 2009.
http://pdf.wri.org/testimony/jonathan_lash_testimony_cejapa.pdf [PDF format, 10 pages].

MODEST SUPPORT FOR "CAP AND TRADE" POLICY: FEWER AMERICANS SEE SOLID EVIDENCE OF GLOBAL WARMING.
Pew Research Center for the People & the Press. October 22, 2009.
There has been a sharp decline over the past year in the percentage of Americans who say there is solid evidence that global temperatures are rising
http://people-press.org/reports/pdf/556.pdf

GLOBAL CLIMATE CHANGE POLICY TRACKER: AN INVESTOR'S ASSESSMENT. DEUTSCHE BANK CLIMATE CHANGE ADVISERS AND THE COLUMBIA CLIMATE CENTER AT THE EARTH INSTITUTE, COLUMBIA UNIVERSITY, October 26, 2009 (with summary and analysis of targets by region and country) http://www.dbcca.com/dbcca/EN/investment-research/investment_research_1780.jsp

CLIMATE CHANGE: THE RESILIENCE OPTION. American Enterprise Institute, October 2009
http://www.aei.org/outlook/100078

CLIMATE Change Science Compendium 2009. UN Environment Programme, September 2009.
There is a news release, September 24, 2009, at
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6326&l=en&t=long

and

http://www.unep.org/compendium2009/

CLIMATE CHANGE, TECHNOLOGY TRANSFER AND INTELLECTUAL PROPERTY RIGHTS Research and Information System for the Non-Aligned and Other Developing Countries, India (2009) Development and transfer of climate-friendly technologies is an important element in the adaptation strategy.
http://www.eldis.org/cf/rdr/?doc=44937&em=221009⊂=clim

IN SEARCH OF SHELTER: MAPPING THE EFFECTS OF CLIMATE CHANGE ON HUMAN MIGRATION AND DISPLACEMENT Produced by: CARE International (2009)
the paper indicates that climate change is already contributing to displacement and migration.
http://www.eldis.org/cf/rdr/?doc=44929&em=221009⊂=clim

COMMUNITY ANSWERS TO CLIMATE CHAOS: GETTING CLIMATE JUSTICE THROUGH THE UNFCCC Produced by: Christian Aid (2009)
this paper gives suggestions of how a successful deal can be made at the Copenhagen Conference in December 2009. http://www.eldis.org/cf/rdr/?doc=44812&em=221009⊂=clim

ADAPTING TO COASTAL CLIMATE CHANGE: A GUIDE FOR PLANNERS
Produced by: US Agency for International Development (2009)
http://www.eldis.org/cf/rdr/?doc=44800&em=221009⊂=clim

Climate Change Tours in Google Earth

Google earth

Google released three new tours in its Explore Climate Change series. The new tours explore the actions of organizations to prevent or adapt to climate change in different parts of the world. These tours include the World Wildlife Foundation's efforts in the peatland swamps of Borneo, Greenpeace's actions to prevent deforestation of the Amazon, and Conservation International's efforts to reduce deforestation in Madagascar. The tours can be viewed three ways, in Google Earth, in the Google Browser plug-in, or through YouTube.

EXPLORING CLIMATE CHANGE IN GOOGLE EARTH

Google earth

Over the last few months, Google has been slowly building up a library of narrated Google Earth tours highlighting the impact of climate change. When the library was launched in September there were five tours. Today, there are twelve tours available for your viewing. Each of these tours is available for download and is available for viewing online. Embedded below is *Saving North American Wildlife* narrated by noted American mountaineer and author Rick Ridgeway

MEETING THE CLIMATE CHALLENGE: CORE ELEMENTS OF AN EFFECTIVE RESPONSE TO CLIMATE CHANGE.
Center for American Progress and United Nations Foundation.October 6, 2009.
http://www.americanprogress.org/issues/2009/10/pdf/UNclimateissues.pdf

CLIMATE CHANGE AND THE FUTURE IMPACTS OF STORM-SURGE DISASTERS IN DEVELOPING COUNTRIES. Center for Global Development. September 24, 2009.
http://www.cgdev.org/content/publications/detail/1422836/

THE WORLD BANK: CLIMATE CHANGE [FLASH PLAYER, PDF]
http://beta.worldbank.org/climatechange/
Climate change continues to be of grave concern to many, and the World Bank is particularly concerned with the ramifications it will have on people in the developing world.

CLIMATE CHANGE AND VULNERABLE SOCIETIES: Brookings Institution. Kemal Dervis. July 23, 2009. http://www.brookings.edu/testimony/2009/0723_climate_change_dervis.aspx

CLIMATE CHANGE ADAPTATION, DISASTER RISK REDUCTION AND SOCIAL PROTECTION. Organization for Economic Co-operation and Development. July 8, 2009. http://www.oecd.org/dataoecd/25/55/43280946.pdf [PDF format, 17 pages].

CLIMATE CHANGE LITIGATION: A SURVEY. Congressional Research Service, updated April 15, **2**009 http://assets.opencrs.com/rpts/RL32764_20090415.pdf

U.S. CLIMATE CHANGE REPORTS ISSUED JUNE 2009:
More information about the U.S. Global Change Research Program (http://www.usgcrp.gov/usgcrp/) the U.S. Climate Change Technology Program (http://www.climatetechnology.gov/) and NOAA (http://www.climatetechnology.gov/) are available at their respective Web sites noted above.

The complete report is at (http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts) and is available for download.

SORTING GLOBAL WARMING FACT FROM FICTION Center for American Progress, May 20, 2009 http://www.americanprogress.org/issues/2009/05/warming_fiction.html

GETTING WARMER: SCIENCE CLOSES IN ON AN UNDERSTANDING OF CLIMATE CHANGE, RAND Review, Spring 2009
http://www.rand.org/publications/randreview/issues/spring2009/climate.html

THE IMPACT OF TOURISM ON CLIMATE CHANGE
Produced by: Centre for Sustainable Tourism and Transport, University for Applied Sciences, 2009. The relationship between climate change and tourism is twofold: climate change impacts on tourism and tourism impacts on climate change. This paper evaluates the magnitude of the impact of tourism on climate change and looks at mitigation measures and adaptation-to-mitigation.
http://www.eldis.org/cf/rdr/?doc=43261&em=270509⊂=enviro

SOLVING THE PUZZLE: RESEARCHING THE IMPACTS OF CLIMATE CHANGE AROUND THE WORLD. [NATIONAL SCIENCE FOUNDATION]. May 2009.
http://www.nsf.gov/news/nsf09202/nsf09202.pdf [PDF format, 114 pages].

MEASUREMENT, REPORTING AND VERIFICATION IN A POST-2012 CLIMATE AGREEMENT. [Pew Center on Global Climate Change].
April 8, 2009. http://www.pewclimate.org/docUploads/mrv-report.pdf

OUR CLIMATE, OUR CHILDREN, OUR RESPONSIBILITY: THE IMPLICATIONS OF CLIMATE CHANGE FOR THE WORLD'S CHILDREN:
http://www.eldis.org/cf/rdr/?doc=42973&em=230409⊂=clim

THE HUMANITARIAN COSTS OF CLIMATE CHANGE
Produced by: PreventionWeb (2009) There is little doubt that climate change will produce more frequent and severe weather patterns. : http://www.eldis.org/cf/rdr/?doc=42574&em=080409⊂=clim

CLIMATE LITERACY: THE ESSENTIAL PRINCIPLES OF CLIMATE SCIENCES: A GUIDE FOR INDIVIDUALS AND COMMUNITIES. U.S. CLIMATE CHANGE SCIENCE PROGRAM AND NOAA CLIMATE PROGRAM OFFICE, MARCH 2009 (17 PAGES).
http://www.climate.noaa.gov/education/pdfs/ClimateLiteracy-8.5x11-March09FinalHR.pdf

There is more information about this publication and related resources at
http://climate.noaa.gov/index.jsp?pg=/education/edu_index.jsp&edu=literacy

CARBON TAX AND GREENHOUSE GAS CONTROL: OPTIONS AND CONSIDERATIONS FOR CONGRESS. CONGRESSIONAL RESEARCH SERVICE,
http://fpc.state.gov/documents/organization/120592.pdf February 23, 2009

TRANSPORTATION AND CLIMATE CHANGE CLEARINGHOUSE – AN INITIATIVE OF THE U.S. DEPARTMENT OF TRANSPORTATION http://climate.dot.gov/

CLIMATE SCIENCE: EMPOWERING OUR RESPONSE TO CLIMATE CHANGE. HEARING BEFORE THE U.S. SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION, MARCH 12, 2009
http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=af3b14fd-92e8-47dd-be28-5688634135a1

BIOCHAR: EXAMINATION OF AN EMERGING CONCEPT TO MITIGATE CLIMATE CHANGE. [CONGRESSIONAL RESEARCH SERVICE, LIBRARY OF CONGRESS]. February 3, 2009.
http://assets.opencrs.com/rpts/R40186_20090203.pdf [PDF format, 11 pages].

CLIMATE CHANGE THREATENS THE FIGHT AGAINST POVERTY
Produced by: Norwegian Church Aid (2007)
Increased support for developing countries that will enable them to adjust to climate change is urgently needed. http://www.eldis.org/cf/rdr/?doc=41769&em=200209⊂=clim

DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION: CLOSING THE GAP
http://www.eldis.org/cf/rdr/?doc=41957&em=200209⊂=clim

CLIMATE CHANGE AND ENERGY SECURITY: LESSONS LEARNED –
http://www.aicgs.org/documents/pubs/polrep35.pdf

OECD: CLIMATE CHANGE
http://www.oecd.org/department/0,3355,en_2649_34361_1_1_1_1_1,00.html Their work is meant "to assist countries to implement effective and efficient policies to address climate change by conducting policy-relevant research and analysis." Near the top of their homepage, visitors will find two particularly helpful sections: "Publications & Documents" and "Information by Country."

THE NEW POLITICS OF CLIMATE CHANGE
http://www.green-alliance.org.uk/uploadedFiles/Publications/reports/The%20new%20Politics%20of%20climate%20change%202008.pdf

McKibben, Bill THINK AGAIN: CLIMATE CHANGE (Foreign Policy, January/February 2009)
Noted author Bill McKibben writes that it may be too late to avert climate change, but that it is imperative that the international political order stop delaying and adopt the few options humanity has left. He notes that there is no doubt left among the scientific community that global warming is a reality; many scientists feel that the Intergovernmental Panel on Climate Change's latest report is too conservative. **http://www.foreignpolicy.com/story/cms.php?story_id=4585&page=0**

AN OVERVIEW OF CLIMATE CHANGE: WHAT DOES IT MEAN FOR OUR WAY OF LIFE:
http://www.ase.tufts.edu/gdae/Pubs/wp/08-01OverviewOfClimateChange.pdf
(A Working Paper of the Global Development and Environment Institute from Tufts University)

ABRUPT CLIMATE CHANGE. [U.S. Climate Change Science Program and the Subcommittee on Global Change Research]. December 19, 2008 http://downloads.climatescience.gov/sap/sap3-4/sap3-4-final-report-all.pdf

GLOBAL CLIMATE CHANGE AND WILDLIFE. Pervaze A.Sheikh, M. Lynne Corn, Jane A. Leggett, and Peter Folger. Congressional Research Service (CRS), Library of Congres. This report provides an overview of recent studies that suggest climate changes could have widespread effects on wildlife. "These effects may include extinctions, changes in species' ranges, mismatches in their phenologies (timing of pollination, flowering, etc.) and population declines."
http://www.nationalaglawcenter.org/assets/crs/RS22597.pdf

ADAPTING TO CLIMATE CHANGE: A BUSINESS APPROACH. Pew Center on Global Climate Change. Frances G. Sussman and J. Randall Freed. April 2008.
http://www.pewclimate.org/docUploads/Business-Adaptation.pdf

INTERNATIONAL CLIMATE CHANGE PROGRAMS: LESSONS LEARNED FROM THE EUROPEAN UNION'S EMISSIONS TRADING SCHEME AND THE KYOTO PROTOCOL'S CLEAN DEVELOPMENT MECHANISM. [U.S. Government Accountability Office]. Web posted December 2, 2008.
http://www.gao.gov/new.items/d09151.pdf

UNDERSTANDING CLIMATE CHANGE
https://www.policyarchive.org/handle/10207/11782

BUILDING A SECURE ENERGY FUTURE –
The next President will face two intertwined challenges that have long been viewed as distinct issues -- energy security and global climate change.
http://www.brookings.edu/projects/opportunity08/Our-World.aspx#Energy

RESPONDING TO PUBLIC AND PRIVATE POLITICS: CORPORATE DISCLOSURE OF CLIMATE CHANGE STRATEGIES
http://www.eldis.org/cf/rdr/?doc=40531&em=ddmmyy&sub=corp

SCIENCE TRACER BULLETS ONLINE FROM THE LIBRARY OF CONGRESS: GLOBAL WARMING AND CLIMATE CHANGE:
http://www.loc.gov/rr/scitech/tracer-bullets/globalwarmingtb.html

FINANCIAL TIMES: CLIMATE CHANGE SERIES looks at the politics of climate change. It includes stories related to the developed world and emerging economies, opinion pieces, and interactive features on climate change agreements and mapping carbon dioxide emissions. **Provides links to stories on the science aspects of global warming.** http://www.ft.com/climatechangeseries

LEVELING THE CARBON PLAYING FIELD: INTERNATIONAL COMPETITION AND U.S. CLIMATE POLICY DESIGN. Peterson Institute for International Economics, May 2008
http://bookstore.petersoninstitute.org/book-store/4204.html

WEATHER AND CLIMATE EXTREMES IN A CHANGING CLIMATE
News release: http://www.noaanews.noaa.gov/stories2008/20080619_climatereport.html

CLIMATE CHANGE, FROM THE OPEN UNIVERSITY: http://www.oercommons.org/courses/climate-change-1
Climate change is a key issue on today's social and political agenda. This unit and lesson plans and free courses explores the basic science that underpins climate change and global warming.

SECURITY ISSUES:

BIBLIOGRAPHY ON CLIMATE CHANGE AND NATIONAL SECURITY ISSUES: AIR UNIVERSITY LIBRARY: http://www.au.af.mil/au/aul/bibs/climate.htm

ENVIRONMENT, CONFLICT AND PEACEBUILDING: ADDRESSING THE LINKS AMONG ENVIRONMENTAL CHANGE, NATURAL RESOURCES AND SECURITY. International Institute for Sustainable Development. October 2010. The brief contends that a better understanding of the links between environmental change and human security is vital for effective conflict prevention, peacebuilding and post-conflict reconstruction. The connections between environmental issues and conflict are many and complex. There is a crucial need to understand these links and transmit them to policy-makers and practitioners.
http://www.iisd.org/pdf/2010/brochure_environment_conflict_peacebuilding.pdf

THE COMING CONFLICTS OF CLIMATE CHANGE. Expert brief by Michael L. Baker. Council on Foreign Relations, September 7,
2010 http://www.cfr.org/publication/22886/coming_conflicts_of_climate_change.html

CIA LAUNCHES A CENTER ON CLIMATE CHANGE AND NATIONAL SECURITY: News release: "The Central Intelligence Agency is launching The Center on Climate Change and National Security as the focal point for its work on the subject. The Center is a small unit led by senior specialists from the Directorate of Intelligence and the Directorate of Science and Technology. Its charter is not the science of climate change, but the national security impact of phenomena such as desertification, rising sea levels, population shifts, and heightened competition for natural resources. The Center will provide support to American policymakers as they negotiate, implement, and verify international agreements on environmental issues. That is something the CIA has done for years."
https://www.cia.gov/news-information/press-releases-statements/center-on-climate-change-and-national-security.html

FROM CONFLICT TO PEACEBUILDING: THE ROLE OF NATURAL RESOURCES AND THE ENVIRONMENT: United Nations [UN] Environment Program (2009) With climate change and population growth placing ever-increasing demands on the environment, it is widely recognized that conflict over basic resources, such as water and arable land, will increase – see Darfur and the Middle East. http://www.eldis.org/cf/rdr/?doc=42268&em=030409⊂=enviro

CLIMATE CHANGE AND NATIONAL SECURITY: AN AGENDA FOR ACTION. Council Special Report, Council on Foreign Relations (CFR). Web posted November 30, 2007. Climate change poses a threat to the security and prosperity of the U.S. and other countries. These threats include the effects of storms, droughts, and floods as well as the possibility of humanitarian disasters, political violence, and undermining weak governments. This paper offers "feasible and affordable policy options" to reduce the predictable effects of climate change. http://www.cfr.org/publication/14862

LOST IN TRANSLATION: CLOSING THE GAP BETWEEN CLIMATE SCIENCE AND NATIONAL SECURITY POLICY. Center for a New American Security. April 25, 2010. National Security policymakers point to climate change as a key trend that will shape the current and future global security environment, but do not always have the scientific information they need to plan and prepare for the security challenges it may cause. The report explores the gap between the science and policy communities and offers recommendations for how they can work together to ensure the United States can effectively plan for the national security implications of climate change.
http://www.cnas.org/files/documents/publications/Lost%20in%20Translation_Code406_Web_0.pdf

AGE OF CONSEQUENCES: THE FOREIGN POLICY AND NATIONAL SECURITY IMPLICATIONS OF GLOBAL CLIMATE CHANGE. Center for a New American Security and Center for Strategic and International Studies (CSIS)]. November 2007. "This report examines the risks of climate change to global peace and stability. The authors develop three possible scenarios and analyze their respective security implications, which at a minimum include increased disease proliferation and tensions caused by large-scale migration, and conflict sparked by resource scarcity, particularly in Africa. The report considers what can be learned from the experience of early civilizations confronted with natural disasters and asks what the three largest emitters of greenhouse gases – the US, the EU and China – can do to reduce and manage future risks."
http://www.cnas.org/attachments/contentmanagers/1278/CSIS-CNAS_AgeofConsequences_October07.pdf [pdf format, 124 pages]

GLOBAL CLIMATE CHANGE: NATIONAL SECURITY IMPLICATIONS. Strategic Studies Institute, U.S. Army War College, May 2008 (454 pages)
http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB862.pdf
This volume is based on the proceedings of a conference held in March 2007; there is a summary at http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=862

A CLIMATE OF CONFLICT: THE LINKS BETWEEN CLIMATE CHANGE, PEACE AND WAR. [International Alert].
http://www.international-alert.org/publications/getdata.php?doctype=Pdf&id=322&docs=980
[pdf format, 48 pages] The findings for this report are taken from the Fourth Assessment Review of the Inter-governmental Panel on Climate Change. The report looks at the social and human consequences of climate change since many of the world's poorest countries face a double-headed problem of climate change and violent conflict. This report includes twelve recommendations for states and communities to handle climate change and conflict.

GLOBAL CLIMATE CHANGE, WAR, AND POPULATION DECLINE IN RECENT HUMAN HISTORY. PNAS – Proceedings of the National Academy of Sciences *of the United States of America*, December 4, 2007
http://www.pnas.org/cgi/content/full/104/49/19214

CLIMATE CHANGE AND HEALTH:

CLIMATE CHANGE ARTICLE: ENVIRONMENTAL PERFORMANCE INDEX 2010. Yale University and Columbia University. January 28, 2010. The Index ranks 163 countries on 25 performance indicators tracked across ten policy categories covering both environmental public health and ecosystem vitality.
http://epi.yale.edu/

AT THE FRONTIER: YOUNG PEOPLE AND CLIMATE CHANGE. U.N. Population Fund. November 2009. The supplemental report to the State of World Population 2009 addresses climate change and young people, through the lens of what impact climate change is predicted to have, and what that will mean for young people's lives, livelihoods, health, rights and development. It explores these issues because the young people of today will be standing in the frontline in the coming decades, meeting the

challenges posed by climate change. http://www.unfpa.org/swp/2009/en/pdf/EN_YSWOP09.pdf [PDF format, 56 pages].

HEALTH CARE PROBLEMS HEAT UP: CLIMATE CHANGE AND THE PUBLIC'S HEALTH. Trust for America's Health. Jeffrey Levi et al. October 26, 2009.
The report finds that only five states have published a strategic climate change plan that includes a public health response. [PDF format, 60 pages].
http://healthyamericans.org/reports/environment/TFAHClimateChangeWeb.pdf

GROWING OLD IN A CHANGING CLIMATE: MEETING THE CHALLENGES OF AN AGEING POPULATION AND CLIMATE CHANGE Produced by: Stockholm Environment Institute (2009) Climate change and an ageing population bring together two key policy challenges which need to be addressed to ensure a safe, secure, equitable and sustainable future. Available online at:
http://www.eldis.org/cf/rdr/?doc=45111&em=270110⊂=clim

HEALTH CARE PROBLEMS HEAT UP: CLIMATE CHANGE AND THE PUBLIC'S HEALTH. Trust for America's Health. Jeffrey Levi et al. October 26, 2009.
The report finds that only five states have published a strategic climate change plan that includes a public health response. [PDF format, 60 pages].
http://healthyamericans.org/reports/environment/TFAHClimateChangeWeb.pdf

CLIMATE-INDUCED ILLNESS. American Sociological Association. According to the report, climate change is detrimentally affecting the lives and health of many people and is resulting in 160,000 annual deaths globally, caused by vector borne diseases, food insecurity, and heat waves.
http://works.bepress.com/cgi/viewcontent.cgi?article=1003&context=sabrina_mccormick

CLIMATE CHANGE, HUMAN HEALTH, AND THE POST-CAUTIONARY PRINCIPLE. Lisa Heinzerling**.** Research Paper, O'Neill Institute for National and Global Health Law Scholarship, Georgetown University. September 2007.http://lsr.nellco.org/cgi/viewcontent.cgi?article=1003&context=georgetown/oi s

CLIMATE CHANGE IS A PUBLIC HEALTH ISSUE. BLUEPRINT BY AMERICAN PUBLIC HEALTH ASSOCIATION, March 2008. http://www.nphw.org/nphw08/NPHW%202008%20Blueprint.pdf
There is a news release (March 31, 2008) at
http://www.apha.org/about/news/pressreleases/2008/nphwblueprint.htm

U.N. Program Targets Climate Change and Health in Seven Countries

(Nations seek help with problems that will worsen as climate changes)

By Cheryl Pellerin, America.gov Science Writer

Washington, D.C. As global temperature climbs, storms intensify and small island states lose their coastal areas to the rising sea, a four-year project is starting up in seven countries to help the most vulnerable populations adapt to the health impacts of climate change.

The $4.5 million pilot effort, created by the U.N. Development Programme (UNDP) and the World Health Organization (WHO), is funded by the Global Environment Facility (GEF). The GEF's 180 member governments, including the United States, provide grants to developing countries for projects on biodiversity, climate change and related topics.

Countries participating in the effort, called "Piloting Climate Change Adaptation to Protect Human Health," are Barbados, Bhutan, China, Fiji, Jordan, Kenya and Uzbekistan.

"We have at least one country from every one of the WHO regions and by design we picked two in each of the ecological types? two small island states [Fiji, Barbados], two water-stressed areas [Jordan, Uzbekistan] and two highland areas [Bhutan, Kenya]," Diarmid Campbell-Lendrum, a specialist in climate change and health at WHO, told America.gov. China is an example of a rapidly developing and urbanizing population.

"We see this as a first step that will build capacity, allow us to learn lessons and put these and other countries in a position" to take on similar projects, he said.

"We don't see climate change [as] an environmental issue. For us it's very much at the heart of poverty reduction and development," Pradeep Kurukulasuriya, senior technical adviser on climate change for the UNDP Environment and Energy Group, told America.gov.

"We don't want these projects to become stand-alone islands of great initiatives that are removed from the rest of the assistance being provided to the country, not only through UNDP and WHO but also other agencies," Kurukulasuriya said. "We're also looking to coordinate better and partner with others, in this case certainly the U.S. government, to ensure that these countries receive targeted and coherent and aligned support."

BIGGEST GLOBAL HEALTH THREAT

According to a 2009 report (http://www.thelancet.com/climate-change) by the medical journal Lancet and the University College London Institute for Global Health, climate change is the biggest global health threat of the 21st century.

The most important long-term influences of climate change, UNDP says, will likely be changes in natural ecosystems and their impacts on disease carriers like mosquitoes, waterborne diseases like cholera, and other contaminants. Climate change's effects on access to water, food and shelter, extreme weather and population growth will have great impacts on human health.

WHO estimates that by 2000, climate change that had occurred since the mid-1970s was responsible for a net increase of more than 150,000 deaths a year. By 2030, according to UNDP, the number of excess deaths due to climate change effects will double.

"The science of climate change has a range of uncertainty, so it's often difficult to know what we're supposed to adapt to, and when," Kurukulasuriya said. "So we decided to focus on issues we understand are quite likely to be important."

INCREASING VULNERABILITY

In each country the pilot project works through the ministry of health, with the support of WHO and UNDP country offices, Kurukulasuriya said.

The work targets water stress in Barbados; flooding from glaciers and water- and air-borne diseases in Bhutan; heat-related cardiovascular diseases in China; floods and drought in Fiji; water quality and quantity in Jordan; changes in malaria transmission and distribution in Kenya; and diseases related to heat and water stress in Uzbekistan.

"The kinds of things we expected the individual countries to be most worried about ? It was quite different when we got to the countries and talked to the people who were dealing with the problems," Campbell-Lendrum said.

The project developers in New York and Geneva expected a small island state like Fiji to be worried about sea level rise or hurricanes, but the Fiji Ministry of Health's main concern was water stress ? that with climate change there would be too much or too little. China could have chosen climate-related flooding or drought or infectious diseases, but the Ministry of Health decided to work on heat stress for people in large cities, which are growing and have aging populations and rising car use and pollution.

Climate change will worsen ongoing problems like water scarcity or disease outbreaks that countries are already dealing with, Campbell-Lendrum said, and the lesson the project developers learned is that existing problems are the adaptation issues countries most want to address.

Each country's activities incorporate some element of early warning planning, he said. In Kenya, this includes early detection of the first cases of malaria to determine if an epidemic is coming. In China, it's combining public health information for the elderly and ill with weather forecasts of coming high temperatures.

Want to do something about climate change? Join the global conversation on Facebook (http://www.facebook.com/conversationsclimate) or share your thoughts below.

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov)

COSTS / ECONOMIC ASPECTS OF CLIMATE CHANGE and IMPACT ASSESSMENTS:

ASSESSING THE BENEFITS OF AVOIDED CLIMATE CHANGE: COST-BENEFIT ANALYSIS AND BEYOND. Pew Center on Global Climate Change. May 2010.
The report conveys the proceedings of an expert workshop on the economic benefits of avoided climate change. Drawing from the environmental economics, impacts and vulnerability, and risk analysis communities, the workshop sought to glean insights on how to better quantify the benefits of reducing greenhouse gas emissions. http://www.pewclimate.org/docUploads/benefits-workshop-proceedings.pdf [PDF format, 252 pages].

FINANCING CLIMATE CHANGE ADAPTATION IN DEVELOPING COUNTRIES: CURRENT PICTURE AND FUTURE POSSIBILITIES:
http://www.eldis.org/cf/rdr/?doc=40781&em=261108&sub=clim

ENERGY AND RELATED ECONOMIC EFFECTS OF GLOBAL CLIMATE CHANGE LEGISLATION.
Hearing before the U.S. Senate Committee on Energy and Natural Resources, May 20, 2008
http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=e4189e08-a755-e064-6d2a-4acdad9a890e

IMPACTS OF CLIMATE-CHANGE LEGISLATION: A LOOK AT TROUBLING NUMBERS. NATIONAL GRAIN AND FEED ASSOCIATION, December 29, 2009
http://www.ngfa.org/full_story.cfm?id=1303

THE COASTLINE AT RISK: 2008 UPDATE TO THE ESTIMATED INSURED VALUE OF U.S. COASTAL PROPERTIES. AIR Worldwide Corporation, June 11, 2008 http://www.air-worldwide.com/_public/images/pdf/AIR2008_Coastline_at_Risk.pdf

INTERNATIONAL CLIMATE CHANGE FINANCE: FACT SHEETS:
http://www.state.gov/documents/organization/140689.pdf (from U.S. STATE DEPARTMENT)
ECONOMIC CHALLENGES FOR CLIMATE CHANGE POLICY Council on Foreign Relations, May 19, 2009

http://www.cfr.org/publication/16009/debate_revs_up_on_emissions_controls.html?breadcrumb=%2F

FINANCING THE RESPONSE TO CLIMATE CHANGE
http://www.imf.org/external/pubs/ft/spn/2010/spn1006.pdf IMF, March 25, 2010 (14 pages)

REPORT: COSTS OF ADAPTING TO CLIMATE CHANGE SIGNIFICANTLY UNDER-ESTIMATED
"Scientists led by a former co-chair of the Intergovernmental Panel on Climate Change will warn today that the UN negotiations aimed at tackling climate change are based on substantial underestimates of what it will cost to adapt to its impacts. The real costs of adaptation are likely to be 2-3 times greater than estimates made by the UN Framework Convention on Climate Change (UNFCCC), say Professor Martin Parry and colleagues in a new report published by the International Institute for Environment and Development and the Grantham Institute for Climate Change at Imperial College London. The report adds that costs will be even more when the full range of climate impacts on human activities is considered." http://www.iied.org/climate-change/key-issues/economics-and-equity-adaptation/costs-adapting-climate-change-significantly-under-estimated

ASSESSING THE COSTS OF ADAPTATION TO CLIMATE CHANGE: A REVIEW OF THE UNFCCC AND OTHER RECENT ESTIMATES, AUGUST 2009: http://www.iied.org/pubs/pdfs/11501IIED.pdf

NEW FINANCE FOR CLIMATE CHANGE AND THE ENVIRONMENT
This paper describes recent developments and trends in global environmental finance. It aims at mapping out the new environmental funds in terms of their objectives, funding and institutional arrangements. http://www.eldis.org/cf/rdr/?doc=44488&em=030909⊂=clim

CALCULATING THE COST OF CLIMATE CHANGE DRIVEN DISASTERS:
http://www.eldis.org/go/topics/resource-guides/aid

THE ECONOMIC EFFECTS OF LEGISLATION TO REDUCE GREENHOUSE-GAS EMISSIONS. Congressional Budget Office, September 2009 (32 pages)
http://www.cbo.gov/ftpdocs/105xx/doc10573/09-17-Greenhouse-Gas.pdf

THE U.S. ECONOMIC IMPACTS OF CLIMATE CHANGE AND THE COSTS OF INACTION: A REVIEW AND ASSESSMENT. Center for Integrative Environmental Research (CIER), University of Maryland.
http://www.cier.umd.edu/documents/US%20Economic%20Impacts%20of%20Climate%20Change%20and%20the%20Costs%20of%20Inaction.pdf

EXPERT OPINION ON THE ECONOMICS OF POLICY OPTIONS TO ADDRESS CLIMATE CHANGE. U.S. Government Accountability Office. 2008. Elevated levels of greenhouse gases in the atmosphere and the resulting effects on the earth's climate could have significant environmental and economic impacts in the United States and internationally.
http://www.gao.gov/new.items/d08605.pdf

GOLDMAN LECTURE IN ECONOMICS, WELLESLEY COLLEGE PREPARING FOR OUR COMMON FUTURE: POLICY CHOICES AND THE ECONOMICS OF CLIMATE CHANGE
http://www.cbo.gov/ftpdocs/99xx/doc9901/10-27-PresentationWellesley.pdf

REPORT: CHANGES IN THE EARTH'S CLIMATE COULD SPELL HIGHER COSTS FOR STATES
"The National Conference of State Legislatures (NCSL) and the Center for Integrative Environmental Research (CIER) at the University of Maryland have worked together to develop State Economic and Environmental Costs of Climate Change reports. Four additional state economic and environmental costs of Climate Change Reports are being released for North Carolina, Tennessee, North Dakota and Pennsylvania. Each report summarizes the climatic changes affecting each state, the potential fiscal

impact, and the affect of any future climate changes. The findings for Colorado, Georgia, Illinois, Kansas, Michigan, Nevada, New Jersey and Ohio were released during an Energy Conference at NCSL's Legislative Summit in New Orleans." State Economic and Environmental Costs of Climate Change report: http://www.ncsl.org/print/environ/ClimatechangeOver.pdf

THE ETHICS OF CLIMATE CHANGE: PAY NOW OR PAY MORE LATER? JUNE 2008 ISSUE OF SCIENTIFIC AMERICAN http://www.sciam.com/article.cfm?id=the-ethics-of-climate-change

THE POTENTIAL IMPACT OF CLIMATE CHANGE ON INSURANCE REGULATION. Draft report by National Association of Insurance Commissioners, May 28, 2008 (19 pages)
http://www.naic.org/documents/committees_ex_climate_impacts.pdf
There is a news release, June 2, 2008, at
http://www.naic.org/Releases/2008_docs/climate_study.htm

EFFECTS OF CLIMATE CHANGE ON MARINE AND COASTAL SYSTEMS . Hearing before a subcommittee of the U.S. Senate Committee on Commerce, Science and Transportation, May 27, 2008 (marine and coastal ecosystems of Washington State)
http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=5918bc0d-9f5a-4959-a776-78aa4b769140

Cossa, Paul F. **UNCERTAINTY ANALYSIS OF THE COST OF CLIMATE POLICIES.** 2004 Master's Thesis, MIT.[Massachusetts Institute of Technology]
http://dspace.mit.edu/bitstream/1721.1/30074/1/55636321.pdf

THE COSTS TO DEVELOPING COUNTRIES OF ADAPTATION TO CLIMATE CHANGE: NEW METHODS AND ESTIMATES Produced by: Adaptation Learning Mechanism (2010)
To shed light on adaptation costs the Economics of Adaptation to Climate Change (EACC) study was initiated by the World Bank in early 2008, funded by the governments of the Netherlands, Switzerland, and the United Kingdom. Its objectives are to develop an estimate of adaptation costs for developing countries and to help decision-makers in developing countries understand and assess the risks posed by climate change and design better strategies to adapt to climate change.
http://www.adaptationlearning.net/sites/default/files/Ecomonics%20of%20Adaptation%20to%20Climate%20Change-june2010.pdf

ECONOMIC CHALLENGES FOR CLIMATE CHANGE POLICY –
http://www.cfr.org/publication/16009/economic_challenges_for_climate_change_policy.html?breadcrumb=%2F

HANDBOOK ON METHODS FOR CLIMATE CHANGE IMPACT ASSESSMENT AND ADAPTATION STRATEGIES Authors: Feenstra,J.F.; Burton,I.; Smtih,J.B. Produced by: University of Amsterdam (2008) In many countries, governments are seeking advice from a wide range of disciplines on the potential impacts of climate change on the environment and their society and economy. This handbook is designed to help those conducting research supporting such advice. Underlying the research are two fundamental questions: "What does climate change mean to us?" and "What might be done about it?" This handbook is designed to provide newcomers to the field of climate impact and adaptation assessment with a guide to available research methods, particularly for answering the first question. The handbook will also serve as a ready reference for many others currently engaged in impacts and adaptation research.**http://dare.ubvu.vu.nl/bitstream/1871/10440/1/f1.pdf**

POTENTIAL IMPACTS OF CLIMATE CHANGE ON U.S. TRANSPORTATION: SPECIAL REPORT 290, Committee on Climate Change and U.S. Transportation, National Research Council, 2008 235 pages] http://cart.nap.edu/cart/deliver.cgi?&record_id=12179

IMPLICATIONS OF CLIMATE CHANGE FOR URBAN WATER UTILITIES. Association of Metropolitan Water Agencies, December 2007 (20 pages) This report looks at the potential impact of climate change on supply of drinking water to urban areas. http://www.amwa.net/galleries/climate-change/AMWA_Climate_Change_Paper_12.13.07.pdf

There is a news release at http://www.amwa.net/cs/news_releases/december13

FREE VIDEOS ON CLIMATE CHANGE:

Beginning with Earth Revealed, the popular earth science and physical geology course, look at program 23 which explains glacial formation, structure and movement. http://www.learner.org/resources/series78.html View magnificent images of glaciers, and learn how their study may help us understand ice ages and the greenhouse effect.

Also for high school teachers and students, The Habitable Planet has resources for studying glaciers and climate change. In unit 12, "Earth's Changing Climate," Dr. Lonnie Thompson discusses his work using ice cores from tropical glaciers to investigate the history of Earth's CO2 levels. http://www.learner.org/courses/envsci/unit/text.php?unit=12&secNum=0#
You can also read a longer interview with Dr. Thompson, and be sure to look at the visuals for this unit, featuring ice cores, and a dramatic photo series of the Quelccaya ice cap's melting process between 1978-2001.

For grade K-6 teachers, look at Essential Science for Teachers: Earth and Space Science, session 6, "Restless Landscapes." http://www.learner.org/courses/essential/earthspace/session6/index.html

This session looks at sand and land formations, and how they are affected by water and ice. Detailed information and visuals are provided about ice ages, glaciers, and glacial landforms, and there is a fascinating activity for teachers based on common ideas children have about science, and in this case, about glaciers.

And finally, look at the Weather Interactive, which focuses on ice and snow. Of particular interest is the link to the National Snow and Ice Data Center at the University of Colorado. http://www.learner.org/interactives/weather/iceandsnow.html

APPENDIX I: INTERNET RESOURCES FROM THE AMERICA.GOV EJOURNAL ON CLIMATE CHANGE (SEPTEMBER 2009): From the www.america.gov site:
http://www.america.gov/publications/ejournalusa/0909.html

Additional Resources

Articles, books, and Web sites on climate change issues

Articles

Anderson, Liana, et al. "Comprehensive assessment of carbon productivity, allocation and storage in three Amazonian forests." Global Change biology, vol. 15, no. 5 (May 2009): pg. 1255-1274.

Brahic, Catherine, David L. Chandler, Michael Le Page, Phil McKenna, and Fred Pearce. "The 7 Biggest Myths about Climate Change." New Scientist, vol. 194, no. 2604 (May 19-May 25, 2007): pp. 34-42.

http://www.newscientist.com/article/mg19426041.100-the-7-biggest-myths-about-climate-change.html

Chen, A. Anthony. "The Climate Studies Group Mona." Caribbean Quarterly, vol. 54, no. 3 (September 2008): pp. 85-91.

De Boer, Yvo. "Informal Ministerial Meeting: Bali Brunch 2009." Washington, D.C., Address, April 26, 2009. *http://unfccc.int/files/press/news_room/statements/application/pdf/090426_speech_balibrunch.pdf*

Hasselmann, Klaus, and Terry Barker. "The Stern Review and the IPCC Fourth Assessment Report: Implications for Interaction between Policymakers and Climate Experts." Climatic Change, vol. 89, nos. 3-4 (August 2008): pp. 219-229. *http://springerlink.metapress.com/content/l015464h31267t53/fulltext.pdf*

Kraemer, R. Andreas. "What Price Energy Transformation?" Survival, vol. 50, no. 3 (June/July 2008), pp. 11-18.

Luers, Amy Lynd. "How to Avoid Dangerous Climate Change." Catalyst, vol. 6, no. 2 (Fall 2007): pp. 1-5. http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf

McKibben, Bill. "Think Again: Climate Change," Foreign Policy, no. 170 (January/February 2009): pp. 32-38.

Monastersky, Richard. "Climate Crunch: A Burden beyond Bearing." Nature, vol. 458, no. 7242 (April 30, 2009): pp. 1091-1094.

Nisbet, Matthew C. "Communicating Climate Change," Environment, vol. 51, no. 2 (March/April 2009): pp. 12-23.

Pan, Jiahua, et al. "Environmental Targets and Policies in China: Effectiveness and Challenges." Canadian Foreign Policy, vol. 13, no. 2 (2006): pp. 133 (13 pages).

Pearce, Fred, and Michael Le Page. "The Decade after Tomorrow," New Scientist, vol. 199, no. 2669 (August 16-August 22, 2008): pp. 26-30.

Specter, Michael. "Big Foot." The New Yorker, February 25, 2008 http://www.newyorker.com/reporting/2008/02/25/080225fa_fact_specter

Swart, Rob, Lenny Bernstein, Minh Ha-Duong, and Arthur Petersen. "Agreeing to Disagree: Uncertainty Management in Assessing Climate Change, Impacts and Responses by the IPCC." Climatic Change, vol. 92, nos. 1-2 (January 2009): pp. 1-29. http://springerlink.metapress.com/content/ t6m685262gp51k2v/fulltext.pdf

Wirth, Timothy E. "Climate Activism: The New Opportunities of Climate Change." The Field Museum, Chicago, IL. Lecture, May 14, 2008. http://www.globalproblems-globalsolutions-files.org/unf_website/PDF/speeches/ClimateActivism_TheNewOpportunitiesofClimateChange_FieldMuseum51408.pdf

Books

Chen, A. Anthony, Dave D. Chadee, and Samuel C. Rawlins, eds., *Climate Change Impact on Dengue: The Caribbean Experience,* Climate Studies Group Mona, University of the West Indies, 2006, ISBN976-41-0210-7.

Christensen, John. *Changing Climates: The Role of Renewable Energy in a Carbon-Constrained World*. Paris, France: Renewable Energy Policy Network for the 21st Century (REN21), 2006.

Diamond, Jared. *Collapse: How Societies Choose to Fail or Succeed*. New York, NY: Penguin, 2005.

The Encyclopedia of Earth: Climate Change. Washington, DC: National Council for Science and the Environment, 2009.
http://www.eoearth.org/by/topic/climate%20change

Evaluating Progress of the U.S. Climate Change Science Program: Methods and Preliminary Results. Washington, DC: National Academies Press, 2007.
http://books.nap.edu/openbook.php?isbn=0309108268

Friedman, Thomas. *Hot, Flat, and Crowded*. New York, NY: Farrar, Strauss, and Giroux, 2008.

Gore, Albert. *An Inconvenient Truth*. Emmaus, PA: Rodale Press, 2006.

IPCC, 2007: Summary for Policymakers. In Climate Change 2007: *The Physical Science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor, and H.L. Miller, eds.]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA.

Mann, Michael, and Lee R. Kump. *Dire Predictions: Understanding Global Warming. The Illustrated Guide to the Findings of the Intergovernmental Panel on Climate Change*. New York, NY: DK Publishing, Inc., 2008.

May, Elizabeth, and Zoë Caron. *Global Warming for Dummies*. Mississauga, ON: J. Wiley & Sons Canada, 2009.

Our Changing Planet: The U.S. Climate Change Science Program for Fiscal Year 2009. Washington, DC: Climate Change Science Program, 2008.
http://downloads.climatescience.gov/ocp/ocp2009/ocp2009.pdf

Pachauri, Rajendra K. et al., eds. *Climate Change 2007: Synthesis Report, Summary for Policy Makers.* Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2007.

Repetto, Robert. *Climate Policy and Economic Revitalization*. Washington, DC: Climate Policy Center, 2008.
http://www.cleanair-coolplanet.org/cpc/documents/repetto_report.pdf

Spencer, Roy W. *Climate Confusion*. New York, NY: Encounter Books, 2008.

Stern, Nicholas. *A blueprint for a Safer Planet: How to Manage Climate Change and Create a New Era of Progress and Prosperity.* New York: Random House, 2009.

Understanding and Responding to Climate Change. Washington, DC: National Academy of Sciences, 2008.
http://dels.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf

Web Sites

Academic

National Center for Atmospheric Research: Climate

http://www.ncar.ucar.edu/research/climate/

The World Bank World Development Indicators database, 1 July 2009. Gross domestic product (2008).
http://siteresources.worldbank.org/DATASTATISTICS/ Resources/GDP.pdf

Yale University: School of Forestry and Environmental Studies: Project on Climate Change
http://research.yale.edu/environment/climate/

Government

U.S. Department of Commerce: National Oceanic and Atmospheric Administration: Climate
http://www.noaa.gov/climate.html

U.S. Department of Energy: Climate Change
http://www.energy.gov/environment/climatechange.htm

U.S. Department of State: Bureau of Oceans and International Environmental and Scientific Affairs: Climate Change
http://www.state.gov/g/oes/climate/

U.S. Environmental Protection Agency: Climate Change
http://www.epa.gov/climatechange/

International

Intergovernmental Panel on Climate Change
http://www.ipcc.ch/

Kombikraftwerk
http://www.kombikraftwerk.de/index.php?id=27

Meteorological Service, Jamaica
http://www.metservice.gov.jm/

United Nations Framework Convention on Climate Change
http://unfccc.int/

Website of a US-EU Strategy Dialogue
http://www.energy-transformation.org/

Organizations

Pew Center on Global Climate Change
http://www.pewclimate.org/

Resources for the Future: Climate Change
http://www.rff.org/research_topics/pages/climate_change.aspx

Sixth compilation and synthesis of initial national communications from Parties not included in Annex I to the Convention
http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf

For Students

Climate Change: The Threat to Life and a New Energy Future
http://www.amnh.org/exhibitions/climatechange/

Climate Classroom — from the National Wildlife Federation
http://www.nwf.org/climateclassroom/

Fired Up Media
http://firedupmedia.com/

Global Campaign for Climate Action
http://gc-ca.org/

Hot Politics
http://www.pbs.org/wgbh/pages/frontline/hotpolitics/

It's Getting Hot in Here blog
http://itsgettinghotinhere.org/

LinkTV: Earth Focus
http://www.linktv.org/earthfocus

Real Climate: Climate Science from Climate Scientists
http://www.realclimate.org/

UN Environmental Programme: Seal the Deal! — Youth Action on Climate Change
http://www.sealthedeal2009.org/

Read more: http://www.america.gov/st/energy-english/2009/September/20090918154100mlenuhret7.987177e-02.html#ixzz0SQdUidBf

Appendix II: Climate Change Partnerships:

CLIMATE CHANGE PARTNERSHIPS:

Foa, Roberto. "Social and Governance Dimensions of Climate Change: Implications for Policy" Washington, DC: World Bank, 2009.
http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/05/19/000158349_20090519141602/Rendered/PDF/WPS4939.pdf

Gore, Albert. Our Choice: A Plan to Solve the Climate Crisis. Emmaus, PA: Rodale, 2009.

Hoffman, Andrew J. Getting Ahead of the Curve: Corporate Strategies That Address Climate Change. Ann Arbor, MI: Pew Center on Global Climate Change, October 2006.
http://www.pewclimate.org/docUploads/PE W_CorpStrategies.pdf (
http://www.pewclimate.org/docUploads/PE W_CorpStrategies.pdf)

Humes, Edward. Eco Barons: The Dreamers, Schemers, and Millionaires Who Are Saving Our Planet. New York, NY: Ecco, 2009.

Kirby, Alex. Kick the Habit: A UN Guide To Climate Neutrality. Nairobi, Kenya: UNEP, 2008.
http://www.unep.org/publications/ebooks/kick-the-habit/pdfs/ KickTheHabit_en_lr.pdf (
http://www.unep.org/publications/ebooks/kick-the-habit/pdfs/ KickTheHabit_en_lr.pdf)

Meadowcroft, James. Climate Change Governance. Washington, DC: World Bank, 2009.
http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/05/19/000158349_20090519144015/Rendered/PDF/WPS4941.pdf

Pew Center on Global Climate Change. Clean Energy Economy. Arlington, VA: Pew Center on Global Climate Change, February 2010.
http://www.pewclimate.org/docUploads/clean-energymarkets-jobs-opportunities-brief.pdf

Serafin, Rafal. Five Key Things I Have Learned About Partnership Brokering: Over 20 years of Professional Practice in Canada, UK, Poland, and Other Countries of Central and East Europe.
http://www.partnershipbrokers.org/PBAS Final Project - Serafin.pdf

Starke, Linda, ed. State of the World 2009: Into a Warming World: A Worldwatch Institute Report on Progress Toward a Sustainable Society. New York: W.W. Norton & Co., 2009.

Stern, N. H. A Blueprint for a Safer Planet: How to Manage Climate Change and Create a New Era of Progress and Prosperity. London: Bodley Head, 2009.

U.S. Environmental Protection Agency Office of Air and Radiation. Climate Leaders Greenhouse Gas Inventory Protocol: Design Principles. Washington, DC: U.S. Environmental Protection Agency, 2005.

U.S. Government Accountability Office. Climate Change: EPA and DOE Should Do More to Encourage Progress Under Two Voluntary Programs: Report to Congressional Requesters. Washington, DC: U.S. Government Accountability Office, 2006.
http://www.gao.gov/new.items/d0697.pdf

Williams, Neville. Chasing the Sun: Solar Adventures Around the World. Gabriola Island, BC, Canada: New Society Publishers, 2005.

WEBSITES

American Council for an Energy-Efficient Economy http://www.aceee.org/

Ceres - Advancing Sustainable Prosperity www.ceres.org (file:///\\Pdna2\IIP\Electronic Journals\Climate Partnerships\CMS Versions\www.ceres.org)

Central African Regional Program for the Environment (CARPE) http://carpe.umd.edu/

Climate 1-Stop
http://arcserver4.iagt.org/climate1stop/

Climate Change Media Partnership
http://www.climatemediapartnership.org/

Coral Triangle - WWF
http://www.worldwildlife.org/what/wherewework/coraltriangle/

Earthship Biotecture
http://earthship.org/

Green Belt Movement
http://www.greenbeltmovement.org/

Indian Youth Climate Network
http://www.iycn.in/

Intergovernmental Panel on Climate Change (U.N.) http://www.ipcc.ch/

Kids Vs. Global Warming
http://kids-vs-global-warming.com/Home.html

Real Climate: Climate Science from Climate Scientists http://www.realclimate.org/

South China Climate Change Network
http://www.gdditan.com/

The Partnering Initiative
http://thepartneringinitiative.org/

Tsumkwe Energy
http://www.drfn.org.na/htm/energy_desk/energy_tsumkwe_energy.htm

U.N. Development Programme Climate Change Web Site http://www.undpcc.org/

USAID Global Development Alliance
http://www.usaid.gov/our_work/global_partnerships/gda/

U.S. Climate Action Partnership (USCAP)
http://www.us-cap.org/

U.S. Environmental Protection Agency Climate Leaders http://www.epa.gov/climateleaders/

U.S. Support to the Coral Triangle Initiative http://www.uscti.org/uscti/default.aspx

World Resources Institute
http://www.wri.org/

Yale Environment 360
http://e360.yale.edu/

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov

Appendix III:

A) Q and A ON COP-15

and

B) UNDERSTANDING CLIMATE MODELS

COP-15: Frequently Asked Questions

Delegates from 192 countries are meeting in Copenhagen December 7-18, 2009, to discuss climate change and map out a strategy for reducing global carbon dioxide (CO2) emissions. COP-15 is neither the first nor the last time international representatives will come together to talk about climate issues. Scientists first hypothesized about global warming as far back as the late 1800s, and international political concern reaches back several decades. Below is an FAQ, written by Carlyn Reichel, on the milestones that led to COP-15 and what the international community hopes to achieve in Copenhagen.

Q: What is COP-15?

COP stands for Conference of Parties, the annual meeting of the 192 signatory countries to the United Nations Framework Convention on Climate Change (UNFCCC). COP-15 in Copenhagen is the 15th such meeting to negotiate an international solution to the problem of climate change since the UNFCCC entered into force in 1994.

Q: What will be discussed at Copenhagen?

Negotiators must deal with a number of issues before crafting an international agreement on climate change that is environmentally effective, politically feasible and economically sustainable. They include:

. Mitigation - Developed and developing countries are both seeking ways to reduce the amount of CO2 that humans emit into the atmosphere. Negotiators are discussing a combined approach in

which developed countries reduce their current level of emissions and developing nations curb the rate of growth in their emissions as they continue to expand economically.

. Adaptation - Countries must also act to reduce the vulnerability of people to the worst effects of climate change. Developing countries are often the most vulnerable to change and have the fewest resources to help them adapt. They will need assistance to pay for adaptation activities such as coastal planning and construction of flood-proof housing. Copenhagen negotiations will likely address the mechanism for channeling aid to developing countries.

. Deforestation - Because forests remove CO2 from the atmosphere, deforestation greatly affects the concentrations of greenhouse gases present in the atmosphere. Reducing emissions by avoiding and reversing deforestation will be a focal point of discussion.

. Technology Transfer - Developed countries can help promote economic growth in developing countries through more energy efficient and environmentally sound means. Technology transfer is a key feature of previous international agreements, but the form it will take is still uncertain. There are also substantial concerns over intellectual property rights.

. Financing - Developed countries polluted freely during their periods of industrial and economic growth, so developing countries argue that the developed world is historically and ethically responsible for the amount of CO2 emissions in the atmosphere. The developed world also has more resources to address climate change, but all these adjustments will be costly, so there is an ongoing debate over who pays for what and how much. The developing world is requesting substantial financial support for their adaptation, mitigation and reforestation efforts.

The White House recently announced an emerging consensus among developed countries to mobilize a fund of $10 billion a year by 2012 to "support adaptation and mitigation in developing countries, particularly the most vulnerable and least-developed countries that could be destabilized by the impacts of climate change."

Q: What is the Kyoto Protocol?

At COP-3 in 1997, the parties adopted the Kyoto Protocol as an amendment to the UNFCCC. The Kyoto Protocol included legally binding targets for industrialized countries to reduce their greenhouse gas emissions, specifically their CO2 emissions, but did not require such commitments from developing countries.

The Kyoto Protocol went into effect in 2005 with 141 ratifying nations, but it is set to expire in 2012. There are currently more than 180 ratifying parties to the Kyoto Protocol. Although the United States is a symbolic signatory, the Senate never ratified the protocol and former President George W. Bush rejected the Protocol outright.

COP-11 in 2005 was also MOP-1 - the Meeting of the Parties to the Kyoto Protocol. More than 10,000 delegates met in Montreal to map out a way to implement the provisions of Kyoto. COP-15 is also MOP 5.

Q: What is the Bali Action Plan?

COP-13/MOP-3 in Bali resulted in adoption of the two-year Bali Action Plan for negotiating a framework for climate action post-2012. All 192 parties to the UNFCCC, including the United States, agreed to the Bali Action Plan, which set COP-15/MOP-5 in Copenhagen as the target conference to reach a permanent successor agreement to Kyoto.

Q: Could COP-15 result in a post-Kyoto agreement?

The Kyoto Protocol expires in 2012. Many political leaders have stated that COP-15 is unlikely to result in a permanent agreement to replace Kyoto. However, at a minimum, they believe it will produce an agreement that clears a path for a treaty in the coming year. Also, the presence of more than 100 world leaders in the final two days of the conference, including President Obama, has led to a renewed optimism for a positive outcome to COP-15.

The outcome of the Copenhagen negotiations could take one of two main forms:

. An agreement that builds on the first phase of Kyoto's emission-reduction commitments for developed countries and adds a supplemental agreement on new mitigation commitments of developing countries.

. An entirely new, comprehensive agreement that governs all countries' obligations and replaces the Kyoto Protocol altogether.

Q: What are some important milestones in international collaborations on climate change?

1971 - Recommendations from the international Study of Man's Impact on Climate Change lead to the creation of the United Nations Environment Programme (UNEP), which officially includes climate issues as part of the U.N.'s environmental concerns.

1979 - The World Meteorological Organization (WMO) and the International Council for Science organize the first World Climate Conference (WCC) and launch the World Climate Research Programme to coordinate continued international research.

1988 - The WMO and UNEP create the Intergovernmental Panel on Climate Change (http://www.ipcc.ch/) (IPCC) that includes science experts and government representatives to regularly report on the state of the climate.

1990 - The IPCC publishes its first report. A second WCC places a strong call for international policy action in response to the IPCC report, leading the U.N. General Assembly to call for an international agreement to restrict global warming.

1992 - World leaders meet in Rio de Janeiro at the "first Earth summit," the U.N. Conference on Environment and Development. Negotiators in Rio adopt the U.N. Framework Convention on Climate Change (http://unfccc.int/2860.php) (UNFCCC), which is ratified by 192 countries including the United States. The agreement is not binding but recognizes that climate change is real and establishes the basic principles for further negotiation.

1997 - Kyoto Protocol adopted at COP-3.

2007 - IPCC publishes its fourth assessment, reaching an "unequivocal" scientific consensus about the sources and dangers of human-made global warming, for which it wins the Nobel Peace Prize. Countries adopt the Bali Action Plan at COP-13.

2009 - WCC-3 meets in Geneva (learn more about the most recent WCC (http://www.america.gov/multimedia/photogallery.html#/4110/historic_conference/)). U.N. Secretary-General Ban Ki-moon hosts a climate change summit at the United Nations prior to convening the General Assembly. Negotiators meet in Copenhagen at COP-15.

Q: What other groups are working on climate change?

Several other bilateral and multilateral groups meet frequently between official COP gatherings to discuss climate change issues. President Obama has elevated climate change to a key issue in several of the United States' bilateral relationships, including with China, India and Brazil. Climate issues have also become a key focus in the regular meetings of the Group of 20 (G20) countries. In April 2009, the United States convened the first meeting of the Major Economies Forum on Energy and Climate (MEF). Since then, the MEF has met another four times in preparation for the negotiations at Copenhagen. Read more about the MEF. (http://www.america.gov/st/energy-english/2009/September/20090922131226lcnirellep0.8883783.html)

Q: What is the most successful international environmental treaty to date?

The 1987 Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer is widely regarded as the most successful international agreement on environmental issues. The discovery of a hole in the ozone layer over Antarctica led to the widespread adoption and implementation of the Montreal Protocol by every member of the United Nations. The Protocol includes the regulation and eventual elimination of specific ozone-damaging chemicals. See a timeline of international environmental treaties. (http://www.america.gov/multimedia/photogallery.html#/30145/env_time/)

(Distributed by the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov)

APPENDIX IV: UNDERSTANDING CLIMATE MODELS

(Despite uncertainty, these computer programs show scientists the future)

By Cheryl Pellerin, Science Writer

Washington - Everything scientists know about the future of Earth's climate comes from models - computer programs that use mathematical equations to describe how the atmosphere, water, land, ice, living things and energy from the sun affect each other and the climate.

In a climate model, the world is broken up into little boxes called grid cells. The cells extend from the North Pole to the South Pole and from the bottom of the ocean up through the stratosphere - so there are cells for the ocean, atmosphere, land and sea ice.

Inside each cell, millions of equations are being solved for things like temperature, precipitation, humidity, heat, winds, carbon dioxide and the effects of Earth's orbit. Each cell constantly communicates with its neighbors, passing data back and forth, moving wind and sun and rain from cell to cell and around the planet to build a picture of the future.

"The climate model is really a state-of-the-art tool for interpreting and projecting climate change," Michael Winton, a climatologist at the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (GFDL) in New Jersey, said at a recent briefing in Washington. "This is the way we apply the constraints of science, really - of chemistry and physics - to the global climate problem."

WEATHER AND CLIMATE

In the worst of several scenarios for a changing climate system, the Intergovernmental Panel on Climate Change (IPCC) used results from more than 20 climate models to predict that by the end of the 21st century global average temperature could rise by 4 degrees Celsius and sea level could rise by nearly a meter.

How can scientists confidently predict climate conditions more than 100 years from now when local weather forecasts are relatively accurate for only a few days in advance? The answer is that weather and climate are closely related problems but have important distinctions.

"The weather forecasting problem is a matter of taking a careful observation of the atmosphere and trying to move the atmosphere forward in time with a numerical model that encompasses the governing physical laws," Winton said. "As you go forward in time small errors in the observations and in your numerical calculations tend to grow and spoil your forecast, limiting weather forecast accuracy to a week or so."

Climate modeling doesn't rely on careful observations of an initial condition, he said. Instead, the basis of predictability for climate is the global energy balance (http://earthguide.ucsd.edu/earthguide/diagrams/energybalance/) - the balance between incoming energy from the sun and outgoing heat from the Earth - which is not important on the short timescales of weather forecasting.

CLOUDS AND UNPREDICTABILITY

A critical step in climate modeling is making sure the model produces realistic results. Scientists do this by comparing a model's results with real-world observations and experiences. Models that study future climate change usually start with atmospheric conditions that existed more than 100 years ago.

Scientists let the model run to present day and check results against the current climate. Once a model shows that it can represent present-day properties of the atmosphere, it's ready to predict future climates.

Climate models are constantly tested against observations and improved, but there is still uncertainty in the results. Aerosols - tiny particles suspended in the air - and the clouds that form around them are a major source of uncertainty. Scientists can't yet simulate clouds in a climate model, so they do something called "parameterization."

"This is a way of essentially guessing the cloud field based on the grid-resolved properties of the model - the grid-scale winds and humidities, for example," Winton said. "It's a guess that's based on physical principles and constrained by observations, but it's a guess nevertheless."

ADVANCES

Today, after some advances in the field, scientists around the world are starting to model the interactions of aerosols and clouds.

"If you have more aerosols, you've taken the cloud's water and distributed it over more drops. It has more surface area, it reflects more radiation and it has a stronger cooling effect," Winton said. "So for the first time at GFDL and other centers, we're going to be modeling clouds from scratch. We're going to be modeling the aerosols from emissions and also the combination of aerosol and water that makes up a cloud drop."

Another recent advance in climate modeling involves developing regional climate models - models that are not just global in scale but that can focus on a region and give specific climate information for communities.

"The global view is that the world is warm," Greg Holland, director of the Mesoscale and Microscale Meterology Division at the National Center for Atmospheric Research (NCAR) in Colorado, said at a recent briefing. "And the question you ask yourselves is, what happens to the rainfall in Boulder, Colorado, or what happens to a hurricane in New Orleans?

"Those questions really need to be answered," he said, "because it's not just enough to say the world is warming. You need to know how it's going to affect you locally so you can make the rational planning to be able to do something about it."

Scientists and modelers from the climate and weather communities are working together, embedding a weather model that now produces regional forecasts into NCAR's global Community Climate System Model. The combination is beginning to produce credible results, Holland said.

A podcast with scientist Greg Holland on climate modeling (http://www.america.gov/st/texttrans-english/2009/October/20091005140339wltsruh4.397219e-02.html)

and a photo gallery on climate modeling

(http://www.america.gov/multimedia/photogallery.html#/4110/climate_modeling/)
are available from America.gov.

Want to do something about climate change? Join the global conversation on Facebook (**http://www.facebook.com/ConversationsClimate**).

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov)

APPENDIX V: OBAMA CALLS CLIMATE CHANGE ACCORD AN IMPORTANT MILESTONE

December 20, 2009

Washington - President Obama said he worked closely with major world leaders at the U.N. Climate Change Conference in Copenhagen during marathon negotiating sessions to reach "an important milestone" to confront the threat posed by unchecked global warming.

Obama met with the leaders of Brazil, China, India and South Africa late on December 18 and agreed to set a goal of limiting the rise of the average global temperature to 2 degrees Celsius (3.6 Fahrenheit) above pre-industrial levels by 2050. Before Obama's direct intervention, it was uncertain if the more than 190 delegations at the conference would reach any accord after 12 days of intense negotiations.

The Copenhagen Accord is a nonbinding agreement that was "recognized" by delegates at the summit on December 19 and did not require unanimous support. It requires that countries specify by February 1, 2010, their pledges for curbing greenhouse gas emissions by 2020.

The measure does require that countries make commitments and then show the world what they are doing to meet them, Obama told reporters. "With respect to the emissions targets that are going to be set, we know that they will not be by themselves sufficient to get to where we need to get by 2050," he added.

"That's why I say that this is going to be a first step," he said.

The climate-change summit had hoped to reach agreement on emissions targets, financial aid for developing countries, and a system for measurement and monitoring of emissions.

Obama said the system for evaluating whether countries are meeting their commitments will be similar to how the World Trade Organization examines progress or the lack of progress that countries make on trade commitments.

"It will not be legally binding, but what it will do is allow for each country to show to the world what they're doing, and there will be a sense on the part of each country that we're in this

together, and we'll know who is meeting and who's not meeting the mutual obligations that have been set forth," the president said.

Obama had a one-on-one meeting with Chinese Premier Wen Jiabao earlier in the day in an attempt to resolve differences, and then again in the evening with Wen, Prime Minister Manmohan Singh of India, President Luiz Inácio Lula da Silva of Brazil, and President Jacob Zuma of South Africa. He also worked closely with Prime Minister Meles Zenawi of Ethiopia, who was representing African nations.

"Now, this progress did not come easily, and we know that this progress alone is not enough. Going forward, we're going to have to build on the momentum that we've established here in Copenhagen to ensure that international action to significantly reduce emissions is sustained and sufficient over time," Obama said in a press briefing December 18 following his meetings.

"We've come a long way, but we have much further to go," he said.

U.S. Senate Foreign Relations Chairman John Kerry, the primary author of the Senate's climate-change bill, told reporters that action by Obama on the last day of the 12-day international conference "broke through the bickering and set the stage for a final deal and for Senate passage this spring of major legislation at home." The U.S. House of Representatives has already adopted a climate-change bill, and is awaiting the Senate bill to resolve differences before sending legislation to the president.

Obama returned to Washington before the final session December 19 for the delegates to accept the accord worked out the night before. Poor weather conditions in the Washington area forced his return.

The next climate summit will be held in mid-2010 and be hosted by Germany.

After arriving in Copenhagen, Obama told delegates that the United States would continue on its course to reduce its emissions and to move toward a clean-energy economy, regardless of the outcome of the Copenhagen conference.

"It is in our mutual interest to achieve a global accord in which we agree to certain steps, and to hold each other accountable to certain commitments," he said. "I just want to say to this plenary session that we are running short on time."

On the day before, Secretary of State Hillary Rodham Clinton told the assembled delegates (http://www.america.gov/st/texttrans-english/2009/December/20091217112556eaifas0.7601435.html) that the United States would

be part of fast-start funding that would provide $30 billion by 2012 to help less-developed nations meet climate-control targets.

The fund to help developing countries would rise to $100 billion a year by 2020, Clinton told the conference.

Obama announced in November that the United States would cut greenhouse gas emissions approximately 17 percent by 2020 compared to 2005 levels, which is in line with targets set by the U.S. House of Representatives in legislation it has already approved. The Senate has yet to act on similar legislation, but it was expected to set emissions targets slightly higher, at 20 percent.
Obama told delegates that the United States, like most major industrialized nations, would reduce emissions 83 percent by 2050.

"All major economies must put forward decisive national actions that will reduce their emissions and begin to turn the corner on climate change," Obama said in an 11-minute address to the conference, which was meeting in the Bella Center in Copenhagen.

The 15th Session of the Conference of Parties to the U.N. Framework Convention on Climate Change (UNFCCC) includes representatives from more than 190 nations. The Copenhagen climate accord is designed to succeed the 1997 Kyoto Protocol, which required 37 industrialized nations to cut greenhouse gas emissions an average of 5 percent by 2012. The United States didn't ratify the Kyoto Protocol and rejected that target because it made no demands on major developing countries.

Excessive greenhouse gas emissions are thought to cause the Earth's temperature to rise, which carries with it substantial impact on the climate, posing dangers to human and animal health and the environment.

Obama also met with Russian President Dmitry Medvedev about efforts by the two nations to reach agreement on a treaty that would further reduce their nuclear arsenals below levels that had been set in the 1991 Strategic Arms Reduction Treaty, also known as START I. That treaty expired December 5; negotiating teams have been meeting literally around the clock in marathon sessions to put the final touches on a new agreement.

A transcript of Obama's press briefing (http://www.america.gov/st/texttrans-english/2009/December/20091219124446ptellivremos0.5465052.html) is available from America.gov.

Want to do something about climate change? Join the global conversation on Facebook (http://www.facebook.com/ConversationsClimate?ref=mf) or share your thoughts below.

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov)

APPENDIX VI: INTERNET AND PRINT RESOURCES FOR CLIMATE CHANGE PARTNERSHIPS, AN APRIL 2010 IIP eJOURNAL: 25 AUGUST, 2010

Climate Partnership Resources

BOOKS AND REPORTS

Foa, Roberto. "Social and Governance Dimensions of Climate Change: Implications for Policy" Washington, DC: World Bank, 2009.
http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/05/19/000158349_20090519141602/Rendered/PDF/WPS4939.pdf

Gore, Albert. *Our Choice: A Plan to Solve the Climate Crisis.* Emmaus, PA: Rodale, 2009.

Hoffman, Andrew J. *Getting Ahead of the Curve: Corporate Strategies That Address Climate Change.* Ann Arbor, MI: Pew Center on Global Climate Change, October 2006.
http://www.pewclimate.org/docUploads/PE W_CorpStrategies.pdf

Humes, Edward. *Eco Barons: The Dreamers, Schemers, and Millionaires Who Are Saving Our Planet.* New York, NY: Ecco, 2009.

Kirby, Alex. *Kick the Habit: A UN Guide To Climate Neutrality.* Nairobi, Kenya: UNEP, 2008.
http://www.unep.org/publications/ebooks/kick-the-habit/pdfs/ KickTheHabit_en_lr.pdf

Meadowcroft, James. *Climate Change Governance.* Washington, DC: World Bank, 2009.
http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/05/19/000158349_20090519144015/Rendered/PDF/WPS4941.pdf

Pew Center on Global Climate Change. *Clean Energy Economy.* Arlington, VA: Pew Center on Global Climate Change, February 2010.
http://www.pewclimate.org/docUploads/clean-energymarkets-jobs-opportunities-brief.pdf

Serafin, Rafal. *Five Key Things I Have Learned About Partnership Brokering: Over 20 years of Professional Practice in Canada, UK, Poland, and Other Countries of Central and East Europe.*
http://www.partnershipbrokers.org/PBAS%20Final%20Project%20-%20Serafin.pdf

Starke, Linda, ed. *State of the World 2009: Into a Warming World: A Worldwatch Institute Report on Progress Toward a Sustainable Society*. New York: W.W. Norton & Co., 2009.

Stern, N. H. *A Blueprint for a Safer Planet: How to Manage Climate Change and Create a New Era of Progress and Prosperity.* London: Bodley Head, 2009.

U.S. Environmental Protection Agency Office of Air and Radiation. *Climate Leaders Greenhouse Gas Inventory Protocol: Design Principles.* Washington, DC: U.S. Environmental Protection Agency, 2005.

U.S. Government Accountability Office. *Climate Change: EPA and DOE Should Do More to Encourage Progress Under Two Voluntary Programs: Report to Congressional Requesters.* Washington, DC: U.S. Government Accountability Office, 2006. http://www.gao.gov/new.items/d0697.pdf

Williams, Neville. *Chasing the Sun: Solar Adventures Around the World.* Gabriola Island, BC, Canada: New Society Publishers, 2005.

WEBSITES:

American Council for an Energy-Efficient Economy
http://www.aceee.org/

Ceres - Advancing Sustainable Prosperity
http://www.ceres.org

Central African Regional Program for the Environment (CARPE)
http://carpe.umd.edu/

Climate 1-Stop
http://arcserver4.iagt.org/climate1stop/

Climate Change Media Partnership
http://www.climatemediapartnership.org/

Coral Triangle – WWF
http://www.worldwildlife.org/what/wherewework/coraltriangle/

Earthship Biotecture
http://earthship.org/

Green Belt Movement
http://www.greenbeltmovement.org/

Indian Youth Climate Network
http://www.iycn.in/

Intergovernmental Panel on Climate Change (U.N.)
http://www.ipcc.ch/

Kids Vs. Global Warming
http://kids-vs-global-warming.com/Home.html

Real Climate: Climate Science from Climate Scientists
http://www.realclimate.org/

South China Climate Change Network
http://www.gdditan.com/

The Partnering Initiative
http://thepartneringinitiative.org/

Tsumkwe Energy
http://www.drfn.org.na/htm/energy_desk/energy_tsumkwe_energy.htm

U.N. Development Programme Climate Change Web Site
http://www.undpcc.org/

USAID Global Development Alliance
http://www.usaid.gov/our_work/global_partnerships/gda/

U.S. Climate Action Partnership (USCAP)
http://www.us-cap.org/

U.S. Environmental Protection Agency Climate Leaders
http://www.epa.gov/climateleaders/

U.S. Support to the Coral Triangle Initiative
http://www.uscti.org/uscti/default.aspx

World Resources Institute
http://www.wri.org/

Yale Environment 360
http://e360.yale.edu/

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://www.america.gov)

Read more: http://www.america.gov/st/energy-english/2010/August/20100426162407xnyazriahs0.8960949.html#ixzz11h0kSa6T

APPENDIX VII: Webchat Transcript: ADAPTING TO A CHANGING CLIMATE:

Adapting to a Changing Climate

In an online conversation about climate change October 27, guest Jennifer Kurz gave a presentation on climate action, climate change and adaptation, then answered questions from participants around the globe on how the world can adapt to rising global temperatures.

Kurz is outreach director for the U.S. Climate Action Network, the largest coalition of climate-focused advocacy organizations in the United States. She has spent years working on environmental issues for nonprofit groups.

Following is the transcript:

(begin transcript)

U.S. DEPARTMENT OF STATE
Bureau of International Information Programs
Webchat Transcript

Climate Series Webchat: "Adapting to a Changing Climate"

Guest: Jennifer Kurz
Date: October 27, 2010
Time: 8 a.m. EDT (12:00 GMT)

Parker-Burns: Good morning and welcome to the fourth program in our climate webchat series. Thank you all for joining us. My name is Susan Parker-Burns, I'm the senior policy advisor for environment, science, technology and health for the U.S. Department of state. I'll be the guest moderator for today's online conversation about climate change and how the world can adapt to rising global temperatures.

With me in the studio is Jennifer Kurz, she's the outreach director for U.S. Climate Action Network, the largest coalition of climate-focused advocacy organizations in the United States. Ms. Kurz has spent years working on environmental issues for nonprofit groups. She's done extensive research on how developing nations can and are responding to climate changes that are already occurring. She's a great person to cover today's topic, adapting to a changing climate. Ms. Kurz is here on behalf of the U.S. Climate Action Network and is not speaking for the U.S. government.

You can submit questions to our speaker at any time during the program. We'll answer as many as we can during the show and we'll follow up on the remaining questions after the program.

Our web chats are hosted in partnership with the East Carolina University and four of its partner universities. Shandong University in China, Faculdade de Jaguariuna in Brazil, the University of

Jammu in India and Regiomontana in Mexico. A special welcome to all our university students who joined our program. Welcome also to all the other participants from around the world who are logging in as I speak.

Ms. Kurz will give a short presentation in just a moment and then take some of your questions, but first, a few more words about today's program guest. Ms. Kurz's university thesis at Harvard included a case study about how the African nation of Malawi is planning to respond to the negative impacts of changing climate conditions. Her work ever since has focused on engaging people and communities to act on climate change. Before she joined the U.S. Climate Action Network, she worked on the Sierra Club's global warming and energy team. She later ran the organization's population and sustainability program. Ms. Kurz, welcome to our program.

Kurz: Thanks so much. Great. Well let me go through the slides I have prepared. The first one is a little bit more about who we are. The U.S. Climate Action Network is, as you said, the largest coalition of advocacy focused organizations on climate change in the U.S. Our membership includes environmental organizations like the Sierra Club or the Natural Resources Defense Council as well as health organizations, international development organizations, faith, student, business and other communities.

We are also the U.S. arm of a global coalition called CAN International which has 500 organizations worldwide and we work with the Global Campaign for Climate Action as well. So on to the subject at hand, adaptation.

The first thing I want to do is go through a little bit about the IPCC, the Intergovernmental Panel on Climate Change, possibly you've heard of it already, there are thousands of scientists that work worldwide on climate and they all participate voluntarily. The summaries that they give to policymakers are actually approved line by line by every government and because of that long process; it frequently underestimates the risks that are inherent in climate change. They also won the Nobel Prize in 2007 and they'll be the source for a lot of the information that I'm presenting here today.

So on to the impacts of adaptation... Or to the impacts of climate change. Water supply is going to be one of the first problems that we'll experience. Wet areas will get wetter and dry areas will be drier as sort of a blanket easy thing to remember. Definitely the areas affected by drought are going to increase and the number and frequency of heavy precipitation events will also increase. There's also an increase in the risk of flood and all of these will have impacts on people.

The next slide has a map of some of the areas that will be become desert over time and you can see in the different shadings how likely that is. The next slide also gives just one example of the dangers of floods, but obviously there are many, many more. Climate change will also impact

food production. Overall, actually, food production might increase slightly, but the distribution of that is going to be very uneven. So in mid to high latitudes, food production is likely to increase slightly, but at the lower latitudes it's likely to decrease. And this is because of other vulnerabilities of the underlying population means that it will actually increase the risk of hunger.

On to health. Connected, of course, to water, but many other changes that climate change will bring. Millions of people will be affected and especially for the poor there will be an increase in malnutrition, an increase in deaths, increase diarrhea disease, increased respiratory disease and the changes in locations of infectious diseases will also occur.

The next slide has an estimation of the existing deaths attributable to climate change. And that's, of course, going to increase over time. So now I'll look at regions and see how each region will be affected by climate change. So first off I'll start with Africa because it's, of course, the most vulnerable continent. By 2020 we expect between 75 and 250 million people to experience an increase in water stress. The yields from rain-fed agriculture are expected to decline by 50% by 2020. That is an astounding figure. In about ten years rain-fed agriculture will be down by 50%. Also the fish supplies in lakes in Africa are likely to be down.

The next slide has a map that looks at the agricultural production going back to that 50% statistic. In Asia we expect the fresh water supplies to be down in some regions, the increase in the risk of mega flooding or flooding in the mega deltas is high. And then crop yields are expected to change, putting at risk a number of people in countries. Finally, the morbidity and mortality rates are likely to rise from diarrheal disease.

In Latin America the food security is expected to decline also. There will be flooding in low-lying areas, water availability will change with precipitation and the glacier disappearance and then tropical rain forests will gradually be replaced by savannah and semi-arid vegetation. And you can see pictures of the glacial decline in the next side. And the risk of droughts.

Small islands are expected to be impacted heavily. Obviously the sea level rise is a huge part of that. It will affect people, infrastructure, and actually entire existence of some states. The fish stocks are likely to be reduced from coral bleach and there will also be water scarcity. The next slide has pictures of storm surges in the Cook Islands to give you a sense of what that will look like and it already has begun to look like.

So now I'm going to switch over to adaptation. How are we going to actually deal with these changes. So first I want to define adaptation and it's the adjusting natural or human systems in response to existing or expected climate change impacts. What that looks like is going to vary by context as we saw the impacts are expected to vary based on where you are. But the process of adaptation will be similar no matter where you are so that there needs to be local solutions and

local debate on what needs to happen and that needs to be matched by resources and other commitment from the highest levels.

So what does this mean in context? At the moment, our models are still very broad scale in terms of the information they can give us. So in any one country, how people need to adapt at the very local level still needs to be discussed and debated and we need more information at that level. But the ability to adapt comes from income, knowledge skills, access to other information and resources.

And so the next slide has a map of vulnerability to climate change impacts that the University of Oxford put together. And what you'll notice immediately on this map is that it overlaps heavily with poverty and vulnerability. So that people in the poorest countries are going to have the hardest time adapting, which is my first point on the next slide which is that poverty determines vulnerability when you're looking at adaptation more than any other factor. It's really poverty and access to resources that are going to affect people's ability to adapt. For that reason, adaptation and sustainable development are connected and strengthening the resource base that poor people depend on more directly is going to be one of the first lines of defense in adapting to climate change.

So what does good adaptation look like? It means addressing the current hazards and risks and looking at the emerging trends. It means managing risk and uncertainty into the future and it means actually teaching people how to adapt because we don't know exactly what the changes are going to be that they'll experience so it's more important to teach people how to make changes than it is to teach people how to respond to an existing change.

I'm going to give you a few examples of projects that are in the adaptation field just to give some concrete examples to this. So actually after hurricane Katrina here in the U.S., one of the adaptations that was implemented here was to put houses up on stilts or lift them up so that the floods would go underneath them. There's a picture of that on the slide.

Coastal restoration is another important one in terms of reducing storm surges on land. Just generally being more prepared for disasters. Improving forestry helps a lot as well. Water-capture systems can be useful when you're expecting droughts and floods to be... To change. Micro insurance for farmers is another possibility to help them weather the increased risks and variability and wetlands restoration as well.

I also wanted to go through an example of adaptation in Thailand in a little bit more detail because one of the areas that is going to be affected most by climate change is on agriculture. So generally the impacts that we can expect in Thailand is that the temperature overall will increase, there will be prolonged droughts, intense rainfall events leading to flooding and storm surges,

reduced agricultural production is also expected and finally impacts on health, settlements, and forests.

So Oxfam and the Earth Net Foundation put together a demonstration project in one of the ten poorest provinces in Thailand. The project lasted from May 2008 to March 2009 and 11% of the household which do organic farming in the province joined. The main crop that they produce is Jasmine rice. And the project itself did both education about climate change so people understood the risks and the impacts that it is bringing and will bring and then it helped participants design their own interventions. These included... And in the organizations themselves, they gave loans to the project participants so that they could implement these and helped in particular with water management on farms and then the farmers themselves shared their experiences and learned from each other's.

The next slide looks at during the project, it was the worst drought in 57 years according to one of the elders, but despite that fact, the outcomes of the project were that all households were actually more food secure than at the start of the project. And the rice production fell, it fell less than in other households not participating in the project. And farmers were able to increase their income by diversifying crops.

So the next slide is a quote by the START organization and I think this sort of sums up the connection between agriculture and climate change. So I'll read it. "Climate adaptation, in my opinion, is the ability to be flexible in dealing with climate shocks. Putting your eggs in one basket-- or in agricultural terms mono culture farming-- would be too risky but integrated farming, for example, is a wise thing to do because your livelihood is not based on one crop."

And then my final slide talks about the funding that's available for adaptation at a global level. Probably people remember the Copenhagen negotiations that happened just about a year ago in December. There developed countries promised to commit $30 billion between 2010 and 2012 for adaptation projects globally and to mobilize $100 billion annually by 2020. They also committed to creating the Copenhagen Green Climate fund and all of those are still in process of being implemented. So that is the extent of my presentation.

Parker-Burns: Great, well thank you so much Jennifer. Really appreciate that overview and I know we'll have lots of questions. I think we're going to take some questions first from people who submitted before today's webchat and then we'll go on to people who are submitting questions right now.

So please, people who are watching, feel free to submit questions. I'd first like to ask you about a term "food security" because we hear that term a lot in terms of sustainable development and also in climate change. Could you just explain what that means to be food insecure?

Kurz: Sure. So food security has to do with your access to food and certainly poor people are going to have less access to food and so it has to do with sort of either the ability to grow that food or to purchase it. And so that's why it's called food security instead of just hunger.

Parker-Burns: Okay. Great, great. Okay. I want to talk a little bit as well about drought and water stress and you showed some maps that-- especially Africa-- there's going to be significant drought issues that poorer countries are going to face. What do they do in that situation when there's just not enough water?

Kurz: Well, that's... (laughs) a little bit of a complicated question. I think that first of all there's things that can be done to manage the water so that when there's lots of water you can catch it and use it over time. But that's one of the really hard questions and involving local communities in that decision of what makes sense in their local context is really critical. But that also has to be matched by the resources and the political commitment at the highest levels to make those changes.

Parker-Burns: So one of the questions that we received before today's webchat was about resources that local communities have. What kind of resources are out there to help educate people and their communities about what they can do about climate change?

Kurz: Well, there are a wealth of resources at this point. The U.S. government actually has some really good maps. NOAA (http://www.noaa.gov/), which is one of our agencies here, does some great work on that front. But globally I would take a look at the UNFCC (http://unfccc.int/2860.php) web site. It it's a little bit complicated but does have a lot of information there. The UN Development Program (http://www.undp.org/) and the UN Environment Program (http://www.unep.org/) also have great web sites on this. But in terms of finding information on your local impacts and resources available you might try your own government's website. In some cases that works. In other cases I would look to some of the non-governmental organizations like Oxfam (http://www.oxfam.org/) or CARE (http://www.care.org/). But, you know... or ones locally in your country.

Parker-Burns: On your web site, the climate action website, do you have resources from every country around the world in terms of partner organizations?

Kurz: Not for the U.S. website but CAN International links to all of our regional partners so you would be welcome to go to the Can International (file:///\\PDNA2\IIP\Power of 6.8\Webchats\Guest Speakers\Transcripts\climatenetwork.org) website and take a look at all of the platforms we have in Africa or Asia and Latin America and they'll link to all of those partner organizations. So you can find who's active locally.

Parker-Burns: We got a question in before today's webchat from Mexico. Someone from Monterrey saying climate change is visible there because it's causing more rain and what that's doing is certainly producing greater greenery around but it's also difficult in terms of rain and roads, dams and damage to infrastructure. Does the climate change adaptation also mean adaptations in changing infrastructure?

Kurz: It definitely does and that's one of the things that people in organizations really need to be paying attention to. Actually, in the U.S. this is happening as well. People are looking at how we budget for our infrastructure needs over the coming years because increased flooding does mean that you need to upgrade. You know your irrigation systems or the ability of water to leave cities. So definitely impacts infrastructure. And it not only in terms of what you're going to need but also in terms of the wear and tear on that infrastructure moving forward.

Parker-Burns: Okay. We had a question come in from Poland and he's asking about the effect of climate change on island countries. We've heard that some island countries may, in fact, disappear. Can you talk a little bit more about that?

Kurz: Sure. Certainly... Especially, say, low-lying atolls in the Pacific where... The Maldives is one example. The highest point is 1.8 meters above sea level and we're looking at sea level rise that's expected to exceed that. The entire nation may actually cease to exist. And the President of the Maldives is already looking at places that he might actually be able to relocate his entire population because they are worried that they're going to cease to exist as a country. So the impact on low-lying countries is absolutely huge. It's just shocking. And as a result of that, in the climate change negotiations, those countries are the ones really the furthest out in front really wanting to make a difference in terms of reducing our emissions.

Parker-Burns: Okay. A question came in from East Carolina University; this was I think before today's webchat on which of the three levels in terms of government you find the most challenging to work with - state, regional, or federal. I guess we could even go international if we wanted to go there in terms of the U.S. Climate Action Network. Which one is the most challenging and why?

Kurz: I guess I would say that each has its own challenges. At the state and local level where a lot of the actual adaptation planning happens maybe it's a little bit easier because the connection to the government is closer and also the impacts are very immediate.

At the federal level, especially in the U.S., we have sort of a challenging political environment around climate change at the moment. A lot of people don't think it's actually even happening. And then internationally I would say that the negotiations-- which is how we deal mostly in the international field-- are also challenging at the moment because you're working on getting

consensus between about 190 countries which is just never easy. But at the same time, it's always... There's an opportunity at every level to continue to push.

Parker-Burns: Are there examples of communities in the U.S. that are doing some things right now to adapt to climate change or doing a good job at it?

Kurz: Yeah, there are. The Center for Clean Air Policy actually recently did a report that looked at what cities across the U.S. are doing and I can give you just a few examples of that. So in L.A.... Sorry, Los Angeles, California, they're already taking into account both climate and sustainability as they make purchases as a city. King County, Washington... King County in Washington state is probably one of the better-known cities for their adaptation program. They're already investing in infrastructure so that they can meet their water needs when the snow pack declines.

And then Chicago in Illinois has done some detailed evaluations of the economic impacts that they're expecting from climate change so that that can help them plan for how they're going to adapt. But generally speaking across the U.S., what the Center for Clean Air Policy Report found is that governments already have the skill set that they need to make changes and to adapt to climate change. It's more about making sure they're taking it into account and they're planning for infrastructure in their resources and budgets that they need.

Parker-Burns: Okay. Thanks. We had a question come in from Cairo about what the U.S. is doing in terms of agriculture and helping countries to adapt and think about new ways of handling agriculture. Do you have any information about that?

Kurz: I know a little bit about that. I know that the Gates Foundation-- which is based in Washington state-- has a program specifically on that. And then I know that ongoing research on how you create strains of crops that are going to be more resistant to droughts is ongoing in a number of different forums. A number of the U.S. non-governmental organizations, especially doing international relief and development are looking at ways to basically make farming more sustainable in the face of climate change. And the program I listed earlier the project from Oxfam, is an example of that. But Action Aid and CARE also have programs in that area, as I'm sure many other organizations do as well.

Parker-Burns: Okay. Thank you. We have several questions come in before today's web chat about the relationship between climate change and population. We see statistics about the world's population doubling in the next 30 to 50 years. How does that impact climate change? And should there be some kind of restriction on population growth because of what's happening with climate change?

Kurz: So there was a recent study by the Futures Group and the National Center for Atmospheric Research that did find that giving women access to family planning and reproductive health

services so that they can choose the number and spacing of their children would reduce global warming emissions by 8% to 15% and cost about $3.7 billion, which is about the same as most other mitigation measures. So there's certainly a link there and I would just recommend taking a look at that study for more information on that.

Parker-Burns: Okay. So it seems like when we talk about climate change we have to talk about agriculture, we have to talk about population growth, we have to talk about water and so many other related issues. I also wanted to bring up health because you mentioned health in your presentation. What's the relationship between climate change and health and potential for disease and infectious disease to spread?

Kurz: Climate change does actually impact so many different areas that it's very complex topic and certainly health is one of those because it's going to change temperatures, where mosquitoes can live or where fly cans live is going to change, which means the diseases that they carry, like dengue fever or malaria, the range of those diseases is also going to spread. So that's going to be a critical impact. It also actually affects asthma and allergy rates because it increases the pollution in a number of areas.

Because once it's warmer the pollution in the atmosphere basically interacts more and creates more health problems for people, which is probably less understood... Is a less understood impact of climate change but allergies and health problems are expected to rise for that reason as well. And one of the small positive benefits that we actually expect from climate change is that there will be fewer deaths because of cold. But that is going to be more than offset by the increased deaths during the heat season and heat waves and the floods.

Parker-Burns: So some of the things we saw this summer for example in Russia, Pakistan this summer may be attributed to climate change. So weather events and natural disasters like that we may continue to see that.

Kurz: Exactly and they are all consistent with what we expect to see with climate change.

Parker-Burns: Okay. Well we had another question from East Carolina University and they're asking about what resources are in place I think more for governments of developing countries, to educate them on how they're going to deal with climate change in their own country.

Kurz: The UN Development Program is one place to definitely look. The World Bank (http://www.worldbank.org/) also has a couple of basic programs on this. The Global Environmental Facility (http://www.thegef.org/) would be a good place to look for that. And then I think the... Again the UN Framework Convention on Climate Change web site is actually a key resource for developing country governments. You can look at all of the national adaptation programs on that website and sort of a wealth of other negotiation-related information. LED

would be another good web site to take a look at. There's actually so much information out there it's sometimes difficult to wade through.

Parker-Burns: Someone else brought up an interesting point that just came in about the relationship between climate change and international relations and security. What's the connection between all those things?

Kurz: That is a very good question. Basically climate change is going to, as we saw, impact water, impact a number of things that are going to put different countries and populations under stress which basically means it can increase the risk of conflict. There's no guarantee that it will do so, but if you have mass migrations, if you have huge floodings, it can definitely exacerbate security problem problems and here in the U.S. we've had a number of retired generals and decorated war veterans who've actually begun talking about this. The Department of Defense itself is beginning to take climate change into effect in its planning, in its operations. So it's definitely a huge security-related issue.

Parker-Burns: We had a couple questions come in about glaciers and how the melting of the glaciers affects oceans and oceans' currents and therefore climate. Can you talk a little bit about that?

Kurz: Sure. So what happens when you have glaciers receding is that there's less snow pack and so less water is melting consistently over the year. And therefore populations have difficulty in terms of accessing fresh water resources. I'm not actually sure what the connection is all the way out to the ocean, but I'm sure it's related because it's part of the hydrological cycle.

Parker-Burns: Some questions came in about kind of your work more specifically and some of the challenges that you face working in an organization that has such a huge international reach. How do you conduct your work when you're working with so many different partner organizations?

Kurz: Sure. Well, email and the internet are absolutely critical to our ability to work. So we're all online a lot of the time. Skype is definitely extremely helpful in this work. And then because a lot of our work focuses on the UN Negotiations, we do actually see each other during those meetings at least once a year and sometimes more frequently than that. So then we're working in person but certainly we wouldn't be able to do it without all the modern technology.

Parker-Burns: Some questions have come in as well about how people at the local level can kind of get started if they're concerned about climate change in their community. How do they turn maybe ideas into reality? Is it working with government? Is it working with NGOS? Where do you start?

Kurz: There's so many ways you can get involved. So certainly working with either local NGOs or international NGOs is certainly an option. Doing a lot of research to figure out what it's going to actually mean in your country. What your country government's positions are so that you can help either push them to be more active on this issue or to put the resources that are needed into this. And then you can work with your government as well in terms of sort of implementing those sorts of projects. But there's a ton of work that needs to be done and we really welcome and encourage people to get involved in their local community because really this is only going to be a problem that gets solved if people stand up and take action.

Parker-Burns: So getting into that a little bit more, if you are somebody in a community that maybe is in one of the regions we've talked about-- and actually climate change is going to impact everyone no matter where you are-- what can you do to get started in your community if you're in a town or city that doesn't have a lot of recycling or other kinds of programs that deal with improving the climate and the environment?.

Kurz: Sure. Well, I mean, that's a good example, recycling. But, you know, I would take a look at what are the biggest impacts likely to be and what are the biggest problems that your community currently faces in terms of being able to have the resources, have and be food secure and have regular incomes. And then really community wide have pretty in-depth conversations about what you want to prioritize and you can do that either as a nonprofit or through the government process itself depending upon their interest in getting involved. And then once you have a sense of what that looks like, you can go to organizations, either nonprofits or governments, for funding to help either implement those projects or continue those discussions and create plans because it is that local level of involvement that's going to be critical.

Parker-Burns: Towards the end of your presentation you talked a little bit about the two potential funds of resources for developing countries to adapt to climate change. You talked about this $30 billion Fast Start and kind of this longer term financing for developing countries. These came out of the Copenhagen Accord which, of course, was last year's international climate negotiations. How would those work? How are those actually going to work in reality?

Kurz: Well, that is a very interesting question. So in the short term, the Fast Start financing, the $30 billion is coming from a number of developed countries. It's going to cover adaptation but it's also meant to cover deforestation and afforestation related issues as well as clean technology transfers. So of these issues and how it works will depend on which government it's coming from.

So in the USA a lot of that money will go through our normal funding channels like the U.S. Agency for International Development. Some of it might be flowing through the World Bank but a lot of it is likely to be bilateral funding. Each country that's committed that money has a different way of handling it. And so actually one of our asks going into the Cancún negotiations that are about to start in about a month is that the Copenhagen Green Climate Fund which, you know,

was obviously part of the Copenhagen Accord, is operationalized so that there's one place where a lot of these resources are and that it's not part of the World Bank or other multilateral development banks but under the authority of the UNSCCC.

OF the $100 billion figure committed to be mobilized by 2020, what is clear is that that's not going to be available through sort of the existing funding channels for a number of the developed countries. So that there needs to be other mechanisms in place to generate that funding. There's so-called innovative funding mechanisms and the UN Commission Report... Commissioned a report this year by an advisory group on finance to look at some of these innovative sources to see what may or may not be available.

That report is due out pretty shortly just in advance of the Cancún negotiation, so that's definitely some place to look for where that funding might come from and how it gets dispersed and where it's available is still up for negotiation that haven't been decided yet. But... So it's a pretty complicated question as to where the funding is available.

Parker-Burns: And are those funding issues something that are still going to be discussed in Cancún and beyond at the international level?

Kurz: Oh, definitely. They will be ongoing both in the UN Negotiation process. Often it is discussed in the G-20, it's discussed in a lot of the bilateral conversations as well between countries and the multilateral conversations between countries. So definitely a key part of the negotiations, a key part of the international dialogue as well. From the civil society standpoint, you know, there's a number of ways these funds can be set up. But one of our critical asks is that civil society actually has a voice in what the funding mechanism looks like and the governance of that funding mechanism that the funds are reliable and committed over periods of time so that countries can make plans and implement them and the funding doesn't vary a lot.

Parker-Burns: Okay. I wanted to return to agriculture for a minute since that's kind of a major impact on... Of climate change is going to be agriculture. People here in the United States talk a lot about eating locally, which means they're eating food that is produced near where you live or eating seasonally or eating more organic foods. Do things like that actually have an impact on climate change?

Kurz: They do in the sense that organic food tends to have less of the fertilizers which are actually fossil fuel based inputs. Also, eating locally means that the food isn't being transported over distances which obviously also has affects on greenhouse gas emissions. But it's not always a straight forward analogy so that if you're eating locally but you live in, you know, in Ohio or for the Midwest where actually there's a lot of fossil fuel-based inputs going into that, that it might not be better to eat locally, ironically. And buying organic food from further away might be better. The calculations depend on, of course, where you are and what that looks like. But

generally speaking it is better to eat from your local farmer who's working to create a sustainable environment.

Speaker: In agriculture you talked about diversification of crops and when you're talking about developing countries where perhaps for centuries maybe rice or corn or one other kind of staple has been used for centuries and you're potentially talking about changing agricultural practices that are very deeply entrenched, how does a group like an NGO or government do that? How do you change practices that have been used for such a long time?

Parker-Burns: That is a very good question. I can speak actually on an example in Mexico. Where first of all it's important for local populations to understand what the impacts of climate change are going to be. A lot of people have already begun to see them so they have some sense that something is happening with the weather patterns. But helping them understand that those changes are likely to get worse over the future will also enable them to make decisions based on what might help them diversify crops because they see that one crop isn't going to make it year after year.

So giving them that context is going to be critical. The example I wanted to talk about in Mexico is of a project that helps local farmers plant Amaranth, which is a different grain than corn which would be one of the major grains in Mexico. But it's a grain that is actually... Was planted a lot with the indigenous population for centuries and then fell out of favor for a number of different reasons. Amaranth. But it's got a higher protein content than corn does so some farmers in areas are planting Amaranth for that reason. And it also adds some diversity to their diet.

Parker- Burns: So education really has to be key?

Kurz: Exactly.

Parker-Burns: A question has come in about the difference between adaptation and mitigation and should we be focusing more on adaptation and less on mitigation or how do we kind of balance this?

Kurz: Well, you definitely need to do both because we cannot adapt our way out of this if we don't do any mitigation which refers to reducing greenhouse gas emissions. But certainly we're at a point where we are experiencing impacts and those are going to get worse so we also can't focus only on mitigation. Looking at adaptation is necessary but you can't do it without any of the mitigation.

Parker-Burns: A question has also just come in... Sort of maybe more of a question about how NGOs operate in the international climate community. Is English the dominant language or are there resources for non-native U.S. Speakers?

Kurz: They are largely conducted in English in terms of the site events during the official negotiations they have translators. But a lot of the side conversations are in English. That said, there are resources to help countries and people who want to plug into that don't speak English. So it is possible, but unfortunately English is sort of still the dominant language. But within CAN International we have a number of people... CAN International we have people from French speaking countries who we have translators for on a regular basis. So it's possible.

Parker-Burns: You mentioned in part of the international negotiations that NGOs are present. What's their role at the UN Negotiations? A rather kind of major negotiations. Are the NGOs in the room? You mentioned the side events. How does that process work with the NGOs?

Kurz: Sure. The climate change negotiations are a little bit different than a lot of the other UN processes. So civil society has more of a role in those negotiations than, say, the WTO (World Trade Organization) negotiations or in other spaces. We are actually given official intervention slots to speak to the plenary of assembled delegates. Those are rationed across a number of different constituencies.

So while CAN is specific to the environmental constituency and the international negotiations, there's business platforms, there's indigenous platforms. There's youth platforms, there's research group platforms and a number of others and all of these different civil society constituency groups are given interventions, can host site events which are basically events that happen just off to the side of the negotiations that negotiators and other government officials can come to as well as other civil society organizations to help with education.

And then I think probably our most key function is translating what's happening during the negotiations for the media and for the outside world because the negotiation can be extremely complex. A lot of acronyms are in use. What the text means because it is legal language, it can be quite difficult to understand, it also can be quite technical. So having experts in the room who follow the process but then can translate into at least plainer English, what's happening for media and for the rest of the world is absolutely critical.

And as part of that, a lot of what we do is actually push on governments to take stronger positions and to be productive actors in the negotiations. And, you know, we do that within the U.S., but also CAN international and the Global Campaign for Climate Action do it in multiple countries.

Parker-Burns: So when you talk about NGOs here in the U.S. or abroad kind of pushing governments, how do you do that? You're an outreach director. How do you actually reach sort of the people that you need to target?

Kurz: Well, it starts again with education and educating a broad number of people about climate change and what needs to happen. And then, you know, sort of similar to what we talked about earlier, it's getting people to engage in the state and local process as well as the federal process. Here in the U.S., one of our chief focuses over the last year has been trying to get legislation through our Congress and that can be done in multiple places.

But then also pushing the U.S. Government and your colleagues in the State Department during their negotiations to take positions that are helpful. So we do directly lobby. We do put ads and media work generally in the U.S. and then a lot of person-to-person engagement of doing events, calling your members of Congress, all of that is part of that have work.

Parker-Burns: So does the Climate Action Network or are there system organizations in the U.S. that can help cities and towns that don't have a climate action plan or any kind of idea on how to start? Are there resources for those kinds of organizations, cities and towns?

Kurz: There are. ICLEI is a good organization for that. It helps local government plan both in terms of mitigation but also adaptation so I would take a look at their website. And that's actually a global organization so that would be one place to start.

Parker-Burns: Okay. Thank you all for sending some really good questions to our guests and we really appreciate that and thank you, Ms. Kurz, Jennifer, for sharing your insights on how nations and communities can adapt to climate change. We've learned a lot today, I think, about thinking about vulnerabilities at the local level and how we need to plan ahead to be successful in adapting to changes in our climate that we already see are occurring.

We've also heard that farming and international effort in terms of learning new techniques on crops and things, that's very important. But our time is up. It's gone by very fast, unfortunately. I hope everybody will join us for our next climate chat which will be November 10. That program is entitled "COP-16: Collaborating on Climate Change" that will focus on the climate change in Cancún, Mexico.

Thank you very much. Oh, I want to talk about our guest. We have the deputy secretary for the U.S. Department of State and he'll be here to talk about Cancún and the commitments made last year in Copenhagen and how you can make your voices heard ahead of the U.N. negotiations in Cancún. So thanks again for tuning in and we'll see you in two weeks.

[A video recording of the full program is available at https://statedept.connectsolutions.com/p24259109/.]

(end transcript)

(Distributed by the Bureau of International Information Programs at the U.S. Department of State. Web site: http://www.america.gov)

15 April 2011

Kids' Questions on Climate Change

Washington journalist Charles McCutcheon is the author of What Are Global Warming and Climate Change? Answers for Young Readers.

We asked Lela, a Washington primary-school student, to interview him. In preparation, she gathered questions from Linnea, 10, Axel, 8, A.J., 8, and Cameron, 12, as well as other children.

Lela, a primary-school student, asks author Charles McCutcheon questions about climate change.

Q: What is climate change?

A: It's a name that's been given to the process that is not just making the Earth warmer but is causing a lot of other physical processes. Like causing the ocean levels to rise, like causing glaciers to melt.

Q: How does pollution cause climate change?

A: To understand climate change, you have to know about the greenhouse effect. The greenhouse effect is like a blanket covering the Earth. When pollution such as carbon gets put into the air, it becomes part of the blanket and raises the temperature of the Earth.

Q: How will climate change affect the Earth?

A: In many different ways. It depends on where you live.

In Africa, for example, a big problem is the lack of water. People who don't have enough water there and in other countries will have more trouble growing the food they need. It could lead to droughts where nothing will grow at all.

In countries in Asia and the Pacific and elsewhere that have a lot of people living near their coastlines, the sea levels could rise — not overnight, but gradually — and flood out a lot of places where people live. It could hurt the incomes of farmers who grow rice and other crops.

Q: Will climate change affect humans in the future?

A: Yes, because Earth's temperature hasn't varied by more than a little bit over the last 10,000 years. It doesn't take much of a shift to throw the world out of balance.

For example, cities around the world could have heat waves. And when there's a heat wave, a lot of elderly people particularly can get sick and die because they sometimes don't have any way to cool off.

Q: How does global warming or climate change affect animals?

A: A lot of animals won't be able to get the food they need and could die. With ice melting, polar bears, for example, might not have access to places to live, which is called their habitat. There are already some animals whose extinction has been blamed directly on climate change. And people are afraid that as temperatures go up, there will be animals, just like humans, who will have trouble adapting.

Q. What's the warmest it's been in the Arctic?

A: I don't know the exact temperature, but the Arctic is the first place that noticeably showed the effects of global warming, and it provides a warning of what might happen elsewhere. This is also true for Greenland and northern Canada. On average, the warming that's been happening in these areas has been two or three times greater than anywhere else.

Q: What animals are extinct because of climate change?

Students in Costa Rica plant saplings as part of an Earth Day celebration.

A: The golden toad of Costa Rica is the first creature whose extinction is believed to have been caused by climate change. It used to live in the humid and misty forests, but higher temperatures affected its skin, which is very moist, and people stopped seeing the toad in the late 1980s.

Q: Are all trees in the rain forest going to be cut down?

A: No, but the rain forests are a big concern. The rain forests have been disappearing at a rate of 4 acres [1.6 hectares] every second. There's a lot of burning that's being done in the forests, and that releases carbon dioxide into the atmosphere.

Q. What is the U.S. government doing to help stop climate change?

A: NASA, which people think of as the agency that sends people into space, actually does a lot of studying of global warming and climate change. Other federal agencies study it too and share their information.

Right now, there's a big debate because the U.S. government hasn't taken steps to really sharply reduce global warming. A lot of state governments and a lot of local governments are making their own efforts to reduce polluting.

Q: What are the U.N. and international community doing to help?

A: The U.N. has an Intergovernmental Panel on Climate Change, which is made up of scientists from dozens of countries. They set the tone for the scientific consensus on climate change. They have gone from saying that humans *may* be causing it to saying humans are *very likely* causing it. The U.N. is also helping some countries in Africa and other places that don't have a lot of money to deal with possible outcomes of climate change.

Q: As an 8-year-old, I don't have much influence over other people who pollute. What can I do to stop climate change?

A: You can do a lot.

Talking to other people about climate change and asking grownups about it is a very important thing you can do.

If you have electricity at home, you can remember to turn off lights when you leave a room to save power. That means the plant that produces electricity won't pollute as much. Cars and power plants make most of the greenhouse gases that cause climate change, so we need to drive less and use less energy. If your family has a car that runs on gasoline, remind people in your family to drive it less. Walking, biking and riding public transit are great alternatives.

Q: If we can stop global warming, how long will it take?

A: It's going to take a while. There's no magic solution, no button we can push to make it stop. It's hard to say how long it will take, but if we do a lot of different things starting at home and also working and helping scientists, we could hopefully do something about it in the next few decades.

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://iipdigital.usembassy.gov/iipdigital-en/index.html)

Read more:
http://iipdigital.usembassy.gov/st/english/article/2011/04/20110415170553alel0.7026331.html#ixzz1KXYrWa7z

Compiled by Stephen Perry **EMAIL**: perrystephen@fastmail.fm
APRIL 25, 2011 with revisions and updates

Related bibliographies @ **http://tinyurl.com/6dfaxn**