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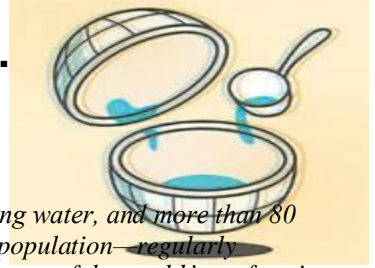
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The Dry Facts About Water.

From Newsweek,
July 2-9, 2007 issue



“About 1 billion people lack access to clean drinking water, and more than 80 countries—representing 40 percent of the world’s population—regularly experience serious water shortages. Though 75 percent of the world’s surface is water, less than 1 percent is readily usable by humans. The rest is in hard-to-use forms such as glaciers, vapor and deep groundwater—as well as saline seawater, of course.

The average amount of water used daily by one person living in Ethiopia, Somalia, Eritrea, Djibouti, Gambia, Mali, Mozambique, Tanzania or Uganda equals that used by someone in a developed country brushing his teeth with the tap running. The United Nations has set a goal of reducing by half the proportion of people who lack regular access to safe drinking water by 2015. In many regions the water crisis reflects poor management, not scarcity.

Agriculture, for instance, accounts for more than 80 percent of the world’s water consumption, but 60 percent of the water used for irrigation is lost to evaporation or leaky canals, or is contaminated by fertilizer and pesticide residues, making it dangerous to consume. The regions of the world where the future of water is most worrisome are China, India and the West Bank. The wars of the future may be fought not only over politics or oil, but water, too.” By *Jemimah Noonoo*

**MORE FACTS ABOUT WATER: August 6, 2008 Wednesday 1:57 AM
GMT LENGTH: 710 words**

HEADLINE: World faced with growing instability, violence: think tank

BYLINE: Gerard Aziakou

DATELINE: UNITED NATIONS, Aug 5 2008

Rising food and energy prices, water scarcity, climate change and increasing migrations could fuel growing instability and violence around the world over the next decade, a report by a global think tank said Tuesday. But despite its grim forecast, the 2008 State of the Future report by the Millennium Project—a global research undertaking—insists that “advances in science, technology, education, economics and management seem capable of making the world work far better than it does today.”

It highlighted 15 global challenges, ranging from water and energy to organized crime and global ethics, that require priority attention.

It noted that half of the world was vulnerable to social instability and violence due to food and energy prices, failing states, water scarcity, climate

change, dwindling food and energy supply per person, desertification and increasing migrations.

It said the US Center for Naval Analyses identified 46 countries (2.7 billion people) facing high risk of armed conflict, and another 56 states (1.2 billion people) at risk of political instability. By mid-2008, it tallied 14 wars (conflicts with 1,000 or more deaths) five in Africa, four in Asia, two in the Americas, two in the Middle East and one described as “worldwide anti-extremism.”

The report pointed to estimates by the Food and Agriculture Organization that 37 countries were facing a food crisis due to higher demand from rapidly developing countries, higher oil prices, use of crop as biofuels, high fertilizer costs and market speculation.

”Basic food prices are doubling around the world,” it said. “Price of cereals, for example, including wheat and rice, are up 129 percent since 2006. With nearly three billion people making two dollars or less per day, long-term global social conflict seems inevitable without more serious food policies, useful scientific breakthroughs and dietary changes.”

On the demographic front, it noted that the current world population of 6.7 billion was expected to reach 9.2 billion by 2050 and to peak soon afterward at 9.8 billion before slumping to 5.5 billion by 2100, according to the United Nations’s lower forecast.

One of the key challenges facing mankind is the availability of water. The report pointed out that today 700 million people face water scarcity, defined as less than 1,000 cubic meters per person per year, and the figure could grow to three billion by 2025 due to climate change, population growth and in-creasing demand for water per capita. Future demand for fresh water could be cut by saltwater farming on coast-lines, producing meat from stem cells without growing animals and increasing vegetarianism, it noted.

The report also warned that the world will need 50 percent more food by 2013 and twice as much within 30 years, which will require more water, land and fertilizer.

But it noted that for the past several years world food consumption had exceeded production while the factors increasing food prices appear to be long-term.

It recommended new farming approaches such as better rain-fed agriculture and irrigation management, genetic engineering for higher-yielding crops, precision agriculture and aquaculture and drought-tolerant varieties.

On climate change, the report warned that Africa will be hardest hit even though it contributes least to the problem, with the southern part of the continent in danger of losing 30 percent of its maize crop by 2030. It called for a “US-China global strategy to address climate change with an Apollo-like 10-year goal that might support electric cars, saltwater agriculture, carbon sequestration,

solar power satellites, animal protein without animals, urban systems ecology and a global climate change collective intelligence to keep track of it all.”

Energy will remain another major headache, with world demand likely to double in just 20 years.

With major energy sources destined to run out eventually and to threaten future climate stability, the report recommended “massive investments into safe and sustainable sources such as wind, geothermal, ground solar and space solar and saltwater-based biofuels.”

The Millenium Project is an initiative of the World Federation of UN associations, a global network of institutions in more than 100 member states.

LOAD-DATE: August 5, 2008

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07356

Climate Change and Water Resources in the Middle East: Vulnerability, Socio-Economic Impacts, and Adaptation.

By Mutasem El-Fadel and Eluer Bou-Zeid, June 2001, FEEM Working Paper No. 46, 2001.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=278514#PaperDownload

While the extent of human induced global warming is inconclusive, the vulnerability of natural systems to rapid changes in climate patterns is regarded as one of the most challenging issues in recent years. Water resources are a main component of natural systems that might be affected by climate change. This paper characterizes water resources in several Middle Eastern countries and evaluates regional climate predictions for various scenarios using General Circulation Models. Adaptation measures are assessed with a focus on no-regret actions in the context of local socio-economic and environmental frameworks.

 IPCC Technical Paper on Climate Change and Water

[Intergovernmental Panel on Climate Change, Technical Paper on Climate Change and Water, June 2008](#) (214 pages, PDF)

- “The Technical Paper addresses the issue of freshwater. Sealevel rise is dealt with only insofar as it can lead to impacts on freshwater in coastal areas and beyond. Climate, freshwater, biophysical and socio-economic systems are interconnected in complex ways. Hence, a change in any one of these can induce a change in any other. Freshwater-related issues are critical in determining key regional and sectoral vulnerabilities. Therefore, the relationship between climate change and freshwater

resources is of primary concern to human society and also has implications for all living species.”

07357

Tradable Water Rights: A Property Rights Approach to Resolving Water Shortages and Promoting Investment.

By Paul Holden and Mateen Thobani, World Bank Policy Research Working Paper No. 1627

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=636112#PaperDownload

In most countries, the state owns the water and hydraulic infrastructure, and public officials decide who gets water rights, how the water is to be used, and how much will be charged for its use. The authors of this paper compare administered systems of water allocation with a system of tradable water rights, and argue that water allocation by administrative edict has resulted in costly, large-scale inefficiencies in the supply and use of water, even with an adequate institutional framework.

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Secure property rights, on the other hand, have been shown to have a powerful positive effect on investment and efficiency, although only a few countries have tried to take advantage of the allocative efficiencies of a market to assign water resources among users. The authors argue that in order to ensure implementation of an effective water market system, attention should be paid to: (i) ensuring stakeholder participation in designing and implementing the new legislation; (ii) deciding on new rules for the initial allocation of rights and for how new rights should be allocated; (iii) establishing a public registry and block titling; (iv) setting up or strengthening water user associations; (v) protecting against the development of potential monopolies; (vi) ensuring that trades do not infringe on the water rights of existing users; and (vii) establishing appropriate environmental laws.

On Water

This blog features links to “news, research, and current events on all aspects of water resources.” Some of the topics include California’s water supply, drought, water quality, agricultural use of water, dams, shoreline and beaches, fish, sewage, and water-related legislation. Archives go back to October 2006. From the Water Resources Center Archives and the Center for Water Resources, University of California. <http://blogs.lib.berkeley.edu/wrca.php>

Special Report: Water

This series of stories from June 2008 explores current water-related issues, including water scarcity, drought, waterborne diseases, dams and hydro-electricity, the global water industry, and bottled water. Also includes a map showing world water use.

<http://lii.org/cs/lii/view/item/26357>

07358

Water Scarcity, Marketing, and Privatization. By Robert Glennon. University of Arizona Rogers College of Law, Texas Law Review, Vol. 83, No. 7, pp. 1873-1902, June 2005

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=762604

Most Americans take water for granted. Turn on the tap and a limitless quantity of high quality water flows for less money than it costs for cable television or a cell phone. The current drought has raised awareness of water scarcity, but most proposals for dealing with drought involve quick fixes-short-term palliatives, such as bans on washing cars or watering lawns except on alternate days. It is assumed that things will return to normal, and we will be able to wash our cars whenever we wish. But the nation's water supply is not inexhaustible. A just-released report of a White House subcommittee ominously begins: "Does the United States have enough water? We do not know." In a survey of states conducted by the U.S. General Accounting Office, only 14 states reported that they did not expect to suffer water shortages in the next 10 years.

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Is the sky falling? Not yet, but the United States is heading toward a water scarcity crisis: our current water use practices are unsustainable, and environmental factors threaten a water supply heavily burdened by increased demand. As the demand for water outstrips the supply, the stage is set for what Jared Diamond would call a collapse. How will we respond? When we needed more water in the past, we built a dam, dug a canal, or drilled a well. With some exceptions, these options are no longer viable due to a paucity of sites, dwindling supplies, escalating costs, and environmental objections. Instead, we are entering an era in which demand for new water will be satisfied by reallocating and conserving existing sources. The current water rights structure is the outcome of historical forces that conferred great wealth and power along with the water. The solution to tomorrow's water shortages will require creative answers to challenging issues of equity, community, and economics.

Water Challenge and Institutional Response, (A Cross-Country Perspective).

By R. Maria Saleth, Ariel Dinar. World Bank- Agriculture and Rural Development Department, January 1999, World Bank Policy Working Paper No. 2045

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=569189

Concerns in the water sector, which once revolved around water development (and quantity), now revolve around water allocation (and quality). The old paradigm-focused on centralized decision-making, administrative regulation, and bureaucratic allocation - is fast giving way to a focus on decentralized allocation, economic instruments, and stakeholder participation.

This cross-country evaluation of institutional responses to problems in the water sector shows that changes in the nature of water problems have changed the development paradigm underlying water institutions.

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There is increasing recognition of how decentralized allocation mechanisms can influence economic forces and stakeholders in water sector decisions. As the notion of water provision as a public good and welfare activity gives way to the concept of water as an economic good and an input of economic activity, there is more policy concern about efficient and equitable use, cost recovery, and financial viability.

All of the countries Saleth and Dinar studied (Australia, Brazil, Chile, China, India, Israel, Mexico, Morocco, South Africa, Spain, and Sri Lanka) are committed to changing the policies and institutions that have caused the present water sector crisis, but they are at different stages of institutional reform. Among cases discussed, Australia and Chile (and, in the United States, California and Colorado) are at an advanced (though not ideal) stage of institutional change. Israel, with its technologically advanced water sector, could well be ahead of them when the proposal to allow water transfers and decentralize water development and distribution systems takes practical shape. Tentative conclusions reached by Saleth and Dinar:

Water and Economic Growth. By Edward B. Barbier. University of Wyoming - Department of Economics and Finance, Economic Record, Vol. 80, March 2004, pp. 1-16.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=513508

Several hydrological studies forecast a global problem of water scarcity. This raises the question as to whether increasing water scarcity may impose constraints on the growth of countries. The influence of water utilization on economic growth is depicted through a growth model that includes this congestible no excludable good as a productive input for private producers. relationship between economic growth and the rate of water utilization.

6 -

Growth is negatively affected by the government's appropriation of output to supply water but positively influenced by the contribution of increased water use to capital productivity, leading to an

inverted-U Cross-country estimations confirm this relationship and suggest that for most economies current rates of fresh water utilization are not yet constraining growth. However, for a handful of countries, moderate or extreme water scarcity may adversely affect economic growth. Nevertheless, even for water-scarce countries, there appears to be little evidence that there are severe diminishing returns to allocating more output to provide water, thus resulting in falling income per capita. These results suggest caution over the claims of some hydrological-based studies of a widespread global 'water crisis'.

Progress on Drinking Water and Sanitation: Special Focus on Sanitation. [World Health Organization, United Nations]. Web posted July 20, 2008.

http://www.wssinfo.org/pdf/JMP_08.pdf [PDF format, 58 pages].

Every day, over 2.5 billion people suffer from a lack of access to reliable sanitation and nearly 1.2 billion practice open defecation, the riskiest sanitary practice of all, according to the report. The report assesses global, regional and country progress using an innovative "ladder" concept. This shows sanitation practices in greater detail, enabling experts to highlight trends in using improved, shared and unimproved sanitation facilities and the trend in open defecation. Worldwide, however, the number of people who lack access to an improved drinking water source has fallen below one billion for the first time since data were first compiled in 1990.

07361

State Department Releases Second Annual Report on its Safe Water and Sanitation Strategy in Developing Countries.

Office of the Spokesman, Media Note, Washington, DC June 6, 2007.

<http://www.state.gov/r/pa/prs/ps/2007/jun/86054.htm>

The U.S. Department of State released the second annual report describing U.S. government efforts to provide affordable and equitable access to safe water and sanitation in developing countries. In 2006 alone, the U.S. Agency for International Development (USAID), through its development assistance provided improved safe drinking water access to over nine million people and sanitation access to approximately 1.5 million people.

- **Senator Paul Simon Water for the Poor Act:** 2007 Report to the Congress (**June 5, 2007**)
<http://www.state.gov/g/oes/rls/rpts/85873.htm>
- **Senator Paul Simon Water for the Poor Act:** 2006 Report to the Congress (**June 1, 2006**)
<http://www.state.gov/documents/organization/67716.pdf>

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07362

Tribal Successes: Protecting the Environment and Natural Resources. Offices of Inspector General, U.S. Environmental Protection Agency and U.S. Department of the Interior, May 2007.

(42 pages)

<http://www.doi.gov/upload/2007-G-0020.pdf>

Many tribes have used innovative practices to protect their natural resources and the environment. The intent of this report is to highlight some of the examples of “successful Tribal practices that will inspire and be useful to others in successfully implementing their own natural resource and environmental programs.” Some of these practices are:

- Foster good communications and positive relationships;
 - Cultivate community education and outreach; and
 - Secure resources for sustainability.

This report is based on observations and examples of innovative practices provided by 14 tribes.

07363

Water, Desertification: Earth's Silent Scourge. USINFO, Department of State, September 13, 2004.

<http://usinfo.state.gov/products/pubs/desertific/water.htm>

On a planet that is 70 percent water, an increasing number of earth's inhabitants are echoing the words of the sailor in Samuel Taylor Coleridge's poem "The Rime of the Ancient Mariner": "Water, water everywhere, nor any drop to drink."

8 -

07364

U.S. Congress Examines Drinking Water Crisis in Africa.

By Jim Fisher-Thompson. USINFO, Department of State, May 17, 2007.

English:<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=May&x=200705171308471EJrehsiF9.121341e-02>

Arabic:<http://usinfo.state.gov/xarchives/display.html?p=washfile-arabic&y=2007&m=May&x=20070518115144bsibhew0.3358881>

USAID official cites \$91 million spent on programs, Washington—Millions of people in Africa are stricken with preventable diseases every year because they lack what the developed world takes for granted—clean drinking water.

07365

U.S. Military Improves Water Systems for Djibouti Children, Partnership for a Better Life. USINFO, Department of State, January 11, 2007.

English: <http://usinf>

o.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=January&x=20070111081012AKllennoCcM0.4103968

Members of the task force recently participated in water system improvements at Djibouti City schools. It is one of many activities with nations in the region to improve the quality of life for residents.

07366

Africa's Water Crisis and the U.S. Response. By Donald M. Payne. Hearing of the Subcommittee on Africa and Global Health of the House Committee on Foreign Affairs; Federal News Service, May 16, 2007.

<http://www.fnsg.com/transcript.htm?id=20070516t2557&nquery=&query=AFRICA%22S+WATER+CRISIS&SLID=0c34cfdb9e6a3cd66e6cee7006f842d7>

- 9 -

Hearing of the subcommittee on Africa and global health of the house committee on foreign affairs

- Chaired by: REP Donald M. Payne (D-NJ)
- Subject: Africa's Water Crisis and the US response
- Witnesses: Panel I REP Earl Blumenauer (d-or) Panel ii Claudia McMurray, Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State.

07367

Initiative Aims To Help Millions in Africa Access Clean Water First lady Laura Bush announces "Play Pumps" private-public partnership. By Kathryn McConnell, Washington File Staff Writer, USINFO, Department of State, 20 September 2006.

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2006&m=September&x=20060920141330AKllennoCcM0.2921564>

Washington—The United States is partnering with two major nonprofit organizations to help bring clean drinking water to millions of people in sub-Saharan Africa.

In announcing the public-private partnership September 20 in New York, first lady Laura Bush called for other partners to join the effort to help up to 10 million people access safe water by 2010 through the installation of 4,000 pumps in schools and communities.

Bush spoke at the annual meeting of the Clinton Global Initiative, held in conjunction with the opening of the 61st session of the United Nations General Assembly. Joining Bush at the launch of the initiative were leaders of the two partner organizations, Case Foundation and the MCJ Foundation.

07368

Law of Sea Convention Serves U.S. Interests, Bush Says.

By Cheryl Pellerin, USINFO, Department of State, May 18, 2007.

English:<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=May&x=20070518125740lcnirellep0.4086115>

Arabic:<http://usinfo.state.gov/xarchives/display.html?p=washfile-arabic&y=2007&m=May&x=20070521145922bsibhew0.1251795>

Establishes a legal order for oceans, promotes international communication
Washington—President Bush has urged the Senate to approve U.S. participation in the United Nations Convention on the Law of the Sea “to advance U.S. interests in the world’s oceans.”

07369

THE LAST DROP: Confronting the possibility of a global catastrophe. By Michael Specter. New Yorker, October 23, 2006.

http://www.newyorker.com/archive/2006/10/23/061023fa_fact1

Summary: Veteran public health and science writer Michael Specter offers a seemingly encyclopedic look at the supply, delivery, and shortage of fresh water in the world, focusing on the water situation in India. Specter notes that the situation seems dire: “somehow, the country has to sustain nearly twenty percent of the earth’s population with four per cent of its water.” The article does not limit itself to India, but provides a global, historical view about water that encompass political conflicts, sanitation, health, desalination, wells, dams, rural electrification, bureaucratic bungling, and the global economy. Specter’s conclusions are somehow very positive in spite of the appalling statistics of waste, shortages and mismanagement. “The biggest potential new source of water, not just in Delhi or Dar es Salaam, but in Tokyo and San Francisco as well, is us. By conserving water and pricing it more realistically, we can dramatically reduce our needs.”

07370

In Hot Water: Water Management Strategies to Weather the Effects of Global Warming. By Natural Resources Defense Council, July 2007. (90 pages)

<http://www.nrdc.org/globalWarming/hotwater/hotwater.pdf>

The effects of global warming on the health of the planet have been a topic of discussion for decades. However, only recently have the potential impacts of climate change on Western communities become a focus for water resource scientists, planners, and

managers. In the American southwest, the severe drought on the Colorado River that began in 2000 served as a wakeup call to water utility managers regarding the possible implications of global warming. Those implications are sobering.

07371

The Dry Facts About Water. Newsweek, July2 / July9, 2007.

(49 pages)

<http://www.msnbc.msn.com/id/19389322/site/newsweek/>

July 2-9, 2007 issue - About 1 billion people lack access to clean drinking water, and more than 80 countries—representing 40 percent of the world’s population—regularly experience serious water shortages. Though 75 percent of the world’s surface is water, less than 1 percent is readily usable by humans. The rest is in hard-to-use forms such as glaciers, vapor and deep groundwater—as well as saline seawater, of course.

07372

Cold Rush: The Coming Fight for the Melting North. By McKenzie Funk, Harper’s Magazine, September 2007.

<http://www.harpers.org/archive/2007/09/0081685> Discusses the water crisis in the context of overall Global Warming.

07373

Water: A Life Force Harnessed as News. By Nieman Foundation for Journalism at Harvard University Spring 2005, Vol. 59 No. 1

<http://www.nieman.harvard.edu/reports/05-1NRspring/V59N1.pdf>

- Reporting on Water: U.S. and International Coverage
- Tsunami Coverage

Water is the essence of life, and its cleanliness, availability, and our use and abuse of it are stories meriting reporters’ and editors’ attention. Yet as Stuart Leavenworth, who covered water issues for The Sacramento Bee and describes the wide array of issues he took on, reports: “To my chagrin, I had the beat largely to myself for four years. Across the country, papers have tackled problems of

water pollution and degradation, but have overlooked fundamental issues of supply—and sustainability. This is curious.”

07374

Warming Will Exacerbate Global Water Conflicts. By Doug Struck
Washington Post Staff Writer, August 20, 2007.

<http://www.washingtonpost.com/wp-dyn/content/article/2007/08/19/AR2007081900967.html>

FRESNO, Calif.—Steve Johnson scans the hot, translucent sky. He wants to make rain—needs to make rain for the parched farms and desperate hydro companies in this California valley. But first, he must have clouds. The listless sky offers no hint of clouds.

Inside a darkened room near the Fresno airport, Johnson’s colleagues study an array of radar screens. If a promising thunderstorm appears, Johnson will send his pilots into it in sturdy but ice-battered single-engine planes, burning flares of silver iodide to try to coax rain from the clouds.

- 13 -

07375

Obstacles to peace: Water

http://news.bbc.co.uk/2/hi/middle_east/6666495.stm

The BBC News website is publishing a series of articles about the attempts to achieve peace in the Middle East and the main obstacles. Martin Asser looks at the central issue of water.

The Arab-Israeli dispute is a conflict about land - and maybe just as crucially the water which flows through that land.

07376

Making the Most of Scarcity: Accountability for Better Water Management in the Middle East and North Africa. By World Bank, 2007; 270 pages.

English:[http://www-](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/03/15/000310607_20070315111424/Rendered/PDF/390400MNA0Most101OFFICIAL0USE0ONLY1.pdf)

[wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/03/15/000310607_20070315111424/Rendered/PDF/390400MNA0Most101OFFICIAL0USE0ONLY1.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/03/15/000310607_20070315111424/Rendered/PDF/390400MNA0Most101OFFICIAL0USE0ONLY1.pdf)

Arabic:<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTMNAREGTOPWATRES/0,,contentMDK:212>

This report is the fifth in a series of Flagship Development Reports that highlight key challenges facing the Middle East and North Africa Region. This volume aims to show how water is integrated into the wider economic policies of the countries of the region. For that reason, it brings water issues to non-water specialists, addressing a multi-sectoral audience. The report will outline actions that can further a broad reform agenda within the current political and economic climate.

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07377

Jordanian Women Help Conserve Country's Water Supply

Partnership for a Better Life,. By USINFO, Department of State,

11 January 2007.

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=January&x=20070111083503AKllennoCcM0.6249506>

In her trendy pantsuit and fashionable hairstyle, Khawla Al Sheikh looks like any modern worker. But when she goes to her job every day, she goes with a dual purpose: to break ground for other low-income Jordanian women and to help save one of her country's most crucial resources.

Although Jordan has one of the lowest water-usage rates in the world, consumption still exceeds renewable supplies, making it a challenge for the government to provide enough of this basic necessity to its people.

As part of a major effort to increase public understanding of water conservation, Jordan's Ministry of Water and Irrigation, working with the U.S. Agency for International Development (USAID), recognized that Jordanian women could be uniquely effective in encouraging water conservation in the home.

07378

A Water Revolution Fuels Industry in City in India: Partnership for a Better Life. USINFO, Department of State, 27 September 2006

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2006&m=September&x=20060927085202AKllennoC M0.3406031>

- 15 -

For two decades, the textile and garment industry in Tirupur, a city in the south Indian state of Tamil Nadu, was growing faster than anyone thought possible. By the 1990s, however, the town was running out of water, a critical input for dyeing and bleaching.

The Tirupur Exporters Association, the government of Tamil Nadu and a private company, Industrial Leasing and Financing Services, reached a deal on the first government concession to the private sector for water supply in India. But they needed to secure financing.

07379

Indonesia Finds New Resource for Clean, Safe Drinking Water, Partnership for a Better Life. USINFO, Department of State, 21 September 2006.

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2006&m=September&x=20060921144649AKllennoCc M0.8310205>

Indonesia's Central Java region in May 2006 left hundreds of thousands homeless and living in tight temporary quarters. Contaminated water was a big concern in places where sanitary conditions broke down.

In such conditions, diseases spread easily and ordinary activities, like getting clean drinking water, become nearly impossible. Waterborne diseases from contaminated sources threaten to kill even more victims than the initial disaster.

The U.S. Agency for International Development (USAID) recognized that providing potable water to earthquake-affected people in Indonesia was critical to both short-term survival and to helping establish safe and sanitary living conditions.

07380

Gender, Water and Sanitation: A Policy Brief. This policy brief was developed by the Inter-agency Task Force on Gender and Water (GWTF), a sub-program of both UN-Water and the Interagency Network on Women and Gender Equality (IANWGE) in support of the International Decade for Action, 'Water for Life,' 2005–2015.

<http://www.unwater.org/downloads/unwpolbrief230606.pdf>

In most societies, women have primary responsibility for management of household water supply, sanitation and health. Water is necessary not only for drinking, but also for food production and preparation, care of domestic animals, personal hygiene, care of the sick, cleaning, washing and waste disposal. Because of their dependence on water resources, women have accumulated considerable knowledge about water resources, including location, quality and storage methods. However, efforts geared towards improving the management of the world's finite water resources and extending access to safe drinking water and adequate sanitation, often overlook the central role of women in water management.

07381

Coping with Water Scarcity: UN-Water Thematic Initiative, A strategic issue and priority for system-wide action. August 2006

<ftp://ftp.fao.org/agl/aglw/docs/waterscarcity.pdf>

UN-Water is the mechanism coordinating the actions of the United Nations (UN) system aimed at implementing the agenda set by the Millennium Declaration and the World Summit on Sustainable Development (WSSD) in all aspects related to freshwater. UN-Water has grown out of many years of extensive collaboration and partnership among the UN agencies. These efforts have helped to achieve significant progress and to bring water and water-related issues to the top of the political agenda.

Advancing the implementation of this complex and ambitious international agenda is a collective responsibility and challenge. It calls for coordinated action within the UN system and with other partners and stakeholders – including organizations from the public and private sectors, civil society and labor – as part of a global, comprehensive effort. The main purpose of UN-Water is to complement and add value to existing programmers and projects by facilitating synergies and joint efforts in order to maximize coordinated action, coherence and the effectiveness of the support provided to countries pursuing the goals agreed upon by the international community. This is in line with the integrated water resources management (IWRM) approach, which calls for collaboration among all stakeholders in water management. UN-Water has identified coping with water scarcity as part of the strategic issues and priorities requiring joint action. This note presents the UN-Water joint plan of action (Poi) for this thematic initiative and describes its elements.

07382

Water Hazard Risk A Priority for Integrated Water Resource Management. Water Resource Management UN-Water series

<http://www.unwater.org/downloads/unwaterseries.pdf>

Paper developed by UN-WATER in support of the World Conference on Disaster reduction Reduction (WCDR), 18-22 January 2005 and the principle program outcome “Building the resilience of nations and communities to disasters: Framework for action 2005–2015”. The paper is also a contribution to the International Decade for Action ‘Water for Life’ (2005-2015).

Water related hazards affect millions of people, jeopardizing human security and hampering socio-economic activities. Both the Johannesburg Plan of Implementation (JPOI) and the Millennium Development Goals (MDGs) have stressed the need for closer interaction between hazard risk reduction and sustainable development. In addition, hazard risk reduction is increasingly recognized as an integral part of water policies and agendas.

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Water-related hazards are major features of natural disasters world-wide.

At almost any point in any time, a hazard is threatening communities, their property and even the lives of the inhabitants. Few of these events are reported in the international media due to their local impacts as their impacts are only local in nature. However, the events like floods in Bangladesh and Haiti this year draw significant international attention.

07383

Water For Life: Making It Happen. By WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation.

http://www.unicef.org/wes/files/JMP_2005.pdf

Every day, diarrhea from easily preventable causes claims the lives of approximately 5000 young children throughout the world. Sufficient and better quality drinking water and basic sanitation can cut this toll dramatically, and simple, low-cost household water treatment has the potential to save further lives.

As we enter the International Decade for Action Water for Life 2005–2015, this report makes clear that achieving the target of the Millennium Development Goals (MDGs) for access to safe drinking water and basic sanitation will bring a payback worth many times the investment involved. It will also bring health, dignity and transformed lives to many millions of the world’s poorest people.

The humanitarian case for action is blindingly apparent. The economic case is just as strong. Improved water and sanitation will speed the achievement of all eight MDGs, helping to: eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria and other diseases; ensure environmental sustainability; and develop a global partnership for development.

At US\$11.3 billion a year, the dollar costs of achieving the MDG drinking water and sanitation target are affordable; the human costs of failing to do so are not. The International Decade for Action Water for Life provides the incentive for coordinated efforts to prevent the daily disaster of unnecessary deaths.

07384

Rethinking the Approach to Groundwater and Food Security. By Marcus Moench, Jacob Burke and Yarrow Moench, FAO in collaboration with the Institute for Social and Environmental Transition Boulder, Colorado United States of America Water Reports 24, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS Rome, 2003

<http://www.fao.org/docrep/005/y4495e/y4495e00.htm>

This study attempts to re-frame the current thinking on groundwater development and the implications for food security. Groundwater is an important source for irrigated agriculture as it generally furnishes reliable and flexible inputs of water. To this extent, groundwater is instrumental in managing risk and optimizing food production. However, this reliance upon shallow aquifer systems for irrigation has turned to dependency. Competition for groundwater is intense both between neighboring users and among economic sectors. This study highlights the role of adaptive strategies in dealing with aquifer management and indicates directions of research and management.

07385

Climate Change 2007: The Physical Science Basis Summary for Policymakers. By Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, This Summary for Policymakers was formally approved at the 10th Session of Working Group I of the IPCC, Paris, February 2007.

http://media.washingtonpost.com/wp-srv/nation/documents/climate_report_020207.pdf

The Working Group I contribution to the IPCC Fourth Assessment Report describes progress in understanding of the human and natural drivers of climate change, observed climate change, climate processes and attribution, and estimates of projected future climate change. It builds upon past IPCC assessments and incorporates new findings from the past six years of research. Scientific progress since the TAR is based upon large amounts of new and more comprehensive data, more sophisticated analyses of data, improvements in understanding of processes and their simulation in models, and more extensive exploration of uncertainty ranges.

The basis for substantive paragraphs in this Summary for Policymakers can be found in the chapter sections specified in curly brackets.

<http://dspace.mit.edu>

07386

Meeting the Mandate for Clean Water: an Evaluation of Privately Managed U.S. Water and Wastewater Systems. By Freund Evan Benjamin, Lawrence Susskind, Massachusetts Institute of Technology; Department of Urban Studies and Planning, June 2005.

<http://dspace.mit.edu/bitstream/1721.1/33408/1/62717167.pdf>

Reliable provision of clean and safe drinking water is critical for public health, economic stability and growth in the United States. Due to a combination of financial, regulatory and operational challenges, however, it is becoming increasingly difficult for publicly owned and operated water utilities to provide affordable and safe water along with efficient service delivery. Since the 1980's, new actors have entered the U.S. water utility scene in the form of large international firms that specialize in water utility management, offering the opportunity to increase efficiency, expedite long-delayed maintenance, minimize rate increases and provide needed capital for system expansion.

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Private management of water and wastewater systems, however, can have unintended and negative consequences on localities, including: * The loss of employment and pensions for the municipal utility work force; * Higher water rates because private firms charge full cost, must pay taxes and earn a profit; * Surrender of local control over ratemaking and other financial issues to state public utility commissions; * Loss of municipal control of daily operations and the setting of service standards, as well as loss of control over planning for long-term growth and economic development.

07387

Analysis of Sustainable Water Supply Options for Kuwait. By Murtaugh, Katharine A. (Katharine Ann), Massachusetts Institute of Technology, 2006.

<http://dspace.mit.edu/bitstream/1721.1/34582/1/71249670.pdf>

This thesis considers several options for improving the sustainability of Kuwait's water supply system. The country currently relies heavily on desalination and brackish groundwater extraction. The options considered for increasing the flux of potable water into Kuwait include expanding the desalination capacity, importing water from other countries, expanding the uses of reclaimed wastewater, and rainfall harvesting. Options for water storage are also considered, including both aquifer and surface systems. Case studies are presented which demonstrate the potential for indirect potable use of Kuwait's highly purified wastewater, and the importance of a storage reservoir as part of such a system. In order to assess the feasibility of rainfall harvesting, a model was constructed to simulate the runoff

processes in the Rawdhatain drainage basin in northern Kuwait. Due to the coarse resolution of the input data, reasonable results could not be obtained using the input parameters gathered from available data.

(cont.) However, through sensitivity analysis, it was discovered that relatively minor variations in soil properties throughout the watershed could produce significant volumes of runoff during extreme rain events.

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Storage was considered for the small lens of fresh groundwater beneath the Rawdhatain basin or in a surface reservoir constructed in the drainage depression there. All of these options should continue to be considered as Kuwait attempts to expand its water supply in a sustainable manner, though further study will be needed especially in order to understand the hydrologic system at Rawdhatain more thoroughly.

07388

Development of Program Implementation, Evaluation, and Selection Tools for Household Water Treatment and Safe Storage Systems in Developing Countries. By Baffrey, Robert Michael Nuval Baffery. Massachusetts Institute of Technology 2005.

<http://dspace.mit.edu/bitstream/1721.1/28942/1/61163761.pdf>

Over the past six years, the MIT Department of Civil and Environmental Engineering's Master of Engineering program has undertaken various projects involved with the design and implementation of a wide range of household drinking water treatment and safe storage (HWTS) systems. Projects have been conducted in Nepal, Haiti, Nicaragua, the Dominican Republic and Peru, with the current year's project team focused on Kenya. These individual and team projects have brought the overall HWTS program to a point where program implementation practices are now of great interest.

The primary objective of this thesis is to generate program implementation and selection tools to aid in the implementation of HWTS systems for local communities in developing nations. The tools generated are presented as two separate components: (1) a HWTS implementation organization survey and (2) a HWTS technology selection tool. The HWTS implementation organization survey is intended primarily for information collection on currently implemented HWTS programs, but is also applicable for pre-implementation scenarios.

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In late 2004, in collaboration with the Implementation Working Group of the WHO International Network to Promote Household Drinking Water and Safe Storage ("The Network"), the MIT team developed a draft implementation organization survey.

07389

Advanced Water and Wastewater Treatment—Implications and Prospects for the Construction Industry. By Lindsay Haugland. Massachusetts Institute of Technology, Department of Civil and Environmental Engineering, 1994.

<http://dspace.mit.edu/handle/1721.1/35383>

07390

[Though water is drying up, a Chinese metropolis booms](#)

By Jim Yardley ([INTERNATIONAL HERALD TRIBUNE](#)) THURSDAY, SEPTEMBER 27, 2007

[SHIJIAZHUANG, China](#): Hundreds of feet below ground, this provincial capital of more than two million people is steadily running out of water. The water table is sinking fast. Municipal wells have already drained two-thirds of the local groundwater. Groundwater levels are dropping around China, as cities, industry and farming compete for scarce water supplies.

<http://www.ihrt.com/articles/2007/09/27/asia/water.php>

[The Advocacy Sourcebook](#) Produced by: Wateraid (2007)

Over 1.1 billion people around the world do not have access to safe water and over 2.6 billion do not have access to safe sanitation. This sourcebook provides guidance for users in drawing up advocacy action plans that aim to improve the water supply and sanitation situation of the poorest people in the countries where they work. It can be used by anyone interested in advocacy. An introduction is given to advocacy followed by step by step guidance on how to produce a water and sanitation advocacy project.

Sections include:

- Water Aid and advocacy
- Rooted advocacy
- Planning for advocacy
- Making advocacy happen
- Advocacy actions
- Monitoring and evaluation.

Examples of WaterAid and its partners' advocacy work in practice are provided throughout the sourcebook to inform and demonstrate what effective advocacy looks like. An advocacy toolkit is provided including tools, tables and diagrams

Available online at:

<http://www.eldis.org/cf/rdr/?doc=39565&em=240908&sub=enviro>

WATER RESOURCES:
GLOBAL 2025 REPORT

http://www.dni.gov/nic/NIC_2025_project.html

Discusses future water shortages as a possibility for future conflict.

The EMPOWERS approach to water governance: guidelines , methods and tools

Water is an increasingly scarce and contested resource around the world, particularly in the Middle East. There is general agreement about the need to improve water governance - the process of making and implementing decisions about water. These guidelines describe a practical and logical framework of activities based on the involvement of those who use and manage water, which leads to improved local water governance, and to the development of integrated water development plans for towns, villages, districts and governorates.

The guidelines advocate a process of collaboration through dialogue, to bring about a change in the way water sector professionals and water users work with each other. They are intended for all those concerned with practical approaches for tackling the complex themes of water governance and Water Resource Management (IWRM). They are particularly relevant for those who want to initiate and facilitate change processes to improve local water governance.

Background information is provided followed by numerous tools for the implementation of the EMPOWERS approach. Topics covered include:

- Looking at improved water governance
- Stakeholder dialogue and concerted action
- Facilitation and capacity development and the management cycle
- Methods and tools for the EMPOWERS approach:
Tools for visioning; scenario building; strategy development and planning; Tools for participatory learning and action; Tools for assessing; Tools for working with stakeholders; Tools for monitoring

The focus of the guidelines is on the Middle East and North Africa (MENA) region however can be applied in other contexts. (adapted from author)

Available online at:

<http://www.eldis.org/cf/rdr/?doc=40234&em=111208&sub=man>

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## Excellent Resources for Researchers

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- Bureau of Oceans and International Environmental and Scientific Affairs  
<http://www.state.gov/g/oes/>
- International Development Research Center  
**MIDDLE EAST: Water Management**  
[http://www.idrc.ca/en/ev-45740-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-45740-201-1-DO_TOPIC.html)
- Water in the Middle East  
<http://www.al-bab.com/arab/env/water.htm>
- UN Water  
[www.unwater.org](http://www.unwater.org)
  - SSRN “Social Science Research Network” <http://hq.ssrn.com/>  
Registration is free and registered users receive substantial benefits as all documents and studies are online and in full text. “Go to e-library” once registered and logged in.
- UNESCO Water Portal  
[http://www.unesco.org/water/water\\_links/](http://www.unesco.org/water/water_links/)

Water scarcity is becoming a critical issue for the world. Search or browse for research and organizations addressing a wide variety of issues: water quality and contamination, extreme water events, desertification, salinization, irrigation, recycling, land use, etc. You can also browse by geographical area and by organization.

**MORE INFORMATION AVAILABLE ON a RESEARCH WIKI at:**  
<http://tinyurl.com/6dfaxn>

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