

The Water Issue

“It has been shown that people who will not talk together about history or politics will do so when their lives and economies depend on it.”

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Water Scarcity and Conflict

Felix Brucher

Access to clean water is essential to all human beings. The UN has stated in the Millennium Development Goals (MDG) that the number of people who have limited or no access to clean water and subsequently basic sanitation should be halved by 2015. The competition for natural resources has become more and more fierce. Traditionally, this contest has been associated with the fight over oil resources. Even though this struggle has increased in its intensity, as the situations in Iraq or Sudan show, another battle over natural resources has captured the attention of the public. As the former Secretary General of The United Nations Kofi Annan stated “fierce competition for fresh water may well become a source of conflict and wars in the future.”

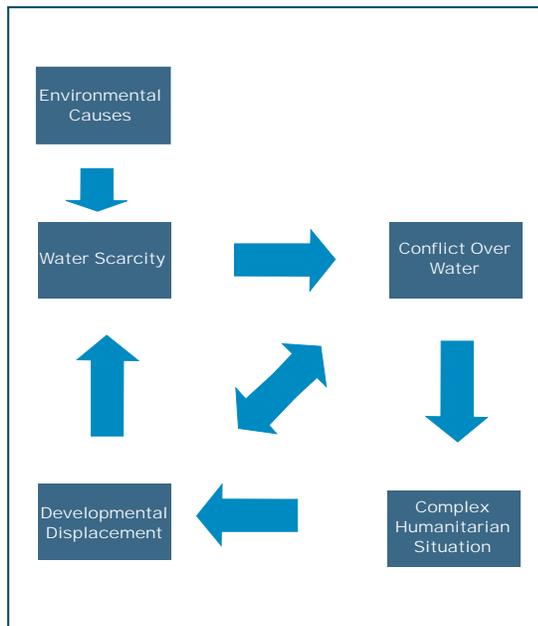
In the early 1990s new challenges and possible causes for conflict were already becoming apparent. After the surprising (for many decision-makers as well as researchers) end of the Cold War, threats became more and more diverse. Kaplan described in “The Coming Anarchy” that the degradation of the environment would have a very negative effect on security; conflicts over resources like water could actually spark off an anarchic conflict. This article was widely recognized in decision-making circles in Washington DC. The Clinton administration realized

the problem and acknowledged in “National Security Strategy of Engagement and Enlargement” that “the dangers we face today are more diverse...large-scale environmental degradation, exacerbated by rapid population growth threatens to undermine political stability in many countries and regions.” The debate over the last decade

has addressed the whole range of environmental issues and included topics related to the problem of water scarcity, like urbanization and demographic trends (mainly population growth). Without any doubt the debate over water scarcity has been affected by and is closely linked to the debate over security issues

caused by environmental degradation. Water scarcity’s effect on conflicts can be briefly summarized by the following four criteria:

- The magnitude of scarcity
 - The number of states, ethnic groups or interest groups sharing one source of fresh water supply
 - The relative power of these groups
 - The ease of access to alternative sources of freshwater supply and the availability of water saving technology.
- Environmental degradation can kick-start a vicious circle that leads from water scarcity to conflict and developmental crisis.
- (continued on page 2)*



Water Scarcity and Conflict (continued from page 1)

As can be seen in the graph, there is a connection between these events. Environmental degradation can have a catalysis effect on the vicious circle of water scarcity, which can cause conflict over water resources and access. The worsening of the humanitarian situation causes many displacements, which in turn cause new water scarcity. This is due to the fact that refugees have generally a hard time finding water resources. Displacement of people can also cause further conflict and vice-versa. This vicious circle often can only be stopped through external aid. The efforts of humanitarian aid organizations focus not only on the supply of medicine and food, but also on the availability of basic sanitation.

Looking to the future, it seems plausible that water could actually replace oil as the prime cause for conflict worldwide, primarily because of the scarcity of resources. This

becomes increasingly likely since water is part of the equation for replacing oil with renewable sources of energy. The production of "green fuel" obviously requires a lot of water and could have a "crowding-out" effect on other water users.

It has to be stressed that the solution to water conflicts must always go hand-in-hand with development efforts. The aim of this management approach must be that all parties have a fair share of the water supply in the region. In a highly politicized environment like the Middle East and in the absence of an overarching and relevant peace treaty between the major conflict parties, this is extremely hard or even impossible to accomplish (the Oslo Treaty of 1994 was a step forward, but has proved to be less and less relevant in recent years). The underlying problem is that transboundary water sources have to be seen as public goods and therefore

have to be accompanied by international recognition of the borders by all parties. With the Oslo Treaty, the PLO recognized the right of Israel to exist and Israel accepted in general the foundation of a Palestinian State. But the last decade has witnessed violent conflict, making these historical accomplishments more and more obsolete. In order to achieve a transboundary water management solution, it therefore seems necessary to have a settlement that recognizes the sovereignty of all participating nations. Many of the transboundary water conflicts have been caused by newly formed independent states. This

broad estimate by the Swedish Foreign Ministry sees the investment in water projects in developing countries at \$70 - \$80 billion per year. Most of these investments go into irrigation and drainage, as well as sanitation and water supply projects. The domestic investment is made by different government levels as well as private cooperation.

The table below shows the broad estimate of funds allocated in 1996 to water projects in developing countries. Within developing countries, 70 percent is being invested by the public sector; this ratio differs from country to country, but

	\$ billion per annum	% of total
International flows		
Multinational & donor aid	9.1	11 - 13
Private investments	4.1	5 - 6
	13.2	
Domestic flows		
Government, public sector	51 - 55	70 - 74
Domestic private and community	12 - 15	15 - 21
	63 - 70	
Total	76 - 83	

Sunman, 2000 (Global Water Partnership)

occurred mainly in the area of the former Soviet Union but also in the former Yugoslavia. The Indus River Case has also to do with the separation of a state into two, and subsequently the internationalization of the water conflict. One major prerequisite for sustainable water management is the settlement of all border conflicts. Since water has evolved as one of the biggest concerns in those overarching solutions, it should be addressed right from the start in negotiations.

Project Financing

After identifying political feasibility as a precondition to water resource development, the question of international funding for projects in the developing world has to be addressed. The level of financial and technological resources globally allocated to international water projects must be addressed. It is rather difficult to find reliable figures, but a

also from sector to sector. Private sector investment into irrigation projects has a long history, whereas water supply and sanitation generally have been public investments. This is mainly due to the characteristic

of water supply and sanitation; these are the clearest examples of public goods and, like many other public goods, they are provided by the government or government agencies.

This has changed significantly during the last two decades. The investment of the private sector in water projects has grown substantially. Compared to other sectors that provide public goods, the share of private investment is still low. This is especially the case compared to telecommunications and, to a lesser extent, the power sector. From 1984 to 1990 there were just eight private sector contracts in water and sanitation in the developing world, with the total value of \$297 million. Over the course of the next seven years there were 97 projects with a total value of \$25 billion. This shows clearly that water projects no longer are only the "business" of governments and (in countries where those fail to provide basic services or public goods) aid
(continued on page 4)



Letter from the Director

As I write, it is a typical November day in upstate New York - cold and rainy. The fields where I walked the dogs this morning were sodden, requiring me to wear rubber boots. It seems

impossible that there could ever not be enough water.

However, in Atlanta, people are deciding which is more important: a law protecting an endangered species of mussels, or the five million humans who share their watershed. The mussels are not going to fight back. They will die without a word if leaders in Georgia decide to divert their water, but humans are not so humble. The governor of Florida has objected vociferously, saying the planned diversion of the water could "displace the entire economy in the Florida Panhandle."

In the past few years the Supreme Court, charged with settling disputes between US states, has heard cases regarding the Colorado River and the rights of Arizona and California; the Potomac River and the rights of Maryland and Virginia; and the Republican River, Kansas and Nebraska.

Negotiations over sharing water resources become even more complex across national boundaries. A 2005 UN Environmental Programme report, *Hydropolitical Vulnerability and Resilience in International River Basins*, summarizes:

"Wherever a major river, lake, or aquifer system is shared by two or more sovereign nations, the shared (international) waters become vulnerable to indiscriminate exploitation and degradation. Urbanization and environmental degradation can cause nations sharing the water resources to be vulnerable to conflict. These vulnerabilities are made more acute by climate variations and variations in precipitation."

According to the Green Cross, an organization which works to prevent and resolve conflicts arising from environmental degradation, half the world's population lives in river basins shared by two or more countries, and lack of cooperation between those sharing these precious water resources is causing reduced living standards, devastat-

ing environmental problems, and even potential conflicts. As global climate change makes matters worse, how can there not be increased conflict over this very basic need?

In the case of water security, economists have very specific competence to add to the discussion. Water is not a public good according to the classical definition; it is certainly not non-excludable. However, in 2002, A UN Committee declared access to water a human right, stating that water is a social and cultural good, not merely an economic commodity. The effect of this declaration was to obligate the 145 countries that have ratified the International Covenant on Economic, Social and Cultural Rights to ensure access to clean water, "equitably and without discrimination." The social utility of ensuring clean water is so high that the consequences of ignoring this obligation will be dire.

As our authors in this issue note, solutions are needed at both the top and bottom. At the highest levels of international cooperation, treaties and even new regulatory bodies will need to be established. There will need to be an internationalization of water-use thinking.

At the local level, reduction (at least in the industrialized world) and recycling will need to become the norm. I once heard that it takes 100,000 gallons of water to make one car in Detroit. Many modern manufacturing processes are predicated on the availability of unlimited fresh water. Notwithstanding all the other reasons to shift our economy to more sustainable practices, the need for protecting our water supplies necessitates a paradigm shift.

With the awarding of the Nobel Peace Prize to Al Gore and the Intergovernmental Panel on Climate Change, EPS can come out of the closet as an organization concerned with environmental issues; water security is so clearly within our field of expertise. The solutions leading to sustainable access to clean water for all the world's people will require international cooperation, encompassing economic considerations as well as conflict resolution protocols. I hope you find this issue of the Quarterly inspires you to find out more and get involved, as economists and concerned citizens.

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Water Scarcity and Conflict (continued from page 2)

agencies, but actually of private companies. This has triggered some criticism that private corporations do not understand the meaning of water as a public good, and that they treat it like any other commodity. This lack of understanding the nature and importance of water, along with the focus on the return on investment, can cause serious problems for the water supply in developing countries. The increasing investment of the private sector in the water business must be identified as one possible source of conflict.

Aid donors have always played a vital role in the funding and management of water resource projects. The Indus Water Treaty, which was negotiated with the help of the World Bank, highlighted that fact. The World Bank therefore had a dual role. First, it was responsible for the supervision and mediation of the Treaty negotiations; and second, after the settlement it remained in a referee position. This secondary role was supported by ongoing funding efforts by the World Bank. Many projects in the Indus River Basin would not have been possible without the financial support of the World Bank and/or its members. This double strategy has proven to be very successful and should be applied in other areas as well. The World Bank is active around the world and it is disbursements range between \$1 billion and \$2 billion a year. Other aid agencies are also active like the above table shows.

The question here remains whether the aid agencies have the political power not only to fund projects but also

to ensure that political progress is made. Over the last decade there has been some advancement in that respect. Mostly the political clout of international development agencies derives from their international role. They have a comparative advantage in providing frameworks to riparian corporations due to their neutrality and technical capabilities. One good example is the Global Environment Facility (GEF), which is providing support for global public goods. The GEF was established after the Earth Summit in Rio in 1992 and has three implementing agencies: the United Nations Development Programme (UNDP); the United Nations Environment Programme (UNEP) and the World Bank. By 1998 the GEF had allocated \$1.9 billion in 197 projects but only 10 percent of these funds were allocated to international water projects.

Most of the projects are concerned with the management in a general sense (building of plants, strategies for water utilization, technology and knowledge transfer). Many international bodies try to combine both technical assistance as well as diplomatic pressure.

International Taxation of Water Pollution

Over the last fifteen to twenty years, there has been a change in financing the provision of international public goods. The Tobin Tax, suggesting a tax on international capital transactions, is one example. With the difficulties of agreeing on and enforcing international laws, international

taxes seem to be a long way off. Still, the idea for an international taxation of pollution is very appealing. The climate crisis has been described as the "biggest market failure" in human history and an international taxation on CO₂ emissions would help tremendously against the further degradation of the earth's climate. There are some steps taken on the national level, such as the Ökosteuern (Ecotax), which taxes the consumption of fossil fuels in Germany. In economic terms this means a short-term comparative disadvantage for the German economy, since other countries that do not have this kind of taxation can go on polluting the atmosphere. The biggest issue in this context is that all countries have to face the consequences of environmental degradation. It is therefore necessary to establish an international tax code for the consumption of international public goods. This also needs to be applied in the case of international river basins. While it has yet to be implemented, there has been taxation of pollution on the national level, though more in developed countries than in developing ones. One of the most prominent examples is the French Agence de Bassin; this agency levies charges on the pollution of surface water. The revenues are used to fund both the clean-up efforts by municipalities as well as the agency itself.

Within the OECD there are a number of countries that levy taxes to support water-related activities. Overall there remain steps to be taken within a national framework.

Various Donors Reports, Transboundary Water Management as an International Public Good, DEVELOPMENT FINANCING 2000, Study 2001:1, Ministry for Foreign Affairs, Sweden

	Contribution	Comments
Total ODA from DAC members	\$3.7 billion in 1997	Water & sanitation - 6.6% of total in 1996
World Bank	\$14 billion from 1991-'97; declining from \$2 billion in '91 to \$1.2 in '98	Share of total declining from 9% to 4% of total over the period
Asian Development Bank	\$5.6 billion from 1991-'96; average \$800 million per year	As share of total lending and TA, averaged around 15%
E U	\$249 million in 1995	Includes all water activities
InterAmerican Development Bank	\$820 million in 1998, \$8.5 billion between 1961-'98, sanitation only	Sanitation is 8.1% of total loans and guarantees, 8.8% over whole period
UNDP	\$192 million	121 ongoing projects in 60 developing countries
Global Environment Facility (GEF)	\$39.6 million	In 1996
UNICEF	\$220 million	Between 1994 and 1996

Water Scarcity and Conflict (continued)

Levying taxes or charges in order to support transboundary river basins, therefore, has proven to be very difficult. The only doable way at the moment would be through transnational water agencies. There are only a handful of agencies that would be able to come up with an international plan for taxation.

Final Suggestions

Concluding, a three-step solution to water related conflicts can be identified:

1. Ensuring political feasibility
2. Financing projects by private, public and international actors (respecting water as a public good)
3. Taxing of pollution on an international basis.

These three broad steps have to be seen as consecutive and must be accompanied by good management and governance, on the international as well as on the local level.

Similar to with other environmental

problems we would like to see the “stakeholder” approach applied. That means that we take all parties in consideration without looking at their economic and/or political clout. This is even more important since we deal with a public good.

Water Disputes in the Middle East

Rea Seraina Bonzi

“If the people in the region are not clever enough to discuss a mutual solution to the problem of water scarcity, then war is unavoidable.”

Meir Ben-Meir, former Israeli Water Commissioner, cited in **The Times**, London, February 21, 1989 (Wolf, 1995)

Water and conflict have different ways of overlapping. First, water scarcity in a region shared by different peoples can lead to competition, and – together with political, economic and socio-cultural factors – it is sometimes an important conflict factor. Second, the control over water resources or the military targeting of water infra-structure can be used as a weapon to harm one’s opponent. Third, cooperation over water resources and joint development projects are possible, and may be an important source of con-

fidence-building, potentially creating a positive “spill-over” even in non-water areas.

The Middle East is one of the tensest areas of the world and, as recent incidents show, the danger of war is not yet averted. Conflicts in the region are determined by deep political differences. However, hydrological matters represent an additional dimension to the Arab-Israeli conflict, a dimension the relative importance of which has been growing over recent years. This article looks into different approaches of dealing with water issues in the process of peace negotiations in the Middle East. The reasons are outlined why one should foster cooperation rather than unilateral action on water management. The consequences from lack of cooperation have not only a detrimental effect on the water

situation, but also severe socio-economic and political consequences.

Dwindling Water Resources in the Middle East

Water scarcity has been increasing year by year. Obviously, countries of the region will try to compete and exploit all available water resources, including the international ones. Overexploitation, especially of aquifers, and increased pollution of the waters, are today taking place in the Gaza Strip and in the West Bank at the expense of the coming generations. This may eventually create greater suffering and instability in the future. A solution to the hydrological crisis is certainly not a sufficient condition for a lasting peace in the Middle East, but it is nevertheless an indispensable one.

	Safe Yield	Water Withdrawals				Total
		Israel	Palestine	Jordan	Syria	
Jordan River Basin	1320	645	0	350 (incl. wadis)	ca. 200	1195
Mountain Aquifer West Bank Israel	679	487	121			608
Coastal Aquifer Israel	240	240				240
Coastal Aquifer Gaza Strip	55		108			108
Other Aquifers Israel	215	283				283
Aquifer Jordan	275			507		507
TOTAL	2784	1655	229	857	ca. 200	2941

Water Resources and Withdrawals in the Middle East, 1995 (in million cubic meters per year). “Safe Yield” means the estimate of the average renewable amount of water (Dombrowsky, 2003).

Water Disputes in the Middle East (continued)

International water disputes in the Middle East have the potential to trigger and fuel conflicts as well as to threaten stability. Furthermore, mismanagement of precious water resources has deteriorated already scarce resources. There is a constant challenge for national governments in providing safe water for drinking and agriculture to their rapidly increasing populations. Per capita water consumption in the Palestinian households lies far below 100 liters per day, which is the minimal requirement for health and sanitation fixed by the WHO. Also water quality, especially in the Gaza Strip, is below health-sustaining standards.

Many of the contested international shared water resources require some sort of agreed-upon arrangement, which

provides for reasonable allocation and sharing of water. Many countries lack the capacity and have serious challenges in managing these international water resources, most notably with respect to the new ones, like the international transportation of water and the development of non-conventional water resources. The rich economy of Israel seems to be the only one in the region to cope with this kind of new challenge. According to UNCTAD, the Palestinian economy has been seriously affected by Israel's recent measures, both strategic (e.g., building of the wall) and practical (e.g., border controls) measures. The organization argues that if Palestine's economical development is hindered, a serious burden on future peace processes will be imposed.

In the future, non-conventional water resources, including desalination and international transportation of water by ships and pipes, are going to create new ways of cooperation. These new challenges will have to be managed under new cooperative models. So far, the Israeli removal of 500 millions cubic meters of water from Lake Tiberias and consequently from the Jordan River, has added to the tensions between the riparians. In 2005, Israel started to construct one of the biggest desalination plants, taking seawater from the Mediterranean in Ashkelon (annual production: 100 million cubic meters of drinking water). This newly available water might mitigate the dispute over water from the Jordan River between the Israel, Syria, Palestine and Jordan. *(continued)*

CALL FOR PAPERS

Twelfth Annual Conference on Economics and Security - June 11, 12, 13, 2008

Hosted by: METU TEKPOL Science and Technology Policies Research Center, Ankara, TURKEY

Venue: Cultural and Convention Center, METU, Ankara

The principal research questions are: What roles do economists play in achieving peace and security and how can they contribute to developing an effective security policy? What are the impacts of security policies on different approaches to innovation, technology, and ethical aspects of government policy? How can these important issues be handled in a common Europe?

Offers of papers regarding these issues are invited for this conference sponsored by Economists for Peace and Security, Middle East Technical University, Turkish Scientific and Research Council (TÜB/TAK), and the University of the West of England. Proposed topics include: European Security; Economics of the RMA; Globalization and the restructuring of the MIC; Militarism and Development; Economics of Conflict and Post-conflict Reconstruction; Economics of the Arms Trade; Procurement and Offsets; Arms Races, Offsets and Alliances; Peace Science; Conversion and Demilitarization; Terrorism. Offers of papers on other related topics are also welcomed.

The conference will have a public lecture and plenary sessions with keynote speakers, plus specialist workshop streams. It will take a comparative and interdisciplinary approach, bringing together academics from security, science and technology studies as well as policy makers at European and national levels. If you are interested in presenting a paper or organizing a panel/workshop in the 2008 Conference, please send a title and abstract with a brief CV as soon as possible (by March 17, 2008) to:

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Water Disputes in the Middle East (continued)

Water as a Source of Conflict in the Middle East

Water resources in the Middle East are scarce by nature, and most of them are transboundary. Moreover, the catchment areas of water systems often coincide with disputed land. Competition over the use of shared resources is therefore pre-programmed. Israel, for example, receives more than half of its water resources from occupied Arab territories. Therefore territorial and hydro-political interests are closely intertwined in the Arab-Israeli conflict.

The area from which Israel has most recently withdrawn its settlers is the hydrologically uninteresting Gaza Strip, where only minor aquifers can be tackled for water supply. Notably, the recently constructed wall in the West Bank between Salem and Alkana reallocates many wells to the Israeli side, out of Palestinian reach. These wells, collectively known as the Mountain Aquifer in the West Bank, are the most important water source in Israel and Palestine.

Water as a Weapon in the Conflict

Water-related infrastructure has been a military target of numerous skirmishes and wars throughout the course of the Arab-Israeli conflict. Since the early 1950s, when the Syrians fired at the Israeli Water Carrier (Israel's main water works), through the first anti-Israeli military attacks of the PLO in 1964, up to the Israeli air strikes against Syrian and Jordanian diversion facilities in the second half of the 1960s, hydrological installations have always been a preferred target for actions aimed at weakening or castigating the enemy. Admittedly, this link must be regarded as a military instrument rather than as a causing dimension of conflict. Nevertheless, it emphasizes the importance given to water within the framework of the dispute. As water supplies and delivery systems become increasingly sensitive in water scarce regions, their value also increases as military targets. To cite an up-to-date example, the first targets of the recent Israeli aggression in the Gaza Strip were the infrastructures of the towns and villages, among them the supplies for water and energy.

Another example regards the joint

Israeli-Palestine water committee that has been founded in the scope of the Oslo Agreement. It has been working despite the al-Aqsa Intifada. On January 31, 2001, the committee appealed to the conflict parties not to damage water infrastructure, due to the connection of Israeli and Palestinian water pipes and its civil purpose. However, the Israeli secretary of infrastructure, Avigdor Lieberman, warned that the water supply of Palestinian residents could be completely cut off by the Israeli water system, if the Intifada persisted.

**Per capita
water consumption in
Palestinian households lies
far below 100 liters per
day, the minimal
requirement for health and
sanitation fixed by the
WHO.**

The Role of Water in the Peace Process

Based on historic analysis of Middle East occurrences, Aaron T. Wolf contends: 1) water as a strategic resource has played a larger role in regional conflict than is generally known; 2) water issues have precipitated some conflict and added to existing tensions in the region; and 3) occasionally, water issues have led to dialogue and attempts at cooperation. If emphasis is placed on easing regional water tensions, some breathing space might be gained, allowing for more complex political and historical difficulties to be negotiated. It has been shown that people who will not talk together about history or politics will do so when their lives and economies depend on it.

During the course of the Middle East peace talks, several agreements containing provisions on water between Israel, Palestine and Jordan were concluded: the Israeli-Jordanian peace treaty of 1994; the Interim (Oslo B) Agreement between Israel and Palestine of 1995; and the Trilateral

Declaration of Principles for cooperation on water-related matters.

On the various bilateral tracks of the Middle East peace negotiations, water concerns are interlinked in different ways with political and territorial core issues of the conflict. Hydrological issues have been treated in all major agreements achieved so far. The most far-reaching results were obtained in Israel-Jordan negotiations where the water issue could be regarded as a genuine hydrological concern, quite independent from the other political dispute. The bilateral Peace Treaty of October 1994, besides clarifying the distribution of shared resources, explicitly lists a series of concrete water projects to be carried out in common.

Hydro-political negotiations on the Israeli-Syrian-Lebanese and Israeli-Palestinian track of the peace process are less advanced than those between Israel and Jordan. In the first case the water question is mainly to be regarded as part of strategic concerns and is thus subordinate to settling this dimension of the conflict. Intensified interactions have been impeded so far by Syria's and Lebanon's boycott of the multilateral talks. Negotiations toward an international agreement with Israel would have implied political recognition of Israel. Future involvement of these two countries in the multilateral process seems therefore of great importance and should be encouraged.

The Israeli-Palestinian water conflict will only be solvable through a combination of partial redistribution and future-oriented cooperation. Early progress in this field might intensify interactions and create functional interdependencies, thus fostering readiness of the parties to make compromises in the political core issues. Above all, concrete improvements in the water supply on the ground are needed. Beside political considerations, this is imposed by humanitarian concerns. By improving living conditions of the people, such a confidence-building step could demonstrate to the Palestinians that Israel is willing to seek a just and equitable solution to the water dispute.

The main reason that the technical aspects of *(continued on page 8)*

Water Disputes in the Middle East

water management are not separable from the political problems of water distribution is that improved management is normally coupled with high economic, social, and/or political costs. Each party will compare the costs of additional water with the costs of conventional resources. And no party will agree to expensive solutions if it believes it has outstanding claims to existing supplies.

Conclusion

The countries in the Middle East should decide whether to establish a regional mechanism for cooperation in the field of water resources management. It should especially be weighed against the alternative costs of doing nothing. Any regional mechanism has to tread a fine line

between what some of the countries might consider infringement of national sovereignty, and areas that clearly are of international, rather than isolated national, concerns. The Arab League rejects any kind of ratification of an international agreement with Israel because this would imply its political recognition. However, the fact that some rivers and aquifers are shared necessitates some sort of basic cooperation.

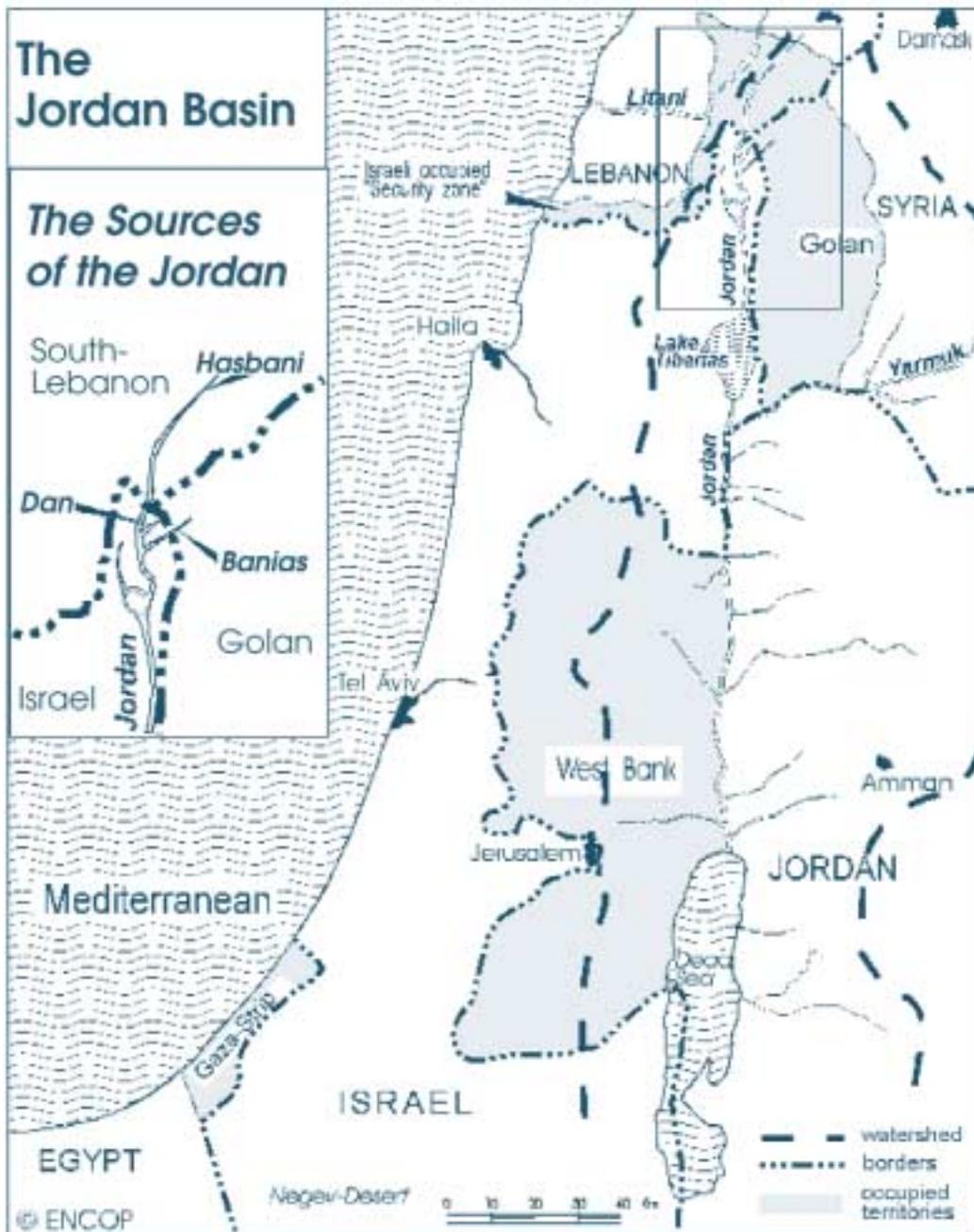
Regional water management is intend-

ed both as a tool to alleviate the water crisis itself and as a vehicle to foster understanding and establishment of interdependencies among parties of the Arab-

water management cannot be achieved independently of settling disputes on distribution of existing resources. On the contrary, one formula for success achieved in the Israel-Jordan peace treaty was the explicit combination of political and technical approaches within the same legal regime. Settlement of the distribution conflict was the prerequisite for making the provisions on envisaged cooperation possible. On the other hand, concrete projects fixed in the treaty helped overcome the zero-sum game on the distribution question and thus made a compromise easier. However, the cases of Lebanon and Palestine do not yet illustrate such cooperation and benefits. This might be explained by an inability to manage international cooperation of water supplies.

The present hydro-political situation in the Middle East is one of intricate problems and delicate solutions. The distribution of scarce water resources in the Jordan River watershed is particularly precarious. The dangers of conflict and the opportunities for cooperation are both growing, as annual supplies are reached and often surpassed. It has been shown that, just as nations have shaped the flow of water, so, too, did water shape the face of history. As Middle East peace negotiations attempt incrementally to lift the riparians of the Jordan River watershed out of a perpetual cycle of violence, water can continue to "lead" the process towards ever-increasing cooperation.

References available at www.epsusa.org



Israeli conflict. In the tradition of the functionalist and neo-functionalist schools of thought, the hope is that by creating a new perception of shared needs and interests, cooperation in the field of water could ease resolution of the underlying political conflict. Furthermore, cooperation on international water resources would significantly improve the management of those resources. However, the peace process so far has shown that cooperation in the field of improving

Water Wars (continued)

Mohammed Mesbahi

For thousands of years legal systems have accepted that running water cannot be owned. Even in the industrialized West, up until recently, water was a shared resource. Public utilities were set up in the industrialized world to install complex water delivery and sewage treatment systems. People in the First World were expected to pay for the delivery of their water, the upkeep of the system and the building of reservoirs and other water storage systems, but the water remained a shared resource.

Over the past half century, as the world population has increased and water has become increasingly scarce, it has become far less a shared resource. By the 1970s international organizations such as the United Nations, UNICEF, World Health Organization and the UN Development Plan began to highlight the plight of the poor in the third world. By 2003 more than a billion people, a quarter of the world's population, had no access to safe drinking water.

Every year more than five million people (mostly children) die from water-borne diseases such as dysentery and diarrhea. Global water consumption is now doubling every twenty years, more than twice the rate of population growth. The UN is now predicting that water will become even scarcer, and global per capita water availability could decline by a third during the next twenty years. The poor in the Third World, who are already suffering from lack of water, will be the worst affected.

Water Privatization

In 1989 Margaret Thatcher carried out a huge water privatization scheme for the whole of England and Wales. Suddenly a precious natural shared resource was taken from the British people, sold off and privatized. The British people now had to pay the water companies, not just to provide water, but also to make a profit for their shareholders and to pay huge management salaries. Water bills doubled in less than a decade, causing hardship in many parts of the UK. There were 50,000 disconnections during this period and water quality steadily deteriorated.

rated.

By 1990 international water companies operated in twelve countries, and between 1994 and 1998 there were 139 water-related deals. In most parts of the First World, however, governments continued to safeguard their water resources and to provide a public service for their people. As a consequence global water companies, who wanted to buy up these public utilities, began to form partnerships with international financial institutions in order to reduce the role that traditional governments played in water provision.

The first two of these partnerships, the Global Water Partnership (GWP) and

Global water consumption is now doubling every twenty years, more than twice the rate of population growth.

the World Water Council (WWC), were formed in 1996 with Ismail Serageldin, the World Bank Vice-President and chair of the WWC. Once these partnerships had been formed, water companies could now negotiate and collaborate with multilateral banks and the United Nations.

The World Water Council held its first meeting, the World Water Forum, in Marrakesh in 1997. In 1998, the World Water Council created the World Water Commission that included all the major water corporations and the CEO of the World Bank/UN Global Environment Facility, Mohamed T. El-Ashry. The commission called for full deregulation of the water sector and recommended that transnational corporations should take over the provision of water worldwide.

By the year 2000, private water corporations operated in 100 countries and 10% of the world's water was privatized. In 2000 the World Bank, the UN and some of the largest water corporations met at the second World Water Forum, in Den Haag, Netherlands. They decided to accelerate global water privatizations.

Fortune Magazine predicted, in May 2000, that water was about to become "one of the world's biggest business opportunities."

Ever since they began to collaborate with the World Bank, transnational water corporations have attempted to wield greater influence over individual countries. A series of trade agreements has increased the power of the transnational water companies. The North American Free Trade Agreement (NAFTA), the Free Trade Area of the Americas (FTAA) and various World Trade Organization (WTO) agreements all gave transnational water corporations access to the water of the countries that had signed these agreements. Governments all over the world literally signed away their right to control their own country's water supplies.

The two biggest water corporations, Suez and Vivendi, now provide water for 230 million people, 7% of the world's population, mostly in Europe. In the US, 85% of households still get their water from public utilities, but the water corporations are putting pressure on Congress by lobbying for laws that will protect them from lawsuits over contaminated water. This legislation will make it easier for the water corporations to take over water provision. The British parliament has already passed a law providing UK water companies with indemnity against lawsuits brought against them by the public.

Water Privatization in the Third World

The World Bank and the IMF are now putting pressure on Third World countries to sell off their water to multinational corporations in order to reduce their national debt. Together with international development organizations, they have been promoting the idea that the only way to provide water in the Third World is through the private sector. Third World countries have huge national debts that they struggle to pay, so in many cases the IMF has made further loans to these countries on the condition that they conform to structural adjustment programs, including the privatization of their water

(continued on page 10)

Water Wars (continued)

supplies. As in the global North, water privatization causes increased costs that the poorest people in the world cannot afford to pay.

As a result of this process in the poorest parts of the world, people (mainly women) are forced to walk further and further in search of water which has not been privatized and which is often neither safe nor clean. In some cases people have to choose between buying water and buying food. In Ghana today, since water privatization, the cost of water has doubled, meaning that families lucky enough to have running water must now pay a quarter of their income for the privilege, while a bucket of water can cost up to a tenth of most people's daily earnings.

Water wars

In Cochabamba, Bolivia, water rates increased by 35% after the water company Bechtel bought the city's water in 1999. The citizens of Cochabamba were so incensed that they marched, protested and rioted, until the Bolivian government eventually voided Bechtel's contract. There have been similar protests against water privatization in Paraguay, Panama, Brazil, Peru, Colombia, India, Pakistan, Hungary and South Africa.

In 1979 Anwar Sadat said, "The only matter that could take Egypt to war again is water," a threat that was directed at Ethiopia. King Hussein of Jordan made a similar statement that year as a threat directed towards Israel. In the 1980s, US government intelligence estimated ten places where water wars could break out: Jordan, Israel, Cyprus, Malta, the Arabian Peninsula, Algeria, Egypt, Morocco, Tunisia and Yemen. More than 200 major river systems cross international borders.

In 1999 Gaddafi warned that the "next Middle East war would be over dwindling water supplies." Other people say that past and present Middle East conflicts have always been over water. Water scarcity in the Middle East is already critical. Four and one-half percent of the world's population lives in the area, which contains half the world's oil, 2% of the world's rainfall and 0.4% of the world's recoverable water supplies. It is

one of the world's most water-stressed regions with deteriorating quality and dwindling water supplies. The Arab per capita water supply is expected to drop by half by the year 2030.

Damming the World

Damming transnational rivers often contravenes international law, especially when countries upstream take more than their fair share of water from countries downstream. Yet the World Bank and the Asian Development Bank have promoted the building of large numbers of gigantic dams throughout Asia. These dams displace millions of people who live in the areas to be flooded, while depriving people downstream of the water the rivers once provided.

Israel

Israel gets two thirds of its water from territories that it has invaded: the Golan Heights and the West Bank. It takes water from the Jordan and stores it in the Sea of Galilee in contravention of inter-

national law, which states that water should not be diverted from its catchment basin. This water is then transported to Israel's cities, farms and industries. The Jordan River flows from the Golan Heights in Syria and from the Lebanon, through Jordan, Israel and Palestine. In 1949 Israel began taking water from the Golan Heights and invaded in 1951, driving out the villagers and ignoring UN Truce Supervision protests. In 1953 the Eisenhower Administration prepared a unified plan for the use of the Jordan River, granting 33% of its use to Israel. But Israel wanted more than that, so in September 1953 Israel began secretly constructing a pipeline to divert Jordan's water resources from the Golan

Heights in defiance of the US. The US soon found out and applied sanctions. Israel suspended work on the pipeline briefly until US aid was resumed, and then continued to work on the diversion project, which was soon completed. Syria and Jordan protested against Israel's appropriation of their water, and the PLO attacked the pipeline. Israel subsequently ignored several UN Security Council Resolutions and occupied the Golan Heights in 1967. In 1982 Israel invaded Lebanon and took control of the Hasbani and Wazzani Rivers, which flow into the Jordan, as well as the Litani River. A quarter of Israel's remaining water comes from underground reservoirs in the West Bank, which Israel occupied in 1967, a resource that supplies 30% of the households in Tel Aviv. Israel uses 17% more than the 1.9 billion cubic meters of water it obtains from renewable sources, therefore causing the water table level to drop.

In 1994 Jordan and Israel signed a peace treaty in which Israel agreed to share the water from the river Jordan with Jordan, but in 1999 Israel cut Jordan's supply by 60% owing to a drought across the region. The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses states clearly how these waters are to be shared equitably and reasonably. The Palestinian people thus have the right to an equitable and reasonable share of the international watercourses situated in their land. They do not, at present, enjoy this right. Israel's severe restriction on Palestine's use of water in agriculture severely limits their ability to grow food.

India

India and Bangladesh have been quarrelling for twenty years over rights to extract water from the Ganges.

Egypt

Egypt is totally dependent on the Nile for water usage. For the past twenty years Egypt has been diverting water from the Nile into land reclamation projects in the Sinai desert, a contravention of international law since the Nile flows through Sudan, Ethiopia, Uganda, Kenya,

**The UN is now
predicting that... global
per capita water avail-
ability could decline by a
third during
the next twenty years.**

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Water Wars (continued)

Tanzania, Rwanda, Burundi, and Zaire. The waters of the Nile should therefore be shared equitably and reasonably among all these countries and not be diverted outside its catchment basin.

In 1996 President Mubarak announced that he planned to divert water from the Nile under the Suez Canal into the North Sinai desert, east of the Suez Canal and 40 kilometers from the Gaza Strip. Many believe that this water will eventually end up in Israel.

Since 86% of the Nile water comes from Ethiopia, where it is desperately needed to develop water projects in order to grow food for its own people, Ethiopia is fiercely opposed to Egypt's Nile diversion project. The Sudan threatened to cut Egypt's water quota, while all the other countries that border the Nile are opposed to the project, viewing it as a direct violation of international law.

Ironically, North Sinai has plenty of underground water; and rainfall would be sufficient, if it were harvested, to support as many as a million people in the area.

Turkey

Turkey signed a treaty with Israel in 2004 to ship 50 million cubic meters of water a year, for 20 years, from the river Manavgat in Anatolia in return for arms from Israel. Turkey is building dams on the Tigris and Euphrates Rivers, which

flow through Syria and Iraq. Called the Grand Anatolian Project, it includes a vast irrigation scheme with seven dams on the Euphrates, six dams on the Tigris, and a giant dam called the Ataturk, which will deprive Syria and Iraq of most of the flow of the Euphrates. With Israel already appropriating water from the river Jordan and the Golan Heights, Syria will be seriously short of water once Turkey's Grand Anatolian Project is completed.

China and the Mekong

Six countries depend on the Mekong River for food, water and transport. The Mekong rises in Tibet, flows through China's Yunnan province, then through Burma, Thailand, Laos, Cambodia and Vietnam. The Manwan Dam, built by China in 1996, has resulted in shallower river levels and flash floods. China is now building six more dams, causing the countries downstream to be afraid that this will have a deleterious effect along the river. None of these Chinese dams have been assessed for their social or ecological impacts on the downstream countries.

In 2003 the Asian Development Bank recommended building a \$43 billion electricity generation system, including major dams in Laos, China, Burma and Cambodia. The Mekong could become one of the most dammed rivers in the world with more than 100 other major

dams, diversions and irrigation projects. It is hard to imagine how Vietnam, the last country the Mekong flows through, will survive if all these projects are carried out. The dams planned for Laos will displace 5,700 people, impoverish 120,000 more, and saddle the country with enormous debt. All the electricity produced by the dam will go to Thailand, and thousands of indigenous people have already been dispossessed by the building of smaller dams in Laos.

Equitable Distribution

Water is a part of the earth's heritage that must be preserved for future generations and protected in the public domain by local, national and international law.

We cannot continue to abuse the world's precious water resources when access to clean water for basic needs is a fundamental human right. International cooperation with sources of fresh water is possible, practicable and protected in principle by existing international legislation that enshrines the principle of equitable and reasonable sharing of water resources. Privatization has resulted in a less efficient distribution of water supplies to those most in need, proving that a return to the principle of sharing this vital resource is both possible and essential.



Clean Water as a Human Right

Fiona Harvey

Access to clean water would be enshrined in international law as a human right, if a campaign by the water charity Green Cross International bears fruit.

The charity was founded by Mikhail Gorbachev, the former president of the Soviet Union, who wrote to the United Nations and national governments around the world to press them to support his campaign for the UN to adopt a convention on fresh water similar to that on human rights.

So far, not enough governments have thrown their weight behind the campaign to give it a chance of succeeding. But Green Cross International will continue to press its case, assisted by continuing research into water availability, which suggests that water crises are becoming more common around the world and could cause problems far beyond the borders of countries traditionally thought of as arid.

Mr. Gorbachev, in an interview with the Financial Times newspaper earlier this year, warned that water scarcity was becoming a source of "severe conflict." Citing examples such as the Middle East, and areas of northern and southern Africa where water access has been fought over, he said, "People, when they lack water, will stop at nothing to get water." The former Soviet leader's proposal would seek to reduce such tension by laying down firm principles on the management of rivers that cross international borders and shared river basins. He told the Financial Times: "Before, people thought water was available and would always be available, and the problem was not that severe. Now it is necessary to adopt a convention that would declare the right of access to good quality drinking water as a human right."

The convention proposed by Green Cross International would force governments to accept responsibility for providing their citizens with safe water and place obligations on them to manage their nation's water more responsibly. Mr. Gorbachev's UN reforms should expand the role of the Security Council beyond military security to economic and environmental safeguards, both of which strongly affect military security,

and warns that failure to act on environmental problems will lead to serious upheavals.

Mr. Gorbachev mused in the Financial Times: "I wonder whether we should wait to see waves of migration as a result of the lack of safe water, whether we want to see people take matters into their own hands to force politicians at different levels to address these issues."

The water situation is growing more desperate by the day. About one billion

People, when they lack water, will stop at nothing to get water.

people lack access to clean water and two billion lack access to sanitation, with the problem being aggravated by the demands of increasing populations and economic growth. It takes 1,000 tons of water to produce a ton of grain. But the lack of clean water and basic sanitation that afflicts up to 40 per cent of the world's population knocks at least \$556 billion US (£317 billion, €458 billion) a year off the world's potential economic growth, according to the World Health Organization - equivalent to about one percent of global gross domestic product.

A further major driver of water shortages, which will become even more important in the future, is climate change. Global warming has started to shift rainfall patterns measurably, leading some areas to become drier and some wetter. These changes are not always obvious; recent research found that the Indian monsoon had changed, to a pattern whereby swathes of the country were receiving shorter heavier bursts of rainfall as opposed to the steady rain they received before. This is worse for farmers, because it can destroy their crops and cause flooding. But the change in the precipitation pattern had not been noted in previous studies because the overall amount of rain falling per year had remained steady.

Climate change itself is being seen as

a potential cause of future conflicts; the award of the Nobel peace prize this year to Al Gore, for his campaigning on the climate, and to the UN's Intergovernmental Panel on Climate Change (IPCC), a body of the world's leading scientists convened by the UN, made this explicit.

Climate change was brought before the United Nations Security Council for the first time in April by the UK government. Margaret Beckett, then British foreign minister, labeled the issue one of the key factors behind the conflict in Darfur, because desertification had forced people from their traditional homes and into areas where they competed with others for scarce resources such as water. Around the same time, a group of 11 influential retired US generals produced a report on the military implications of climate change, warning it could prolong the war on terrorism and foster political instability that some governments would be unable to handle.

In the most comprehensive survey of climate change science yet produced, the IPCC warned earlier this year that global warming would cause widespread food shortages in the developing world. Other destabilizing results would include increased flooding, particularly in Asia, as well as fiercer storms and prolonged droughts.

As well as taking water and climate change to the UN in hopes of a solution, some economists have suggested that paying people to maintain watercourses and forests could be the best way to resolve the world's water crisis. A report last year by the World Conservation Union found that introducing fair water markets, under which poor communities would be paid for preserving the natural landscapes that are essential to maintaining water supplies, would reduce water scarcity.

Many of the natural features that are essential to the water cycle are damaged by poor people needing to make a living. Wetlands are drained, watersheds damaged by agriculture, and forests are cut down for timber. The effects are then felt in flooding, a reduction of water flow, or the contamination of water. But if local

(continued on page 14)

Upcoming Events

March 7 - 9, 2008 Eastern Economic Association 34th Annual Conference. EPS will have an exhibit table and host a session on "The Privatization of War and Conflict." For more information, please visit <http://www.iona.edu/eea>.

June 11 - 13, 2008 The Twelfth Annual Conference on Economics and Security will take place in Ankara, Turkey, sponsored by Economists for Peace and Security, Middle East Technical University, Turkish Scientific and Research Council (TÜB/TAK), and the University of the West of England.

A call for papers is at <http://carecon.org.uk/Conferences/Conf2008/Call2008.pdf>. Deadline for submission of abstracts is March 17, 2008. Further details about the conference are at <http://www.stps.metu.edu.tr/conference08/>.

July 25 - 26, 2008 The Second Australasian Conference on Security, Peace Economics and Peace Science will be held at Sydney, Australia. The meeting will be organized in cooperation with EPS-Australia, Peace Science Security (International), the University of Western Sydney, Macquarie University of Sydney and Binghamton University.

Persons interested in attending the conference are requested to contact Professor Manas Chatterji at (607) 777-2475 or mchatter@binghamton.edu.

Why Join Us?

EPS's efforts depend heavily on the support of its members. By joining today, you will be welcomed into a family of dedicated individuals committed to reducing dependence on military power, and to searching for political and institutional change through peaceful democratic processes.

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Fact Sheets

Periodically, EPS releases two-sided fact sheets designed to give an accessible, graphic look at one specific issue of concern to our members and constituency.

Global Arms Trade 2004 examines the world's supplies of conventional weapons and small arms. Check out the numbers at <http://www.epsusa.org/publications/factsheets/globalarmstrade.pdf>.

Military vs. Social Spending: Warfare or Human Welfare compares US and global military spending with the costs of achieving the UN Millennium Development Goals. Visit <http://www.epsusa.org/publications/factsheets/milexMDG.pdf>.

Clean Water as a Human Right (continued from page 12)

people were paid to maintain these land-scapes, water supplies would be protected, and the true cost of maintaining supplies could be reflected in higher water bills. Those bills are themselves the cause of controversy: poor people not only pay more for their water in developing countries, but sometimes effectively end up subsidizing better water services to the rich. Another possibility that could help defuse conflict is a forum in which the management of water basins which are shared between nations.

Areas of the world that have been pinpointed as the potential flashpoints for conflicts over water include the Middle East, where Israel and the Palestinian territories, Syria, Lebanon and Jordan all have rights to the Jordan River, on which they rely for agriculture, drinking and sanitation. Other danger spots include those around the Nile,

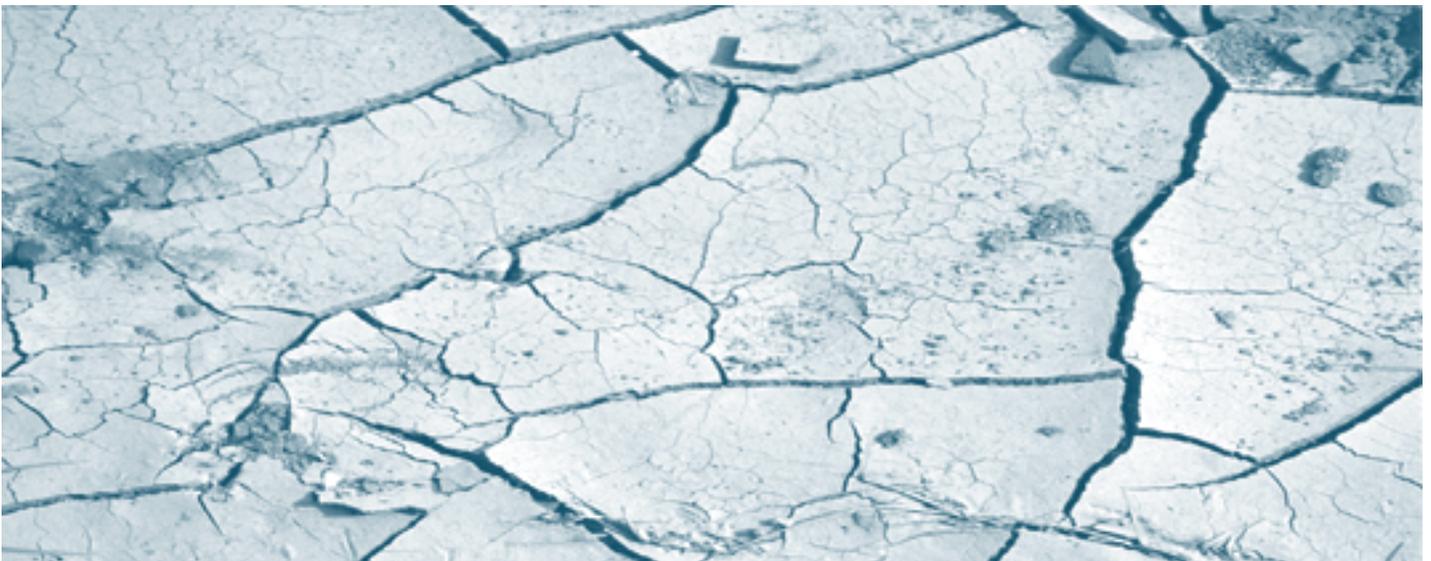
Niger and Zambezi rivers in Africa and Syria's dispute with Turkey over the damming by Ankara of the Tigris and Euphrates. Even in areas where there is no prospect of violence, nations suffering shortages - the "water stressed" in the jargon - are paying the price in lost productivity and stunted growth.

Water is, of course, a renewable resource: it falls as rain all over the world. But our increasing demands of our water supplies, and problems such as climate change and pollution which are curtailing the amount of water available, mean that we need to find some technical solutions to increase our water supply, too.

Desalination is one option for creating fresh water from the sea but it remains very expensive and requires large amounts of energy, which gives rise to greenhouse gas emissions if it comes from fossil fuel power stations.

Other low-tech solutions to our water shortages may in the end turn out be more valuable. For instance, much of the water currently used for irrigation is wasted. Farmers can be taught better techniques that will require less water for irrigation and conserve what water there is. Businesses that are heavy users of water, from food processing to silicon chip manufacturing, can also be taught to recycle their water. Households can be fitted with equipment to cut down their water use. Sewage can even be recycled to fresh water, using simple technologies now available.

If we were to use our available water to the maximum efficiency, many areas of the world that are now water stressed would be less so. And if we assisted poor countries to gain access to better sanitation, they would suffer less of an economic handicap.



EPS at the AEA/ASSA meetings in New Orleans

January 4 - 6, 2008

This year, EPS will offer the following sessions:

Friday, January 4 at 10:15am

The Plight of the Soldier, in the Sheraton New Orleans, Napoleon C2 room. Chair: Thea Harvey, EPS Executive Director.

- o The All-volunteer Force and the Long War: When and How should we Reinstigate Conscriptio? Lawrence Korb, Center for American Progress
- o The American Soldier: Carrying the Entire Load for the Bush Administration? Major General Paul Eaton, United States Army (retired)
- o The Effect of Activation on the Post-Activation Earnings of Reservists. David Loughran, RAND Corporation; Jacob Klerman, Abt Associates
- o Veterans from Iraq and Afghanistan: Impediments to Securing Disability Benefits and Medical Care. Linda Bilmes, Kennedy School of Government, Harvard University

Friday, January 4 at 2:30pm

A Roundtable on Climate Change, Hurricane Katrina and Related Issues, in the Hilton New Orleans Riverside (room TBA). Chair: James Galbraith, EPS Chair.

- o Paul Krugman, Princeton University
- o Joseph Stiglitz, Columbia University
- o Howard Kunreuther, University of Pennsylvania
- o Marcellus Andrews, Barnard College

Saturday, January 5 at 2:30pm

The Future of the Defense Budget, in the Sheraton New Orleans, Napoleon C2 room. Chair: Michael Lind, New America Foundation.

- o Five Years of War: Reassessing the Economic Cost of Conflict in Iraq. Joseph Stiglitz, Columbia University; Linda Bilmes, Kennedy School of Government, Harvard University
- o A Cost/Benefit Analysis of Large Military Budgets. Barbara Bergmann, American University
- o Weapons Systems that Don't Work for Threats that Don't Exist. Winslow Wheeler, Strauss Military Reform Project, Center for Defense Information
- o The Next Peace Dividend. Richard Kaufman, Bethesda Research Institute

In addition, we will hold our usual events:

Table in the Exhibit Hall Booth #439 - right next to the coffee area

Saturday, January 5 at 5:30pm

Annual Membership Meeting. All are welcome to come and hear the annual report in the Sheraton New Orleans Rampart room.

Saturday, January 5 at 6:30pm

Annual Dinner, in honor of Paul Krugman in the Sheraton New Orleans Rhythm Ballroom. See page 16 for information.

Sunday, January 6 at 10:00am

Annual Joint Fellows/Board Meeting in the Sheraton New Orleans Evergreen room.

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Please join
Economists for Peace and Security
for a dinner honoring

Paul Krugman

Saturday, January 5, 2008
6:30pm - 10:00pm
at the Sheraton New Orleans

Speakers will include Sylvia Nasar,
Maurice Obstfeld, and Joseph Stiglitz

Host Committee:

Honorary Co-chairs, Paul A. Samuelson and Robert Solow
Chair, James K. Galbraith

Committee members: Dean Baker, Michael A.
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Graham, Pentti J.K. Kouri, Robert Z. Lawrence,
Richard Medley, Sylvia Nasar, Maurice Obstfeld,
Anthony Venables, and David Warsh

Reservations are required. Tickets are \$125

Please email Thea Harvey
(theaharvey@epsusa.org) to RSVP

Register for the dinner online at
<http://www.epsusa.org/events/eventregistration.htm>

EPS Quarterly

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