BLUE GOLD

The Global Water Crisis and the Commodification of the World's Water Supply

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"The wars of the next century will be about water."

Ismail Serageldin, Vice-President of the World Bank

INTRODUCTION

We'd like to believe there's an infinite supply of water on the planet. But the assumption is tragically false. Available fresh water amounts to less than one-half of 1 percent of all the water on earth. The rest is sea water, or is frozen in the polar ice. Fresh water is renewable only by rainfall, at the rate of 40,000 to 50,000 cubic kilometers per year. Due to intensive urbanization, deforestation, water diversion and industrial farming, however, with the drying of the earth's surface, even this small finite source of fresh water is disappearing; if present trends persist, the water in all river basins on every continent could steadily be depleted.

Global consumption of water is doubling every 20 years, more than twice the rate of human population growth. According to the United Nations, more than one billion people on earth already lack access to fresh drinking water. If current trends persist, by 2025 the demand for fresh water is expected to rise to 56 percent above the amount that is currently available.

As the water crisis intensifies, governments around the world—under pressure from transnational corporations—are advocating a radical solution: the privatization, commodification and mass diversion of water. Proponents say that such a system is the only way to distribute water to the world's thirsty. However, experience shows that selling water on the open market does not address the needs of poor, thirsty people. On the contrary, privatized water is delivered to those who can pay for it, such as wealthy cities and individuals and water-intensive industries, like agriculture and high-tech. As one resident of the high desert in New Mexico observed after his community's water had been diverted for use by the high-tech industry: "Water flows uphill to money."

The push to commodify water comes at a time when the social, political and economic impacts of water scarcity are rapidly becoming a destabilizing force, with water-related conflicts springing up around the globe. For example, Malaysia, which supplies about half of Singapore's water, threatened to cut off that supply in 1997 after Singapore criticized its government policies. In Africa, relations between Botswana and Namibia have been severely strained by Namibian plans to construct a pipeline to divert water from the shared Okavango River to eastern Namibia.

The former Mayor of Mexico City predicts a war in the Mexican Valley in the foreseeable future if a solution to his city's water crisis is not found soon. Much has been written about the potential for water wars in the Middle East, where water resources are severely limited. The late King Hussein of Jordan once said the only thing he would go to war with Israel over was water, because Israel controls Jordan's water supply.

Meanwhile, the future of one of the earth's most vital resources is being determined by those who profit from its overuse and abuse. A handful of transnational corporations, backed by the World Bank, are aggressively taking over the management of public water services in developing countries, dramatically raising the price of water to the local residents and profiting from the Third World's desperate search for solutions to the water crisis. The corporate agenda is clear: water should be treated like any other tradable good, with its use determined by market principles.

At the same time, governments are signing away their control over domestic water supplies by participating in trade agreements such as the North American Free Trade Agreement (NAFTA); its proposed successor, the Free Trade Area of the Americas (FTAA); and the World Trade Organization (WTO). These global trade institutions effectively give transnational corporations unprecedented access to the water of signatory countries.

Already, corporations have started to sue governments in order to gain access to domestic water sources. For example, Sun Belt, a California company, is suing the government of Canada under NAFTA because British Columbia (B.C.) banned water exports several years ago. The company claims that B.C.'s law violates several NAFTA-based investor rights and therefore is claiming $10 billion in compensation for lost profits.

With the protection of these international trade agreements, companies are setting their sights on the mass transport of bulk water by diversion and by supertanker. Several companies are developing technology whereby large quantities of fresh water would be loaded into huge sealed bags and towed across the ocean for sale. Selling water to the highest bidder will only exacerbate the worst impacts of the world water crisis.

A number of key research and environmental organizations such as Worldwatch Institute, World Resources Institute and the United Nations Environment Program have been sounding the alarm for well

over a decade: If water usage continues to increase at current rates, the results will be devastating for the earth and its inhabitants. Groups such as the International Rivers Network, Greenpeace, Clean Waters Network, Sierra Club and Friends of the Earth International, along with thousands of community groups around the world, are fighting the construction of new dams, reclaiming damaged rivers and wetlands, confronting industry over contamination of water systems, and protecting whales and other aquatic species from hunting and overfishing. In a number of countries, experts have come up with some exciting and creative solutions to these problems. This work is crucial, yet such efforts need to be coordinated and understood in the broader context of economic globalization and its role in promoting privatization and commodification.

Who owns water? Should anyone? Should it be privatized? What rights do transnational corporations have to buy water systems? Should it be traded as a commodity in the open market? What laws do we need to protect water? What is the role of government? How do those in water-rich countries share with those in water-poor countries? Who is the custodian for nature's lifeblood? How do ordinary citizens become involved in this process?

The analysis and the recommendations in this report are based on the principle that water is part of the earth's heritage and must be preserved in the public domain for all time and protected by strong local, national and international law. At stake is the whole notion of "the commons," the idea that through our public institutions we recognize a shared human and natural heritage to be preserved for future generations. Local communities must be the watchdogs of our waterways and must establish principles that oversee the use of this precious resource.

Instead of allowing this vital resource to become a commodity sold to the highest bidder, we believe that access to clean water for basic needs is a fundamental human right. Each generation must ensure that the abundance and quality of water is not diminished as a result of its activities. Great efforts must be made to restore the health of aquatic ecosystems that have already been degraded as well as to protect others from harm.

Above all, we need to radically restructure our societies and lifestyles in order to reverse the depletion of our fresh water and to learn to live within the watershed ecosystems that were created to sustain life. We must abandon the specious notion that we can carelessly abuse the world's precious water sources because,

somehow, technology will come to the rescue. There is no technological "fix" for a planet depleted of water.

THE CRISIS

A FINITE RESOURCE

It is commonly assumed that the world's water supply is huge and infinite. This assumption is false. In fact, of all the water on Earth, only 2.5 percent is fresh water, and available fresh water represents less than half of 1 percent of the world's total water stock. The rest is seawater, or inaccessible in ice caps, ground water and soil. Crucially, this supply is finite.

As Allerd Stikker of the Amsterdam-based Ecological Management Foundation explains: "The issue today, put simply, is that while the only renewable source of fresh water is continental rainfall (which generates a more or less constant global supply of 40,000 to 50,000 cubic km per year), the world population keeps increasing by roughly 85 million per year. Therefore the availability of fresh water per head is decreasing rapidly."

Most disturbingly, we are diverting, polluting and depleting that finite source of fresh water at an astonishing rate. Today, says the United Nations, 31 countries are facing water stress and scarcity and over one billion people lack adequate access to clean drinking water. By the year 2025, as much as two-thirds of the world's population—predicted to have expanded by an additional 2.6 billion people—will be living in conditions of serious water shortage and one-third will be living in conditions of absolute water scarcity.

World Resources, a publication of the United Nations Environment Program, the World Bank and the World Resources Institute, has a dire warning: "The world's thirst for water is likely to become one of the most pressing resource issues of the 21st century...In some cases, water withdrawals are so high, relative to supply, that surface water supplies are literally shrinking and groundwater reserves are being depleted faster than they can be replenished by precipitation."

Groundwater over-pumping and aquifer depletion are now serious problems in the world's most intensive agricultural areas. In the U.S., the High Plains Ogallala aquifer, stretching some 800 miles (1,300 km) from the Texas panhandle to South Dakota, is being depleted eight times faster than nature can replenish it. The water table under California's San Joaquin Valley has dropped nearly ten meters in some spots within the last 50 years. Twenty-one percent of irrigation in the U.S. is achieved by pumping ground water at rates that exceed the water's ability to recharge (and most water used for irrigation cannot be recycled).

In the Arabian peninsula, groundwater use is nearly three times greater than recharge and, at the current rate of extraction, Saudi Arabia is running toward total depletion in the next 50 years; Israel's extraction has exceeded replacement by 2.5 billion meters in 25 years and 13 percent of its coastal aquifer is contaminated by seawater and fertilizer run-off; current depletion of Africa's non-recharging aquifers is estimated at 10 billion cubic meters a year; water tables are falling everywhere throughout India; land beneath Bangkok has actually sunk due to massive over-pumping; and Northern China now has eight regions of aquifer overdraft while the water table beneath Beijing has dropped 37 meters over the last four decades. In fact, so severe is the projected water crisis in Beijing, experts are now wondering whether the seat of power in China will have to be moved.

In Mexico City, pumping exceeds natural recharge by 50-80 percent every year and experts are saying the city could run out of water entirely in the next decade. In the *maquiladora* free trade zones all along the Mexican-U.S border, water is a precious commodity, delivered weekly in many communities by truck or cart. In early 2001, the National Water Commission reported that the border area, thick with industrial and human waste and strapped for funds, only treats about one-third of its waste water and sewage. Ciudad Juarez, growing at a rate of 50,000 people a year, is running out of water; the underground aquifer the city relies on has declined at about five feet a year. At this rate, there will be no usable water left in 20 years.

As Stikker explains, this means that instead of living on water income, we are irreversibly diminishing water capital. At some time in the near future, water bankruptcy will result. Sandra Postel of the Global Water Policy Project adds that, in addition to depleting supplies, groundwater mining causes salt water to invade freshwater aquifers, destroying them. In other cases, groundwater mining actually permanently reduces the earth's capacity to store water. In California, for example, overuse of the underground water supplies in the Central Valley has resulted in a loss of over 40 percent of the combined storage capacity of all human-made surface reservoirs in the state. In 1998, California's Department of Water Resources

announced that by 2020, if more supplies are not found, the state will face a shortfall of water nearly as great as the amount that all of its towns and cities together are consuming today.

Further, the global expansion in mining and manufacturing is increasing the threat of pollution to these underground water supplies. (In most Asian countries, for example, these aquifers provide more than 50 percent of domestic water supplies.) *World Resources* reports that as developing countries undergo rapid industrialization, heavy metals, acids and persistent organic pollutants (POPs) are contaminating aquifers.

At the same time, over-exploitation of the planet's major river systems is threatening another finite source of water. "The Nile in Egypt, the Ganges in South Asia, the Yellow River in China, and the Colorado River in America are among the major rivers that are so dammed, diverted, or overtapped that little or no fresh water reaches its final destination for significant stretches of time," writes Sandra Postel. In fact, the Colorado is so over-subscribed on its journey through seven U.S. states that there is virtually nothing left to go out to sea. The flows of the Rio Grande and upper Colorado rivers are in danger of being reduced by as much as 75 percent and 40 percent respectively over the next century.

Perhaps the most devastating analysis of the global water crisis comes from hydrological engineer Michal Kravèík and his team of scientists at the Slovakia non-governmental organization (NGO) People and Water. Kravèík, who has a distinguished career with the Slovak Academy of Sciences, has studied the effect of urbanization, industrial agriculture, deforestation, dam construction, and infrastructure and paving on water systems in Slovakia and surrounding countries and has come up with an alarming finding. Destroying water's natural habitat not only creates a supply crisis for people and animals, it also dramatically diminishes the amount of available fresh water on the planet.

Kravèík describes the hydrologic cycle of a drop of water. It must first evaporate from a plant, earth surface, swamp, river, lake or the sea, then fall back down to earth as precipitation. If the drop of water falls back onto a forest, lake, blade of grass, meadow or field, it cooperates with nature to return to the hydrologic cycle. "Right of domicile of a drop is one of the basic rights, a more serious right than human rights," says Kravèík.

However, if the earth's surface is paved over, denuded of forests and meadows, and drained of natural springs and creeks, the drop will not form part of river basins and continental watersheds, where it is needed by people and animals, but head out to sea, where it will be stored. It is like rain falling onto a huge

roof, or umbrella; everything underneath stays dry and the water runs off to the perimeter. The consequent reduction in continental water basins results in reduced water evaporation from the earth's surface, and becomes a net loss, while the seas begin to rise. In Slovakia, the scientists found, for every 1 percent of roofing, paving, car parks and highways constructed, water supplies decrease in volume by more than 100 billion meters per year.

Kravèík issues a dire warning about the growing number of what he calls the earth's "hot stains"—places already drained of water. The "drying out" of the earth will cause massive global warming, with the attendant extremes in weather: drought, decreased protection from the atmosphere, increased solar radiation, decreased biodiversity, melting of the polar icecaps, submersion of vast territories, massive continental desertification and, eventually, "global collapse."

SCARCE WATER, SCARCE FOOD

As well as creating major environmental problems, overtapping of ground water and rivers is exacerbating another potential crisis—world food security.

Irrigation for crop production claims 65 percent of all water used by humans, compared to 25 percent for industry and 10 percent for households and municipalities. The annual rise in population means that more water is needed every year for grain production (for humans and animals), a highly water-intensive activity. But, every year the world's burgeoning cities and industries are demanding more and more of the water earmarked for agriculture. California, for example, now projects a serious decline in irrigated lands just as its population is exploding.

Eventually, some dry areas will not be able to serve both the needs of farming and those of the ballooning cities. If these regions are to meet everyday water requirements, they might have to permanently import all or most of their food. This raises the prospect that lack of water will make some countries chronically dependent on others, or on the international community at large.

Throughout rural Latin America and Asia, massive industrialization is throwing off the balance between humans and nature. Export-oriented agribusiness is claiming more and more of the water once used by small farmers for food self-sufficiency. Another major drain on local water supplies are the more than 800

Third World free trade zones, such as those in Latin America, where assembly lines produce goods for the global consumer elite. In the *maquiladora* zones of Mexico, for example, clean water is so scarce that babies and children drink Coca-Cola and Pepsi instead. During a drought crisis in northern Mexico in 1995, the government cut water supplies to local farmers while ensuring emergency supplies to the mostly foreign controlled industries of the region.

The story is perhaps most stark in China. The Worldwatch Institute warns that an unexpectedly abrupt decline in the supply of water for China's farmers could threaten world food security. China faces severe grain shortages in the near future because of water depletion due to the current shift of limited water resources from agriculture to industry and cities. The resulting demand for grain in China could exceed the world's available exportable supplies. While China might be able to survive this for a time because of its booming economy and huge trade surpluses, the resulting higher grain prices will create social and political upheaval in most major Third World cities and shake global food security.

The western half of China is made up mostly of deserts and mountains; the vast bulk of the country's 1.2 billion citizens live on several great rivers whose systems cannot sustain the demands currently placed upon them. For instance, in 1972, the Yellow River failed to reach the sea for the first time in history. That year it failed on 15 days; every year since, it has run dry for more days. In 1997, it failed to reach the sea for 226 days. The story is the same with all of China's rivers and with its depleting water tables beneath the North China Plain. As big industrial wells probe the ground ever deeper to tap the remaining water, millions of Chinese farmers have found their wells pumped dry. Four hundred of China's 600 northern cities are already facing severe water shortages, as is over half of China's population.

These shortages come at a time when China will see a population increase in the next 30 years greater than the entire population of the United States, when conservative estimates predict that annual industrial water use in China could grow from 52 billion tons to 269 billion tons in the same period, and when rising incomes are allowing millions of Chinese to install indoor plumbing with showers and flush toilets. The Worldwatch Institute predicts China will be the first country in the world that will have to literally restructure its economy to respond to water scarcity.

ENDANGERING SPECIES

Around the world, the answer to the increase in water demand is to build more dams and divert more rivers. Water has long been manipulated. Even the earliest civilizations, from the Roman to the Mayan, built aqueducts and irrigation schemes. But we are now tampering with water systems on a scale that is totally unsustainable.

The number of large dams worldwide has climbed from just over 5,000 in 1950 to 38,000 today and the number of waterways altered for navigation has grown from fewer than 9,000 in 1900 to almost 500,000. In the northern hemisphere, we have harnessed and tamed three-quarters of the flow from the world's major rivers to power our cities. While advances in modern engineering have allowed governments to supply farms and cities with water, these practices have done great damage to the natural world.

The world's waterways are also struggling with the full range of modern industrial toxic pollution problems. Ninety percent of the developing world's waste water is still discharged untreated into local rivers and streams.

In the U.S., only 2 percent of the country's rivers and streams remain free-flowing and undeveloped. The continental U.S. has lost more than half of its wetlands and California has lost 95 percent. Populations of migratory birds and waterfowl have dropped from 60 million in 1950 to just 3 million today. Watersheds that are the most biologically diverse are the most degraded, putting species and wilderness at great risk.

"The U.S. is the epicenter of freshwater biodiversity in the world," says Larry Masters of the Nature Conservancy. However, thirty-seven percent of its freshwater fish are at risk of extinction, 51 percent of crayfish and 40 percent of amphibians are imperilled, and 67 percent of freshwater mussels are extinct or vulnerable to extinction.

One billion pounds of weed and bug killers are used throughout the United States every year, reports *National Geographic*, most of which runs off into the country's water systems. The Natural Resources Defense Council says that 53 million Americans drink tap water contaminated with lead, fecal bacteria or other harmful pollutants. Nearly 40 percent of U.S. rivers and streams are too dangerous for fishing,

swimming or drinking. "We have crashing ecosystems in every river basin in the West," says Steve Glazer of the Sierra Club's Colorado River Task Force.

In Canada, Jamie Linton has documented a disturbing story of water system abuse for the Canadian Wildlife Federation. Wetland loss includes 65 percent of Atlantic coastal marshes, 70 percent of Southern Ontario wetlands, 71 percent of prairie wetlands, and 80 percent of the Fraser River Delta in Canada's province of British Columbia. Acid rain has caused a 40 percent decline in fish species in some Canadian lakes. Most major river systems have been dammed, and more stream flows are diverted out of their basins of origin than in any other country in the world by a considerable margin. Over a century of mining, forestry and large-scale industry has affected virtually every water body in Canada, and toxic chemicals are found even in the most remote parts of the Far North.

In the Great Lakes of North America, the world's largest freshwater system, the result has been a "catastrophic loss of biological diversity," according to Linton. Janet Abramovitz of the Worldwatch Institute adds that the Great Lakes have lost two-thirds of their once extensive wetlands and that less than 3 percent of the lakes' shorelines are suitable for swimming, drinking or supporting any aquatic life.

The Nature Conservancy has identified 100 species and 31 ecological communities at risk within the Great Lakes system and notes that half don't exist anywhere else. Two hundred years ago, each of the five Great Lakes had its own thriving aquatic community. In 1900, 82 percent of the commercial catch was native. By 1966, native species were only two-tenths of 1 percent of the catch; the remaining 99.8 percent were exotic species, most of them devastating to the local species.

The story is the same all over the world. All but one of England's 33 major rivers are suffering; some are now less than a third of their average depth. The Thames is threatening to run dry and already larger ships are having to restrict their movements to high tides. Development has cut off the Rhine River in Europe from 90 percent of its original flood plains, and the native salmon run has nearly disappeared. Over the last 25 years, the Danube's phosphate and nitrate concentrations have increased six-fold and four-fold, respectively, causing great harm to the region's tourism and fisheries. According to the UN Food and Agriculture Organization (FAO), 80 percent of China's major rivers are so degraded they no longer support fish. The building of Egypt's Aswan Dam in 1970 caused the number of commercially harvested fish to drop by almost two-thirds.

The World Resources Institute reports that, after the Pak Mun Dam was built in Thailand, all 150 fish species that had inhabited the Mun River virtually disappeared. Introduction of non-native species to Victoria Lake in Africa has all but destroyed the native species population, already imperilled by the dumping of millions of liters of untreated sewage and industrial waste from the cities of surrounding Kenya, Tanzania and Uganda. Three-fourths of Poland's rivers are so contaminated by chemicals, sewage and agricultural run-off that their water is unfit even for industrial use. Nearly half of the water and sewage treatment systems in Moscow are ineffective or malfunctioning and, according to the Russian Security Council, 75 percent of the Republic's lake and river water is unsafe to drink.

The Aral Sea basin shared by Afghanistan, Iran and five countries of the former Soviet Union was once the world's fourth largest lake. Excessive river diversions have caused it to lose half its area and three-fourths of its volume, while its surrounding wetlands have shrunk by 85 percent. Calling it one of the planet's greatest environmental tragedies, Postel reports that almost all fish and waterfowl species have been decimated and the fisheries have collapsed entirely. Each year, winds pick up 40-150 million tons of a toxic salt mixture from the dry sea bed and dump it on the surrounding farmlands. Millions of "ecological refugees" have fled the area.

There is simply no way to overstate the water crisis of the planet today. No piecemeal solution is going to prevent the collapse of whole societies and ecosystems. A radical rethinking of our values, priorities and political systems is urgent and still possible. Yet, as we will explore in the next section, there are forces at work in the world today that, unless challenged, would move the world almost inexorably into a water-scarce future.

THE IMPACT OF GLOBALIZATION

EVERYTHING FOR SALE

The dominant development model of our time is economic globalization, a system fuelled by the belief that a single global economy with universal rules set by corporations and financial markets is inevitable. Economic freedom, not democracy or ecological stewardship, is the defining metaphor of the post-Cold War period for those in power. As a result, the world is going through a revolutionary transformation as

great as any in history. The most direct result of economic globalization to date is a massive transfer of economic and political power away from national governments into the hands of the bureaucracies they helped to create. At the heart of this transformation is an all-out assault on virtually every sphere of life.

Everything is for sale, even those areas of life once considered sacred, such as health and education, culture and heritage, genetic codes and seeds, and natural resources such as air and water. Increasingly, these services and resources are controlled by a handful of transnational corporations who shape national and international law to suit their interests. The Washington-based Institute for Policy Studies reports that the top two hundred corporations are now so big that their total sales surpass the combined economies of 182 countries and they have almost twice the economic clout of the poorest four-fifths of humanity. Of the 100 largest economies in the world, 53 are now transnational corporations.

A new global royalty now centrally plans the market, destroying lives and nature in its wake. Says writer and former senior advisor to the U.S. Agency for International Development (USAID) David Korten, "The world is now ruled by a global financial casino staffed by faceless bankers and hedge-fund speculators who operate with a herd mentality in the shadowy world of global finance. Each day, they move more than two trillion dollars around the world in search of quick profits and safe havens, sending exchange rates and stock markets into wild gyrations wholly unrelated to any underlying economic reality. With abandon they make and break national economies, buy and sell corporations and hold politicians hostage to their interests."

UNEQUAL ACCESS

A striking feature of economic globalization is the widening gap between rich and poor; an entrenched underclass is being created between regions and within every society in the world. The 2000 United Nations Human Development Report says that the disparity in the level of income between the top 20 percent and the bottom 20 percent of the world's population is 150:1 and has doubled in the last 30 years. The world's 225 richest individuals have a combined wealth equal to the annual income of half of humanity. The three richest people in the world have assets that exceed the combined gross domestic product of 48 countries.

The richest fifth of the world's people consumes 86 percent of all goods and services, while the poorest fifth consumes just over 1 percent. Americans and Europeans spend substantially more every year on pet

food, reports the United Nations, than the total money needed to provide basic health and nutrition for everyone in the world. Americans spend more money on cosmetics every year than the total amount needed to provide basic universal education.

It is no surprise, then, that the deep inequality sustained by economic globalization, whether intentional or not, is dramatically affecting the poor's access to water, the most basic of life's rights. The United Nations Economic and Social Commission on Sustainable Development says that fully three-quarters of the population living under conditions of water stress—amounting to 26 percent of the total world population—are located in developing countries. By 2025, the Commission projects, those low-income countries experiencing water stress will amount to 47 percent of the total world population.

In crowded Asian, African and Latin American countries, massive increases in animal and human waste, intensified with the arrival of factory farms, are exposing more and more people to cholera and the deadly E. coli bacteria through contaminated water supplies. Most local governments cannot even afford basic chlorine to treat the water. Where local communities used to turn to aquifers and hand-pumps to get around the problem of polluted surface water, now chemical and human waste seeping into these sources has rendered the water table dangerous as well. In Third World cities, it is now common to ration water to neighbourhoods for a few hours a day or a few days a week.

The United Nations reports that Europeans spend $11 billion a year on ice cream, $2 billion more than the estimated total money needed to provide clean water and safe sewers for the world's population. More than five million people, most of them children, die every year from illnesses caused by drinking poor-quality water. While billions go without clean water, North Americans use 1,300 gallons of water per person every day.

But water inequality exists within societies as well. In 1994, when Indonesia was hit with a major drought, residents' wells ran dry, but Jakarta's golf courses, which cater to wealthy tourists, continued to receive 1,000 cubic meters per course per day. In 1998, in the midst of a three-year drought that dried up river systems and further depleted aquifers, the Cyprus government cut the water supply to farmers by 50 percent while guaranteeing the country's two million tourists a year all the water they needed. In South Korea, farmers south of Seoul recently armed themselves with hoes and blocked municipal water trucks from pumping water for city dwellers in fear it would leave their crops wanting.

Anne Platt of Worldwatch Institute reports that a family in the top fifth income groups in Peru, the Dominican Republic, or Ghana is respectively, three, six, or twelve times more likely to have water connected by pipe to the home than a family in the bottom fifth in those countries. Because they lack access to publicly subsidized utilities, says Platt, the poor often end up paying more for their water than do the rich because they must obtain it from illegal sources or private vendors.

In Lima, Peru, for instance, poor people may pay a private vendor as much as $3 for a cubic meter of water, which they must then collect by bucket and which is often contaminated. The more affluent, on the other hand, pay 30 cents per cubic meter for treated water provided through the taps in their houses. Hillside slum dwellers in Tegucigalpa, the capital of Honduras, pay substantially more for water supplied by private tankers than they would even if they paid for the government to install a water pipe. In Dhaka, Bangladesh, squatters pay water rates that are twelve times higher than what the local utility charges. In Lusaka, Zambia, low-income families pay, on average, half their household income on water.

Indigenous people have been impacted in a particularly brutal fashion by economic globalization and the theft of their water. It is the immediate relationship that indigenous people have to water that makes them especially vulnerable to any large-scale project that alters aquatic ecosystems. The massive hydroelectric projects of northern Quebec were devastating to the local Cree First Nations as well as to the caribou and fish upon which they depend.

Environmental writer Josh Karliner explains: "Indeed the process of globalization is steamrolling social and financial support for the basic rights of the poor, increasingly shunting the disenfranchised off to the side, where they must fend for themselves in the brutally competitive 'market.' Growing numbers of people are becoming victims of globalization, as the forces of corporate expansion move into farmlands, deserts, oceans and river systems they previously ignored. Already poor but largely self-sufficient, communities across the earth are being cast into deeper social and ecological poverty, as well as cultural dislocation, as their resources are appropriated for the seemingly insatiable demands of the world's ever growing consumer societies."

Once recognized as a basic human right, water is now denied to huge numbers of the human family. Wise conservation of water cannot take place until the reality of inequality is confronted—and the reality of inequality cannot be confronted until the tenets of economic globalization are rejected.

PROHIBITING PRESERVATION

Globalization creates economic and political structures that make an ecologically sound economy entirely impossible. Economic globalization refers to the integration of national economies into a single unified market. Transnational corporations pressure national governments to privatize, deregulate, eliminate trade and investment "barriers," boost exports, and generally relinquish state controls over the economy in order to create one global economy.

Such economic integration unleashes new levels of industrial production, intensifying natural resource exploitation and exacerbating all existing environmental problems. Heightened competition forces governments to roll back environmental protections in order to increase the competitiveness of their domestic producers and attract foreign investment. Economic activities that are ecologically sustainable are punished by deregulated market forces, making responsible management a liability that decreases competitiveness.

"Globalization creates political and economic structures whose patterns of production and consumption are both ecologically and socially destructive," says Victor Menotti, director of the International Forum on Globalization's Committee on the Ecological Consequences of Globalization. "All activity orients around exports, which, to be globally competitive, require centralized control over vast natural resources, the ability to access large amounts of finance capital, and the need to operate complex mega-technologies. Fewer workers are needed, so great numbers of people are left watching as local resources they once tended are now shipped away to others.

"The result is a regime that contradicts the very principles of ecologically sustainable economics: removing control over the land from people who live on it, discouraging strong regulatory protections, penalizing responsible management, and making impossible the task of getting the price right."

As nature is increasingly commodified, governments all over the world are dismantling environmental legislation or allowing industry to police itself. Countries are lowering corporate taxes and environmental regulations in order to remain competitive, the primary mandate of the new economy. As a result, governments are left with reduced fiscal capacity to reclaim polluted waterways and build infrastructure to protect water; at the same time they are also left with reduced regulatory capacity to prevent further pollution.

Globalization's imperative of unlimited growth makes it impossible for participating countries to make preservation a priority. Developing countries have restructured their economic systems to pay their debt and export their way to prosperity, destroying both natural ecosystems and environmental regulations in the bargain. The massive abuse and pollution of the internal waterways of most developing countries has been one price of belonging to the global economy. The depletion of underground aquifers and rivers to supply the water demand of transnational industry is another.

Intrusive technologies, including the massive transportation systems needed to carry out global trade, damage water systems as well. Roads carved out of wilderness destroy river and lake habitats as well as forests; increased global shipping multiplies the amount of waste dumped directly into oceans and lakes; and dredging for port and waterway construction destroys coastal habitat.

China has started work on a gargantuan $1 billion project to divert water from the Yangtze River to Beijing. Ten thousand workers have almost finished drilling a 420-kilometer series of tunnels to drain water from the middle stretch of the Yangtze, where it will either be sent through a high-mountain range, or through a new 1,230-kilometer channel to water-starved cities like Taiyuan on its way to the capital—a prospect the Worldwatch Institute compares to turning the Mississippi River to service Washington, D.C.

The governments of several South American countries have put a hold for now on the creation of a mammoth new water system that would channel 3,400 kilometers of the Paraguay and Paraná rivers for industrial use and open up the interior of the continent to global trade. But environmentalists aren't celebrating yet; they know there are huge corporate interests at stake and they will not easily give up on this project.

"Given current corporate practices," says businessman and environmentalist Paul Hawken, "not one wildlife reserve, wilderness, or indigenous culture will survive the global economy. We know that every natural system on the planet is disintegrating. The land, water, air, and sea have been functionally transformed from life-supporting systems into repositories for waste. There is no polite way to say that business is destroying the world."

Not everyone is so gloomy about the world water crisis. After all, what some see as an ecological nightmare of unprecedented proportions, a growing number of private investors are seeing as a golden market opportunity.

THE WATER PRIVATEERS

WATER FOR SALE

Just at the time governments are backing away from their regulatory responsibilities, giant transnational water, food, energy and shipping corporations are lining up to take advantage of the world's water shortage, acquiring control of water through the ownership of dams and waterways; the development of new technologies such as water desalination and purification; control over the burgeoning bottled water industry; the privatization of municipal and regional water services, including sewage and water delivery; the construction of water infrastructure; and water exportation.

"Water is the last infrastructure frontier for private investors," says Johan Bastin of the European Bank for Reconstruction and Development. Tragically, water is also the last frontier of nature and the commons.

The *Globe and Mail* of Canada states that privatizing water looms as the national mega-industry of the next decade, with potential investment in the tens of billions of dollars. "Water is fast becoming a globalized corporate industry." In May 2000, *Fortune* magazine stated that, in a world fleeing the vagaries of tech stocks, water is the best investment sector for the century. The World Bank places the value of the current water market at close to $1 trillion; however, with only 5 percent of the world's population currently getting its water from corporations, the profit potential is unlimited.

The world of privatized water is overwhelmingly dominated by two French transnationals. Suez Lyonnaise des Eaux (which built the Suez Canal and had 1999 profits of $1.5 billion on sales of $32 billion) and Vivendi SA are referred to as the General Motors and Ford Motor Company of the water world. Both are ranked among the 100 largest corporations in the world by the Global Fortune 500. Between them they own, or have controlling interests in, water companies in over 120 countries on five continents, and distribute water to almost 100 million people in the world.

Suez's CEO, Gerard Mestrallet, says that he wants to take a page from his country's past and develop in his company the philosophy of "conquest" as Suez moves into new markets around the world. Suez is more than just a water company. According to *Fortune*, "its a fresh invention...a diversified utility that offers cities a full range of infrastructure services, from water and sewer to trash collection, cable TV, and electric power." The company, which projects an annual 10 percent expansion of its water business, has just signed its first major business contracts in China, which Mestrallet says "will be a prime market at the onset of [this]century."

Both Suez and Vivendi are vying for the lucrative U.S. market, estimated to be the world's largest with annual revenues at $90 billion. New U.S. laws have opened the way to greater private sector involvement in the U.S. water supply and treatment business. Until now, this sector has been almost exclusively controlled by small public-sector operators. Now these companies are poised to promote the massive privatization of the American water market. In 1999, Suez paid $1 billion for United Water Resources and bought two major water treatment chemical producers, Nalco and Calgon, for $4.5 billion. In the same year, Vivendi purchased U.S. Filter Corp. for more than $6 billion in cash, giving the new company a projected revenue of $12 billion in annual sales. Vivendi also owns 42 percent of Air and Water Technologies (AWT).

Another French company, SAUR, owned by the construction company, Bouygues, is also emerging in a number of countries. The Spanish transnational Aguas de Barcelona is active in Latin America, and Great Britain's Thames Water and Biwater are acquiring water concessions in Asia and South Africa. United Utilities of Britain has joined up with the American construction and engineering giant, Bechtel, to promote privatization schemes in North and South America.

Recently, a number of large pipeline and energy and electricity companies have entered the water field, promising great stock profits from what they are calling "convergence"—the prospect of a single company carrying natural gas, water and electricity to millions of customers on a for-profit basis. General Electric has joined forces with the World Bank and investment speculator George Soros to invest billions of dollars in a "Global Power Fund" to privatize energy and water around the world, according to the *Guardian Weekly*.

U.S. energy giant Enron, having acquired Wessex Water PLC of Britain, is bidding for huge contracts against the established players for newly privatized water services in Bulgaria, Rio de Janeiro, Berlin and Panama under its new water division, Azurix. The RWE Group, Germany's largest electricity producer, is also emerging as a major player in water and wastewater services.

A POOR TRACK RECORD

The privatization of municipal water services around the world has a terrible track record. Since water services were privatized in France, customer fees have increased by 150 percent. The government of France also reports that the post-privatization drinking water of over five million people was contaminated. For most of the past decade, French magistrates have been investigating allegations of corruption against executives of the two major French water companies who have been convicted on three occasions of paying bribes to obtain water contracts in France.

Public Services International (PSI) reports that in England, between 1989 (the year water was privatized) and 1995, there was a 106 percent increase in the rate charged to customers, while the profits of the companies increased by 692 percent. The salary of the highest paid director of North West Water, for example, increased by 708 percent. As a result of these price hikes, the number of customers who have had their water disconnected has risen by 50 percent since privatization. British water corporations have been among the worst environmental offenders in the U.K. Between 1989 and 1997, Anglian, Severn Trent, Northumbrian, Wessex (a subsidiary of Enron) and Yorkshire were successfully prosecuted 128 times.

Furthermore, privatization is almost always accompanied by lay-offs. In Great Britain, the private companies fired almost 25 percent of the work force, approximately 100,000 workers, when they acquired rights to the water system. In December, 1999, when they were ordered by the government to make price cuts, they announced thousands of further lay-offs, even though they were enjoying wide profit margins. In central Europe, private water companies reduced the work force of seven cities (whose rights they acquired) by 30 percent in just a few years. In Sydney, Australia, after the Water Board was privatized, thousands of workers lost their jobs and prices for consumers almost doubled in four years.

When water is privatized, the public often loses its right to access information about water quality and standards. A furor erupted when it was discovered in the summer of 1998 that Sydney, Australia's water

supply, now controlled by Suez Lyonnaise des Eaux, contained high levels of the parasites giardia and cryptosporidium and that the public had not been informed of the problem when it was first discovered.

In Ontario, Canada, the government introduced what it called a "Common Sense Revolution." Key to this "revolution" were massive cuts to the environment budget, the privatization of water testing labs, the deregulation of water protection infrastructure, and massive lay-offs of trained water testing experts. In fact, in 1999, just after a Canadian federal government study revealed that a third of Ontario's rural wells were contaminated with E. coli, the Ontario government dropped testing for E. coli from its Drinking Water Surveillance Program and, a year later, closed the program down entirely.

The results were catastrophic. E. coli outbreaks in a number of communities sent waves of panic through rural Ontario. In June 2000 at least seven people, one of them a baby, died from drinking the water in the little town of Walkerton. The town had subcontracted to a branch-plant of a private testing company from Tennessee. The lab, A&L Laboratories, discovered E. coli in the water, but failed to report the contamination to provincial authorities, an option it has under the new "common sense" rules. A lab spokesman said that the test results were "confidential intellectual property" and, as such, belonged only to the "client"—the public officials of Walkerton who were not trained to deal with the tests.

WORLD BANK IN THE LEAD

The story in the developing world is far worse where international financial institutions like the World Bank and the International Monetary Fund are aggressively promoting the privatization of water. As Public Services International explains, these institutions distort the choices available by their policies; these include imposing water privatization as a condition of loans and debt relief, financing water transnationals in preference to efficient public enterprises, and selling water utilities to reduce national debt.

World Bank-sponsored water privatization projects promote monopolies and protect rampant corruption and bribery and are often negotiated entirely in secret. The agreements are considered "intellectual property" and the public has no access to their terms. Collusion with dictators like Indonesia's Suharto are too frequent. The Bank often puts up the lion's share of the investment while the company takes home the profits. Suez promised to invest $1 billion to privatize the water system of Buenos Aires, but only put up $30 million; the rest came from a World Bank agency.

When water is privatized, prices are set on the open market. Says Suez Director During, "We are here to make money. Sooner or later the company that invests recoups its investment, which means the customer has to pay for it." The result in the Third World is that millions of poor people have been cut off. Because the companies are motivated by profit and not public service, they have no incentive to supply the poor with water.

In India, some households pay a staggering 25 percent of their income on water. The water system of Manila, in the Philippines, was divided by the World Bank into two zones in 1997, each run by a separate consortium. One consortium included Bechtel, the other, Suez Lyonnaise des Eaux. Only months into the new arrangement, they sharply raised customer rates, contrary to their proclaimed intention to keep rates low, to compensate for revenues lost due to the regional currency crisis. A year later, Biwater increased water rates in Subic Bay in the Philippines by 400 percent.

Laboractivists in South Africa have been threatened with legal action by British transnational Biwater for criticizing the company on the Internet. The activists charge the company with poor water management practices and with being involved in the British arms-for-aid scandal in the 1980s, a fact documented by the British House of Commons' Foreign Affairs Committee. The South African Municipal Workers' Union says that Biwater is trying to stave off public criticism in the hopes of gaining the first private water contract in South Africa's history.

The union's position is firm: "Water privatization is a crucial issue for public debate. Human lives depend on the equitable distribution of water resources; the public should be given a voice in deciding whether an overseas-based transnational corporation whose primary interest is profit maximization, should control those critical resources...Water is a life-giving scarce resource which therefore must remain in the hands of the community through public sector delivery. Water must not be provided for profit, but to meet needs."

The privatization of water is wrong on many counts. It ensures that decisions regarding the allocation of water center almost exclusively on commercial considerations. Corporate shareholders are seeking maximum profit, not sustainability or equal access. Privatization means that the management of water resources is based on the principles of scarcity and profit maximization rather than long-term sustainability. Corporations are dependent on increased consumption to generate profits and are therefore much more likely to invest in desalination, diversion or export of water than in conservation.

Further, the global trend to commodify what has been a public service reduces the involvement of citizens in water management decisions. Private water projects brokered by the World Bank, for example, have minimal disclosure requirements. A water corporation executive at the March 2000 World Water Forum in The Hague, said publicly that as long as water was coming out of the tap, the public had no right to any information as to how it got there. The concentration of power in the hands of a single corporation and the inability of governments to reclaim management of water services allows corporations to impose their interests on government, reducing the democratic power of citizens.

Pro-privatization advocates argue that they are seeking private-public partnerships, and give assurances that governments will still be able to establish regulations. However, because the provision of water services itself does not provide sufficient return, water corporations are increasingly seeking exclusive control over water service provision through acquisitions of infrastructure and water licences while closing the loop around public involvement. In early 1999, when the government of Ontario announced the break-up of the public utility, Ontario Hydro, into three new private companies, it also made public its intention to eliminate access to information laws.

In their support for large-scale project financing, the World Bank and others give preference to large multi-utility infrastructure projects that favour the biggest corporations, leading to monopolies against which local suppliers cannot compete. To add insult to injury, the World Bank is underwriting these giant corporations with public money, and often incurs the risk, while the company reaps the profit. And often governments, supposedly representing their people, have to assure a return to the shareholder. Chile had to guarantee a profit margin of 33 percent to Suez Lyonnaise des Eaux as a World Bank condition—regardless of performance.

Most disturbing, the close alliance between governments, the World Bank and the water companies gives these corporations undue influence over government policies that favour their interests, like deregulation and free trade, and preferred access to upcoming water contracts. The stated goal of the World Bank water loan to Budapest was to "ease political resistance to private sector involvement." In the Philippines, the water corporations can appeal government decisions and actions against them to an international arbitration panel appointed by the International Chamber of Commerce.

So far have these World Bank–backed contracts gone, they now actually contain a form of "democracy insurance." A recent contract between Azurix and the Argentinean government guarantees cash payment for "expropriation" if a future government changes its mind and wants to bring water services back under public control.

WATER WAR

In 1998, the World Bank refused to guarantee a $25 million loan to refinance water services in Cochabamba, Bolivia, unless the government sold the public water system to the private sector and passed the costs on to consumers. Bolivia, one of the poorest countries in the world, finally acquiesced. Only one bid was considered, and the company was turned over to Aguas del Tunari, a subsidiary of a conglomerate led by Bechtel, the giant San Francisco engineering company, and several other construction companies.

In December 1999, before making any infrastructure investments, the private water company announced the doubling of water prices. For most Bolivians, this meant that water would now cost more than food; for those on minimum wage or unemployed, water bills suddenly accounted for close to half their monthly budgets, and for many, water was shut off completely. To add insult, the Bolivian government, prompted by the World Bank, granted absolute monopolies to private water concessionaires, announced its support for full-cost water pricing, pegged the cost of water to the American dollar and declared that none of the World Bank loan could be used to subsidize the poor for water services. All water, even from community wells, required permits to access, and peasants and small farmers even had to buy permits to gather rainwater on their property.

The selling-off of public enterprises such as transportation, electrical utilities and education to foreign corporations has been a heated economic debate in Bolivia. But this was different; polls showed that 90 percent of the public wanted Bechtel turfed out. Debate turned to protest and one of the world's first "water wars" was launched.

Led by Oscar Olivera, a former machinist turned union activist, a broad-based movement of workers, peasants, farmers and others created La Coordinadora de Defensa del Agua y de la Vida (the Coalition in Defense of Water and Life)—La Coordinadora for short—to "de-privatize" the local water system. Hundreds of thousands of Bolivians marched to Cochabamba in a showdown with the government, and a general strike and transportation stoppage brought the city to a standstill. Police reacted with violence and

arrests and in early April, the government declared martial law. Activists were arrested during the night; radio and television programs were shut down in mid-program. A 17-year-old boy, Victor Hugo Danza, was shot through the face and killed.

Finally, on April 10, 2000, the directors of Aguas del Tunari and Bechtel abandoned Bolivia, taking with them key personnel files, documents and computers and leaving behind a broken company with substantial debts. Under popular pressure, the government revoked its hated water privatization legislation. Deeply chagrined at the failure of its pet project, the local government basically handed over the running of the local water service, SEMAPA, to the protesters and La Coordinadora, complete with debts.

The people accepted the challenge, and set out to elect a new board of directors for the water company and develop a new mandate based on a firm set of principles. The company must be efficient, free of corruption, fair to the workers, guided by a commitment to social justice (providing first for those without water), and it must act as a catalyst to further engage and organize the grassroots.

The first act of the new company was to operationalize a huge water tank in the poorest southern neighbourhoods, establishing connections to 400 communities that had been abandoned by the old company. Then the company established an active presence in the neighbourhoods, listening to the people and working with them to solve problems. In summer 2000 La Coordinadora organized its first public hearings on SEMAPA, to begin a public process on building a broad, consensus-based definition of what the company must become, and received many proposals from civil society.

The company has also taken a strong stand against any compensation to Bechtel for its "losses." Bechtel is suing the government of Bolivia for close to $40 million at the World Bank's International Court for the Settlement of Investment Disputes. It is claiming "expropriation" rights under a 1992 Bilateral Investment Treaty (BIT) that Bolivia signed with Holland. Bechtel, an American company, must have sensed the conflicts in Bolivia brewing. In late 1999, it moved its holding company for Tunari from the Cayman Islands to Holland, thereby gaining the right to sue South America's poorest country.

While the Bolivian government has officially said it will fight this challenge, there are those in the government who feel it best to pay Bechtel its compensation to prove that Bolivia is ready for economic globalization and will be a "good" global player in the WTO. There is a real concern that the government of Bolivia is now in secret negotiations with Bechtel to settle that dispute out of court.

In the early months of 2001, a very disturbing pattern of surveillance, infiltration, harassment and physical attacks against members of La Coordinadora has emerged. It is widely understood that both La Coordinadora and SEMAPA have powerful enemies in the echelons of power in the Bolivian and state governments. A failure on the part of the citizens to run their own water company could be used as a warning to others around the world who stand up to water privatization and the power of the World Bank.

HIGH-TECH WATER GUZZLERS

Similar water conflicts are growing in the computer industry, where big corporations are claiming unfair shares of local water supplies. Computer manufacturers use massive quantities of de-ionized fresh water to produce their goods and are constantly searching for new sources. Increasingly, this search is pitting giant high-tech corporations against economically and socially marginalized peoples in a battle for local water sources.

Electronics is the world's fastest-growing manufacturing industry, according to the Silicon Valley Toxics Coalition. Giants such as IBM, AT&T, Intel, NEC, Fujitsu, Siemans, Phillips, Sumitomo, Honeywell, and Samsung have annual net sales exceeding the gross domestic product of many countries. Originally thought to be a "clean" industry, high-tech has left a staggering pollution legacy in its short history. In 1980, the U.S. congress set up the Superfund program through the EPA to locate, investigate and clean up the worst sites in the nation. Presently, the Silicon Valley has more EPA toxic Superfund sites than any other area in the U.S. plus more than 150 groundwater contamination sites, many related to high-tech manufacturing. Close to 30 percent of the ground water beneath and around Phoenix, Arizona, has been contaminated, well over half by the high-tech sector.

There are currently about 900 semi-conductor manufacturing plants, or fabrication facilities (fabs) making computer wafers (used for computer chips) around the world. Another 140 plants are now under construction. These plants consume a staggering amount of water. For example, Intel Fab, located on the high desert near Albuquerque, New Mexico, is permitted to use nearly 6 million gallons (18 million liters) of water per day, or enough to supply a small town.

At this rate (including the new plants under construction) the industry will be using over 500 billion gallons (1,500 billion liters) of water and producing over 100 billion gallons (300 billion liters) of waste

water each year. Much of the new construction is in water-poor countries or in the desert, but as local activists say, "Water flows uphill to money."

The question is: where will the water come from? The Southwest Network for Economic Justice and the Campaign for Responsible Technology explain: "In an arena of such limited resources, a struggle ensues between those who have traditionally enjoyed these resources and those newcomers who look at these resources with covetous eyes."

High-tech companies are engaging in mechanisms to capture traditional water rights: *water pricing*, whereby industry pressures governments for subsidies and circumvents city utility equipment to directly pump water, thus paying much less than residential water users pay for water; *water mining*, whereby companies gain rights to deplete the aquifers while driving up the access costs to smaller users such as family farmers; *water ranching*, whereby industry buys up water rights of ranches and farmers; and *waste dumping*, whereby industry contaminates the local water sources and then passes the costs on to the community.

Despite increasing industrial demand, conservation programs aimed at ordinary people are not applied to industry. "While some residents tore out their lawns last year [1996] to save water," the *Albuquerque Tribune* wrote of a city conservation project, "it poured with increasing volume through the spigots of industry." While residents had to decrease their use by 30 percent, Intel Corporation, a software company, was allowed to increase its use by the same amount. In addition, Intel pays four times less than the city's residents for its water. Perhaps the most disturbing trend, however, is the deliberate destruction of a local pueblo traditional *acequia*—a collective system of agricultural water distribution—to feed the voracious appetite of the high-tech giants.

Under the new commercial system, water is separated from the land it belongs to and transported great distances; this is anathema to the local indigenous ways. Says John Carangelo, a mayordomo of the La Joya Acequia Association, "In New Mexico, where the total finite supply of water is allegedly fully appropriated, the location of a high-tech industry is dependent on the purchase of existing water rights. This high demand for water and their vast financial resources makes water a valuable commercial product." He warns that water trading could hollow out rural America.

Local sources, however, will clearly not be sufficient to meet industrial needs, given the aquifer depletion taking place in many high-tech-intensive areas. The companies are starting to look farther afield within their own countries or abroad for new sources of water; the global trade in water provides a possible new source. Given the rapid growth of high-tech companies in the developing world, particularly China, it is entirely possible that current bulk water exports are being negotiated to feed the voracious water appetite of the global technology industry.

THE GLOBAL TRADE IN WATER

PIPE SCHEMES

The water privateers are now also setting their sights on the mass export of bulk water by diversion, by pipelines and by supertanker. Modified tanker deliveries already take place in certain regions that are willing to pay top dollar for water on an emergency basis. Barges carry loads of fresh water to islands in the Bahamas and tankers deliver water to Japan, Taiwan, and Korea. Turkey is preparing to sell its water by converted oil tankers and pipeline from the Manavgat River to Cyprus, Malta, Libya, Israel, Greece and Egypt. In the summer of 2000, Israel began negotiations to buy over 13 billion gallons of water a year from Turkey; the tankers are already moored to huge yellow floating stations two miles offshore, awaiting delivery orders. Turkey's water company says it has the pumps and pipes to export four to eight times that amount.

To deal with droughts in southern European countries, the European Commission is looking into the possibility of tapping into the sources of water-rich countries such as Austria. If its plans to establish a European Water Network are realized, Alpine water could be flowing into Spain or Greece, rather than Vienna's reservoirs, within a decade. "This means that in theory we could supply everyone in the European Union, all 370 million of them," declares Herbert Schroefelbauer, deputy chairman of Verbund, the country's largest electrical utility. A high-tech pipeline already transports quality spring water from the Austrian Alps to Vienna, and the proposal to extend this system to other countries is creating great unease among Austria's environmentalists, who warn of the damage bulk exports could have on the sensitive alpine ecosystem.

Gerard Mestrallet of Suez Lyonnaise is planning another Suez Canal—this time in Europe. He has announced his intention to build a giant 160-mile aqueduct to transport water from the Rhone River through France to the Catalonian capital, Barcelona.

To address England's growing water crisis, some political and corporate leaders are calling for large-scale exports of water from Scotland, by tanker and pipeline. Already, several English companies are exploring the possibility of water exports and one Scottish entrepreneur told *The Scotsman* that Scottish companies are also interested. Complicating the political sensitivities is the fact that Scotland still has a publicly owned water system, while English water is run by privatized companies. Ironically, some of these companies have been lukewarm to exports because the scarcity of water in England has kept prices and profits high.

Professor George Flemming of Strathclyde University claims that it would be relatively simple to extend pipelines and natural waterways that already exist between the north of Scotland and Edinburgh to London and other parts of England. However, support for water sovereignty in Scotland is strong. When Scotland's water authority, West of Scotland Water, publicly sounded out a plan to sell surplus water to Spain, Morocco and the Middle East, public reaction forced it to back off. Still, many see this reluctance as temporary; Flemming says England and Wales are running out of water because of global warming and that imports of bulk water are inevitable.

In Australia, United Water International has secured the contract of the water system of Adelaide (located in southern Australia) and has developed a 15-year plan to export its water to other countries for computer software and irrigation. Domestic companies were not allowed to bid for this contract because it was assumed that a large transnational would increase the value of the water exports, now expected to be in the range of $628 million.

Several companies around the world are developing technology whereby large quantities of fresh water would be loaded into huge sealed bags and towed across the ocean for sale. The Nordic Water Supply Company in Oslo, Norway, has signed a contract to deliver 7 million cubic meters of water per year in bags to northern Cyprus. During the Gulf War, Operation Desert Storm used water bags to supply water to their troops.

Aquarius Water Trading and Transportation Ltd. of England and Greece has begun the first commercial deliveries of fresh water by polyurethane bags, towed like barges through waterways. The company, whose corporate investors include Suez Lyonnaise des Eaux, delivers water to the Greek Islands where a piping system links the bag to the main water supply on the island. Aquarius predicts that the market will soon exceed 200 million metric tons per year. The company's bag fleet consists of eight 720-ton bags and two 2,000-ton versions. The larger bags hold two million liters of water each. Aquarius has completed research and development on bags ten times their size and is searching for the capital investment to produce them. The company has its sights set on Israel, and claims to have the interest of several major water companies.

Nowhere are dreams for the trade in water as big as they are in North America. Every few years, plans to divert massive amounts of Canadian water to water-scarce areas of the United States, Asia and the Middle East by tanker, pipeline, or rerouting of the natural river systems, are raised, only to be shut down by public protest. One of the largest proposed diversion projects was called the GRAND Canal—the Great Recycling and Northern Development Canal. It originally called for the building of a dike across James Bay at the mouth of Hudson Bay (both of which now flow north) to create a giant freshwater reservoir out of James Bay and the twenty rivers flowing into it. A massive series of dikes, canals, dams, power plants and locks would divert this water at a rate of 62,000 gallons a second down a 167-mile canal to Georgian Bay, where it would be flushed through the Great Lakes and taken to the U.S. Sun Belt.

The NAWAPA—the North American Water and Power Alliance—was another. The original plan envisaged building a large number of major dams to trap the Yukon, Peace and Liard rivers into a giant reservoir that would flood one-tenth of British Columbia to create a canal from Alaska to Washington state and supply water through existing canals and pipelines to thirty-five American states. The volume diverted would be roughly equivalent to the average total annual discharge of the St. Lawrence River.

In the early 1990s, a consortium named Multinational Water and Power Inc. spent $500,000 promoting the diversion of water from the North Thompson River (a tributary of the Fraser River) into the Columbia River system for delivery by pipeline to California.

In the last decade, these projects have quietly been drawing support again from the business community in Canada. In 1991 *Canadian Banker* magazine said that water export would become a multi-million dollar

business: "The concept of NAWAPA...remains a potentially awesome catalyst of economic and environmental change."

In the same year, the *Report on Business* magazine stated: "Pollution, population growth and environmental crusading are expected to put enormous pressure on the world's supply of fresh water over the next ten years. Some of Canada's largest engineering companies are gearing up for the day when water is moved around the world like oil or wheat or wood…What will be important is who has the right to sell it to the highest bidder."

Meanwhile residents of water-scarce regions continue to live in denial. In a July 1998 article for *The Atlantic Monthly* titled "Desert Politics," writer Robert Kaplan notes the blind faith of people living in the Arizona desert believing that some magical solution to their water shortage will manifest itself while they continue to build in an area never meant for human habitat in these numbers. He notes that more than 800,000 people live in greater Tucson alone and four million in Arizona, a tenfold increase in seventy years. According to Wade Graham of *Harper's Magazine*, municipal development in Phoenix is occurring at a rate of an acre every hour. Kaplan writes,

"Maybe, as some visionary engineers think, the Southwest's salvation will come ultimately from that shivery vastness of wet, green sponge to the north: Canada. In this scenario a network of new dams, reservoirs, and tunnels would supply water from the Yukon and British Columbia to the Mexican border, while a giant canal would bring desalinized Hudson Bay water from Quebec to the American Midwest, and supertankers would carry glacial water from the British Columbian coast to Southern California—all to support an enlarged network of post-urban, multi-ethnic pods pulsing with economic activity."

CANADA AND ALASKA: OPEC OF WATER?

Similarly, the call to export water by supertanker is heating up again in Canada after a lull of a few years. In British Columbia, a number of export companies such as Western Canada Water, Snow Cap Water, White Bear Water and Multinational Resources were already lined up for business when the government banned the export of bulk water in 1993. One project was to involve a Texas company prepared to pay for a fleet of 12 to 16 of the world's largest supertankers (500,000 deadweight tons) to operate around the clock. Under this one contract, the annual volume of water to be shipped to California was equivalent to the total annual water consumption of the city of Vancouver.

The government that made the decision to ban bulk water exports is politically committed to this position, but low in the public opinion polls for reasons unrelated to this law. A future government in British Columbia might easily reverse this policy, opening a floodgate of export proposals. Canadian water expert Richard Bocking explains that the same companies would transport oil and water, in some cases, emptying oil on one leg of the trip, and carrying water home on the return voyage.

"Water export from the B.C. coast would involve huge supertankers, operating year round on tight schedules. They would wind their way through tortuous coastal waterways, maneuvering around islands and reefs in an area where no well-developed marine traffic management system exists. There are strong and often turbulent tidal currents in coastal inlets where winter winds often reach ferocious velocities.

"These huge tankers would travel through waters that are amongst the world's finest for recreational boating and fishing. Pods of killer whales move regularly through these waters. Along with commercial and sports fisheries, spawning for almost the entire commercial oyster industry of coastal B.C. is located here. The enormous fuel tanks of supertankers are full of bunker C fuel, the worst possible grade of oil in environmental terms. With currents, winds, rocks, and reefs intersecting with tight ship schedules, the stage is set for tragedy on a grand scale."

In recent years, two other Canadian provinces received corporate applications to allow the export of bulk water for commercial profit. In the spring of 1998, the Ontario Ministry of the Environment approved a plan by Nova Group to export millions of liters of Lake Superior water by tanker to Asia. However, the province later rescinded the grant after an outcry from the International Joint Commission, (then) U.S. Secretary of State Madeleine Albright, who claimed that the US had shared jurisdiction over Lake Superior, and the public, most notably those living in the Great Lakes area of Canada and the U.S. The other application, a request to export 52 billion liters of water a year from pristine Gisborne Lake in the Newfoundland wilderness, seemed poised to receive the go-ahead, given recent statements made by Newfoundland's new premeir, Roger Grimes. The company, McCurdy Group of Newfoundland, plans to ship the water to the Middle East by supertanker.

Newspaper and business publications are intensifying the debate. In February 1999 the *National Post* called Canada's water "blue gold" and demanded that the government "turn on the tap." Its business columnist, Terence Corcoran, added fuel to the fire: "Canada is a future OPEC of water. Here's a

worthwhile long-term bet: By 2010, Canada will be exporting large quantities of fresh water to the U.S., and more by tanker to parched nations all over the globe.

"The issue will not be whether to export, but how much money the federal government and the provinces will be able to extract from massive water shipments. Rather than resisting the idea of water exports, Canada will end up scrambling to head the WWET, the World Water Export Treaty, signed in 2006 by 25 countries with vast water reserves. Using the OPEC model, they will attempt to cartelize the world supply of water and drive the price up." The *Calgary Herald*'s editorial board agreed, "Canada has plenty of fresh water, so let the commercial exports begin."

However, Canada isn't the only water-rich region being eyed by transnational business. A Canadian company, Global Water Corporation, has signed an agreement with Sitka, Alaska, to export 18 billion gallons (58 billion liters) per year of glacier water to China where it is to be bottled in one of that country's "free trade zones" to save on labor costs. Although the company brochure acknowledges that there is a severe water crisis in China, it entices investors "to harvest the accelerating opportunity...as traditional sources of water around the world become progressively depleted and degraded" and laments the fact that the government of British Columbia in Canada has placed a ban on bulk water exports.

The company is now engaged in a "strategic alliance to plan an international strategy to move water globally in bulk tankers" with the Signet Companies, an international maritime shipping company based in Houston, Texas. Signet has been engaged in the bulk movement of water since 1986 when both Western Canada Water and its predecessor contracted the shipping company for the "design, development, analysis and implementation of an international water transport system." As Global explains, "Water has moved from being an endless commodity that may be taken for granted to a rationed necessity that may be taken by force."

But Global is only one of the many companies with interests in Alaskan water. Alaska has become the first jurisdiction in the world to permit the commercial export of bulk water. *The Alaska Business Monthly* bluntly states, "Everyone agrees water has 21st century potential as an export from Alaska, and communities from Annette Island to the Aleutians are thinking about turning on the tap." The journal reports that a Washington-based company has begun shipping city tap water from Alaska on barges to be bottled in Kent, Washington, and that several other projects are in the works.

Alaska's water resources are staggering, reports the pro-export *Alaska Business Monthly*. For example, it suggests that if Sitka filled a million-gallon tanker per day, this would still be less than 10 percent of its current water usage. At Eklutna, Brian Crewdson, assistant to the general manager of the Anchorage Water and Wastewater Utility, estimates the export potential to be as high as 30 million gallons (90 million liters) per day.

He reports that in 1995 a Mitsubishi-leased tanker taking on petroleum by-products for processing overseas also loaded a couple of millions of gallons of Eklutna water for shipment to Japan. He believes this may have been the first tanker shipment of water out of the United States and when word got out, he received calls from companies interested in doing business in New York City, Washington D.C., and Charleston, S.C. Crewdson adds that there is more money in bulk water exports than bottled water exports.

One entrepreneur who is poised to profit from Alaskan water exports spent much of his career shaping water policy in the public sector. Ric Davidge, president of Arctic Ice and Water Exports, served in the U.S. Department of the Interior as chairman of the Federal Land Policy Group and was a key advisor to both the federal and state governments in the clean-up operations for the Exxon Valdez oil spill. As Alaska's director of water, Davidge was responsible for initiating the marketing of the state's water and established the policy framework that allowed for the export of water. Soon after he set the export wheels in motion, he moved into the private sector and began a water export business. He is now known as "Alaska's Water Czar."

Davidge's curriculum vitae states that he provides a "wide range of consulting services to foreign and domestic companies developing bulk and bottled water exports from Alaska." Clients include companies from Saudi Arabia, Taiwan, Alaska, Washington, Canada, South Korea, Tanzania, Japan, Mexico, California and Nevada.

There are some who say that bulk export of water is too expensive to be economically viable and suggest that the future lies with desalination. However, the World Bank points out that the world has already tapped all its low-cost, easily accessible water reserves; the financial and environmental costs of tapping new supplies, however they are developed, will be two to three times more than those of existing investments and the demand will be there even if the sources are expensive.

While desalination will be used by some countries, it is a very expensive process and heavily fossil fuel intensive. Massive desalination projects would be possible only to those countries with abundant energy supplies, and would seriously add to global warming—a crisis already exacerbated by the freshwater shortage.

Davidge points out that the price of water on a dollar-per-unit basis is already higher than refined gasoline. "Everything from soft drinks to French wine to microchips will get many times more expensive as area reserves of clean water are drawn down." He argues that desalinated water is more expensive to produce and more environmentally destructive than bulk water shipments in tankers and water bags.

Quebec businessman Paul Barbeau of Aquaroute, Inc., a company "dedicated to water transportation in bulk," agrees. He says that water can be easily exported by tanker vessel on very short notice. He claims that at his former company, Enercem Tankers, he converted and operated a petrol carrier into a water carrier which was used to transport Canadian water to the Bahamas. "Capturing water is easy. A floating ship can simply pump what may be declared as a water ballast. This is done daily on any coastal or ocean-going vessel or even more simply with any barge as there are already some on the Great Lakes. The tools to export water afloat are already there. What is missing is the precise development in law to prevent an uncontrolled practice."

Even some environmentalists believe that water commodification and trade is inevitable. Says Allerd Stikker, "It could very well be that in the beginning of the 21st century clean water will start to become a major regional and inter-regional commodity, being produced and traded in volumes undreamt of today."

Especially in light of economic globalization, it is a myth that large cross-border transfers of water are not economically feasible. The only difference between these and other mega-projects is that water becomes a product transferred across borders. These mega-projects are identical in purpose to domestic water projects and governed by the same economic analysis. There is no reason to believe that current massive government subsidies to industry and agribusiness are going to end anytime soon. Transnational corporations operating in water-intensive industries are going to expect local governments to find and fund the water supplies they need before making investment and production decisions.

BOTTLED WATER BECOMES BIG BUSINESS

Where there is a demand for the trade of water across borders, it is already well underway. The trade in bottled water is one of the fastest-growing (and least regulated) industries in the world. In the 1970s, the annual volume was 300 million gallons. By 1980, this figure had climbed to 630 million gallons, and by the end of the decade, the world was drinking two billion gallons of bottled water every year. But these numbers pale in comparison to the explosion in bottled water sales in the last five years—over 20 percent annually. In 2000 over 8 billion gallons (24 billion liters) of water was bottled and traded globally, over 90 percent of it in non-renewable plastic containers.

In Canada, the amount of water extracted by bottlers has grown by more than 50 percent in less than a decade; bottlers, who pay no fee for the water they capture, have the legal right to extract about 30 billion liters a year—1,000 liters for every person in the country. Almost half of it is exported to the U.S.

As the world's freshwater supply becomes more degraded, those who can afford it are favoring the packaged item, even though bottled water is subjected to less rigorous testing and purity standards than tap water. A March 1999 study by U.S.-based Natural Resources Defense Council (NRDC) found that much bottled water is no safer than tap water and some is decidedly less so. One-third of 103 brands of bottled water studied contained levels of contamination, including traces of arsenic and E. coli and at least one-fourth of bottled water is actually bottled tap water, the study found.

Alongside the giants of the industry, such as Perrier, Evian, Naya, Poland Spring, Clearly Canadian, La Croix and Purely Alaskan, there are litreally thousands of smaller companies now in the business. As well, the big soft-drink players are entering the market in force. PepsiCo has its Aquafina line and Coca-Cola has just launched the North American version of its international label, Bon Aqua, called Dasani. Coca-Cola predicts that its water line, which is just processed tap water and sells for more than gasoline, will surpass its soft-drink line within a decade.

These companies are engaged in a constant search for new water supplies to feed the insatiable appetite of the business and are engaging in the trade of water by tanker shipments and by purchasing water rights from farmers. In rural communities all over the world, corporate interests are buying up farmland to access wells and then moving on when supplies are depleted. In South America, foreign water corporations are buying vast wilderness tracts and even whole water systems to hold for future development.

Sometimes these companies leave dried-up systems in a whole area, not just their own land. A ferocious debate has been taking place in Tillicum Valley, a picturesque fruit and wine district in British Columbia. Clearly Canadian Beverage Corp. has been mining the ground water of the region so relentlessly that local residents and orchard growers say the company is "draining their water supply dry."

Of course, the global income gap is mirrored in inequitable access to bottled water. The NRDC reports that some people spend up to 10,000 times more per gallon for bottled water than they do for tap water. For the same price as one bottle of this "boutique" consumer item, 1,000 gallons (3,000 liters) of tap water could be delivered to homes, according to the American Water Works Association. Ironically, the same industry that contributes to the destruction of public water sources—in order to provide "pure" water to the world's elite in non-renewable plastic—peddles its product as being environmentally friendly and part of a healthy lifestyle.

THE FAILURE OF GOVERNMENTS

TOO LITTLE TOO LATE

Governments all over the world have been remiss in not recognizing the crisis surrounding the world's water resources and for not taking steps to offset the coming emergency.

True, in the developed world, there are some real success stories in the reclamation of rivers, lakes and estuaries choked with sewage and industrial pollution. The Hudson River in the U.S. was once given up for dead; now it abounds with life. Citizens and governments have worked to ban some of the most egregious toxins entering our water, such as DDT, and in December 2000 concluded a historic treaty banning the major persistent organic pollutants (POPs). As well they have forced the partial clean-up of industrial effluent such as waste from pulp and paper mills.

The partial recovery of the Great Lakes through joint action of the bordering provinces and states, for example, is being studied by scientists all over the world. After discovering that phosphorus was causing much of the deterioration, the governments of Canada and the United States signed the Great Lakes Water

Quality Agreement in 1972, which strongly curbed the dumping of phosphorus and municipal sewage into the lakes.

As well, conservation efforts in Europe and North America have resulted in some reduction in household and industrial water use, helping to slow the rate of aquifer withdrawal. Water use has actually dropped in some regions and industrial sectors in the U.S. by 10 to 20 percent since 1980, according to the United States Geological Survey. In the last decade, governments have begun to meet on a regular basis to begin to address the multiple crises of depletion, pollution, sanitation and equity of access.

The United Nations declared the 1980s to be the International Drinking Water Supply and Sanitation Decade and made some significant inroads toward providing infrastructure and clean water to some particularly desperate communities. But the United Nations sadly admits that lack of money is seriously jeopardizing this campaign, and at its present rate, the world cannot expect to see full-service coverage before the year 2100.

A statement of principles—The Dublin Statement on Water and Sustainable Development—emerged from a 1992 conference in Ireland. That document served as the foundation for the water chapter of Agenda 21, the global action plan developed at the 1992 Earth Summit in Rio. These principles recognize the need to protect watershed ecosystems and call for more long-range planning by governments to protect freshwater resources. The United Nations Commission on Sustainable Development undertook a comprehensive assessment of the world's freshwater resources, presented to the General Assembly in 1997. The report outlines areas for "urgent action," and calls for the organization to "facilitate inter-governmental dialogue" on taking action toward "sustainable development."

Important as these steps are, they are not yet great enough nor coordinated enough to offset the other actions, or inactions, of governments. As Klause Topfer of the United Nations Environment Program said at a March 1998 water conference in Paris, "The fragmentation of authority for water across many sectors and departments at the national and international levels has resulted in the absence of a common vision on the sustainable use of this vital resource."

The United Nations points out that governments in developed and developing countries alike give low priority to water issues and institutions; funding for research and solutions is abysmally inadequate. Freshwater management is in its infancy—and political commitment, public education and conservation

awareness are sadly lacking all over the world. While environmental groups and huge financial costs have slowed the enthusiasm for mega-projects such as dams and hydroelectric projects in some countries, others are embracing such technology with zeal.

Meanwhile, governments and industry continue to engage in destructive practices. While many Northern governments have banned the sale and use of toxins such as DDT within their borders, Northern-based multinationals continue to manufacture and peddle such harmful chemicals elsewhere. As a result, they are widely used in the developing world. Massive use of pesticides, herbicides, fungicides and hormones are used in agriculture around the world. Traces of these toxins can be found in ecosystems in virtually every country on earth, including uninhabited wilderness and watersheds.

Governments are failing to address another leading cause of water loss: leakage from municipal infrastructure and irrigation systems. In the Third World, these problems are being exacerbated as governments sink deeper into poverty in the wake of the global financial meltdown. The World Bank reports that at least 50 percent of municipal water is wasted through leakage in the developing world. For example, in the Philippines' Manila, 57 percent of its municipal water is lost through leaks and theft. In developing countries, reports *World Resources*, 60 to 75 percent of irrigation water never reaches the crop.

In developed countries, where the technology and resources are available for improvements, governments are instead cutting spending on public works and eviscerating environmental laws in the name of global competitiveness. Already crumbling inner-city systems are deteriorating in most First World cities. In Britain, for example, Worldwatch Institute estimates that one-quarter of the water that enters the distribution network is lost because of broken pipes and other problems. Until it started to address the problem, Boston, Massachusetts, lost almost 40 percent of its municipal water supplies annually from similar neglect. The average Canadian household uses about 500,000 liters a year, but almost half is wasted in washing cars or leaving taps to drip. The Canadian government estimates that it will cost $53 billion (Can $80 billion) to upgrade deteriorating water infrastructures.

A coordinated effort by the world's governments could change this pattern of waste within a decade. With current technologies and methods available today, a conservative estimate suggests that the agriculture sector could cut its water usage by close to 50 percent, industries by 50 to 90 percent, and cities by one-third without sacrificing economic output or quality of life. What is missing is political will and vision.

As well, millions of people die every year from contaminated water because many governments don't allow local communities to manage their own resources. A March 1999 study by the World Bank and the United Nations Development Program reports that international aid programs channel too much money through government agencies and utilities and don't trust local communities to manage their own systems. The report also accuses international agencies and governments of forcing new technologies on communities that cannot afford to maintain them. As an example of what can work, the report highlights a pilot project in Uttar Pradesh, India's most populous and least developed state, in which villagers elect their own water-management committees and oversee public budgets. The local test projects cost two-thirds less than those delivered by the government water board.

Governments are also culpable by their massive subsidization of the global transportation system that underpins economic globalization. For example, as Victor Menotti points out, if the full cost of transporting consumer goods across the ocean for assembly and then back again was reflected in the final price, the volume of world trade would diminish significantly.

Governments subsidize the water-guzzling high-technology sector in many ways. The city of Austin, Texas, not only gives tax breaks to high-tech companies (recently $125 million to Samsung and $56 million to Sematech), but also reduced water rates. Austin's industrial water rates are less than two-thirds of what residents pay. For its Rio Rancho facility in New Mexico, Intel recently received a tax subsidy of $8 billion via an industrial revenue bond and an additional $250 million in tax credits and other subsidies. The Southwest Network and the Campaign for Responsible Technology reports in *Sacred Waters*, "The greatest form of cost externalization related to water...comes in the form of water price subsidies, water delivery and treatment infrastructure subsidies, and restricted access to traditional and low-income water users caused by the massive use by this industry."

Further, in the absence of legislation or even debate in most countries, the privatization of water and wastewater services is steadily advancing. Through "public-private partnerships," municipal governments in many countries are blurring the lines between private companies and democratically elected governments. Often, these "partnerships" are the first step to full privatization. Because many of the same companies providing these services are likely to move into the area of bulk export, dams and water diversion, governments are granting them access to water resources through the back door.

TRADING AND BUYING WATER RIGHTS

Commercial water trading is growing in many parts of the world, usually with governments' blessing. In Chile, where privatization is a government goal, water companies are buying water rights from farmers and selling them to cities. Informal, small-scale water trading among farmers is common throughout the developing world. As long as these arrangements are made between local farmers and local communities, the system can work equitably; but if the practice is unregulated, it is often used to drive up the price of water for the poor. When large corporations enter the game, they typically buy up block water rights, deplete water resources in an area, and move on.

A similar practice is already common in the fishing industry. Large corporations are buying up government-granted fishing licences called Individual Transferable Quotas (ITQs)—an entitlement that can be leased or sold, permitting the holder to catch a specified quantity of fish. Originally designed by governments to control overfishing, ITQs are now concentrating the fishery industry in the hands of a small number of giant fishing corporations who encourage destructive fishing practices and strangle local communities. As one out-of-work Newfoundland fisher said, "For the first time in history, the fish are owned before they are caught."

In California, water rights trading is becoming a very big business. In 1992, the U.S. Congress passed a bill allowing farmers, for the first time in U.S. history, to sell their water rights to cities. In 1997, Interior Secretary Bruce Babbitt announced plans to open a major water market among the users of the Colorado River. The new system would allow interstate sales of Colorado River water among its southern users, Arizona, Nevada and California.

Wade Graham (*Harper's Magazine*) calls this development "the largest deregulation of a national resource since the Homestead Act of 1862" and adds that the only thing that could have topped it would have been the privatization of all U.S. federal lands. Babbitt is counting on the free market to do what politicians and the courts have not been able to do—referee between the many claims to the Colorado's water.

The deals are expected to be small at first (Nevada has already arranged to pay Arizona to store water for future use), but in the long run, the fast-growing areas where high-tech industry is concentrated will be able to obtain vast quantities of reasonably priced water from a virtually limitless source. As a warning, Graham points to a failed experiment in water privatization in the Sacramento Valley in the early 1990s.

For the first time, Southern California cities and farmers were no longer prevented from buying water directly from Northern California farmers, hoarding it and selling it on the open market. Large-scale operators helped themselves to huge amounts of water and stored it with the Drought Water Bank until the price was right to sell. A small handful of sellers walked away with huge profits, while other farmers found their wells run dry for the first time in their lives. The results were disastrous; the water table dropped and the land sank in some places.

Graham compares this incident with the Owens Valley tragedy at the turn of the last century. The once lush, water-rich Owens Valley was bled dry when water officials from Los Angeles devised a scheme to divert Owens Valley water to Southern California. "The Owens Valley scam demonstrated that although only a few individuals or corporate entities hold registered water rights, the entire community depends upon those rights...Water in California is prosperity, and if the legal right to use it can be privatized and transferred away, then the prosperity of the community may go with it."

Water rights trading, however, is growing in California despite the storm warnings. In 1993, the billionaire Bass brothers of Texas quietly bought up 40,000 acres of Imperial Valley farmland in order to sell water to the city of San Diego, California. The project fell through when it was discovered that the district, not private farmers, owned the property. In January 1999, U.S. Filter Corp. bought a ranch and 14,000 acre-feet of water north of Reno, Nevada, which it intends to divert by pipeline to Reno for commercial sale. The local community of Lassen County says it will be left without its lifeblood. Santa Monica–based Samda plans to pump well water from its 2,000-acre ranch in Fremont Valley north of Mojave and deliver it by pipeline to Los Angeles. The Stockman Water Co. has received an endorsement from the city of Parker, California, to pump water out of the San Luis Valley to Denver, Colorado.

In early 2001, the Metropolitan Water District of Los Angeles contracted to buy as much as 47 trillion gallons of water from the state's largest farming company, Cadiz Inc. In a move of great concern to environmentalists, who fear a repeat of Owens Valley, the water will be pumped from an aquifer deep under the Mojave Desert. Tony Coelho, formerly a powerful Democratic congressman and a chairman of Al Gore's presidential campaign, says that this water source is so valuable, no dollar figure can be put on it. "Careers are made and lost in water politics, and that will be true here." Adds Keith Brackpool, the British entrepreneur who runs Cadiz, "If you do the math, the price of our water just soars."

Little wonder California's Governor Gray Davis says, "Water is more precious than gold." In a private market, the superior purchasing power of large cities such as Los Angeles and of corporations such as Intel could force the cost of water up far enough to price farmers, small towns and indigenous peoples out of the market.

CLOSED-DOOR DEALS

Companies with water interests stand to reap huge windfalls as governments around the world, having allowed municipal infrastructures to crumble, now hand the water market over to the private sector. And they are doing it with the full participation and approval of international government agencies such as the United Nations and the World Water Council.

In July 2000, the United Nations announced a "Global Compact" with a number of major transnational corporations, including Nike, Shell Oil and Suez Lyonnaise des Eaux. Many NGOs were surprised and deeply concerned about the UN giving its blessing to corporations with bad international reputations in return for their cooperation with a handful of purely voluntary guidelines. But this development is very much in keeping with the pro-privatization position the UN has been following for some years now.

At a March 1998 conference in Paris, the UN Economic and Social Council Commission on Sustainable Development proposed that governments turn to "large multinational companies" for capital and expertise and called for an "open market" in water rights and an enlarged role for the private sector. The UN promised to mobilize private funds for the vast investments needed for networks and treatment plants and for the technology needed to ensure future water supplies.

The United Nations, with the World Bank and the International Water Resources Association, is also a founding member of the World Water Council, "the world's water-policy think tank" as the Council describes itself. The World Water Council's 175 member groups include leading professional associations, global water corporations, government water ministries, and international financial institutions. One of its two vice presidents is Rene Coulomb of Suez Lyonnaise des Eaux.

The Council held the first World Water Forum in Marrakesh, Morocco, in 1997, and the second in The Hague in March 2000, attended by 5,700 participants from all over the world and chaired by then World Bank Vice-President Ismail Serageldin. While ostensibly called to bring together "stakeholders" in the

water issue from around the world to address the global water crisis, the Forum was instead used as a showcase for the transnational water and energy companies and even big food corporations such as Nestle and Unilever in order to promote privatization and full cost recovery as the only solution to the world's water shortages. Most panels and workshops were chaired by World Bank and corporate executives who also made up the lion's share of panellists; only one public sector union representative was invited to speak during the entire five-day conference.

NGOs were allowed to attend, but the prohibitive cost of the conference fee and accommodation ensured that only a small number were present. Government officials from more than 160 countries attended, but were relegated to observer status and approving the final report of the Forum, which refused to name water as a human right, calling it instead a "human need." This is not semantic; if water is a human need it can be services by the private sector. A human right cannot be sold. Throughout this process, governments and the World Bank were sidelined, as corporations emerged as the dominant players on the world water stage.

A second new international water agency was also created in 1996, composed of many of the same players. The Global Water Partnership (GWP) describes itself as an "action-oriented network" of organizations interested in water issues with a mission to find "practical tools" for solving water problems, particularly in developing countries. Its membership includes a number of NGOs, government agencies (like Canada's Canadian International Development Agency, whose former head, Margaret Catley-Carlson, is GWP's new chair), multilateral banks and the private sector. Rene Coulomb of Suez Lyonnaise des Eaux sits on the steering committee, as does a representative of the Switzerland-based World Business Council for Sustainable Development and the World Bank. Another representative of Suez Lyonnaise des Eaux, Ivan Cheret, sits on the GWP's Technical Advisory Committee.

Its operating principle that water is an "economic good" and has an "economic value in all its competing uses," is the basis for GWP's priority on the privatization of water services. For instance, in November 1997, this advisory group held a meeting in Vitória, Brazil, in partnership with the Brazilian Association of Water Resources and the Inter-American Development Bank. Among the issues considered were "public-private partnerships for water management." Suez Lyonnaise des Eaux, through its membership on this committee, is in a privileged position to bid for these "partnership" contracts with the "good housekeeping seal of approval" of the world's governments and the United Nations.

It is clear that transnational water corporations are waging an offensive on many fronts to take over the agenda of international sustainable development programs for their own profit and that political leaders, the World Bank and the United Nations are openly colluding. Their way is paved by the utter failure of governments everywhere to protect their water heritage. The private sector argues that it is time to give the private sector the chance to manage this precious resource and even some environmentalists, having given up on governments altogether, agree.

In fact, governments are losing their right to protect their water heritage by default. Most governments have very few laws or regulations regarding their water systems. Most haven't even begun to address the issues of privatization, commercialization and trade in water. Yet, while they leave their water resources unprotected by legislation, they are actively negotiating and signing international trade and investment agreements that supersede national law. These treaties include trade in water, and some explicitly grant water rights to the private sector. The most immediate example is NAFTA signed by Canada, the United States and Mexico in 1993.

THE THREAT OF INTERNATIONAL TRADE AND INVESTMENT AGREEMENTS

WATER, NAFTA AND THE FTAA

Chapter 3 of NAFTA establishes obligations regarding the trade in goods. Using the General Agreement on Tariffs and Trade (GATT) definition of a "good" which clearly lists "waters, including natural or artificial waters and aerated waters", NAFTA adds in an explanatory note that "ordinary natural water of all kinds (other than sea water)" is included. Chapter 12 sets out a comprehensive regime to govern trade and investment in the service sector, including water services. Chapter 11 establishes an extensive array of investor rights, including investors in water goods and water services. Thus, under NAFTA, water is a commercial good, a service and an investment.

There are three key provisions of NAFTA that place water at risk. The first is "National Treatment" whereby no country can "discriminate" in favour of its own private sector in the commercial use of its water resources. For example, if a municipality privatizes its water delivery service, it would be obliged to

permit competitive bids from water service corporations of the other NAFTA countries. Similarly, once a permit is granted to a domestic company to export water, the corporations of the other NAFTA partner countries would have the same right of establishment to the commercial use of that country's waters as its domestic companies. If a Canadian company, for instance, gained the right to export Canadian water, American transnationals would have the right to help themselves to as much Canadian water as they wished.

The second key provision is Article 315, the "proportionality" clause, under which a government of a NAFTA country cannot reduce or restrict the export of a resource to another NAFTA country once the export flow has been established. Article 309 states that "no party may adopt or maintain any prohibition or restriction on the exportation or sell for export of any good destined for the territory of another party" and this provision includes a ban on export taxes. This means that if the export of water were to commence between NAFTA countries, the tap couldn't be turned off. Exports of water would be guaranteed to the level they had acquired over the preceding 36 months; the more water exported, the more water required to be exported. Even if new evidence were found that massive movements of water were harmful to the environment, these requirements would remain in place.

The third provision is "Investor State" (Chapter 11) whereby a corporation of a NAFTA country can sue the government of another NAFTA country for cash compensation if the company is refused its national treatment rights or if that country implements legislation that "expropriates" the company's future profit. Only a "foreign-based" company can sue using Chapter 11; domestic companies have to abide by national law and cannot sue their own government for compensation under NAFTA. As a result of this provision, there has been a flurry of investor-state suits in North America challenging environmental, health and safety legislation in the three countries.

Chapter 11 could apply to water in two ways. If any NAFTA country, state or province tried to limit the delivery of water services or the commercial export of its water to its domestic sector, corporations in the other countries would have the right to financial compensation for "discrimination." In fact, the very act of a government attempt to ban bulk water exports automatically makes water a commercial tradable commodity, triggering NAFTA. The very same law that excluded them would trigger foreign investors' NAFTA rights, and they could demand financial compensation for lost opportunities. For now, as long as water is lying in its natural state, it is safe from trade regulations.

As well, under Chapter 11, changes to government policy could trigger a challenge, as foreign companies have the advantage under this ruling. For example, if the state of Alaska were to reverse its policy and ban water exports or change the law so that only Alaskan companies could export water in order to keep jobs at home, the U.S. government would be vulnerable to a huge investor-state challenge. Global Water Corp. of British Columbia is poised to make a great deal of money from its contract with Alaska. Because it is a Canadian and not an American company, Global would have rights not accorded to U.S. domestic companies in the same situation.

The first NAFTA Chapter 11 case on water was filed in the fall of 1998. Sun Belt Water Inc. of Santa Barbara, California, sued the Canadian government because the company lost a contract to export water to California when the Canadian province of British Columbia banned the export of bulk water in 1991. Sun Belt alleges that the ban contravenes NAFTA and is seeking $10 billion in damages. "Because of NAFTA, we are now stakeholders in the national water policy in Canada," declared Sun Belt's CEO Jack Lindsay.

All of these corporate-friendly provisions—and more—are contained in the FTAA, currently being negotiated by 34 countries of the Americas and the Caribbean. Although it is based on the NAFTA model, the FTAA goes far beyond NAFTA in its scope and power.

The FTAA, as it now stands, would introduce into the Western Hemisphere comprehensive new provisions on services that, along with Chapter 11, would create a trade powerhouse with sweeping new authority over every aspect of life in Canada, the Americas and the Caribbean (except Cuba). Combining these two powers into one agreement, the FTAA would give unequalled new rights to the transnational corporations of the hemisphere to compete for and even challenge every publicly funded service of its governments, including water and environmental protection.

As well, the proposed FTAA contains new provisions on competition policy, government procurement, market access and dispute settlement that, together with the inclusion of services and investment, could remove the ability of all the governments of the Americas to create or maintain laws, standards and regulations to protect the health, safety and well-being of their citizens and the environment they share. Also, the FTAA negotiators appear to have chosen to emulate the WTO rather than NAFTA in key areas of standard setting and dispute settlement, where the WTO rules are tougher.

WATER AND THE WTO

NAFTA is not the only existing trade agreement that compromises water. The WTO was created in 1995 at the conclusion of the Uruguay Round of the GATT in order to enforce GATT and other agreements. The WTO's 134 member nations work toward eliminating all remaining tariff and non-tariff barriers in order to promote the movement of capital, goods and services across nation-state borders. The WTO contains no minimum standards to protect laborrights, social programs, the environment or natural resources.

The essence of the WTO is deregulation; it is intended to render it more difficult for nations to place safeguards or conditions on exportable products, including natural resources. The market is given pre-emptive rights to determine the course of resource development and nation-state rules are not to be trade- or profit-inhibiting. Tough environmental laws can be disputed by member countries at the WTO as being non-tariff barriers to trade. Therefore, domestic standards that are lower than the global average are protected; those that are higher become clear targets for dispute. Once a WTO dispute panel issues a ruling, worldwide conformity is required. A country is obliged to harmonize its laws, face the prospect of trade sanctions or pay direct compensation.

The WTO's authority includes water; it incorporates the same GATT definition of a "good" as does NAFTA. Although the WTO does not yet include an investor-state clause, in some ways it is more of a danger to the protection of water than NAFTA. This is because, unlike any other global institution, the WTO has both the legislative and judicial authority to challenge laws, policies and programs of member countries if they do not conform to WTO rules, and it has the power to strike down these rules if they can be shown to be "trade restrictive."

One provision of the WTO particularly places water at risk. Article XI specifically prohibits the use of export controls for any purpose and eliminates quantitative restrictions on imports and exports. This means that quotas or bans on the export of water imposed for environmental purposes could be challenged as a form of protectionism. A GATT ruling that forced Indonesia to lift its ban on the export of raw logs and a NAFTA ruling against a similar practice in Canada do not bode well for a nation's right to protect its natural resources.

Further, the WTO forces nations to forfeit their capacity to discriminate against imports on the basis of their consumption or production practices. Article I, "Most Favored Nation," and Article III, "National Treatment," require all WTO countries to treat "like" products exactly the same for the purposes of trade whether or not they were produced under ecologically sound conditions. If it were discovered that the commercial trade in water was destructive to watersheds, the WTO could prevent countries from restricting that trade because of environmental concerns.

WTO defenders argue that an "exception" included in the GATT will protect the environment and natural resources. According to Article XX, member countries can still adopt laws "necessary to protect human, animal or plant life or health...relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption." However, there is something known in trade jargon as a "chapeau" to Article XX, which means that the Article can only be applied in "non-discriminatory" fashion and cannot be a disguised barrier to trade. In the individual dispute cases that have come before the WTO to test these "protections, in each case the WTO has upheld the rights of commerce over the rights of environmental protection.

Also, any protections must be interpreted in a way that is "least trade restrictive." Further, the WTO does not recognize the authority of Multilateral Environmental Agreements (MEAs) and threatens to undermine agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Says US.-based *Public Citizen*, "The emerging case law...indicates that the WTO keeps raising the bar against environmental laws." If panel rulings to date are any indication, water is at great risk under the WTO, in spite of the so-called "exception."

A new agreement of the WTO, the General Agreement on Trade in Services (GATS), poses another serious trade threat to water sovereignty and conservation. The GATS was established in 1994, at the conclusion of the "Uruguay Round" of the GATT and was one of the trade agreements adopted for inclusion when the WTO was formed in 1995. Negotiations were to begin five years later with the view of "progressively raising the level of liberalization." These talks got underway as scheduled in February 2000, and are to reach a general agreement by December 2002.

The GATS is called a "multilateral framework agreement," which means that its broad commission was defined at its inception and then, through permanent negotiations, new sectors and rules are to be added. Essentially, the GATS is mandated to restrict government actions in regard to services, through a set of

legally binding constraints backed up by WTO-enforced trade sanctions. Its most fundamental purpose is to constrain all levels of government in their delivery of services and to facilitate access to government contracts by transnational corporations in a multitude of areas, including water and environmental services.

The GATS covers hundreds of types of water services—sewer services, freshwater services, treatment of waste water, nature and landscape protection, construction of water pipes, waterways, tankers, groundwater assessment, irrigation, dams, bottled water, and water transport services, just to name a few. Crucially, the object of GATS disciplines are not services per se, but rather government actions, initiatives and regulations that pertain to services and limit or prevent private-sector rights to service industries. No other agreement to date has attempted to reach so far into the policy jurisdiction of governments (although the proposed FTAA services agreement is modelled on the GATS).

Essentially, under proposed new wording, governments would have to prove that any measure or regulation related to water (and other services, like health care, utilities and education) were "necessary," based on "transparent and objective criteria," in accordance with "relevant international standards," and the least trade restrictive of all possible measures. For example, to defend standards on drinking water before a WTO trade panel, a government would have to prove that it had canvassed every conceivable way in which it might improve water quality, that it was subjected to an assessment of its impact on international trade in water services, and that it opted for the approach that was least trade restrictive of the rights of foreign private water providers.

Furthermore, the GATS has not even adopted the weak GATT Article XX exception relating to conservation, thus expressing an undeniable and deliberate intent to subordinate conservation goals to those of trade liberalization. As Canadian trade expert Steven Shrybman notes in his March 2001 legal opinion on the GATS: "At risk is the public ownership of water resources, public sector water services, and the authority of governments to regulate corporate activity for environmental, conservation or public health reasons."

WATER AND INTERNATIONAL INVESTMENT TREATIES

In addition to the above agreements, countries all over the world are signing Bilateral Investment Treaties (BITs) which, by and large, leave their natural resource sectors open to unconditional investment by one

another's corporations. There are now 1,720 bilateral agreements and the number grows every year. Most BITs contain a form of NAFTA's Chapter 11 provision, allowing corporations of the signatory countries to sue governments for "expropriation" compensation. This is the trade venue chosen by Bechtel in its suit against the government of Bolivia.

BITs are modelled on the Multilateral Agreement on Investment (MAI), a treaty proposed by member countries of the Organization for Economic Cooperation and Development (OECD) which was defeated in the fall of 1998 due to international opposition. Drafted by the International Chamber of Commerce, the MAI contained the same investor-state rights as NAFTA, but applied them to a wider range of sectors and corporations. Any "investor" of any member country could have claimed access to the natural resources of any other country without discrimination and would have had the right to sue for compensation if denied. The MAI set out clear rules for privatization of public assets, including natural resources.

These international trade and investment agreements are gaining in power and scope. Yet very few of the world's citizens are aware of their contents or even their existence. No plan for water protection can afford to ignore them; they form a clear and present danger to water stewardship and must be deeply reformed or abolished.

THE NEED FOR COMMON PRINCIPLES

> "Watersheds come in families; nested levels of intimacy. On the grandest scale the hydrologic web is like all humanity—Serbs, Russians, Koyukon Indians, Amish, the billion lives in the People's Republic of China—it's broadly troubled, but it's hard to know how to help. As you work upstream toward home, you're more closely related. The big river is like your nation, a little out of hand. The lake is your cousin. The creek is your sister. The pond is her child. And, for better or worse, in sickness and in health, you're married to your sink."
>
> —Michael Parfit, *National Geographic*

Presently, the world is poised to make crucial, perhaps irrevocable decisions about water. Outside of those now deliberately seeking to profit from the world's water crisis and those who have continued to pollute water systems even when confronted with evidence of the damage they have wrought, the harm done to

water to date has been largely unintentional and reactive—a combination of benign neglect, ignorance, greed, too many demands on a limited resource, careless pollution and reckless diversion. The human race has taken water for granted and massively misjudged the capacity of the earth's water systems to recover from our carelessness. Although we now must answer for the great harm we have caused, it is probably fair to say that no one set out to create a global water shortage or to deliberately destroy the world's water supply.

However, lack of malice is no longer a good enough excuse. We know too much. Forces are already established that would see water become a private commodity to be sold and traded on the open market, controlled by transnational corporations and guaranteed to serve investors and private sectors through global trade and investment agreements. If we do nothing now, this is the future of water.

THE ETHICS OF WATER SHARING

In order to begin to develop a comprehensive sustainable water ethic, it is first necessary to acknowledge that there is a profound human inequity in the access to fresh water sources around the world. Those who are water-poor live almost exclusively in the developing world; those who are water-rich live in the First World, where governments and corporations have become wealthy from the colonization and domination of the very areas now living in water-stress conditions. We have in this situation a tragic dilemma. It could be argued that the developed world has a moral obligation to share with water-poor areas, even though this would put great stress on already damaged ecosystems.

Those who view water as a commodity say that water flowing into the sea or situated in what one forest company CEO calls "decadent wilderness" is not of service to people or the economy and is, therefore, a wasted commodity. However, environmentalists warn that this is a simplistic analysis. For one thing, water situated in lakes is not available for export or diversion unless we choose to dry up those lakes. Only water that runs off from rivers to the sea or is mined from aquifers is actually available fresh water. Although Canada holds almost one-quarter of the world's fresh water, for instance, most of it is in lakes or river systems flowing north. To move large volumes of this water would massively tamper with the country's natural ecosystems.

Scientists warn that removing vast amounts of water from watersheds has the potential to destroy whole ecosystems. Lowering water tables can create sinkholes and dry up wells. Huge energy costs would be

associated with large-scale water movement; one version of the GRAND Canal scheme called for a series of nuclear power stations along the route to supply the energy needed for the movement of such huge volumes of water. Existing water diversions and hydroelectric projects are causing local climate change, reduced biodiversity, mercury poisoning, loss of forest, and the destruction of fisheries habitat and wetlands. Imagine what damage a mega-project such as the GRAND Canal might cause.

Scientific studies show that large-scale water removal affects not just the immediate systems, but ecosystems far beyond. "This work proves beyond all doubt that water is not 'wasted' by running into the sea. It suggests that the cumulative effects of removing water from lakes, rivers and streams for export by tanker could have large-scale impacts on the coastal and marine environment," says Canadian water expert Jamie Linton.

Richard Bocking says we strike a Faustian bargain when diverting rivers. "For power generation or irrigation today, we exchange much of the life of a river, its valley and biological systems, and the way of life of people who are in the way. As the cost of the last 50 years of dam building becomes evident, we can no longer plead that we don't know the consequences of treating rivers and lakes as plumbing systems."

However, what of the humanitarian argument that in a world of water inequality, water-rich areas have an obligation to share water supplies with others? Perhaps here it would be helpful to distinguish between short-term and long-term approaches. Importing water is not a desirable long-term solution for either the ecosystems or the peoples of water-scarce regions of the world. Water is such an essential necessity of life, no one should become dependent on foreign supplies that could be cut for political or environmental reasons.

It is also helpful to distinguish between *water trading* and *water sharing*. In a commercially traded water exchange, those who really need the water would be the least likely to receive it. Water hauled long distances by tankers would only be available to the wealthy, especially large corporations. Importing water for only those who could afford it would reduce the urgency and political pressure to find real, sustainable and equitable solutions to water problems throughout the world.

George Wurmitzer, the mayor of Simitz, a small town in the Austrian Alps, essentially captures the difference between water sharing and water trading when he expresses concerns about large-scale exports of water from his community: "From my point of view, it is a sacred duty to help someone who is

suffering from thirst. However, it is a sin to transfer water just so that people can flush their toilets and wash their cars in dry areas...It makes no sense and is ecological and economic madness."

As Linton says, "Perhaps the strongest argument against [commercial] water export is that it would only perpetuate the basic problem that has caused the 'water crisis' in the first place—the presumption that peoples' growing demands for water can and should always be met by furnishing an increase in the supply. This thinking has led to the draining of lakes, the depletion of aquifers and destruction of aquatic ecosystems around the world."

If, however, we maintain public control of water, it might be possible to share water supplies on a short-term basis between countries in times of crisis. In these cases, water sharing would need to be accompanied by strict timetables and conditions aimed at making the receiving region water-independent as soon as possible. This way, water could be used to encourage water system restoration. This kind of resolution is not conceivable, however, if the privatization of the world's water continues unchallenged; corporations would not allow a non-profit system of water transfer to be established.

THE ETHICS OF WATER PRICING

Similarly, the call to place a true economic value on water—increasingly made by environmentalists who rightly point out that in many water-rich countries, water is taken for granted and badly wasted—must be put in a political context. The argument is, if an accurate economic value were to be put on water, people would be more likely to conserve it. But in the current climate, there are serious concerns that need to be raised about the issue of water pricing.

First, water pricing exacerbates the existing global inequality of access to water. As we know, the countries that are suffering severe water shortages are home to the poorest people on earth. To charge them for already scarce supplies is to guarantee growing water disparities.

The issue of water pricing will therefore exacerbate the North/South divide. There is a sub-text to much of the hand-wringing over the world's water shortage. Almost every article on the subject starts with the reminder of the population explosion and where is it occurring. The sub-text is that "these people" are responsible for the looming water crisis. But a mere 12 percent of the world's population uses 85 percent of its water, and the 12 percent don't live in the Third World.

The privatization of this scarce resource will lead to a two-tiered world—those who can afford water and those who cannot. It will force millions to choose between necessities such as water and health care. In England, high water rates forced people to choose whether or not to wash their food, flush their toilets or bathe.

Second, under the current trade agreements, priced water becomes a private commodity. Only if water is maintained as a public service, delivered and protected by governments, can it be exempted from the onerous enforcement measurements of these free trade deals. The trade agreements are very clear. If water is privatized and put on the open market for sale, it will go to those who can afford it, not to those who need it. Once the tap has been turned on, by the terms of trade rules it cannot be turned off.

The World Bank says that it will subsidize water for the poor. Anyone familiar with the problems of welfare, particularly in the Third World, knows that such charity is punitive at best, and more often non-existent. Water as a fundamental human right is guaranteed in the UN International Covenant on Human Rights. Water welfare is not what the architects of that great declaration had in mind.

Third, as it is now envisaged, water pricing won't have much of an impact. It is generally accepted that water consumption in urban centers breaks down at 70 percent industrial, 20 percent institutional and 6-10 percent domestic. Yet most of the discussions about water pricing center on individual water use. Large corporate users notoriously evade the cost of their water altogether.

Finally, in an open bidding system for water, who will buy it for the environment and the future? In all of this privatization/pricing debate, there is precious little said about the natural world and other species. That is because the environment is not factored in to the commercial equation. If we lose public control of our water systems, there will be no one left with the ability to claim this life-giving source for the earth.

Yet the need to stop wasting water is urgent. The dialogue about water pricing is a crucial one; however, it must take place within a larger framework. To be both effective and just, any serious consideration of water pricing must take into account three factors: the global poverty gap, water as a human right and water in nature.

To deal with the first, the global poverty gap, there are several immediate actions governments could take. These include cancelling the Third World debt, increasing foreign aid budgets to their previous standards (.7 percent of GDP), and implementing a "Tobin tax" (a small, worldwide tariff) on financial speculation that would pay for water infrastructure and universal water services.

To deal with the issue of water as a human right, countries must adopt constitutions such as that of South Africa, which guarantees water first for people, second for nature and third for the economy. Every South African is guaranteed enough free water for basic needs; only then is there consideration of pricing.

To ensure that ecosystem survival is key to any new system that might include pricing, revenues raised must be used to protect the environment, restore watersheds, enforce clean water standards and repair faulty infrastructure which is currently the cause of great water wastage.

Further, the focus must be on the greatest abusers of water—large industry and corporate farming. Governments must bring the rule of law to those corporations that pollute and waste precious water. They must also implement a more just taxation system that captures some of the untold billions in taxation that large corporations now evade. These revenues would go a long way toward cleaning up the earth's dying water systems. Clearly, the focus must be on those who use water most and who then remove the benefits of using this common good, this public trust, from the community in the form of profits, particularly in an age of mergers and transnationals. Business has no right to deprive anyone of their inalienable human rights; if that is the price of profit, the price is too high.

None of these conditions however, is possible if water is not controlled in the public interest. If water is allowed to be commercialized and controlled by corporations, the profit principle will dominate. In this case, water-pricing would become a tool of the market, rather than be a tool that could be used as an incentive to conservation and to ensure that water remains a fundamental human right for every person on earth.

PROTECTING WATER: TEN PRINCIPLES

In order to take the kind of action needed by all levels of government and communities around the world, it is urgent that we come to agreement on a set of guiding principles and values. The following is offered as an opening dialogue:

1) Water belongs to the earth and all species.

Water, like air, is necessary for all life. Without water, humans and other beings would die and the earth's systems would shut down. Modern society has lost its reverence for water's sacred place in the cycle of life as well as its centrality to the realm of the spirit. This loss of reverence for water has allowed humans to abuse it. Only by redefining our relationship to water and recognizing its essential and sacred place in nature can we begin to right the wrongs we have done.

Because water belongs to the earth and all species, decision-makers must represent the rights and needs of other species in their policy choices and actions. Future generations also constitute "stakeholder" status requiring representation in decision-making about water. Nature, not man, is at the center of the universe. For all our brilliance and accomplishment, we are a species of animal who needs water for the same reasons as other species. Unlike other species, however, only humans have the power to destroy ecosystems upon which all depend and so humans have an urgent need to redefine our relationship to the natural world. No decisions about water use should ever be made without a full consideration of impacts to the ecosystem.

2) Water should be left where it is wherever possible.

Nature put water where it belongs. Tampering with nature by removing vast amounts of water from watersheds has the potential to destroy ecosystems. Large-scale water removal and diversion affects not just the immediate systems, but ecosystems far beyond. Water is not "wasted" by running into the sea. The cumulative effects of removing water from lakes, rivers and streams has disastrous large-scale impacts on the coastal and marine environment as well as on the indigenous peoples of the region, and other people whose livelihoods depend upon these areas.

While there may be an obligation to share water in times of crisis, just as with food, it is not a desirable long-term solution for either the ecosystems or the peoples of any region of the world to become dependent on foreign supplies for this life-giving source. By importing for this basic need, a relationship of dependency would be established that is good for neither side. By accepting this principle, we learn the nature of water's limits and to live within them, and we start to look at our own regions, communities and homes for ways to meet our needs while respecting water's place in nature.

3) Water must be conserved for all time.

Each generation must ensure that the abundance and quality of water is not diminished as a result of its activities. The only way to solve the problem of global water scarcity is to radically change our habits, particularly when it comes to water conservation. People living in the wealthy countries of the world must change their patterns of water consumption, especially those in water-rich bioregions. If they don't change these habits, any reluctance to share their water—even for sound environmental and ethical reasons—will rightly be called into question.

The key to maintaining sustainable groundwater supplies is to ensure that net extractions do not exceed recharge. Some water destined for cities and agribusiness will have to be restored to nature. Large tracts of aquatic systems must be set aside for preservation; governments must agree on a global target. Planned major dams must be put on hold and some current river diversions must be re-oriented to reflect a more natural seasonal flow or else be de-commissioned altogether.

Infrastructure improvement must become a priority of governments everywhere to stem the huge loss of water through aging and broken systems. Government subsidies of wasteful corporate practices must end. By refusing to subsidize abusive water use, governments will send out the message that water is not abundant and cannot be wasted.

4) Polluted water must be reclaimed.

The human race has collectively polluted the world's water supply and must collectively take responsibility for reclaiming it. Water scarcity and pollution are caused by economic values that encourage overconsumption and grossly inefficient use of water. These values are wrong. A resolution to reclaim polluted water is an act of self-preservation. Our survival, and the survival of all species, depends on restoring naturally functioning ecosystems.

Governments at all levels and communities in every country must reclaim polluted water systems and halt, to the extent possible, the destruction of wetlands and water systems habitat. Rigorous law and enforcement must address the issue of water pollution from agriculture, municipal discharge and industrial contaminants, the leading causes of water degradation. Government must re-establish control over

transnational mining and forestry companies whose unchecked practices continue to cause untold damage to water systems.

The water crisis cannot be viewed in isolation from other major environmental issues such as clearcutting of forests and human-induced climate change. The destruction of waterways due to clearcutting severely harms fish habitat. Climate change will cause extreme conditions. Floods will be higher, storms will be more severe, droughts will be more persistent. The demand on existing freshwater supplies will be magnified. To reclaim damaged water will require an international commitment to dramatically reduce human impacts on climate.

5) Water is best protected in natural watersheds.

The future of a water-secure world is based on the need to live within naturally formed "bioregions," or watersheds. Bioregionalism is the practice of living within the constraints of a natural ecosystem. The surface and groundwater conditions peculiar to a watershed constitute a set of essential parameters that govern virtually all life in a region; other characteristics, like flora and fauna, are related to the area's hydrological conditions. Therefore, if living within the ecological constraints of a region is key to developing a sustainable society, watersheds are an excellent starting point for establishing bioregional practices.

An advantage of thinking in watershed terms is that water flow does not respect nation-state borders. Watershed management offers a more interdisciplinary approach to protecting water. Watershed management is a way to break the gridlock among international, national, local and tribal governments that has plagued water policy around the world for so long. Watersheds, not political or bureaucratic boundaries, will lead to more collaborative protection and decision-making.

6) Water is a public trust to be guarded at all levels of government.

Because water, like air, belongs to the earth and all species, no one has the right to appropriate it or profit from it at someone else's expense. Water, then, is a public trust that must be protected at all levels of government and communities everywhere.

Therefore, water should not be privatized, commodified, traded or exported in bulk for commercial purpose. Governments all over the world must take immediate action to declare that the waters in their territories are a public good and enact strong regulatory structures to protect them. Water should immediately be exempted from all existing and future international and bilateral trade and investment agreements. Governments must ban the commercial trade in large-scale water projects.

While it is true that governments have failed badly in protecting their water heritage, it is only through democratically controlled institutions that this situation can be rectified. If water becomes clearly established as a commodity to be controlled by the private sector, decisions about water will be made solely on a for-profit basis.

Each level of government must protect its water trust: municipalities should stop raiding the water systems of rural communities. Watershed cooperation will protect larger river and lake systems. National and international legislation will bring the rule of law to transnational corporations and end abusive corporate practices. Governments will tax the private sector adequately to pay for infrastructure repair. All levels of governments will work together to set targets for global aquatic wilderness preserves.

7) An adequate supply of clean water is a basic human right.

Every person in the world has a right to clean water and healthy sanitation systems no matter where they live. This right is best ensured by keeping water and sewage services in the public sector, regulating the protection of water supplies and promoting the efficient use of water. Adequate supplies of clean water for people in water-scarce regions can only be ensured by promoting conservation and protection of local water resources.

First Nations Peoples have special inherent rights to their traditional territories, including water. These rights stem from their use and possession of the land and water in their territories and their ancient social and legal systems. The inalienable right of self-determination of Indigenous Peoples must be recognized and codified by all governments; water sovereignty is elemental in the protection of these rights.

Governments everywhere must implement a "local sources first" policy to protect the basic rights of their citizens to fresh water. Legislation that requires all countries, communities and bioregions to protect local sources of water and seek alternative local sources before looking to other areas will go a long way to halt

the environmentally destructive practice of moving water from one watershed basin to another. "Local sources first" must be accompanied by a principle of "local people and farmers first." Local citizens and communities have first rights to local water. Agribusiness and industry, particularly large transnational corporations, must fit into a "local-first" policy or be shut down.

This does not mean that water should be "free" or that everyone can help themselves. However, a policy of water pricing that respects this principle would help conserve water and preserve the rights of all to have access to it. Water pricing and "green taxes" (which raise government revenues while discouraging pollution and resource consumption) should place a heavier burden on agribusiness and industry than on citizens; funds collected from these sources should be used to provide basic water for all.

8) The best advocates for water are local communities and citizens.

Local stewardship, not private business, expensive technology or even government, is the best protector of water security. Only local citizens can understand the overall cumulative effect of privatization, pollution and water removal and diversion on the local community. Only local citizens know the effect of job loss or loss of local farms when water sources are taken over by big business or diverted to faraway uses. It must be understood that local citizens and communities are the front-line "keepers" of the rivers, lakes and underground water systems upon which their lives and livelihoods rest.

In order to be affordable, sustainable and equitable, the solutions to water stress and water scarcity must be locally inspired and community-based. Reclamation projects that work are often inspired by environmental organizations and involve all levels of government and sometimes private donations. But if they are not guided by the common sense and lived experience of the local community, they will not be sustained.

In water-scarce regions, traditional local indigenous technologies, such as local water sharing and rain catchment systems that had been abandoned for new technology, are being revisited with some urgency. In some areas, local people have assumed complete responsibility for water distribution facilities and established funds to which water users must contribute. The funds are used to provide water to all in the community.

9) The public must participate as an equal partner with government to protect water.

A fundamental principle for a water-secure future is that the public must be consulted and engaged as an equal partner with governments in establishing water policy. For too long, governments and international economic institutions such as the World Bank, the OECD and trade bureaucrats have been driven by corporate interests. Even in the rare instances that they are given a seat at the table, non-governmental organizations (NGOs) and environmental groups are typically ignored. Corporations who heavily fund political campaigns are often given sweetheart contracts for water resources. Sometimes, corporate lobby groups actually draft the wording of agreements and treaties that governments then adopt. This practice has created a crisis of legitimacy for governments everywhere.

Processes must be created whereby citizens, workers and environmental representatives are treated as equal partners in the determination of water policy and recognized as the true inheritors and guardians of the above principles.

10) Economic globalization policies are not water-sustainable.

Economic globalization's values of unlimited growth and increased global trade are totally incompatible with the search for solutions to water scarcity. Designed to reward the strongest and most ruthless, economic globalization locks out the forces of local democracy so desperately needed for a water-secure future. If we accept the principle that to protect water we must attempt to live within our watersheds, the practice of viewing the world as one seamless consumer market must be abandoned.

Economic globalization undermines local communities by allowing for easy mobility of capital and the theft of local resources. Liberalized trade and investment enables some countries to live beyond their ecological and water resource means; others abuse their limited water sources to grow crops for export. In wealthy countries, cities and industries are mushrooming on deserts. A water-sustainable society would denounce these practices.

Global sustainability can only be reached if we seek greater regional self-sufficiency, not less. Building our economies on local watershed systems is the only way to integrate sound environmental policies with peoples' productive capacities and to protect our water at the same time.

CONCLUSION

Not long ago, the world celebrated the 50th anniversary of the 1948 United Nations Universal Declaration of Human Rights. This Declaration marked a turning point in the long international quest to assert the supremacy of human and citizen rights over political or economic tyranny of any kind. Together with the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights, the Declaration stands as a 20th century Magna Carta. Besides granting full human rights to every person on earth regardless of race, religion, sex, and many other criteria, the Declaration includes the rights of citizenship, those services and social protections that every citizen has a right to demand of his or her government.

These rights include social security, health, and the well-being of the family, including the right to work, decent housing and medical care. The covenants bind governments to accept a moral and legal obligation to protect and promote the human and democratic rights outlined in the Declaration and contain the measures of implementation required to do so. The individual rights and responsibilities of citizens as established by the Declaration, together with the collective rights and responsibilities of nation-states as established in the covenants, represent the foundation stones of democracy in the modern world.

Yet a half-century later, the lack of access to clean water means that more than one billion people are being denied a right guaranteed them in the United Nations Declaration. Over those fifty years, the rights of private capital have grown exponentially, while the rights of the world's poor have fallen off the political map. It is no coincidence that the deterioration and depletion of the world's water systems has taken place concurrent with the rise in the power of transnational corporations and a global financial system in which communities, indigenous peoples and farmers have been disenfranchised.

The role of the state has been profoundly altered in recent decades. As writer and activist Tony Clarke explains, "Stateless corporations are effectively transforming nation-states to suit their interests in global transnational investment and competitiveness." It appears that governments and government institutions, even the United Nations, have become, at worst, captive to these corporate forces and, at best, unable to stand up to them. Citizens have been largely left to fend for themselves.

In recent years, an international movement of workers, social advocates, human rights groups and environmental organizations has come together to put human and ecological issues back on the political

agenda. They are forming powerful alliances with one another to affect government policy in their own countries and around the world and to dismantle or reform global institutions working against them. Public educators are meeting with one another to stem the assault on public education. Environmentalists are working together to slow the progress of international trade agreements. International anti-poverty activists meet regularly to forge a new international "Social Contract" for adoption by governments.

Similar groups are coming together to forge links and take direct action to protect water. The Blue Planet Project is an international initiative begun by The Council of Canadians to protect the world's fresh water from the growing threats of trade and privatization. During the March 2000 World Water Forum in the Hague, activists from Canada and more than a dozen other countries organized to oppose the Forum's privatization agenda and kick-start an international network to protect water as a common resource and a basic human right. A grassroots civil society movement, The Blue Planet Project, intends to become an active force in every country and community in the world.

Information on this project can be found at http://www.canadians.org/blueplanet

The time has come to take a clear and principled stand to stop the systematic devastation of the world's water systems. In the long term, nation-states have to be re-tooled in order to establish the regulations and protections necessary to save their water systems. International law must be developed that recognizes and enforces the social obligations of global capital in the interests of the global "water commons." Most important, the citizens of planet earth must move, and quickly, if we are to save it.

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Blue Gold is the second book in the NUMA Files series of books co-written by author Clive Cussler and Paul Kemprecos, and was published in 2000. The main characters of this series are Kurt Austin and his sidekick Joe Zavala. Blue Gold is about attempting to control the world's water at any cost, including mass murder. Kurt and Joe Z must stop these events from happening with the help of a scientist who discovered how to purify water and collect free energy from it. Intermetallic compounds include blue gold and its hues, ranging from light blue to saturated violet. In the photo: a wedding ring made of blue gold with a pink sapphire. Intermetallic purple is obtained by combining pure gold with aluminum or potassium. Blue gold alloys. Blue gold is a gold alloy with indium â€" AuIn2, containing 46% of 11-carat gold and 54% . The blue intermetallic compound is very fragile. The compound of gold and gallium â€" AuGa2 has a lighter bluish hue and contains 58% of 14K gold. 'Wars of the future will be fought over water, as they are over oil today, as our Blue Gold, the source of human survival, enters the global marketplace and political arena as a commodity to be sought out, fought over, and conquered. Will we survive?. Narrated by Malcolm McDowell, Executive Produced by Mark Achbar (The Corporation) and Si Litvinoff (Man Who Fell to Earth), based on the book 'Blue Gold: The Fight to Stop the Corporate Threat of the World's Water.