



**PACIFIC  
INSTITUTE**

**15th Anniversary Report  
1987-2002**



Never has the need to understand the connections among environmental degradation, unsustainable development, and political conflict been more apparent. And never has the need for effective and innovative solutions been more urgent.

## From the President

Is poverty an environmental issue? Can disputes over resources lead to political conflict and violence? Is access to clean drinking water a human right?

Are fundamentally new ideas needed to address the links among development, environment, and security?

In the mid-1980s, as the Cold War raged, a small group of researchers began asking questions, challenging old approaches, and creating innovative solutions to problems at the intersection of these issues.

Out of this came the Pacific Institute. Our goal: to bring people of different backgrounds together to find creative solutions to pressing environmental and social problems. Founded in 1987, the Pacific Institute has grown into a vibrant organization whose work is valued at the highest levels of international decision-making—and at the ground level of grassroots advocacy.

And although we have made progress on issues ranging from climate change to environmental justice, the world still faces an array of vexing challenges. In fact, never has the need to understand the connections between environmental degradation, unsustainable development, and political conflict been more apparent. And never has the need for effective and innovative solutions been more urgent.

The vision and approach that inspired our work fifteen years ago still guide us today. We remain fiercely independent. We are still focused on solving problems. And we are still committed to using science and research to illuminate, inform, empower—and promote change.

After fifteen years, we have many achievements to our credit: scores of reports and papers, reams of testimony and comment, collaborations with top-level policymakers and grassroots community groups, conferences, presentations, and awards. But our most rewarding achievements are the real changes in local, national, and international policies that come about because of our efforts—changes that we hope will make the world a more just, equitable, and sustainable place.

We cannot claim that the battle is won. Millions still die every year from preventable water-related diseases. Globalization and privatization of the world's resources are leading to controversy, dispute, and even violence. The risks from unavoidable climate change are looming ever larger as politicians—especially here at home—dissemble and delay. And the ability and willingness of governments to respond are being called into question.

The good news is that there is hope. We know how to provide clean water to the billions who lack basic services, and to manage water sustainably. We know how to protect against resource shortages, and to reduce the threat of environmental conflicts. We believe there are smart and effective responses to the risks of climate change.

As we look to the future, I am optimistic that open, independent research, innovative and original analysis, and advocacy driven by science instead of ideology can lead to a better world for all. And I'm optimistic that the Pacific Institute will continue to be a force for change.

Peter H. Gleick  
January 2003

*Founded in 1987 and based in Oakland, California, the Pacific Institute is a nonprofit research center dedicated to protecting our natural world, encouraging sustainable development, and improving global security.*



*The Pacific Institute's Oakland, California office.*

## Our Methods

The Pacific Institute conducts research, publishes reports, recommends solutions, and works with decision-makers, business leaders, advocacy groups, and the public to change policy.

Since our founding, we've become known for independent, innovative thinking that cuts across traditional areas of study. Our interdisciplinary approach not only helps us make connections that others miss, it also enables us to bring opposing groups together to forge effective real-world solutions.

## Our Vision

We envision a world where the basic needs of all people are met, where resources are managed sustainably and the natural world protected, and where conflicts over resources are resolved in a peaceful and democratic fashion.

## Our Programs

The Pacific Institute currently has five main areas of research: Water and Sustainability, Environment and Security, Community Strategies for Sustainability and Justice, Economic Globalization and the Environment, and Global Change.

**The Water and Sustainability Program** works on a wide range of water-related issues—from improving efficiency of water use and anticipating the impacts of climate change to studying water privatization and ensuring that the billions of people without access to basic water or sanitation services are not forgotten.

**The Community Strategies for Sustainability and Justice Program** integrates the Pacific Institute's research skills with the strengths of community-based groups to democratize decision-making, protect human health, and foster environmental justice.

**The Economic Globalization and the Environment Program** studies the effects of the increasingly integrated global economy on the environment and society. Current work focuses on performance-based regulatory innovation and on the policy implications of international environmental standards, such as ISO 14000.

**The Environment and Security Program** examines the connections between natural resources, the environment, and national and international security. The program also studies nontraditional threats to security, such as environmental terrorism, and the ecological impacts of war.

**The Global Change Program** focuses on the impacts of climate change on water supplies, wildlife, the environment, and human society, and works to educate policymakers and the public.



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January 1987: Six-year drought begins in California.

October 1987: Gorbachev begins to open Soviet Union with "perestroika" and "glasnost."

1987

October 1987: Pacific Institute for Studies in Development, Environment, and Security founded by Peter Gleick, Ronnie Lipschutz, Michael Maniates, and Gail Kimmel. Two-room office opens in Berkeley.

November 1987: First meeting of the Board of Directors, first grant provided by the Cowles Fund of the Ploughshares Fund.



# Water & Sustainability

**W**ater is one of our most precious and valuable resources. Without a gallon a day, you will perish. Plants and animals need a reliable supply, and it is critical to growing crops and etching chips.

Despite its importance, over 1 billion people around the globe still lack access to clean water and thousands perish daily for lack of it. In the natural world, many of our most important aquifers are being over-pumped and half of the world's wetlands have been lost to development. There is a political dimension to water as well: Almost every major river system on the planet is shared by two or more nations, making water a source of international conflict and a matter of national security.

As water cuts across disciplines and issues, so does our Water and Sustainability program. Since our founding in 1987, we've worked to bring attention to key issues that have often been overlooked: the impact of climate change on water, the role of water in conflict, water as a basic human right, threats to the world's water, efficiency and conservation and, most recently, the globalization and privatization of water.

## New Approach to Conservation

Underlying all of the Pacific Institute's work is the belief that a new approach to the way we plan, manage, and use water is urgently needed. The world's water problems flow from our failure to meet basic human needs and our inability

to balance human needs with the needs of the natural world. These maladies are both rooted in a wasteful use of water and an antiquated mindset towards gathering and distributing it. Only by developing a new approach that makes sustainability and efficiency paramount can effective and permanent solutions to these problems be found.

The good news is that we are making progress. We have succeeded in focusing water policymakers at all levels to look at the risks of climate change. The 2003 California Water Plan will officially acknowledge this issue for the first time and others are also beginning to consider the effects of global warming on water supply.

Work we've done on water-related diseases and the human right to water has changed the nature of the international debate over water policy—although too many still perish from preventable water-related disease. The Pacific Institute has also played a crucial role as an independent moderator in water-related disputes in the Middle East and we are working to reduce the risks of water-related conflict across the globe.

Our push toward a reevaluation of the importance of water-use efficiency and conservation is leading to fundamental changes in water policy in the western United States and elsewhere. And our work on the privatization and globalization of water has been widely praised by people on both sides of the debate.

**June 1988:** Dr. James Hansen testifies before the U.S. Senate that there is a strong cause and effect relationship between climate change and human activities.

**November 1988:** George H.W. Bush defeats Michael Dukakis to become the 41st President of the United States.

**February 1989:** Chinese journalists critique China's Three Gorges dam, arguing that the project will do little to control flooding while displacing over one million people.

1988

**July 1988:** The first Pacific Institute publication is released: "Climate Change and International Politics," by Peter H. Gleick.

**September 1988:** Pacific Institute gives its first testimony to the California State Legislature. The following month, Pacific Institute testifies to U.S. Congress. Both presentations are on climate change and water.

1989

**January 1989:** Pacific Institute continues to grow and moves to 1681 Shattuck Avenue in Berkeley, California to accommodate more staff.

## “Soft Path” Solutions

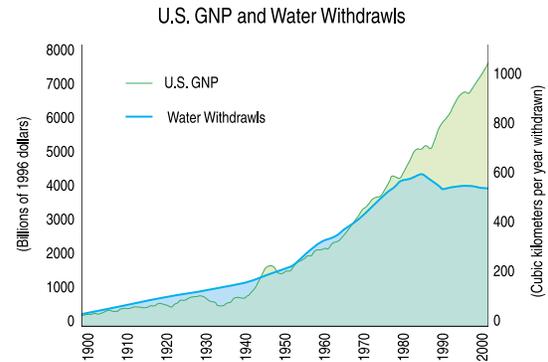
Despite these successes, more needs to be done—much more. The most important change we can make is in the way we think about water. Big dams and centralized storage projects have brought many benefits and are still needed in some parts of the world. But “soft path” solutions—conservation, efficiency, and community-scale infrastructure—can bring

clean water to billions who don’t have it while helping protect our natural world.

Old habits still linger, but new approaches abound. There are a host of solutions to the pressing problems of shortages, disease, and environmental destruction that, if properly used, will help us build a more sustainable and equitable future.

### TREND: BREAKING THE BOND BETWEEN GROWTH AND CONSUMPTION

For over a hundred years water use and economic growth have appeared to be tightly linked. But recently, radical improvements in the productivity of water use—combined with a growing awareness of the limits of natural systems—have broken the bond between economic growth and water demands. As the figure at right shows, water use and U.S. gross national product (GNP) rose together from the beginning of the 20th century until the late 1970s. Despite a \$3 trillion rise in GNP since then, total water use in the U.S. has actually declined. The good news is that we can continue to improve water-use efficiency, both here and abroad, by using existing cost-effective solutions and new technology.



- By 2020, enough water can be saved from indoor residential water conservation in California to meet the needs of over 5 million people.
- The quantity of water that Mexico City’s water supply system loses in leaks is enough to meet the needs of a city the size of Rome, Italy.
- Growing tomatoes with drip irrigation can save 40 percent more water than using traditional irrigation systems.

## RESULTS

### Water and Climate

The Pacific Institute’s groundbreaking research and persistent work with the media and policymakers has pushed California to be the first state to include the impacts of climate change in its long-term water planning.

### Demand-Side Management

The Pacific Institute has been one of the prime movers behind California’s water conservation and efficiency programs—saving the state billions of gallons annually.

### Colorado River and Salton Sea

Our work on the Colorado River delta has prompted the governments of the United States and Mexico to begin to recognize and address the tremendous ecological values supported by this region.

Our independent work on the hydrology of the Salton Sea has played an important role in efforts to protect it. Our conservation plan was the only alternative considered by the Salton Sea Science office.

### Privatization and Globalization

“The New Economy of Water,” the first comprehensive analysis of water privatization and globalization, has helped bring badly needed facts to a heated debate. The “Pacific Institute principles” outlined in the report are forming the basis for more open, transparent, and environmentally sound management.

### The World’s Water

“The World’s Water,” the biennial guide to water issues produced by the Pacific Institute and published by Island Press, has become one of the most important resources for researchers working on water. Our companion website, [worldwater.org](http://worldwater.org), provides key data on water issues and receives thousands of hits per week.

**November 1989:** The Berlin Wall falls and Eastern European communist regimes begin to collapse.

**June 1990:** The United States and the Soviet Union agree on major cuts in nuclear weapons.

**August 1990:** Iraqi troops invade Kuwait.

## 1990

**October 1989:** Pacific Institute hosts “Global Security” Conference with over 600 participants in San Francisco. Peter Gleick meets with California officials to discuss risks of climate change to the state’s water: officials not interested.

**March 1990:** Institute holds “Sustainable Resource Workshop” with UC Berkeley and the Transnational Foundation for Peace and Future Research (Sweden).

**September 1990:** Co-founders Ronnie Lipschutz and Michael Maniates take faculty positions. Pacific Institute publishes “Strategic Insecurity: Environment, Development, and Geopolitics in the Philippines,” by Linda Nash.



# Community Strategies for Sustainability & Justice

**S**ocial justice has long been the missing element from the debate over environmental pollution and economic development. Why are some neighborhoods plagued with toxic air while other nearby communities breathe easy? What are the links between political power, economic development, and environmental pollution? How can voices traditionally ignored become a productive part of policy and planning decisions?

Environmental justice compels us to uncover and address the gulf in resources, capacity, and quality of life among different communities; the Pacific Institute’s Community Strategies program brings science-based scrutiny and innovative solutions to this work.

Our program, launched in 1995, has grown out of the recognition that certain groups—often people of color, immigrants, or poor people—are left out of critical decisions that affect their neighborhoods and face serious health and environmental risks as a result. In response, the Community Strategies program works with local organizations and residents to give those that live in polluted neighborhoods the tools they need to advocate for change, clean up pollution, and protect the health of their families.

## Working in West Oakland

The West Oakland Environmental Indicators Project is one of the best examples of this approach. We are working closely with a long-ignored community to decide what issues are most important, what indicators—measurements of pollution,

human health, and economic power—to scrutinize, and what the best solutions are.

The report that we produced after more than two years of community-directed research, “Neighborhood Knowledge for Change,” shows that the West Oakland neighborhood has some of the most polluted air in the region, with childhood asthma hospitalization rates seven times that of the state of California. Other indicators show that West Oakland residents are vulnerable to displacement and gentrification, face five times more toxic chemicals per capita than residents of the city of Oakland, and live closer on average to contaminated sites and industrial areas than other Oakland residents.

The good news is that this research is helping the community lobby elected officials, educate their neighbors, and focus the attention of agencies and political leaders on the health and environmental burdens that West Oakland residents face.

## Brownfields Redevelopment

We’ve used a similar, community-driven approach to study the problem of brownfields—those hard-to-develop, and often contaminated, parcels of land that dot many industrial and residential neighborhoods.

Here again the Pacific Institute’s emphasis on scientific research and collaborative decision-making is helping to inform an often contentious debate. Our most recent report on brownfields highlights six case studies of effective community involvement in the redevelopment process and makes policy recommendations to improve the process.

**January 1991:** Gulf War begins with air strikes by U.S.-led coalition forces. Later that month retreating Iraqi army sets fire to oilfields in Kuwait.

**December 1991:** Soviet Union breaks apart and Mikhail S. Gorbachev steps down.

**January 1992:** Six-year California drought ends and a 10-year average-to-wet period begins.

1991

1992

**February 1991:** Peter Gleick prepares paper on water and conflict for the American Academy of Arts and Sciences.

**1991:** Pacific Institute releases assessments of the California drought, and groundwater overdraft in India.

**January 1992:** Linda Nash publishes op-ed in the Los Angeles Times about drought and the Sacramento/San Joaquin Delta.

## Water and Environmental Justice

Another important area of the Community Strategies program involves water. As part of the Environmental Justice Coalition for Water, the Pacific Institute is helping a coalition of community-based environmental justice organizations gain a formal foothold in the planning process, articulate their concerns regarding California water policy, and present facts and information to back these concerns up.

We are also creating an International Water Network of public interest groups to improve water and wastewater

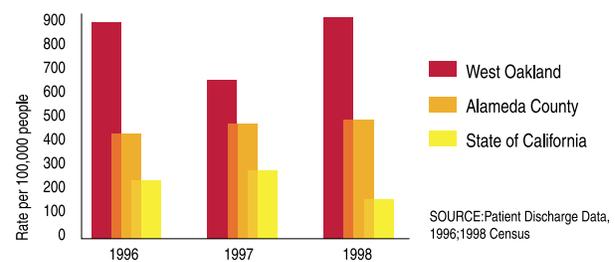
services worldwide. This network will provide residents and community organizations in underserved cities with the tools to exercise public oversight, improve service, and protect water quality, while also creating a forum to influence international decisions on water policy.

All of this work has been guided by the Pacific Institute's core values: belief that science can inform policy, that policy research must have real world value, and that the best solutions to environmental and social problems flow from fair, open, and democratic decision-making.

### TREND: NEIGHBORHOOD-LEVEL INDICATORS

Indicators are measurements of economic, social or environmental conditions. Neighborhood-level indicators break these measurements into more useful pieces allowing residents to better understand what is going on in their own backyards. By comparing a neighborhood's living conditions against other similar communities, decision-makers and the public can draw attention to inequities and work for change. The chart at right shows that children living in West Oakland are seven times more likely to be hospitalized for asthma than the average child in the state of California.

1998 West Oakland Asthma Hospitalization Rates for Children Under 15



- West Oakland has more toxic air pollution than any Oakland neighborhood (1998 data).
- Over 80% of West Oakland residents live in close proximity to a contaminated or potentially contaminated site.
- Less than half of West Oakland's registered voters voted in the 2000 presidential election—20% lower than in the city of Oakland.

## RESULTS

### Environmental Indicators Project

In "Neighborhood Knowledge for Change," we demonstrated that West Oakland residents are finding it more difficult to buy homes than their neighbors. The financier for the West Oakland Community Land Trust used evidence from the report to advocate for increased affordable housing funding.

Spurred in part by our report, the Environmental Protection Agency has begun to study the effects of diesel pollution, improve air quality, and protect the public health in

West Oakland.

Since the publication of the report, the Oakland City Attorney has moved aggressively to take on neighborhood blight and dirty air and has based the first member of its Neighborhood Law Corps in West Oakland.

After a meeting between residents, the Pacific Institute, Oakland's Mayor, and the City Manager, the Oakland Police Department began cracking down on illegal truck traffic in West Oakland.

### Environmental Justice

#### Water Coalition

The Environmental Justice Water Coalition has played an increasingly important role in California state water policy. This group has pushed CALFED—a coalition of state and federal agencies working to protect the San Francisco Bay-Delta—to formally incorporate environmental justice concerns into the planning process, and is also educating more than 300 community groups on state water policy.

### Community-Directed

#### Brownfields Redevelopment

Redeveloping brownfields—abandoned and often contaminated industrial areas—is key to reinvigorating inner cities and stemming the growth of sprawl. Our work in this area, including a major study of community participation in brownfield redevelopment, is helping to ensure that community concerns are taken into account before work begins.

**November 1992:** Bill Clinton defeats George H.W. Bush to become the 42nd President of the United States.

**February 1993:** President Clinton places restrictions on logging in old growth forests.

**June 1993:** The U.S. military protects United Nations aid groups in Somalia, where poverty, hunger, and environmental degradation are contributing to violence and governmental collapse.

1993

**July 1992:** Pat Brenner discovers Preservation Park, and the Pacific Institute moves to new offices near downtown Oakland.

**1993:** Peter Gleick leads the development of the Pacific Institute's new Water and Sustainability program.

**1993:** Pacific Institute publishes its first major book, "Water in Crisis," and also produces a study looking at the impacts of climate change on the Colorado River.



# Economic Globalization & the Environment

**T**he explosive growth of the global economy threatens the natural systems that sustain life on Earth. Despite some significant successes in reducing industrial pollution and increasing efficiency, globalization is devastating natural habitats, speeding global warming, and increasing air and water pollution. At the same time, due to the increasingly global nature of trade and business, traditional national environmental protection techniques have become less effective.

The Economic Globalization and the Environment (EGE) Program studies the local, national, and international impacts of globalization while developing solutions to support healthy economic growth, protect the environment, and create a more equitable world.

## Environmental Policy in Transition

Due in great measure to the pressures posed by globalization, environmental policy both in the United States and abroad is in transition. Many government officials, environmentalists, and business leaders believe that the traditional “command and control” regulatory system — as useful as it’s been in reducing pollution and regulating unsafe practices — is approaching the limits of its effectiveness.

In response, both environmentalists and corporations have begun to explore new approaches like voluntary, performance-based environmental initiatives. The Pacific Institute’s EGE program is working to influence these initiatives and environmental standards in general. Global environmental standards and voluntary industry

programs have many possible benefits for those concerned about environmental protection and social equity — provided these efforts are strong enough to be significant and credible.

One of the most influential standards-setting bodies is the International Organization for Standardization (ISO). And much of our work has focused on ensuring that ISO-created standards protect the environment, consumers, and the public at large. A comprehensive report on ISO’s environmental standards produced by the Pacific Institute in 2000 provided a critical, public interest analysis — while informing policymakers, environmental and consumer groups, and the general public about this important subject.

The EGE program also plays an important “insider” role by serving as a member of the U.S. Technical Advisory Groups to the ISO technical committees at work on issues including water management, eco-labeling, and environmental communications. The Institute was a founding member of the NGO Working Group on ISO 14000 — which worked to strengthen the voice of nongovernmental organizations (NGOs) participating in the standards-setting process — and EGE program director Jason Morrison currently serves as Chair of the ISO/TC 207 NGO Task Group.

## Organizing NGOs to Guide New Rules

Building on our past efforts in ISO, we have recently launched an initiative called the International NGO Network on ISO (INNI). This network is a response to ISO’s recent moves to expand its standards-making activities into areas

**April 1994:** South Africa elects Nelson Mandela as president. Country rejects apartheid-era water policy and puts a human right to water into the new constitution.

**October 1994:** The Israelis and Jordanians sign a peace treaty. The water section is influenced by the negotiating efforts of the Institute.

**January 1995:** 169 people are killed in the bombing of the Oklahoma City federal building.

1994

**January 1994:** Pacific Institute briefs Vice President Al Gore, members of Congress, and international policymakers on issues of environment and security.

**May 1994:** Peter Gleick gives keynote speech on environmental security to senior military officers at the U.S. Army War College. Pacific Institute staff lead workshops and roundtables on sustainability.

1995

**February 1995:** Peter Gleick meets with the Prime Minister of Jordan and Palestinian water experts.

such as water management, climate change, corporate social responsibility, and environmental reporting.

It is our firm conviction that ISO's headlong rush into these new areas of standardization can only be addressed by a more informed and coordinated response from members of the environmental community. The goal of this network is to ensure that any ISO-created standards serve the public interest and protect our environment. We aim to do this by providing timely information on the activities of ISO to network organizations so that they can activate their members, provide

guidance to decision-makers, and shape public opinion.

Global environmental standards and performance-based environmental protection have the potential to create a win-win-win situation by making corporations more efficient, reducing pollution, and protecting the public interest. But this bold promise can only be realized if environmentalists, labor organizers, and the public become educated and active. We hope our work will inform and empower those working to build a more sustainable and equitable world.

### TREND: NEW APPROACHES TO SUSTAINABLE DEVELOPMENT

Traditional efforts to regulate pollution have done much to improve air and water quality in the industrialized world. But as obvious sources of pollution are controlled, the cost of traditional regulation increases. And, as the global economy becomes increasingly complex and integrated, it becomes easier for corporations to dodge environmental regulations. One innovative solution is to create performance-based goals and let industry figure out the best way to reach them. As the diagram at right shows, the current regulatory system misses a wide range of pollutants, problems, and opportunities. By looking at the issue of environmental

protection more holistically, we can begin to create a cleaner, more efficient, and more sustainable world.



- Reducing pollution with traditional techniques has become more expensive as the "low-hanging fruit" has been picked.
- Traditional techniques cannot effectively address a large percentage of environmental challenges.
- Performance-based regulation can help industrialized and developing nations reduce pollution and protect natural areas.

## RESULTS

### International NGO Network on ISO

We have recently launched a new initiative, the International NGO Network on ISO (INNI), which aims to ensure that new standards in such areas as water management, climate change, and corporate social responsibility serve the public interest. We've already helped environmental groups, labor organizations, and other NGOs become more active players on important subjects that range from eco-labeling to international water management standards.

### Publications and Presentations

The Pacific Institute's report on ISO, "Managing a Better Environment: Opportunities and Obstacles for ISO 14001 in Public Policy and Commerce," provides a critical analysis of international standards from a public interest perspective. By informing policymakers, environmentalists, consumer groups, and the general public about this complex subject, we are helping ensure that ISO's standards are not used inappropriately.

### Influencing Standards Development

The Pacific Institute has helped steer the debate over global environmental standards for over five years by serving as a member of several of the technical committees that advise and carry out the work of the ISO. The Institute was a founding member of the NGO Working Group on ISO 14000 and EGE program director Jason Morrison currently serves as Chair of the ISO/TC 207 NGO Task Group.

### Shaping Regulatory Innovation

We are working to influence the rapid emergence of Environmental Management Systems (EMSs) in performance-based environmental regulation. As a board member of the Multi-State Working Group on EMSs—a coalition of state and federal agencies investigating the role of EMSs in policy innovation—the Institute is ensuring that performance-based regulation protects the environment and human health.

**October 1995:** Paul J. Crutzen, Mario Molina, and F. Sherwood Rowland win the Nobel prize for their work on chlorofluorocarbons (CFCs) and ozone depletion.

**January 1996:** France agrees to halt nuclear weapons testing.

**November 1996:** Congress approves multi-billion dollar plan to restore the Everglades.

## 1996

**November 1995:** The Pacific Institute publishes "California Water 2020: A Sustainable Vision" and is excoriated by the Department of Water Resources for "wishful thinking."

**May 1996:** Pacific Institute publishes a key paper on meeting basic human needs for water. Institute also publishes "The Sustainable Use of Water in the Lower Colorado River Basin," by Jason Morrison, Peter Gleick, and Sandra Postel.

**September 1996:** Irving Mintzer and Amber Leonard join the Pacific Institute, which becomes publisher of Global Change Magazine.



# Environment & Security

**T**he links between national security and the environment may not seem readily apparent, but these issues are deeply intertwined.

Armed conflicts are often caused by disputes over shared resources. And struggles over these resources are often the result of their depletion, degradation, or unsustainable use. Environmental issues often have a direct impact on armed forces and national security as well. Climate change, for instance, by threatening low-lying land, increasing the range of insect-borne diseases, and making disasters like floods and droughts more frequent, will tax armed forces—and civilians—across the globe.

And just as the environment affects security, the reverse is also true: War often causes extensive environmental damage and environmental destruction has been used since ancient times as an instrument of conflict. But with the rise in international terrorism, issues of sabotage and intentional environmental destruction are no longer confined to the battlefield. With growing frequency, environmental resources—air, water, energy facilities, and even forests and fields—are being targeted directly by terrorists and armed forces.

The Pacific Institute has been studying these issues, raising awareness about their importance, and finding practical solutions to the problems of environment and security since our founding. This work, which grew out of our early focus on conflicts over water in California and the Middle East, epitomizes the Pacific Institute's innovative, multi-disciplinary approach.

## Water-Related Conflicts and Environmental Security

Beginning in the late 1980s, the Pacific Institute began tracking water-related conflicts and created a timeline of these conflicts, which was later published in *Environment* magazine and has since been widely quoted. In the early 1990s, we published a series of papers on reducing water-related conflicts in the Middle East, the United States, and elsewhere that pushed policymakers here and abroad to focus on these issues and begin to create solutions.

In late September of 2001, we published the only in-depth analysis of environmental terrorism and helped the FBI and other government agencies prioritize risks to infrastructure and resources in the United States. We also made several presentations on climate change and security, water and conflict, and a wide range of environmental security issues to audiences including the National Defense University and the Urban Water Council. In 2002, we brought together arms control experts and water experts to discuss shared concerns and tactics. Currently, we are at work on a comprehensive, searchable research bibliography of all available literature on environmental security to aid those studying these issues.

## Future Threats

Looking into the near future, environmental security issues seem certain to grow in prominence. Global warming is sure to become one of the most pressing security issues of this century. It will reorder the political map by submerging some nations, flooding others, and creating refugees from rising

**January 1997:** Heavy floods cause major damage across the western United States.

**December 1997:** Delegates reach agreement on the Kyoto Protocol, a landmark agreement to reduce emissions of greenhouse gases.

**January 1998:** United States signs, but does not ratify, the Kyoto Protocol.

1997

**March 1997:** Economic Globalization and the Environment program is established, and Pacific Institute becomes involved in international environmental standards.

**October 1997:** Pacific Institute celebrates 10 years with a party in Preservation Park.

1998

**March 1998:** Pacific Institute becomes an active member of the Multi-State Working Group on Environmental Management Systems.

waters. Climate change also threatens armed forces around the globe: The increased spread of tropical diseases puts troops at risk and more extreme weather disasters will likely hasten their deployment to missions other than war.

Conflicts over water will also grow over the coming decades as growing populations demand more and climate change affects supply. With the overwhelming majority of the world's rivers shared by two or more nations, these challenges will test

diplomats and political leaders worldwide.

But despite this bleak picture, there is most certainly hope. Military leaders here in the United States and elsewhere are beginning to realize that environmental issues can be as threatening as bullets and bombs. Political leaders from the international to the local level are also learning a critical lesson: Sharing natural resources fairly and democratically is the surest way to prevent conflict and ensure a peaceful future.

### TREND: RESPONDING TO NON-TRADITIONAL ENVIRONMENTAL THREATS

An important trend in the area of international security is the growing danger of nontraditional threats. Terrorism is an obvious nontraditional threat, but environmental-security issues including climate change, environmental terrorism, and conflicts over natural resources are also of growing importance. Since our founding, the Pacific Institute has been working to increase awareness of these types of threats and also to bring experts from different, seemingly unconnected fields into contact.

As the diagram below shows, environmental issues can often play a role in sparking conflict and even warfare by impacting the availability of critical resources. In addition, armed conflict often has powerful environmental impacts.



- Nontraditional threats to international security are growing. Examples include terrorism, environmental refugees, and conflicts over resources.
- A single gunshot fired into the Alaskan pipeline by a deranged gunman spilled roughly 300,000 gallons of crude oil in October of 2001. Experts worry that an intentional attack against environmental assets or energy or water infrastructure could cause widespread damage.
- As critical resources like water and timber become more scarce, conflicts over them are likely to grow. Most rivers in the world, for instance, are shared by two or more nations and water is predicted to be in short supply in coming years.

## RESULTS

### Reducing Conflicts Over Water

In October 2001, the Pacific Institute hosted experts from the fields of arms control and water resources in a workshop designed to compare how each of these disciplines can help the other. Previous Institute work has helped defuse conflicts in the Middle East, the United States and Mexico.

### Addressing Non-Traditional Environmental Threats

Reports, seminars, and articles created by the Pacific Institute have begun to raise the awareness of military and civilian leaders in the United States and abroad. A searchable Web-based bibliography of research on environmental security, available in early 2003, will help those studying non-traditional threats.

### Raising Awareness of Environmental Terrorism

In September 2001, the Pacific Institute published the first comprehensive examination of environmental terrorism—the deliberate targeting of natural resources like water supplies or forests. Our work on this subject has been sought out by the FBI, the Army, the Navy, the Coast Guard, the Association of Metropolitan

Water Agencies, the Monterey Institute for International Studies, and officials at National Defense University. In November 2001 the U.S. Navy included the Pacific Institute in its Maritime Homeland Security War Game.

May 1998: India and Pakistan conduct nuclear tests.

January 1999: Global population reaches six billion.

September 1999: Thousands protest against globalization and the World Trade Organization in Seattle, Washington.

## 1999

December 1998: Pacific Institute and Island Press publish first book in the "The World's Water" series.

January 1999: Pacific Institute publishes "Sustainable Use of Water: California Success Stories."

April 1999: Peter Gleick publishes "The Human Right to Water," which argues that all humans have a right to sufficient water for their basic needs.

November 1999: Pacific Institute launches www.worldwater.org.



# Global Change

In the world of contemporary American politics, the dangers of climate change remain hazy and indistinct. But among scientists a consensus has formed: We must act. Although there is still much we don't know, an overwhelming majority of scientists who study the issue believe that global warming is already changing our climate, with dangerous and potentially deadly consequences for the future.

The threat of climate change cuts across all of the Pacific Institute's programs and has been a focus of our work from the beginning. The Global Change program is dedicated to studying the impacts of climate change, educating policymakers about the dangers, and creating real-world solutions to slow or reverse this threat.

## The Hidden Dangers of Global Warming

Many researchers have brought attention to the better-understood impacts of climate changes like rising sea levels and changes in weather patterns. The Global Change program has contributed to these efforts while also drawing attention to hidden, but critical, threats.

One example is the impact of climate change on water resources. As rainfall and snowmelt patterns change, water systems from New York to Beijing to Cairo will be threatened. And long before they are directly threatened by rising sea levels, Pacific Island nations and low-lying coastal areas may become uninhabitable as ocean water contaminates fresh water supplies.

Since our founding, we have been studying the impacts of climate change on water resources in the western United

States and beyond. In the mid-1990s, we completed a major assessment of the potential effects of climate change on the Colorado River basin, and in 2000 we directed the research and writing for the Water Sector chapter of the U.S. national climate change assessment. The good news is that a few states — notably California — have begun to act. The bad news is that too many policymakers still ignore the danger.

Another poorly understood threat from climate change is the threat it poses to national and international security. Flooding, changes in weather patterns, and spreading tropical diseases will cause dislocations and migrations across borders, raise economic and political tensions, and even directly threaten military operations. Here, too, much remains to be done, but work by the Pacific Institute has begun to make headway against the entrenched assumptions of security policymakers.

In 1996, we began publishing *Global Change Magazine*, a major research and policy newsletter. This publication has served as a critical link between climate scientists, policymakers, business leaders, professional journalists, and the public. By highlighting new science and policy developments in a clear, easy-to-digest form, we are contributing to a broader and more open debate, and speeding the implementation of solutions.

In the late 1990s, we expanded our efforts on climate change to include education and outreach to the developing world. Through our work with the Consortium for North-South Dialogue and Partnership on Climate Change, we've

**April 2000:** 30th Anniversary of the original Earth Day.

**December 2000:** The closest Presidential election in fifty years is decided in favor of George W. Bush by a 5-4 Supreme Court decision.

**December 2001:** National Research Council issues a report suggesting that abrupt climate change may wreak havoc on the United States.

2000

**August 2000:** Pacific Institute publishes second volume of "The World's Water." The website [www.worldwater.org](http://www.worldwater.org) is now receiving 200,000 hits per month.

**December 2000:** Pacific Institute finishes major national study on the threat climate change poses to the U.S. water supply.

2001

**February 2001:** The BBC names Peter Gleick as a "visionary on the environment" in its Essential Guide to the 21st Century.

helped give developing nations the tools they need to respond to global warming and its threats.

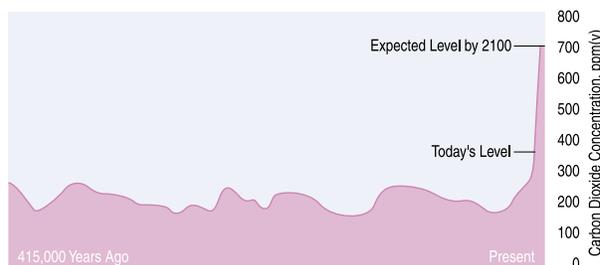
Most recently, we've begun to combine our expertise on international standards with our work on climate change to ensure that new rules being created by the International Organization for Standardization protect the public interest and lead to real action on global warming.

We've made significant progress in improving our understanding of the threats from, and solutions to, climate change. Unfortunately, political leaders—especially here in the United States—have lagged far behind the scientists. We know what we must do to slow the onset of climate change, and we are learning what will happen if we fail. Our task now is to convince our leaders to act in a timely and responsible way.

### TREND: THE GROWING THREAT OF CLIMATE CHANGE

Many political leaders, especially in the United States, continue to claim that there is too much “uncertainty” to take any action to combat climate change. And although some details are as yet unknown, an overwhelming majority of climate scientists believe that climate change has already begun. As the chart at right shows, carbon dioxide concentrations, which vary naturally over thousands of years, have shot up to levels not seen on the planet in the past 415,000 years—and over the next century they will double again without concerted international action. And, not only are carbon levels rising, so is the average global temperature: Nine of ten of the warmest years in the past century have occurred since 1990.

Atmospheric Carbon Dioxide, 400,000 Years Ago to Present



- Carbon dioxide from burning fossil fuel is the main cause of global warming. Over the last fifty years, atmospheric carbon dioxide levels have exceeded levels seen in the last 400,000 years and are predicted to double again over the next century.
- 2001 was the second-warmest year in the past hundred years (just behind 1998). Nine of the ten warmest years in the past century have occurred since 1990.
- Climate change may already be making bad storms worse. According to one major insurer, there were three times as many climate catastrophes—causing eight times as much economic damage—in the 1990s compared to the 1960s.

## RESULTS

### Global Change Magazine

Since 1996, Global Change Magazine has been one of the most respected sources of information on climate change. Published by the Pacific Institute's D.C.-based affiliates, Irving Mintzer and Amber Leonard, Global Change has given journalists, researchers, policy makers, and members of the business community detailed information on the likely impacts of, and solutions to, global warming.

### Climate Change and Water

The Institute has been a pioneer in bringing the issue of climate change to the attention of water policymakers. Most recently, the California Department of Water Resources has agreed to take the impacts of climate change into account when planning California's water policy. Research, education, and advocacy efforts by the Pacific Institute have been key to this decision.

### Climate Change as a Security Threat

One of the most critical impacts of climate change will involve national and international security. But with a multitude of post-cold war threats to worry about, global warming has long been ignored by the world's armed forces. Due in part to a concerted effort by the Pacific Institute and other groups, this has begun to change. The U.S. military, and other armed forces, are taking tentative steps to consider the impacts of climate change on regional and global security.

### Helping the Developing World

Although the focus of the Global Change program has been on influencing U.S. policy, we've also played a key role in the Consortium for North-South Dialogue and Partnership on Climate Change. Working with groups like the Bangladesh Center for Advanced Studies and the Andean Center for Economics and the Environment, we've begun helping developing nations adapt to climate change. Most recently, we've studied the impacts of climate change on the water resources of island nations.

**September 2001:** Terrorists attack the United States, damaging part of the Pentagon, destroying the World Trade Center, and killing over 2,800 people.

**January 2002:** Scientists from the University of California confirm that an algae-like organism has infected oaks, redwoods, and Douglas firs in California.

**August 2002:** World Summit on Sustainable Development gathers in Johannesburg, South Africa and calls for new efforts to meet basic water needs.

## 2002

**September 2001:** Pacific Institute publishes the first examination of environmental terrorism.

**January 2002:** Pacific Institute releases "Neighborhood Knowledge for Change" about conditions in West Oakland and holds a successful "toxic tour." U.S. EPA and Oakland's City Attorney and Mayor take note and step up efforts to assist the neighborhood.

**October 2002:** Pacific Institute celebrates fifteenth anniversary with an open house party, new logo, and anniversary report.

## STAFF

Anitra Balzer, Bookkeeper  
Patricia Brenner, Administrative and Finance Director  
Shirley Brown, Office Manager  
Nicholas L. Cain, Communications Director  
Elizabeth L. Chalecki, Research Associate  
Michael J. Cohen, Senior Research Associate  
Dr. Peter H. Gleick, President  
Dana Haasz, Research Associate  
Christine Henges-Jeck, Research Associate  
Diana Lee, Development Director  
Jason Morrison, Program Director  
Meena Palaniappan, Program Director  
Veena Srinivasan, Research Associate  
Dr. Gary H. Wolff, Principal Economist and Engineer  
Arlene K. Wong, Program Director

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Catherine Hunt, Research Assistant  
Michael Kiparsky, Research Assistant  
Jacki Kohleriter, Research Intern  
Taryn Lesser, Research Assistant  
Jason Malinsky, Research Intern  
Amar S. Mann, Research Assistant  
Ursula Mehl, Research Intern  
Mari Morikawa, Research Assistant  
Kurtis Seid, Research Intern  
Carol Underwood, Research Assistant  
Peggy Wu, Research Intern

## AFFILIATES

William C.G. Burns, Global Change project  
Amber Leonard, Global Change project  
Dr. Irving Mintzer, Global Change project  
Dr. Gregg Morris, Green Power project



*The Pacific Institute's staff. From left to right are (top row) Anitra Balzer, Shirley Brown, Nicholas L. Cain, Peter H. Gleick, Jason Morrison, Christine Jeck, Elizabeth L. Chalecki, Gary Wolff, (bottom row) Dana Haasz, Diana Lee, Patricia Brenner, Veena Srinivasan. Not pictured are Michael J. Cohen, Arlene Wong, and Meena Palaniappan.*



*The Pacific Institute's Board of Directors. From left to right are Richard Morrison, Gigi Coe, Peter H. Gleick, Ashok Gadgil, Anne Erlich, and Michael J. Watts. Not pictured are Kelly Cash, Catherine E. Fox, Jim Mayer, and Steven Nightingale.*

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"Your Pacific Institute work has been superb."

*Senator Paul Simon (D-IL)*

"In the world of adversarial environmental politics, the Pacific Institute plays an invaluable role. They seem to be equally at home with government, business, and the advocacy communities when addressing issues ranging from water management in the southern California deserts, to global sustainability. Their next challenge should be cloning — of themselves."

*Dr. Robert Stephens, Assistant Secretary for Management & Sustainability, California EPA*

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Susan Baremore, Research Analyst, 1995  
Jerry Bass, Director of Development, 1996-1999  
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Cynthia Chiang, Research Analyst, 1992  
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Tom Dudley, Senior Research Associate, 1992-1995  
Megan Fidell, Research Analyst, 1997  
David Fifer, Research Analyst, 1992  
Debbie Goldenberg, Admin Assistant, 1992-1993  
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Brent Haddad, Research Associate, 1995  
Haleh Hatami, Research Associate, 1992-1993  
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Anibal Hernandez-Santana, Research Analyst, 1995  
Eric Holst, Research Associate, 1993-1994  
Katherine Kao-Cushing, Senior Research Associate, 1999-2001  
Dave Karlinsky, Research Analyst, 1997  
Gail Kimmel, Director of Administration, Founder, 1987-1988  
Susan Kocher, Research Analyst, 1995

Clara Landero, Research Associate, 2000-2001  
Sharad Lele, Senior Research Associate, 1993-1994  
Nancy Levin, Executive Director, 1990-1995  
Ronnie Lipschitz, Founder, 1987-1990  
Penn Loh, Research Associate, 1993-1996  
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Ed Maurer, Research Analyst, 1989-1990  
Bruce McWilliams, Research Associate, 1994-1997  
Leia Muenster, Office Manager, 1998-2000  
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Lisa Owens-Vianni, Research Associate, 1997-1999  
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Anna Steding, Research Associate, 1995-1998  
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Andrea Sumits, Research Affiliate, 2001  
Shelley Tannenbaum, Research Analyst, 1989  
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Jeanny Wang, Research Analyst, 1993-1994  
Karen Witte, Admin Assistant, 1997-1998  
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“You want facts, credible and incontrovertible facts? Go to the Pacific Institute. You want a dedicated concern for the earth, its inhabitants, and the future? Go to the Pacific Institute. You want a small, smart staff that is connected to policymakers in the private and public sectors around the world? Go to the Pacific Institute. You want to fund the best of the best, with academic credentials but without the academic molasses? Go to the Pacific Institute. Now.”

*Michael Fischer, Senior Fellow, Hewlett Foundation*

## 2001 REVENUE AND EXPENDITURES

### Revenue

Grants and Contracts	\$1,567,194
Contributions	15,737
Endowment	138
Interest	6,587
Publications	2,214
<b>Total Revenue</b>	<b>\$1,591,870</b>

### Expenditures

Programs	
Water and Sustainability	\$514,176
Economic Globalization	165,546
Environment and Security	72,073
Global Change	419,354
Community Strategies	200,400
General Programs	173,586
Fundraising	60,666
<b>Total Expenses</b>	<b>\$1,605,801</b>

## 2001 BALANCE SHEET

*Consolidated Statement of Financial Position  
Period Ending December 31, 2001*

### Assets

Current Assets	
Cash (in interest-bearing deposits)	\$327,408
Marketable securities	82,281
Grants and contracts receivable	266,346
Other receivables	8,075
Prepaid expenses	11,984
Office Furniture and Equipment, net of accumulated depreciation of \$31,876	12,890
Office Lease Deposit	7,320
<b>Total Assets</b>	<b>\$716,304</b>

### Liabilities and Net Assets

Current Liabilities	
Accounts payable and accrued expenses	(\$207,474)
Net Assets	
Unrestricted	179,960
Temporarily restricted	328,870
Total net assets	\$508,830
<b>Total Liabilities and Net Assets</b>	<b>\$716,304</b>

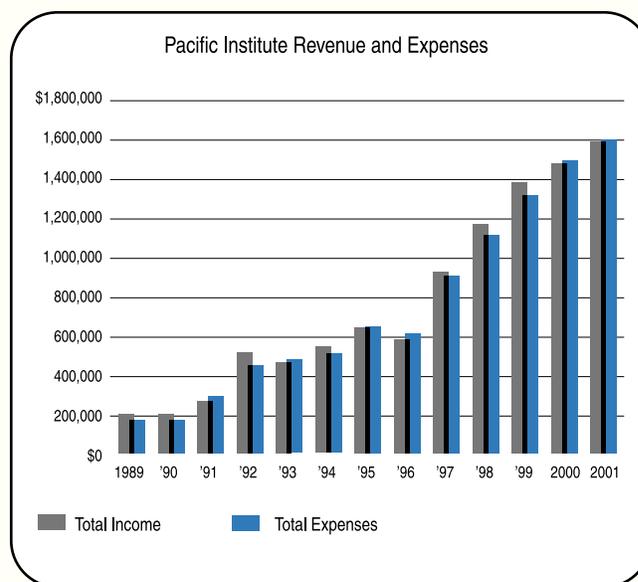
## 2002 PROJECTED REVENUE AND EXPENSES

### Revenue

Grants and Contracts	\$1,330,831
Contributions	25,500
Interest	1,058
Publications	5,267
<b>Total Revenue</b>	<b>\$1,362,656</b>

### Expenditures

Salaries	\$686,905
Program Expenses	244,197
Affiliate Programs	60,924
Fundraising	60,969
Management and Overhead	309,160
<b>Total Expenditures</b>	<b>\$1,362,155</b>



*Audited financials are available on request.*

"The work of the Pacific Institute has integrity and a quality unsurpassed in this soundbite world."

*Mandy Rose, Director of Integrated Waste Management, San Benito*

"This is an institute that focuses on the right questions, with the right biases (the planet, the poor, and safeguarding our global future) and does first-rate research to produce provocative, relevant recommendations. ...the Institute's work means that more and more of the world is paying attention to the important issues."

*Margaret Catley-Carlson, Chair, Global Water Partnership*

The Pacific Institute is grateful for the financial support of the following institutions, businesses, and individuals.

**FOUNDATIONS, CORPORATIONS AND AGENCIES**

Advisory Group on Greenhouse Gases, Sweden  
 Alonzo Printing  
 Bank of America  
 Ben and Jerry's Foundation  
 California Department of Water Resources  
 California Energy Commission  
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 California Wellness Foundation  
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Jeff Abbott  
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 Peter Menzel Photography  
 Thanksgiving Coffee

**MEMORIAL**

Dr. Jacquelyn June Wilson in memory of her parents, Josephine and John Wilson



**PACIFIC INSTITUTE CELEBRATES VISION OF MARY LECRON FOSTER**

Mary LeCron Foster, who played a key role in helping found the Pacific Institute, passed away at the end of 2001. Ms. Foster was the earliest supporter of the Pacific Institute and we celebrate her vision on the occasion of our fifteenth anniversary.

Known to her friends as Mickie, she saw the value in the idea of the Pacific Institute and supported a seed grant from the Cowles Fund of the Ploughshare Fund. That money allowed us to incorporate, gain nonprofit status, set up a board—and even paid some salaries. Mickie also served on our first board of directors.

Mickie's intellectual passions were the origin of speech and the role of social science in reducing international conflicts. She was a world-renowned anthropologist who, along with her husband George Foster, conducted field research in Mexico, Europe, and elsewhere.

Her contributions to understanding the relationships between symbolism and the origins of language are extensive and groundbreaking. In 1987, the Society of Women Geographers honored her with its Outstanding Achievement Award—one of many honors she received.

We will miss her vision, generosity, and intellect, as well as her willingness to help us understand how to be effective and productive in a complex and changing world.

—Peter H. Gleick

## CONTACT INFORMATION

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## 2002 SELECT PUBLICATIONS

“The World’s Water: The Biennial Report on Freshwater Resources: 2002–2003,” by P. Gleick et al (July, Island Press)

“The New Economy of Water: The Risks and Benefits of Globalization and Privatization of Fresh Water,” by P. Gleick, G. Wolff, E. L. Chalecki, R. Reyes (February, Pacific Institute)

“Threats to the World’s Freshwater Resources,” by P. Gleick, A. Singh, H. Shi (February, Pacific Institute)

“Healthy, Fair, and Profitable: A Win-Win Pesticide Policy,” by Gary A. Wolff (January, Pacific Institute)

“Neighborhood Knowledge for Change: The West Oakland Environmental Indicators Project,” by M. Palaniappan, A. K. Wong, S. Costa (January, Pacific Institute)

“The World’s Water” can be ordered from Island Press at [www.islandpress.org](http://www.islandpress.org). All of the other listed reports can be ordered directly from the Pacific Institute and are also available online at [www.pacinst.org/reports](http://www.pacinst.org/reports).

## PACIFIC INSTITUTE FIFTEENTH ANNIVERSARY REPORT

January 2003

*This publication is printed on paper made from 100% recycled post consumer waste. No chlorine or chlorine derivatives were used in the deinking or papermaking processes.*

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**Page 1 (Pacific Institute):** Photo by Brad Knipstein, (c) 2002 Pacific Institute.

**Page 2 (Water and Sustainability):** An Indonesian boy treats himself to a short swim under a waterfall in Batuan, Bali, Indonesia. Photo by Peter Menzel (c) 2002.

**Page 4 (Community Strategies):** Residents hold a clean air rally and protest in front of a polluter in West Oakland, California. Photo by the Pacific Institute (c) 2002.

**Page 6 (Economic Globalization):** People protest the World Trade Organization during anti-globalization protests that swept Seattle, Washington in December 1999. Photo by Jason Morrison, (c) 2002 Pacific Institute.

**Page 8 (Environment and Security):** The Magwa oil fields in Kuwait burn after being set on fire by retreating Iraqi troops at the end of the first Gulf War (May 1991). Photo by Peter Menzel (c) 2002.

**Page 10 (Global Change):** Mount Shasta is set against a field irrigated by California snowmelt. Photo by Peter H. Gleick, (c) 2002 Pacific Institute.

**Page 12 (Staff Page):** Group shot of the Pacific Institute staff taken in early 2002. Photo by Brad Knipstein, (c) 2002 Pacific Institute.

**Page 12 (Board Photo):** The Pacific Institute’s Board of Directors, 2002. Photo by Nicholas L. Cain, (c) 2002 Pacific Institute.

**Page 15 (Mary LeCron Foster):** Photo courtesy of the Foster family.





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