

Pacific Institute Report

WINTER
2001-2002

The Newsletter of the Pacific Institute for Studies
in Development, Environment, and Security

INSIDE

Environmental Indicators Project Steps Out

New Paper

**"A New Vigilance"
Focuses on Risks,
Solutions to
Environmental
Terror**

Update

**"New Economy of
Water" Looks at
Water Privatization**

Update

**Colorado River
Efforts Make
Progress**

In Depth

**Life After Kyoto?
Climate Change in
the Long-Term**

Letter From the President

Dear Friends and Colleagues:

As I write this, the tragic events of September 11 still reverberate in our thoughts. Like so many others, staff members of the Institute have been personally and professionally touched by the terrorist attacks on New York and Washington, DC.

The Pacific Institute was founded in 1987, with the belief that the old ways of thinking about development, environment, and security were outmoded. What we all witnessed a few weeks ago was a horrible reminder of the complexities of the new world we live in and the need to understand the real threats and problems facing us.

We've often complained about our full name. Yet we now find ourselves proud that our name explicitly recognizes that problems of international security, environmental protection, and the development of sustainable societies are not isolated and separate, but intertwined in fundamental ways. Never has the need to understand these connections been more important. And never has the need for effective and innovative solutions been more urgent.

2001 is coming to an end. And despite these terrible attacks, this year has been an exciting and productive one for the Pacific Institute. We continue to charge ahead, making dramatic progress in several key areas.

Our Community Strategies program, under the direction of Arlene Wong, continues to expand its scope and influence. Our work with local neighborhoods in Oakland to identify and publicize key environmental indicators is attracting more and more attention as a model for community participation.

Thanks to the well publicized and largely unintentional efforts of President Bush, the problems of global climate change have once again taken center stage. The Institute has been working on this issue since 1987, playing a key role in identifying impacts on water resources, recommending strategies for reducing those impacts, publishing and distributing Global Change magazine (under the guidance of Institute associates Irving Mintzer and Amber Leonard), and maintaining one of the best Websites on the subject (www.globalchange.org).

In recent months, largely at the urging of the Pacific Institute, the California Department of Water Resources agreed for the first time to incorporate the problem of climate change directly into the new California Water Plan. We are providing scientific background, recommendations, and special testimony on the subject to the California Assembly and Senate.

**Never has the need to
understand the connections
between development,
environment, and security
been more important.**

Continued on next page



From the President

Continued from previous page

Our second biennial water book, *The World's Water 2001-2002* (published by Island Press) was published in Chinese, including our analysis of the Three Gorges Dam project. Thanks to a grant from the Rockefeller Foundation, and support from Island Press, we recently mailed out 400 free copies of these books to libraries and researchers in developing countries. The next volume of the book, coauthored by nine Pacific Institute staff members, is to be published in the spring of 2002.

In other water-related news, Michael Cohen and Christine Henges-Jeck have released their new study "Missing Water: The Uses and Flows of Water in the Colorado River Delta Region." This new assessment of water use along the Colorado is the next step in our long-term effort to restore water to the threatened river delta ecosystem.

Use of our water-related Website (www.worldwater.org) has been strong. We've logged more than one million hits since the beginning of the year, and that's on top of the more than 800,000 hits we've received on our main site.

During the summer, I had the opportunity to brief senior representatives of the new Department of Defense on the risks of international conflicts over water resources. This was the first sign of interest in these issues by the new Bush administration and a sign of the influence and reputation of our work in the field of environment and security.

More immediately relevant, we have completed a project on environmental terrorism and we have published a new paper – by Associate Elizabeth Chalecki – on our website (www.pacinst.org) free of charge. It is making the rounds among policy makers and has been quoted in several newspaper articles on the subject.

I'm proud to say that four recent or current staff members have gotten married in the past few months – an optimistic action in a pessimistic time.

Much more is going on at the Pacific Institute – take some time to read the articles and the news of our activities.

And if you want more information, let us know – our mission is to bring knowledge and new thinking to the places where it can be of most value.

Peter H. Gleick
President

Editor's Note

Welcome to a new and improved Pacific Institute Report!

As you peruse this issue, you may notice that certain sections have disappeared and others have been renamed or reconfigured.

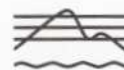
All this rearranging is an effort to make the newsletter more useful to our readers. And it's part of a larger effort to rethink how we communicate our work. The goal: to improve our outreach and get the knowledge we create into the right hands.

How are we doing?

Now's your chance to weigh in by responding to our online communications survey. It's available on our Website (www.pacinst.org) from the front page. We look forward to hearing from you.

Nicholas L. Cain
Communications Director
newsletter_editor@pacinst.org

Pacific
Institute
Report



The Pacific Institute Report is produced by the Pacific Institute for Studies in Development, Environment, and Security.

654 13th Street
Oakland, CA 94612

510.251.1600 (Phone)
510.251.2203 (Fax)

pistaff@pacinst.org
www.pacinst.org

Board Members

Gigi Coe
Dr. Anne H. Ehrlich
Catherine Fox
Dr. Peter H. Gleick
Jim Mayer
Richard Morrison
Steven Nightingale
Sam Schuchat
Dr. Michael J. Watts

Advisory Board

Ambassador Richard E. Benedick
Dr. Tracy Benning
Kelly Cash
Christina Desser
John Gamboa
Henry Izumizaki
Dr. Michael F. Maniates
Ms. Nancy Ramsey
Dr. Peter H. Raven
Hon. Claudine Schneider
Dr. Stephen H. Schneider
Peter Schwartz
Mal Warwick

Pacific Institute Report

Editor, Nicholas L. Cain

The Pacific Institute Report is printed on Process Chlorine Free 100% recycled paper with 50% post-consumer waste content



Indicators Project Steps Out Lends Support to West Oakland Clean Air Festival

The fight for cleaner air and a better environment brought hundreds of West Oakland residents out to a festival and rally held across the street from Red Star Yeast — one of the neighborhood's top polluters.

The festival's aim was to bring attention to the problem of air pollution in West Oakland and to educate community members about what they can do to clean up the neighborhood.

The Pacific Institute's Environmental Indicators Project (EIP) staff lent a hand with the festival's organization and also discussed the results of EIP's research with residents, local nonprofits, and community leaders.

Program staff handed out information on the core of the project — indicators that measure a range of social and environmental conditions, including those related to clean air.

And what the research demonstrates is not pretty: West Oakland residents suffer the lion's share of harm from local pollution while enjoying few of the benefits.

In 1998, polluters spewed over 33,000 pounds of toxic pollution into the skies of the neighborhood, making West Oakland's air the most polluted in the city. And, not surprisingly, children in West Oakland are seven times more likely to be hospitalized for asthma than the average child in California.

Yet, despite the pollution and the problems it creates for those who live there, members of the community see few benefits: Only 35 percent of those who live in West Oakland can afford a median priced house in the neighborhood and only 31 percent can

afford the median rent.

The good news is that residents and local organizations are working together to cut pollution, empower the community and make West Oakland a better place to live.

More information on EIP can be found at: <http://pacinst.org/eip/>

Environmental Justice

EJ Coalition Brings New Voices to Table



The third in a series of five CALFED environmental justice workshops was held in Stockton, California at the end of September.

The Environmental Justice Coalition for Water, an outgrowth of the Pacific Institute's community outreach and education project, has been instrumental in calling for and helping plan these workshops.

The workshops aim to help those traditionally left out of state water-planning efforts to have a voice in important CALFED decisions. CALFED is a coalition of state and federal agencies working to restore the Sacramento River delta region.

More information on the Coalition's efforts can be found at: <http://www.ejwatercoalition.org/>

New Reports

"Missing Water" Tracks Colorado River Flow

Six million acre-feet of water flow through the lower Colorado River in a year. But just over 100 miles from the Colorado River's mouth that flow is reduced to a trickle.

"Missing Water: The Uses and Flows of Water in the Colorado River Delta Region," describes the fate of the millions of acre-feet of water diverted from the Colorado.

The report compiles flow data along the mainstem and along diversions within the delta — the first time such data has been compiled for the region as a whole — and is available online or in print.

"New Vigilance" Looks at Environmental Terror

The Pacific Institute has just completed a new study of environmental terrorism entitled: "A New Vigilance: Identifying and Reducing the Risks of Environmental Terrorism."

The report, in the works for almost a year, discusses possible types of targets and also looks at ways to protect our natural resources from attack. The full report is now available without charge on our website.

Cadiz Water Project Analysis Shows Flaws

The Pacific Institute's economic analysis of the Cadiz Water Project shows water from the proposed project could be twice as expensive as advocates contend. Environmental groups are opposing the project because it would threaten fragile aquifers that lie under the Mojave Desert.

Our analysis is available online.

BRIEFINGS

WATER AND SUSTAINABILITY

On October 17, the Pacific Institute's President, Dr. Peter H. Gleick, discussed water and security issues on National Public Radio's KQED Forum with Michael Krasney.

Also in October, Dr. Gleick gave the keynote addresses to the Environment Section of the California Bar Association and to the annual meeting of the Association of Metropolitan Water Agencies on "Water in the 21st Century."

On October 9, Dr. Gleick gave the keynote address on water and energy at the 5th Biennial State of the Bay Conference at the Palace of Fine Arts in San Francisco.

An article by Dana Haasz was printed in the October issue of *Water Conditioning and Purification*. Ms. Haasz, a Research Associate with the Pacific Institute, wrote on the importance of demand management to California's water policy.

On September 17, Michael Cohen, Senior Research Associate, participated in a panel entitled "Providing a Reliable Water Supply in the San Diego/Imperial Valley/Baja California Region: An Overview" at the San Diego Dialogue's *Forum Fronterizo* in San Diego.

On September 10, *The Wall Street Journal* ran a piece discussing our economic analysis of the Cadiz water project and quoting Dr. Gary Wolff, the Pacific Institute's Chief Economist and Engineer.

COLORADO RIVER

The September issue of the peer-reviewed *Journal of Arid Environments* published an article by Michael Cohen and Christine Henges-Jeck, titled "A Preliminary Water Balance for the Colorado River Delta, 1992-1998." Ms. Henges-Jeck is a Research Associate with the Pacific Institute.

Mr. Cohen was also the U.S. coordinator for the Environmental Issues and the Technical and Scientific Studies panels at the United States-Mexico Colorado River Delta Symposium held in Mexicali, Baja California, Mexico from September 11-12.

SECURITY AND THE ENVIRONMENT

On November 9, Elizabeth Chalecki, a Research Associate with the Pacific Institute focusing on security, presented information on environmental terrorism to a seminar at the Monterey Institute for International Studies.

The Monterey County Herald ran a piece on environmental terrorism that week-end that quoted Ms. Chalecki in-depth.

On October 23-24 the Pacific Institute, Oregon State University, and the Cooperative Monitoring Center of Sandia National Laboratory organized a workshop on reducing water-related conflict that brought together arms control experts, environmentalists, and other researchers.

On October 19, the San Diego Union-Tribune interviewed and quoted Ms. Chalecki for an article on water supply safety and terrorism.

On September 20, Ms. Chalecki presented "New Security Challenges in the Global Era: Environmental Security," at the National Defense University's 2001 Topical Symposium on National Security and Globalization.

Also interviewed on this subject in September was the Pacific Institute's President, Peter Gleick. He provided background material to a recent piece written by Anthony DiPalma for the *New York Times* and was also interviewed by the *Arizona Daily Star* and *Portuguese National Radio*.

ENVIRONMENTAL JUSTICE

On September 20, *The Oakland Tribune* ran a feature piece discussing

the West Oakland Clean Air Festival that quoted Meena Palaniappan, co-director of the Pacific Institute's Environmental Indicators Project.

Ms. Palaniappan joined Monsa Nitoto, of the Coalition for West Oakland Revitalization, to present a talk on clean air in West Oakland to a group of McClymonds High School Students at the end of October. The speakers presented information on toxic air pollution and asthma rates in the community.

GLOBALIZATION AND THE ENVIRONMENT

The Pacific Institute and the Global Environmental Management Initiative hosted a workshop on corporate accountability on October 24. Environmentalists, researchers, including the Pacific Institute's Jason Morrison, community leaders and industry representatives came together to find common ground on what is meant by transparency and how best to achieve it.

CLIMATE CHANGE

William C.G. Burns, now an Affiliate with the Pacific Institute, wrote an opinion essay on energy that was printed in *The Columbus Dispatch* on November 11, and several other papers in the Midwest. The piece argues for increasing our use of renewable energy and energy efficient technology to reduce our dependence on foreign oil.

Gary Wolff spoke to a joint workshop of the Monterey Peninsula World Affairs Council and the Monterey Institute of International Policy on "Why the US is still married to fossil fuels." Dr. Wolff has been asked to speak again on the topic by California assembly-member Fred Kelley (D).

On October 23, William C.G. Burns delivered a public lecture at the Vernon Center of New York University entitled: "That Sinking Feeling: The Role of Carbon Sequestration in the United Nations Convention on Climate Change."

"New Economy of Water" Report Plumbs Water Privatization, Globalization

By Dr. Peter H. Gleick, President

Old approaches to addressing water problems – building large-scale dams, pipelines, and irrigation systems – have brought great benefits to hundreds of millions of people, but they have also had great costs.

One of the costs: Billions of people still struggle without access to the most basic water services – safe drinking water and adequate sanitation services.

New voices have begun to be heard in the water debate, and new ideas – good and bad – considered.

Among the most powerful and controversial of these new ideas is that water should be considered an "economic good," subject to the rules and power of markets, prices, multinational corporations, and international trading regimes. In the last decade, this idea has been put into practice in dozens of ways, in hundreds of places, affecting millions of people.

Prices have been set for water previously provided for free. Private companies have been invited to take over the management, operation, and sometimes even the ownership of previously public water systems. Commercial trade in bottled water has boomed. International development agencies that used to work with governments to improve water services are now pushing privatization efforts. Proposals have been floated to transfer large quantities of fresh water across international borders and even across oceans.

These ideas and trends have generated enormous controversy; but far more heat than light. Many unanswered questions remain about the true implications and consequences of treating water as an economic good and whether these new approaches can effectively and equitably serve human and environmental needs.

Controversy is building about protecting ecosystem quality and access to water. Debate is growing about how – and even whether – to price and sell a resource as fundamental and vital as water. Concern has been raised about how fresh water should be defined and treated by sweeping new international trade agreements. Violent

protests have broken out over efforts to give private multinational corporations control over local water resources.

In order to address these issues, the Pacific Institute is releasing a comprehensive analysis of this "new economy" of water ("The New Economy of Water" by Peter H. Gleick, Gary Wolff, Elizabeth Chalecki, Rachel Reyes). It discusses the globalization, privatization, and commodification of water; defines terms; reviews cases and examples; and offers principles and standards to guide policy-makers in the future.

There is little doubt that the headlong rush toward private markets has failed to address some of the most im-

portant issues and concerns about water. In particular, water has vital social, cultural, and ecological roles to play that cannot be protected by purely market forces. In addition, certain management goals and social values require direct and strong government support and protection.

Some of the consequences of privatization may be irreversible, hence they deserve special scrutiny and control.

As a result, the report concludes that any efforts to privatize or commodify water must be evaluated far more carefully than they have been and accompanied by guarantees to respect certain principles and support specific social objectives.

Among these are the need to provide for basic human and ecosystem water requirements, permit equitable access to water for poor populations, include affected parties in decision making, and increase reliance on water-use efficiency and productivity improvements.

Openness, transparency, and strong public regulatory oversight are fundamental requirements in any efforts to shift the public responsibility for providing clean water to private entities. These principles are defined and summarized in this paper.

The paper will be available for free from our website. Hard copies of the report can be ordered for \$20 from the Institute.

The headlong rush toward private markets has failed to address some of the most important issues and concerns about water.

Colorado River Delta Efforts Make Progress

Michael Cohen, Senior Research Associate

Mention of the Colorado River evokes images of powerful rapids racing through deep canyons, of the untamed and the primeval.

Yet the reality of today's Colorado river is far more mundane: it is a river controlled by dams and depleted by diversions, managed for offstream use and hydropower generation.

One of the areas most affected by the taming of the Colorado River is the river's delta-estuary ecosystem.

Historically, the Colorado River delta and the Upper Gulf of California sustained tremendous levels of biological productivity and diversity.

As late as 1922, after much of the delta had been cleared for agriculture and irrigators had begun to divert the river, Aldo Leopold described the region as a "milk and honey wilderness."

Human demands have dramatically reduced the amount of water reaching the delta. Except for unusually high flood years, virtually the entire flow of the Colorado is now captured and used before reaching the river's mouth.

However, even without the historic flows, the remaining delta and upper gulf ecoregions still comprise the largest and most critical desert wetland in North America, as well as one of the world's most diverse and productive marine ecosystems.

In recent years, flood release flows from upstream dams have prompted the reemergence of native cottonwoods and willows – creating more native riparian habitat than in the rest of the lower Colorado River – and have been strongly correlated with a rise in the shrimp catch in the Upper Gulf, an indication of the renewed viability of an important estuary.

Sensible Strategies Can Lead to Recovery

Although the original conditions in the delta probably cannot be restored, several plausible strategies for delivering water to the delta could improve and maintain

a substantial area of critical habitat and recreate the estuary conditions necessary for the recovery of endangered species.

More efficient management and allocation of the region's waters would not only improve ecosystem health, but could simultaneously provide substantial socioeconomic benefits for the indigenous tribes and fishing communities in Mexico that historically have relied on the river's water for their livelihood.

Until recently, the ecological and social significance of the delta/upper Gulf region were almost entirely ignored. Users and regulatory agencies disregarded environmental impacts in general, and paid no heed to the impacts of management decisions on habitat and communities in Mexico. This was partly due to the limited number of stakeholders – primarily U.S. irrigators and urban water districts – empowered to participate in decision-making processes.

Yet in the past year, in response to the efforts of the Pacific Institute, other non-governmental organizations (NGOs), and academic researchers in the U.S. and Mexico, recognition of the ecological value of the delta and Upper Gulf has grown markedly, even as a host of adopted and proposed changes pose new threats to the delta.

One of the most significant recent threats was created by the adoption of Interim Surplus Criteria (ISC) in January of this year. The ISC, designed to provide additional Colorado River water to California to facilitate the implementation of plans to reduce California's dependence on such water, will reduce the frequency and magnitude of the space-building and flood release flows that currently sustain the delta and enhance the Upper Gulf estuary.

To mitigate these potential impacts, the Pacific Institute and the NGO community proposed an alternative



Recent flood releases from upstream dams have prompted the resurgence of the delta's riparian habitat.

Continued on next page

set of interim surplus criteria (see www.pacinst.org/coriver.html) that would have created a specific baseline to protect the lower Colorado River and delta by establishing an interim set of tiered releases to meet their environmental needs.

Partly in response to the NGO alternative ISC and partly in response to a lawsuit (Defenders et. al. v. Babbitt), the U.S. Dept. of the Interior and SEMARNAT signed a Joint Declaration to Enhance Cooperation in the Colorado River Delta on May 18, 2000.

To discuss the implementation of this Joint Declaration, the Deputy Secretary of the Interior convened a meeting of U.S. stakeholders in October 2000.

At this meeting it became clear that many of the water users wanted to see some further demonstration of commitment to delta restoration from Mexico before they would be willing to move forward.

Binational Agreement Sets Stage

During one of the smaller working group sessions at the meeting, the Pacific Institute and several other stakeholders developed the idea of a binational, government-to-government level agreement, in the form of a "conceptual Minute," as an indication of this binational commitment.

This led to the adoption of Minute 306 – "Conceptual Framework for United States-Mexico Studies for Future Recommendations Concerning the Riparian and Estuarine Ecology of the Limitrophe Section of the Colorado River and its Associated Delta" – of the International Boundary & Water Commission on December 12, 2000 (click "What's New" at www.ibwc.state.gov).

The Minute specifically recognizes the role of NGOs in promoting awareness of the ecological value of the Colorado River delta, and formally recommends the establishment of "a forum for the exchange of information and advice among government and NGOs."

This forum has taken the shape of a multi-stakeholder binational planning committee, charged with planning and organizing the Mexico-United States Binational Symposium on the Colorado River delta.

The Pacific Institute was selected by the NGO com-

munity to participate on this planning committee, and played a lead role in organizing the panels and poster session on science and on-going restoration activities in the region.

This symposium took place in Mexicali, Baja California, on September 11-12, with expert panels on the institutional, hydrologic, and scientific issues in the delta.

The symposium was attended by more than 400 stakeholders from Mexico and the United States, including representatives of water users, state and federal agencies (including senior government officials from both countries), academia, community groups, and NGOs.

In deference to U.S. stakeholders' resistance to discussing restoration alternatives before they have a better un-

derstanding of the delta, the planning committee agreed to limit the agenda of the planned symposium to a discussion of what is currently known about the delta, with the expectation that this would provide the foundation for future discussions on restoration alternatives.

Unfortunately, the tragic events of September 11 limited participation and discussion at the symposium.

Some U.S. stakeholders now claim that they will be unwilling to discuss next steps until they have reviewed the proceedings from the symposium, due at the end of this year.

Progress Continues on Other Fronts

Meanwhile, progress on restoring the delta and the Upper Gulf of California continues on other fronts.

The State of California recently recognized the importance of the region and pledged to support research and collaboration in the area. On March 21 of this year, the California Resources Agency, Cal/EPA, and SEMARNAT issued a Joint Declaration "in Order to Carry Out Joint Activities for the Conservation and Sustainable Development of the Sea of Cortez Region."

Additionally, a research consortium announced the availability of \$400,000 for research in the Colorado River delta and Gulf of California, furthering the scientific understanding of the area and enhancing collabora-

**Aldo Leopold
once described
the Colorado
River Delta as a
"milk and honey
wilderness."**

Continued on page 10

Life After Kyoto? Exploration of Long-Term Climate Policy Strategies

Detlef van Vuuren

Editor's note: An earlier version of this report was published in 55 Change, the research and policy news letter on Global Change from the Netherlands.

The overarching objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2).

This requires long-term strategies to stabilize emissions. At the 6th Conference of the Parties to the UNFCCC, the Netherlands National Institute for Health and Environment organized a side event with the title "Life after Kyoto: Exploring long term strategies to control climate change" to discuss the contours of a plan that looks beyond the next decade.

What Greenhouse Gas Levels are "Safe"?

At the outset of the meeting, Rik Leemans made a presentation that focused on the quantification of climate policy objectives.

He began with a projection of temperature increases over the next century in the absence of mitigation policies, based on baseline scenarios taken from the "Special Report on Emission Scenarios," recently issued by the Intergovernmental Panel on Climate Change.

These scenarios yield a temperature change of between 1.5 and 6°C and sea level rise of between 50-80 centimetres by 2100. This will undoubtedly bring about substantial changes in climate.

In some cases, the impacts may be positive (such as extra precipitation in certain arid areas, for instance), while in many other cases the impacts will be disadvantageous.

Recent research has demonstrated that in the case of

Detlef van Vuuren is a researcher with the Climate Change Team of the Department of Environment & Nature Assessment, National Institute of Public Health and the Environment, The Netherlands

larger temperature increases, the balance will shift from both positive and negative impacts to a situation in which the disadvantages clearly outweigh the benefits. If the objective of the UNFCCC is also to limit the worst climate consequences at the regional level, and to protect certain unique ecosystems, then current research increasingly indicates that we must limit temperature increases to no more than 2°C above the level at the start of the 20th century.

What this means in terms of the level at which atmospheric greenhouse gases must be stabilized is strongly dependent on the sensitivity of climate to increases in such levels.

If the climate has low sensitivity (1.5°C after a doubling of greenhouse gas concentrations), then the carbon dioxide concentration will have to be stabilized below 650 ppmv to stay within the 2°C increase. If the climate is highly sensitive (4.5°C after doubling), the stabilization target can only be achieved at levels below 350 ppmv.

(Editor's note: A new study by researchers at the University of Illinois, released in June, indicates that the Earth's climate system is likely to be highly sensitive over the next century to increases in greenhouse gases, perhaps outstripping even the upper boundaries projected by the IPCC.)

However, given the fact that it is probably politically impossible to stabilize emissions at 350ppmv or below by the end of the century, the focus is now on how to stabilize emissions at 450ppmv.

Is Stabilization Possible?

In his presentation, Bert de Vries emphasized that climate policy scenarios are integrally tied to development strategies and priorities.

For example, will material growth be important, or will immaterial matters, such as healthcare and the environment, receive greater attention?



Continued on next page

In a rich world, focused on material growth, driven by globalization, the gap between baseline developments and the route needed to stabilize at 450 ppmv will probably be very wide. At the same time, there will be many opportunities for international cooperation and mechanisms such as technology transfers to drive efforts to reduce emissions.

A commitment to sustainable development programs could also play a salutary role in lowering emissions.

The speaker demonstrated that it is possible to stabilize greenhouse gas emissions levels at below 450 ppmv through technological options such as increasing efficiencies, fuel switching, and renewable energy programs, possibly supplemented with biological sinks and CO₂ removal.

One of the points for discussion is whether such measures will have to be taken as soon as possible, or whether postponement may prove to be a more cost-effective option.

The IMAGE-TIMER model, in fact, demonstrated that for both macroeconomic and environmental reasons, early action is more conducive to the achievement of low stabilization targets, in particular because it helps to stimulate technological innovation.

Computations with macroeconomic models, such as CPB's WorldScan model for the most part demonstrate that the macroeconomic costs associated with this stabilization scenario will be relatively limited (at most a 2% reduction of world GDP in 2100).

However, the consequences may be far more severe for individual regions or industrial sectors. Dr. de Vries concluded that other matters will also have to be taken into account in formulating long-term strategies and assessing costs, such as co-benefits between climate policy and other environmental policies and the distribution of burdens.

Nancy Kete of the World Resources Institute and Jip Lenstra of the Netherlands Ministry of Public Health, Physical Planning and Environment responded with the

perspective of policy makers and negotiators.

Dr. Kete concluded that the previous presentations had shown that the reductions provided for under the Kyoto Protocol would be inadequate in the longer term.

However, the Protocol would contribute both to the learning process and provide a framework for future negotiations. She posed the question of whether this has implications for the way the protocol is being implemented. Dr. Lenstra concluded that policy makers are uncomfortable when presented with a wide array

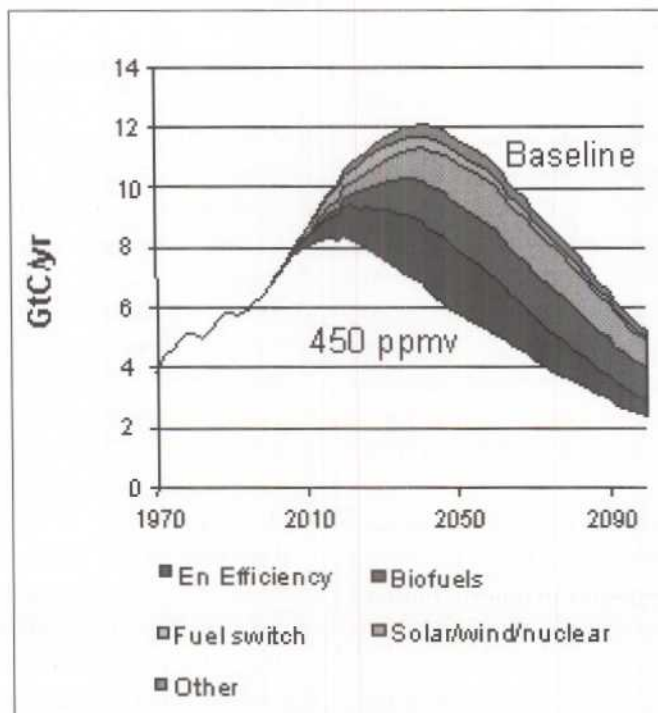
of possible scenarios, perhaps arguing in favor of presenting them with the worst case scenario.

Discussion

The discussion commenced with a response from Bert de Vries and Rik Leemans to the policy makers' views. Among their conclusions was that an important criterion for policy options is their effects on technological development.

There are other matters to consider when assessing whether large-scale carbon dioxide recovery and storage can play a major role in climate policy, including the cost of development and reliability of the option and possible implications of decentralization of energy supplies. At the same time, Dr. de Vries indicated that carbon dioxide recovery programs may be a critical component of long-term programs.

The open discussion initially concentrated on similar topics. What role can be played by CO₂ storage? Is there a part for biomass energy to play? Is nuclear energy a



Continued on page 10

Progress in Colorado River Delta

Continued from page 7

tion between researchers.

The Pacific Institute coauthored an article, entitled "Two Nations, One River: Managing Ecosystem Conservation in the Colorado River Delta," in the Fall 2000 issue of the *Natural Resources Journal*, which outlines a range of alternatives for enhancing and preserving the delta. Reprints are available from the Pacific Institute.

In September, the Pacific Institute published "Missing Water: the Uses and Flows of Water in the Colorado River Delta Region" (available online at www.pacinst.org or in hardcopy for \$10 from the Pacific Institute), providing for the first time a binational overview of water use throughout the region. This water balance offers a foundation for assessing water use and availability in the region.

Although new threats continue to present themselves – such as the proposed operation of the Yuma Desalting Plant and consequent desiccation of the Cienega de Santa Clara – recognition of the importance of the Colorado River delta and the Upper Gulf of California is cause for optimism. In his annual speech to the Colorado River Water Users Association last December, then Secretary of the Interior Bruce Babbitt concluded:

I want to emphasize that dealing with the needs of the Delta may be the single most important piece of unfinished business on the Colorado River, and I urge you, as water users on the American side of the border, to approach this issue proactively.

We know there are a number of potential win/win opportunities that can and should be explored in bilateral negotiations and with the advice of stakeholders in both countries.

With this growing recognition comes the water users' first, halting steps to better understand the issue, steps that with continued public pressure will lead to guaranteed water for the delta.

The Pacific Institute will continue to push the discussions forward, recommending win-win solutions and promoting sustainable uses that meet the needs of all stakeholders.

Life After Kyoto

Continued from page 9

viable option for reducing the emissions of greenhouse gases?

Opinions on these matters were highly polarized.

In regard to CO₂ storage, for instance, a representative from Statoil emphasized that the technology already existed and that the costs were relatively low in comparison with renewable energy.

Others, however, argued that further technological developments were necessary. Yet others had doubts about the reliability of storage. The talk gradually passed on to more strategic matters.

Would an emphasis on early action lock us into technologies that might not prove the most effective in reducing emissions in the long term? How do we identify technologies that would be most successful over the long term?

The discussion made it clear that there are many reasons to opt for ambitious emissions reduction targets in order to keep a tight rein on the risks of climate change.

There does appear to be a possibility of actually achieving those targets, but choices will have to be made. Opinions differ sharply about which choices.

The slides presented by Rik Leemans and Bert de Vries can be downloaded from the RIVM website: <http://www.rivm.nl/ieweb/>.

*Information on the response of Jip Lenstra can be found in the report *Climate Change: Solution in Sight*, A Dutch Perspective, which can be downloaded from: <http://www.ce.nl/bg.pdf>.*

Keep Yourself In The Loop!

Sign up for one of our
topic-based mailing lists at:
www.pacinst.org

Help Support The Pacific Institute *Bring Knowledge to Power*

Working at the intersection of environmental policy, sustainable development and security studies, the Pacific Institute brings independent, nonpartisan research to decision makers, journalists, and the public.

The generous support of foundations and individuals has allowed us to:

- Present research on environmental terrorism to influential groups including the National Defense University;
- help policy-makers in California and across the United States respond to the threat of global warming;
- and work with residents in West Oakland to provide neighborhood-level research on toxic pollution in the area.

**Now you can support our
work online!**

Make a secure, tree-free,
credit card gift at:
www.pacinst.org

**This fall, the Pacific Institute
will be part of the Bay Area
United Way Campaign.**

If you work in the San
Francisco Bay Area, please
consider designating Pacific
Institute to receive your payroll
deduction donation.

The Pacific Institute thanks the following supporters:

Bank of America	Island Press
Cal-Fed Bay Delta Program	John D. and Catherine T. MacArthur Foundation
California Environmental Protection Agency	Lang Family Foundation
California Resources Agency	Malcolm Pirnie
Carnegie Corporation of New York	National Renewable Energy Laboratory
Center for Environmental Information	North American Commission for Environmental Cooperation
Compton Foundation	Oracle Corporation
Conrad N. Hilton Foundation	Ploughshares Fund
David and Lucile Packard Foundation	Quantum Corporation
Environmental Water Caucus	Richard and Rhoda Goldman Fund
Firedoll Foundation	Rockefeller Foundation
Flora Family Fund	Rose Foundation
Fred Gellert Family Foundation	San Francisco Foundation
Friends of the River	Silicon Valley Group
Global Environmental Management Initiative	Sustainable Communities Leadership Program
Government of Canada: Department of Foreign Affairs and International Trade	U.S. Agency for International Development
Government of Norway: Royal Ministry of Foreign Affairs	United Nations Environment Programme
Government of the Netherlands	United States Environmental Protection Agency
Henry Luce Foundation	United States Geological Survey
Horace W. Goldsmith Foundation	Wallace Alexander Gerbode Foundation
IBM	Wells Fargo Foundation
International Institute for Energy Conservation	Western Environmental Law Foundation
	William and Flora Hewlett Foundation

Pacific Institute for Studies in
Development, Environment, and
Security
654 13th Street
Preservation Park
Oakland, CA 94612

Nonprofit
ORG.
U.S. POSTAGE
PAID
BERKELEY, CA
PERMIT NO. 403

Dr. Tim Krantz
Program Manager
Salton Sea Database Program
University Of Redlands
Center For Environmental Management
Redlands CA 92373

Pacific Institute Report

WINTER 2001-2002



INSIDE THIS ISSUE:

Environmental Indicators Project Steps Out

New Paper

"A New Vigilance" Focuses on Risks, Solutions to Environmental Terror

Update

"New Economy of Water" Looks at Water Privatization

Pacific Institute for Studies in
Development, Environment, and
Security
654 13th Street
Preservation Park
Oakland, CA 94612

Nonprofit
ORG.
U.S. POSTAGE
PAID
BERKELEY, CA
PERMIT NO. 403

Dr. Tim Krantz
Program Manager
Salton Sea Database Program
University Of Redlands
Center For Environmental Management
Redlands CA 92373

Pacific Institute Report

WINTER 2001-2002



INSIDE THIS ISSUE:

Environmental Indicators Project Steps Out

New Paper

"A New Vigilance" Focuses on Risks, Solutions to Environmental Terror

Update

"New Economy of Water" Looks at Water Privatization