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CLIMATE ALERT

Volume 9, Number 5 September - October 1996

Summary Information on the Washington Summit on Protection of the World's Climate, September 4 - 6

Intellectual electricity crackled through the sessions of the Summit , as more than 400 people circulated through the meetings.

In this issue:

- *conclusions from the Summit by Sir Crispin Tickell who chaired the meeting for three strenuous days;*
- *a condensed version of the luncheon address by Peter Goldmark, President of the Rockefeller Foundation, a high point of the three days;*
- *remarks by Senators Alvarez (Philippines) and Lieberman (US)*
- *a collage of photos snapped during the meeting.*

In the next issue: *a focus on green energy. Workshop reports:*

- *Opportunities for Green Energy Development in Key Countries,*
- *Progress on stratospheric ozone protection,*
- *Pace of future IPCC assessments,*
- *Mainstreaming zero emission vehicles.*

After the first of the year, *the Climate Institute will publish a volume containing summaries of many of the Summit sessions.*

Rockefeller Foundation President Lays Solar Energy Challenge

Peter C. Goldmark, Jr.

We have seen the emergence of a global economy, where capital and microchips rocket around the world, changing the landscape of investment, opportunity, wealth, and insecurity in the nation-states whose feeble, outdated borders and laws these flows sweep over, under, and around.

(Continued on page 3)

Tickell Stresses Energy Role of Governments and International Bodies

Our conference has covered three broad themes: the accumulating science on climate change, the impacts it is likely to have, and the particular problems these create for the future generation of energy. We began with theory and ended with the detailed practicalities. In so doing the Climate Institute has continued to act as a catalyst for both thought and action, and helped shift current paradigms. Such changes cannot take place overnight, but in the ten years since the creation of the Institute, major changes have taken place and the Institute has contributed

(Continued on page 2)

FALL CONFERENCE: **CHESAPEAKE BAY AT THE CROSSROADS**

Sponsored by the Climate Institute and held at **Washington College in Chestertown, Maryland on October 18-19** to highlight the forces threatening the fragile ecosystems of the Chesapeake Bay region.
Friday morning: sessions on climate change threats: **rising seas, disappearing islands, aquatic systems, and population growth** .
Friday afternoon panels: members of community and other constituencies: **Chesapeake Bay Program, fishermen, coastal property owners, coastal developers, state & federal agencies, legislature.**
Friday evening: Reception showcasing work of local environmental & government groups hosted by Climate Institute and Washington College. Presentation of **award-winning film** *Vanishing Lands* produced by Dr. Stephen Leatherman, Director of Coastal Research Lab, U. of MD
Saturday: Five concurrent sessions on **agriculture, wetlands, shoreline development, awareness education, and latest international report on climate change**
Lunch presentation of the results of the working sessions.
Post conference: visit local attractions & activities; infomation provided.
No charge for the conference but prior registration is requested. Please contact Michele Pena to register or for more information at 202/547-0104

Tickell

(Continued frpm page one)

greatly to them. We must not be depressed by the continuing inertia within the current system, and the mobilization of vested interest and interested parties, notably the fossil fuel industries, who are bound to mount a spirited resistance.

We must also accept the limitations inherent in much current thinking. There have been many appeals to market forces, and market forces are indeed a determining factor. But they are not the only factor. As I said yesterday, markets are superb at setting prices, but incapable of recognizing costs. Those costs, well brought out by a panel of the US National Academy of Sciences in its report on the *Policy Implications of Greenhouse Warming* in 1991, are primarily the responsibility of governments charged to look after the common interest. The current hierarchy of energy costs is artificial, and if social cost pricing were introduced would change overnight. There is also artificiality in many current finance mechanisms, as we have heard from several during the conference. I was impressed by Florentin Krause's analysis of the limitations of some of the economic modeling which was discussed in Working Group III of the Intergovernmental Panel on Climate Change Report. The picture he painted must have been unfamiliar to those who feel excessively daunted by the economics of climate change. Again we have to think anew.

I think our conference well brought out that the problem is not whether we should prepare ourselves for climate change with a green revolution, but how that green revolution should be launched. There are many factors, some negative and some positive:

- if energy prices and environmental protection cannot be left entirely to the market, we should not expect voluntary arrangements to meet the needs of the hour. In some areas governments must act, and set equitable ground rules of a mandatory kind;
- obviously we need cooperation and partnerships between the private and public sectors. In a small world cooperation soon reaches beyond frontiers. Few governments are strong enough to act alone. Here is a vital role for international organizations, ranging from the UN agencies concerned to the World Bank and the regional development banks;

Sir Crispin Tickell

- successful introduction of new technologies is often dependent on securing sufficient volume of production and thus bringing down costs. This is happening already, but clearly not enough. As was well said in the conference, more money may now be needed for advertising than for research, development and demonstration.

There are certain things that we have not discussed which perhaps we should have done. Three spring immediately to mind:

- the future role of nuclear energy as a renewable source. I know that there are many problems about use of nuclear energy but whereas some countries in the world have more or less renounced it, others are intent upon developing it, and see it as their primary source for the future. We need a thorough look at the whole issue. I very much support current efforts to set up a world commission on nuclear energy designed to produce a balanced assessment for the future;
- we have only briefly touched on the issue of size of future energy sources. Small may not always be beautiful, but there is a strong trend away from massive centralized systems toward more local, decentralized and self-sufficient technologies. This has many implications for our society;
- nor have we examined the artificiality of many of the measuring tools of current economics. The use of GNP or GDP as yardsticks of prosperity is grossly misleading, and we have to rethink our vocabulary. It is very relevant to the current debate.

I particularly welcomed the speech by Peter Goldmark of the Rockefeller at lunch yesterday. He made four points of great importance for all who, in his words, want to get off the fossil-fuel juggernaut. All are relevant to our current debate:

- first he underlined the importance of dialogue between scientists. The perceptions they share creep out and eventually infect government policy and public opinion. But of course this takes time, and we do not always have it;
- to speed things up he suggested a focused set of meetings among leading climate and energy scientists, key government decision

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makers and private sector leaders from China, India, Indonesia, South Africa, Mexico and Brazil (all countries with large and burgeoning populations). If this is to happen, the case for the use of solar energy must be made to them through due preparation by the experts concerned. He generously offered the Rockefeller facilities at Bellagio for the purpose;

• he then underlined, as I have done, the importance of bringing in the multi-lateral institutions. It would, he thought, be important for such bodies as the World Bank to stop lending, either directly or indirectly, for conventional fossil-fuel plants. Environmental sustainability should more than ever be the goal;

• last he suggested putting together a team to advise government leaders accordingly. He is already in touch with one or two possible members of such a team, including Jose Goldemberg, who is with us today. Such a team could make the case not only to the industrial countries but to reach political and business leaders around the world.

In all this the Climate Institute could continue to play its vital catalytic role. The modalities would be complex, and will need careful thought. But our conference today may come to be seen as a turning point at which things which were hitherto unthinkable suddenly emerge into the sphere of the possible as well as desirable.

We have had a wonderful conference. The points I have chosen to single out may seem somewhat arbitrary, and others may have different priorities. We are immensely indebted to John Topping, as President of the Climate Institute, and to his team for having put the conference together, brought the participants under one roof, and orchestrated such an interesting and fruitful result. In concluding I would like first to congratulate him, and then all the other participants who have made this an outstanding event.

GOLDMARK

(Continued from page 1)

How did it come to pass that there is so much wealth and yet so many are poor at the same time? How is it that we have instant telecommunications but are so out of touch with our own environment? Why are we so powerful for evil, so weak for good? So numerous and yet so alone? So well informed... and yet so uncertain? Why do we seem to share so little common purpose... when we share so much common ground?

During this autumn's madcap boisterous, rollicking, contumacious electoral contest we will not hear — believe me — many serious words uttered about climate change.

So let us have our conversation today knowing that we will have to return to the real world, acknowledging to each other that the human enterprise on the planet we inhabit is accelerating along a path which, figuratively, leads off a cliff into an immense abyss which we can barely fathom.

Why such a stark metaphor?

Here is why.

We humans are growing in number, and the amount of grain and grain-equivalent it takes to meet our demand for food is growing even faster. We do not know how we will be able to meet that demand over the long run. I personally believe that the food squeeze will come sooner, rather than later, and that we will see advance tremors of it in the next few years. But even if you disagree with that, and there are many who do, there is no one on this planet who can tell us how to produce, year in and year out, 3 1/2 - 4 1/2 billion metric tons of grain-equivalent by the year 2020.

Then there is energy. If we generate and consume energy on a global scale the way we do now in the North, we will all choke ourselves with waste and poisons, and climate change will accelerate probably sharply.

The butterflies are trying to tell us this already. The insect known as "Edith's checkerspot butterfly" is especially sensitive to subtle climate change. It has become one of the first biological barometers of climate change: it's been dying in Mexico and multiplying in northern California.

There are other aspects of the path we are on now that are not sustainable, but population, food and energy form an iron triangle. The path we are on runs right into the jaws of that iron triangle.

One of these jaws is climate change.

We're hooked on junk food — fossil fuel. It tastes good and it's killing us.

And what's amazing is that there are substitutes. There is a choice.

Will there be climate change?

Absolutely.

Why?

Because it is not conceivable, either statistically or intuitively, that the impacts of all the wastes that we are releasing into the biofilm will be neutral or positive.

I do not know whether things will get colder or hotter, whether the sea will rise or fall, whether there will be more desert or more tropical vegetation. I do fear that more fisheries will be depleted, that more arable land will be exhausted, that water will be less potable and less available, and that air will get more noxious.

But what I absolutely do not believe, and will not take the risk of hoping, is

We're hooked on junk food — fossil fuel, and it's killing us. But there are substitutes; there is a choice

(Continued on page 4)

Goldmark

(Continued from page 3)

that in this great, mindless, untended and unintended experiment, we lucky old human beings will wake up one day and find that our massive injections of the wastes of our civilization into the biofilm will miraculously make its intricate, beautiful and mysterious dynamic healthier, more benign and more durable.

As we try to find, together, the path to sustainable development, we are on the threshold of an important choice now. The issue is renewable energy, and solar is the breakthrough point.

We know there are two billion people who don't have electricity — and they want it.

How they get it has enormous consequences for all of us.

We know that the process we call development, the tool we call energy and the setting we call environment are inextricably bound.

We know that the purpose of development is to let people improve their lives — and that it takes energy inputs to improve your quality of life. It takes energy to be productively employed. It takes energy and *it will take lots more energy* for most of the people in the world to improve their lives. Let's not pretend otherwise.

But the fossil-fuel juggernaut combined with the desire of major states such as China and India for economic autarky means there are hundreds of conventional thermal stations on the world's drawing boards with dozens of giant utilities and independent power producers, and thousands of suppliers and contractors, lobbying to build them. Financial institutions, both private and public, stand ready to finance them. This vast machine could clank on for decades.

We are an amazing species. We finally figure out that we are really screwing things up big time. Yet we sit here with a whole new vocabulary of polite pettifoggery — no regrets, incremental cost per ton of carbon, climate abatement strategies, carbon stability at 1990 levels ... perfectly comfortable creating a new industry dealing primarily on the margins of the problem ... absolutely impervious to the actions of the past ... content to pretend that a North American's 7.8 metric tons of oil equivalent burned each year is a less appropriate starting point for the future than an African's one-half ton. Wrong. That's flat earth thinking.

> I believe the barrier to choosing solar is implementation and service systems, not technology

Many of you understand that the present energy paradigm has — excuse me — run out of gas. We think it is cheap and indispensable, yet at every opportunity we confuse present cost with future cost. Our high-power investment firms are so sophisticated about net present value ... why aren't they as savvy about future costs? When will we learn to apply the concept of present value to quality of life? to the opportunity or the destruction our children will inherit?

We do not know exactly what the energy paradigm of the future will look like. But we can and must begin making choices and adapting now.

I believe it is time to choose solar. A substantial part of the future can rely on commercially sound, technically reliable solar. I believe the price is right. Perhaps not in the US market today — but in rural, unelectrified, developing markets, it is *affordable* right now. And that's where most of the two billion people who want electricity are.

What is affordable?

Come with me to the Dominican Republic where it has been proven that with the right financing mechanism, solar energy can be brought to the rural poor on an unprecedented scale. A for-profit company has figured out a way to deliver household PV systems to villages on a monthly *leasing* basis.

A solar home system typically costs about $500 (US) — spread that over five or six years and the cost can be as low as eight dollars a month.

Let's remember what we've learned in the field of microenterprise: the poor are good credit risks. Look at Grameen. Look at Accion.

Now compare those eight dollars a month to the money — as much as $10 a month — the same family currently spends on energy like candles, kerosene, and dry cell batteries. And compare this to the much higher cost that would be spent by them or for them on power from the grid under the conventional thermal model — if the grid was extended to them. But what makes the old model unfeasible is the cost of the grid. No utility connects the rural poor unless it is heavily subsidized; when they do connect, the kilowatt-hours can be much more than two to three times more expensive than the ones produced by PVs.

I believe the technology is viable and reliable.We can expect improved modular and cost-effective manufacturing processes, lower unit costs, and simpler as well as more sophisticated applications. But in its present state, PV is strong enough to bet on. Today.

And we *can* expect to see the price driven down even lower than the price of conventional thermal power sources, without the environmental problems caused by them. The price of PV modules has decreased by approximately 20% for each doubling of the number of units produced in the past two or three years.

I believe the barrier to choosing solar is implementation and service systems, not technology.

The main problem is no longer R&D. It is implementation ...

market-driven implementation. What we need now are effective delivery systems for the product on one hand and the credit and servicing on the other. Old-fashioned, channels of distribution.

Several years ago the RF formed a small, lean, agile subsidiary which prepared and funded startup costs for renewable energy projects throughout the developing world. It's a fascinationg model. With core funding of a few million dollars a year, it has helped to develop and acquire capital financing for over two dozen projects worth $800 million. More important, it has helped to demonstrate the viability in technical and commerical terms of village level solar energy. Connecting two billion people is a challenge of implementation, not invention. Entrepreneurship, market forces, channels of product distribution and credit systems — this is the vocabulary of implementation. The history of a solar century will be written in the language of commerce, as well as technology. We have to rapidly expand the off-grid solar which has been shown to work in regions of Kenya and Morocco, South Africa, Mexico, India, and Zimbabwe, China, and throughout Central America and the Caribbean. Both small, village-level efforts, and larger, megaprojects, like the Enron-Amoco project in Rajasthan. And we need to promote on-grid projects tapping the range of solar technologies, because solar is not some micro-niche. Even in the US electricity generated with renewable, PV systems feeding into electric grids, and biomass from agricultural residues or energy plantations, are making strides. What do we have to do to get on this eminently sensible path — and to get *off* the fossil fuel juggernaut?

First scientists have to talk to scientists. Science is the *lingua franca*. Scientists are the international community whose judgments — over the long haul, imperfect and incremental as they are — are the strongest, long-range influence on our decisions about the technical dimensions of our large social decisions. Eventually the perceptions they share creep out and begin to infect government policy and public opinion.

But we need something that goes a little faster and a little farther than a twenty-year program of informal seepage. So what I suggest is a focused set of colloquia among the leading climate and energy scientists, key government policymakers and private-sector leaders from the following countries: China, India, Indonesia, South Africa, Mexico and Brazil. I would imagine the colloquia being structured as follows: an international team of scientists and policy experts would prepare the case for solar for each country on scientific, economic, equity and development grounds. They would than hold a series of meetings with key scientific and government leadership of those countries to talk and work through the solar vs. fossil issue in the country's development plans. The Rockefeller Foundation is willing to make available its conference center at Bellagio in Italy for such a series of conferences if that will facilitate them.

Second, the multilaterals have to get on board. Chief among these are the World Bank, the Inter-American Development Bank, the Asian and African Development Banks. It is time for multilateral decision-makers, especially in the World Bank, to say they will no longer lend for conventional fossil-fuel plants. Such loans contribute to a non-sustainable future; they are all too financeable in the conventional capital markets; but do not advance the goals of equity and development of the poor as much as a village-level, solar energy franchise system would. The real job of the Bank is to use its loans and its underwriting standards to nudge and cajole the commercial markets, to show the way to the new paradigm, with its dimensions of fairness and environmental sustainability.

Third, government leaders — who shape government policy, who influence the allocation of resources, who guide public opinion — need to begin paying attention to this. But there has to be more than that. The US and OECD countries have to get on board in practical, effective ways. And we have to reach business leaders around the globe, particularly in the multinationals.

We have to reach business leaders around the globe, particularly in the multinationals

We have work to do to define and pursue the path to sustainable development.

We will seek a path to a world in which we learn to close the gap between suffering and waste, and yet live in balance with the earth, our host. We will seek the path to a world in which material resources flow from those who have prospered to those who struggle to survive — not the other way round. We will seek the path to a common ground which allows us to safeguard and to leave for all children of the earth an inheritance of tall forests and clear water and clean air and fertile land as full as that we received from the generation before us. These paths are one path, not only one of hope but of necessity. The generation to which you and I belong will be judged finally — by our children, by history — by whether we can find and follow that path.

You and I do not know today how all this will come out. I cannot tell you and you cannot tell me whether we should be pessimistic or optimistic.

Whichever camp you belong to, of this I assure you: the road will be long and hard, sometimes unnerving. And I have the feeling that we are only at the beginning of it.

1. Dr. Jose Goldemberg, Univ. of Sao Paolo; 2. Bunker Power, 11, "What kind of car will I drive when I grow up?" 3. Dr. Stanford Ovshinsky, Pres., Energy Conversion Devices; 4. John Topping, Pres., Climate Institute; 5 Dr. Joanne Fox-Przeworski, UNEP; 6. John Noel, John Noel Investment Co.; 7. Dr. Stephen Viederman, Pres., Jessie Smith Noyes Foundation and Dr. Thomas Gale, Pres., Thomas H. and Barbara W. Gale Foundation; 8. Paul Pritchard, Pres., NPCA and Rep. Wayne Gilchrest; 9. Christopher Dabi, coordinator, Green Energy Partnership Program, Climate Institute, stepping into a prototype battery-operated GM Impact.

A Senator from US and One from the Philippines Urge Green Energy Support

"Science has turned the corner on understanding the causes of climate change," and we must now think about how to reduce and adapt to these changes, said Senator Joe Lieberman of Connecticut, in a speech to Summit participants.

Citing the signals we are receiving — from increased floods and drought, coastal damage, hurricanes and tropical storms, sea level rise, spread of infectious disease and loss of forests — he said the cost of doing nothing may be prohibitive. What is the best way of moving forward?

Dismissing voluntary changes to energy supply as unlikely to get the job done and regulatory policies as having no proven record, he proposed adoption of market incentives, including those for major technology and energy conservation.

We could use as a model, he suggested, the Clean Air Act 1990 Amendments which include: caps on emissions, industries selecting their own method of compliance, and a permits and emission allowance system, combining this with a series of major technology advancement programs.

Major technology and conservation advances would reduce the need for regulation and allow the US to become a world leader in energy efficiency technology by structuring public-private partnerships.

But we need economic incentives , he continued: from the market, signals that allow investment in maximum economic efficiency returns; from the government, funding of precompetitive R&D.

The framework we create is a great opportunity to build a sustainable energy path to the future. If we make a serious commitment , he concluded, we can do it.

Reform of the energy system to meet the challenge of climate change must begin now because time is short and the problem overwhelming, said Senator Heherson Alvarez in an address following Senator Lieberman.

Senator Joe Lieberman and Senator Heherson Alvarez

Senator Alvarez is Chair of the Environment Committee of the Philippine Senate.

While reliance on renewables is increasing more than ten percent a year, the Senator said, because it is still more expensive than conventional it is crucial to improve energy efficiency and to improve the transportation sector. He predicted that by the 21st century, commercial energy consumption in the developing world will account for almost all the increase in world energy consumption, and the consequences are already being felt. It is obvious that a radical shift — a green energy revolution — is needed, and he expressed the hope that "this

(Continued on page 8)

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Lieberman and Alvarez

(Continued from page 7)

symposium is a watershed."
A strong international public private partnership is needed. The public sector has not the capability to spark a evolution, and competitive concerns of the private sector prevent it from acting. But together they could create a regulatory environment "in which markets demand profitable and environmentally sound technologies."
Once greenhouse gas benign energy options are demonstrated, green energy will take off as the private sector opens up "its great investment potential to the benefits of renewable and efficient energy technologies."
But even after dramatic price falls, green energy is still not competitive. It is urgent, he insisted, to shift international R&D funding as the most cost-effective way of accelerating the arrival of cleaner and cheaper energy. The question to answer here and now is how these funds will be raised and for how long.

Watson Succeeds Bolin As Head of IPCC

Robett Watson

Dr. Robert Watson has been unanimously elected to head the Intergovernmental Panel on Climate Change, succeeding Dr. Bert Bolin , the first chair, who developed the panel into a strong institution over the past eight years.
Dr. Watson led Working Group II of the IPCC Second Assessment, with what one colleague called "legendary energy." Until recently he was Associate Director for the Environment of the President's Office of Science and Technology Policy, from which he left to become Senior Scientific Advisor to the World Bank.
In a statement following his election, Watson pointed out the difficulty facing the IPCC as every word will be carefully scrutinized because of the potential implications to the Convention process. In setting the course for the Third Assessment Report, he said he looks forward to working closely with the scientific and technical communities, and with the Conference of Parties and its subsidiary bodies, increasing emphasis on regional aspects of climate change by involving experts from developing countries and countries with economies in transition. He also wants to enhance the involvement of the industry, finance and business communities and environmental organizations. He hopes to improve the dissemination of information, particularly in non-English languages.
Dr. Watson gave the overview of our current understanding about climate change at the September Washington Summit opening symposium.
The Climate Institute awarded Dr. Watson its prize for scientific achievement in 1993.

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