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THROUGH THE ENERGY LOOKING GLASS: WHO SPEAKS FOR THE POOR?

By L.R. Wallis, Executive Director, Citizens for Total Energy

Sometime between dinner and the Milton Berle show on Dec. 8, 1953, this fervently democratic nation was astounded to learn that its president planned to give away America's most closely held national secrets at the height of the Cold War.

The time had come, said former soldier Dwight D. Eisenhower, who had led the Allied forces to victory in Europe during World War II, for the United States to beat the swords of atomic weaponry into plowshares of peace.

The president's unprecedented "Atoms for Peace" plan, unveiled that day at the United Nations headquarters in New York, would open up the field of nuclear science- until then controlled by governments for military purposes - only to help mankind by using the technology peacefully.

"President Eisenhower's vision changed the course of history," says Phillip Bayne, president of the U.S. Council for Energy Awareness. "For centuries, mankind had used technology to build bigger, more awesome weapons, each new version more lethal than the one before. Now, the technology that had been earmarked for weapons of mass destruction, more powerful than any in all of history, would be used to help heal and feed people and to improve their lives by providing the energy to produce electricity as well as new products."

In the four decades since this radical idea was offered, the uses of this technology have grown dramatically affecting our daily lives through electricity, medicine, and consumer products. Today, 423 nuclear power plants generate 17 percent of the world's electrical energy. Factories worldwide use radioactive gauges to test materials for defects and ensure the safety of bridges, automobile tires, roads, and airplanes. Products not invented 40 years ago - videotapes, contact lenses, and cleaning solutions - are made safer, more effective and at a lower cost through nuclear technology. Over 6,550 nuclear machine centers across the globe save lives by using radioactive materials to treat and diagnose illnesses. Ninety percent of all drugs are tested with radiation during their development. In the U.S., one out of every three hospital patients undergoes a beneficial procedure using radiation.

Electric power is required at this stage of civilization for almost every economic and cultural activity. For most of the uses to which electricity is put, there are no reasonable substitutes. While it may sound romantic, no one would seriously entertain the possibility of returning to the era of gas lights, oil lamps and candles in those regions where electricity is available for lighting. There is no possible substitute for radio, television, the telephone or the computer.

In short, electrical energy has become so ubiquitous and essential in the industrialized world that it has

almost joined the classical list of food, shelter, and clothing as one of the necessities of modern life. Just as the terms "bronze age", "iron age", and "industrial age" have been used as indices to technology in characterizing periods in the advance of civilization, today we can say we are in the "age of electricity." Amazingly, it has attained this state in just over a hundred years of our modern history.

Yet, when we as a nation consider the world's need for more energy, we become somewhat like that storybook character Alice in Wonderland.

One moment we think very big, the next we think very small. One moment we say we must develop all energy resources as quickly as possible. The next moment we hear shouts like "harness the wind, the sun, and the tides." Or we listen to jabberwocky saying the world does not need any new or expanded energy resources; conservation alone will solve all the problems.

Like the Mad Hatter, some people continuously run around with wondrous charts and long lists of statistics stuck in their hats ready to prove their point. Others sit on their academic toad stools and merely cry "Doom." A few puff their cheeks, and yawn, "Why worry?" It is enough to give Alice and anyone else a monstrous headache. Yet decisions must be made.

So, "Where do we go from here?" asked Alice.

"That depends a good deal on where you want to get to," said the Cheshire cat.

When looking at energy, the answer also depends on where you have been.

For a moment, let's step back in history a million years. Primitive humans each used some six thousand units (BTUs) of energy a day derived simply by eating food. One hundred thousand years ago our hunting ancestors used fire to cook and to warm themselves and consumed 24 thousand units - four times as much energy. By the 15th century, the medieval populous had learned how to use animals, windmills, waterwheels and coal consuming 120 thousand units of energy - 20 times as much as early man. By 1875, the steam engine had put 340 thousand units a day at the disposal of industrial man in Alice's country of England.

In today's technological society, America is at the top of the benefit table with an average yearly consumption per person of 337 million units of energy ... over 56,000 times as much as the primitives.

In today's industrialized world, it takes the energy equivalent of one-half glass of diesel fuel just to put a glass of milk on the table; two pounds of coal to produce a one pound loaf of bread; and three pounds of coal to produce one pound of hamburger. Making a car uses the energy equivalent of 1.3 tons of oil; running it for a year, another 1.3 tons. Each day transportation in the U.S.A. consumes 836 Olympic-sized swimming pools of petroleum fuel.

In the midst of these riches, it is easy to forget that the world's population increases by one million every four days... 177 people every minute, and such growth is expected to continue for another 120 years. By 2010 there will be 520 million extra car loads of people in South Asia, one million extra car loads in Europe and there will be one million extra car loads in just one Indian city... just one. By the end of the next century, five billion more people will be added to our present population of 5.5 billion. Most of them will be in underdeveloped countries where they will be crammed into ramshackle, dirty cities or left to struggle in rural wastelands. More people will almost certainly mean more pollution as they strive to power their lives with the nearest means at hand... fossil fuels.

Giving these additional five billion even a halfway decent standard of living means giving each of them adequate housing, food, transportation and 1,000 kilowatt hours of electrical energy per year. Ignoring the

energy needed for the basic necessities of life 1,000 kilowatt hours per person means 742,000 megawatts of new electrical generating capacity. Multiply that by the amount of carbon dioxide produced by burning fossil fuels and you will find the answer falls off your calculator.

It boggles the mind to think that five billion more people will be added to a planet where existing overtaxed infrastructures are already collapsing. Many water conduits in the developing countries are crumbling and raw sewage runs into the water lines.

The availability of clean drinking water has already failed to keep pace with population growth. And there are few toilets and washrooms to break the transmission of disease. A recent Mexican health ministry study revealed no less than 80 percent of the food served on the streets of Mexico City contained fecal bacteria.

In Mexico's poverty-stricken Chiapas region, most of the homes have no method to dispose of human feces, other than in the gardens that surround the household. When the rainy seasons come, the human waste is washed into the water supply. Even though drinking water is carried by women long distances, it is seldom safe.

Prevention - by boiling water for drinking and washing food - is a matter of economics: Many families lack the money to buy kerosene. Boiling one liter of water for 20 minutes can use an entire day's supply of fuel.

A major dilemma facing society can be stated simply as "the risk of doing on the one hand and the risk of not doing on the other." The goal of conserving the environment inevitably conflicts with that of ensuring an adequate supply of energy to maintain life at adequate levels. It is a dilemma on which the Rio "Earth Summit" failed to come to a satisfactory conclusion.

Unfortunately, it is very easy, in fact too easy, for the majority of people in the developed world to embrace a severe case of myopia when they contemplate the world's population growth and increasing energy requirements. They are shocked, even stunned, by the extent of the problems. In addition to politics, economics, and physical supply problems, there are those of world energy flows and the impact on life support systems.

Fortunately for the world's poor, the problem is not that complex - just difficult. **There really never has been and probably never will be a shortage of primary energy.** The problem that man has always faced is how to convert our almost boundless resources into mechanical work or other usable forms of energy. Mankind has managed to harness additional energy supplies at each stage of his development... and a new source is available today. Man's newest energy source, **nuclear power**, must be used to help solve the world's energy problems. If used in fast reactors, uranium reserves should last 2,000 years. It could be potentially disastrous for the developed nations to abandon nuclear energy when in a few years time, nuclear power could become essential to global survival.

The main opposition to nuclear power is centered among the educated, well-nourished and financially secure middle and upper middle class. *When was the last time you saw a hungry looking anti-nuclear protester - a poor man in a lesser developed country protesting against the establishment of a nuclear power program?* Since it is not the poor speaking out against nuclear power, then how can the well fed of the world feel justified in opposing programs that can only help their fellow man? The answer is obvious. Because of the difficulty of the problem, they just bury their heads in the sand, place themselves in Alice's Wonderland and listen to jabberwocky saying the world does not need any new or expanded energy resources; conservation alone will solve all problems.

Imagine - the industrialized world managing to halve its energy consumption. Imagine - as much as three-quarters of the world's present energy need coming from renewable resources. It sounds like the answer to a conservationist's prayer; no more wasting fossil fuels, no more pollution, no more need for nuclear power... and no more heat, no more light, no more transport! **In the real world, the totally green dream would be the stuff of which nightmares are made.** Because even those massive improvements in energy management just mentioned are simply not enough to ensure a viable future for our grandchildren let alone the coming billions. John Collier, chairman of Britain's Nuclear Electric Company, put the problem neatly at a recent European Nuclear Conference in Lyon, France:

"Like all Utopian schemes, the conservationist ideal works until you add people - nearly 10 billion people by the year 2100."

That's about twice the present world population, and most of the increase is expected in the developing world where energy needs are rising all the time. So, even if their consumption no more than doubles - and the rest of us make the massive savings suggested above - world energy consumption will still jump by 100 percent in the next century. Where will it come from? With the present mix - that's nearly 90 percent fossil fuels - the world would grind to a halt by 2070. Newly-discovered reserves might keep us going until 2100 - if we didn't choke to death on carbon dioxide first. The pollution would treble in that time. Halve fossil fuel consumption and both nuclear and renewable energy sources would then have to provide three-quarters of the world's present total energy needs each. As John Collier said:

"I am quite certain that nuclear power could achieve this but I am less sure about the renewables."

And even nuclear power won't have much of a chance unless we start building now.

Dr. Chauncey Starr, former chairman of the California based Environmental Policy Research Institute, states:

"The industrialized nations of the world have an obligation to develop and safely utilize nuclear power as well as all other reasonable alternatives to fossil fueled based energy. Only the industrial countries have the resources, skill and capital to engage in such development. But above all, the industrialized nations have a social obligation to give developing countries access to reasonably priced liquid fuels by reducing their own consumption through conservation and nuclear power and other alternative energy sources."

We also have to remember that the Middle East holds almost two-thirds of the world's oil reserves and three-tenths of the gas. Another third of the gas reserves are owned by Russia. As never before, the conventional energy supplies are vulnerable to political change. To have the control of energy is to control food and inevitably gain political power.

It's even more frightening when we realize that today's national governments do not work well in the quantum world of microchips, fax, and instant global information. William Van Dusen Wishard, president of World Trends Research, points out that all the major currents of the 20th Century intellectual thought have dried up. Marxism has collapsed. Socialism is vanishing. Totalitarianism is discredited. Even the French are losing faith in nationalism. Further, Wishard says liberalism inspires few hearts and little action. In the past two years, the U.S.S.R and Yugoslavia have gone from being two nations to becoming 23 nations. There is carnage in Bosnia; whole nations disappear in Africa; there is barbarianism in our streets and in our culture. We are witnessing the disappearance of national cultural and ethnic boundaries that provide identity. Wishard describes the changes taking place in the world today as an earthquake rolling like a giant wave underneath the foundation of life.

For a while governments and the media will continue to ascribe riots and other violent upheavals abroad

mainly to ethnic and religious conflict. But Robert D. Kaplan in the February 1994 issue of *The Atlantic Monthly* provides a more compelling answer. In his preview of the 21st Century, Kaplan says as these conflicts multiply, it will become apparent that something else is happening making more and more places like Nigeria, India and Brazil ungovernable.

It is time, according to Kaplan, to understand "The Environment" for what it is: the national security issue of the early 21st century. The political and strategic impact of the surging populations, spreading disease, deforestation and soil erosion, water depletion, air pollution and lagging fossil energy supplies will arouse the public, inflame existing hatreds and unite assorted interests left over from the cold war.

Kaplan refers to an article published in the fall of 1991 by Thomas Fraser Dixon who is head of the Peace and Conflict Studies program at the University of Toronto. Dixon predicts that:

"In the developing world environmental stress will present people with a choice that is increasingly among totalitarianism (as in Iraq), fascist-leaning mini-states (as in Serb held Bosnia) and road-warrior cultures (as in Somalia)."

Dixon also predicts that:

"As environmental degradation proceeds, the size of the potential social disruption will increase. Indeed the Saddam Husseins of the future will have more- not fewer opportunities because people find liberation in violence."

According to Kaplan, a large number of the people on this planet to whom the comfort and stability of a middle class life is utterly unknown, find war and a barracks existence a step up rather than a step down. Only when people attain a certain economic, educational and cultural standard is this trait tranquilized.

The Atlantic Monthly on its February cover provides a very graphic and vivid summary of how Kaplan views the future if we proceed on our present course. It states:

"Nations will break up under the tidal flow of refugees from environmental and social disaster. As borders crumble, another type of boundary is erected - a wall of disease. Wars will be fought over scarce resources, especially water, and war itself will become continuous with crime, as armed bands of stateless marauders clash with private security forces of the elites."

Whether we believe the environment is or is not the national security issue of the 21st Century, the ultimate losers in the debate are the poor - the inhabitants of the third world who spend their valuable foreign exchange for expensive foreign oil, who burn dung for fuel and watch in silence as fields turn to desert, water supplies dry up and children starve. We owe it to them and their children to follow the path mankind has taken since making the first tool and lighting the first fire. We must extend and multiply the power of our limbs by making use of increasingly potent and complex sources of energy in forms that can safely, easily, and efficiently be employed. I think the message is clear. The best thing for the environment and the world's disadvantaged masses is prosperity. Something that cannot occur unless adequate energy supplies are available.

There will always be doubters who believe this is impossible. Just like Alice they would say, "There's not use trying." Or in Alice's words, "One can't believe impossible things."

But I believe the queen's advice to Alice is sound. "I daresay you haven't had much practice." She said, "When I was your age I always did it for half-an-hour a day. Why, sometimes I've believed as many as six impossible things before breakfast."



Through the energy looking glass..

In energy, as in all other considerations in the ecology of human kind, we still have the opportunity to knowingly "invent" our own future - as people and as institutions. But time is rapidly running out.

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