

Ambassador Djerejian
Lane Science and Policy Conference

Remarks

It is a great honor to address this illustrious gathering today, celebrating the career of my good friend and colleague Dr. Neal Lane. I cannot think of a more fitting tribute to Dr. Lane's incredible contribution to the pursuit of science, environmental protection, and good citizenship, than to bring together the outstanding community of scientists and policy experts convened here today to discuss the critical future of scientific research and science policy in the United States.

I am sorry I could not be in Houston to participate more fully in your deliberations, but I know that the high level of discussion and interchange on this important topic of bridging the gap between science and society will make a solid contribution to our better understanding of the challenges ahead and the assets we have in place to tackle them.

When I joined the Baker Institute as its founding director in 1995, I knew that energy and environmental policy issues would be an important piece of our institute's work. Secretary Baker and I, with our long experience in the Middle East, understood first hand the direct impact secure energy supplies have on daily life and prosperity in America and abroad. I knew that among the major challenges facing us in the 21st century, energy and the environment would loom large.

It has been 30 years since the Arab oil embargo spurred a quadrupling of the price of oil. The embargo inspired the industrialized West to undertake dramatic and important actions to prevent oil blackmail from recurring. Interest soared in the 1970s in science and energy policy, and we saw the birth of important energy technology research programs at our national labs and universities.

But, in part because of the diversification spurred by 1970s response to sudden oil insecurity, oil demand fell in the 1980s and with it, the price of oil. Unthinkably, complacency set in. We cut science research budgets, dropped promising initiatives, and got back into large cars. Sadly, now thirty years after the 1973 oil crisis, the international community again faces difficult energy challenges and is being forced back into introspection concerning the lack of progress where energy supply and use are concerned.

Oil price volatility has again experienced record swings; and the future of the Middle East, home to 60% of the world's known oil resources, remains with great uncertainties. We also now understand the broad environmental challenges that face us from the continued increases in the rate of burning of fossil fuels.

Beginning last May, the Baker Institute began an exciting new venture with Rice University sciences: to explore more fully how scientific developments, including breakthroughs in the Nanotechnology field, might contribute solutions to the global energy problem. To this end, the Baker Institute, in keeping with the long history of interdisciplinary research at Rice University, has joined forces with Rice's Center for Nanoscale Science and Technology, the Environmental and Energy Systems

Institute, and the Rice Alliance for Technology and Entrepreneurship, to prompt a broader national dialogue on science and energy policy.

Energy is not just a critical national concern to the United States but also a global one. War in the Middle East, the recent political disturbances in Venezuela and Nigeria, emerging environmental pressures—all these events underscore the need for new, more secure sources of energy. The rate of growth in energy demand worldwide runs the risk of outpacing affordable, clean supplies unless we can muster not only conservation and evolutionary improvements to existing technologies, but also revolutionary new breakthroughs in the energy field.

The September 11 attack on the United States has changed the geopolitical landscape in major ways. US response to the attacks has prompted it to forge new strategic relationships and undertake new military initiatives that have affected old alliances and linkages. This shifting landscape of international relations will have significant ramifications for the geopolitics of oil in the coming decades.

Already, the terror attacks and the implementation of the subsequent US "War on Terror" has thrown a spot light on the inherent risks associated with heavy reliance on oil supplies from the Middle East.

American science and technology policy will have a pivotal influence on whether the world will become increasingly dependent on Middle East oil in the coming decades. More than 60% of the world's remaining conventional oil reserves are concentrated in the Middle East. A quarter of these reserves sit in Saudi Arabia alone. The Middle East is currently supplying over one third of world oil demand.

This percentage could rise significantly in the future, depending on policies in consumer countries and on the pace of development of new resources and technologies. The US Department of Energy, in one forecast, even predicts that the need for OPEC oil could rise from 28 million b/d in 1998 to 60 million b/d in 2020, with the majority of supply having to come from the Middle East, especially Saudi Arabia.

Iran, Iraq, Syria, Sudan and Libya produce around 8 million barrels a day at present or about 10% of world oil supply. Saudi Arabia alone is responsible for almost 10% of world supply and holds a unique position in oil markets. It maintains the largest share of spare idle production capacity of any other nation in the world. The kingdom is the *only* oil producer in the world that can replace single-handedly, within a short period of time, the total loss of exports for any other oil producer on the globe. No other nation currently has enough spare capacity to claim this role. Saudi Arabia is also the world's largest exporter, in past years selling almost 100% more than its next largest export competitor, Russia.

Saudi Arabia's cushion of spare capacity, which represents almost two-third of all global spare capacity, has provided security and stability to world oil markets for two decades. But policy makers and analysts have questioned whether reliance on one ally, no matter how reliable and strong an ally it has been over the years, makes sense in today's changing world.

Political and economic reform in the Middle East faces formidable challenges. There is a huge gap between the agenda of the "political Islamists" and the existing "liberalized autocracies"—one that is not easily bridged. Many countries in the Middle East have gravitated into liberalized autocracy for

concrete reasons having to do with both historical experience and current societal, cultural and political realities. The region as a whole faces severe social and economic problems as governments have had difficulty finding the resources to provide adequate services for a growing and restive population.

The delicate compromise that now represents the *status quo* ante among the middle class, reformists, Islamicists and ruling regimes in many countries in the Middle East, if upended, could usher in prolonged, bloody civil chaos long before it produces, if it ever does, political peace and stability. Even the history of our own country demonstrates the potential volatility of change.

In the aftermath of September 11, the United States is engaged in a major struggle to expand the zone of tolerance and marginalize extremists. The role of public diplomacy has taken on a critical importance in the effort to understand, inform, engage and influence the Arab and Muslim world.

I have just returned from three months of travel in the Muslim world and intensive work chairing the US Advisory Commission on Public diplomacy, a private sector advisory group set up by an order of Congress. We realized in our deliberations the urgency to bring about a transformation in the way the US communicates its values and policies abroad. Such an effort will take a commitment of more substantial resources, larger numbers of skilled professional personnel, and better utilization of modern tools such as the internet, translated materials and educational outreach. It is critical to our national security that our policies and values be accurately portrayed in the international arena and that our enemies who choose to spread viciously inaccurate claims about our intentions and actions be countered with accessible, meaningful dialogue.

US global leadership on energy and the environment is a major cornerstone to this effort of public diplomacy. The United States needs to show that it cares about the fate of the world's disadvantaged and that we are dedicating our plentiful resources to improving their future in concrete ways: by enhancing access to health care and medical solutions to challenging diseases like HIV-AIDS, and by offering solutions to shortages of clean water, affordable energy, food and education.

Lack of access by the poor to modern energy services constitutes one of the most critical links in the poverty cycle in Africa, Asia and Latin America.

Despite great advances in oil and gas drilling techniques and progress in renewable fuels, more than a quarter of the world's population has no access to electricity today, and two-fifths are forced to rely mainly on traditional biomass –fire wood and animal waste-- for their basic cooking and heating needs. Indoor air pollution from this traditional energy source is responsible for the premature death of over 2 million women and children a year worldwide from respiratory infections, according to the World Health Organization. Without a major technological breakthrough, well over 1 billion people will still be without modern electricity in 2030, and rural women and children will still be barred from activities that can lift them out of the cycle of poverty by the need to collect daily biomass resources needed to survive. We cannot continue in the United States to be blind to the grave challenges affordable, clean energy supply poses for such a large portion of the world's population.

It is our opinion at Rice University that a solution to the global energy problem will require revolutionary new technology, as well as conservation and evolutionary improvements in existing technologies.

Advancement of nano-technology solutions can be an integral component to solving the energy problem. Breakthroughs in nano-technology open up the possibility of moving beyond our current alternatives for energy supply by introducing technologies that are more efficient, inexpensive, and environmentally sound. The benefits of such technology will not be confined to the United States or the developed world; indeed, its impact will be greatest for the world's poor.

As you continue your deliberations today, I urge you to consider how we might improve public understanding of the challenges that face us in the areas of science and policy, especially in the areas of energy and the environment, and how these challenges link directly to the issues of national security and perceptions in the Muslim world that I have mentioned briefly in my remarks today. Without this public awareness, we cannot hope to muster the kind of financial resources and scientific effort that is needed to tackle the problems that face us. We must inspire young Americans of all backgrounds that a career in science offers not only the opportunity to make a contribution in the fight against poverty, disease and environmental degradation around the world but also a means to enhance our national security in an increasingly dangerous world. Sometimes as I am entering the Baker Institute, I am impressed by the activism that occasionally bubbles up among the young people here on the Rice campus. That passion needs to be tapped into the laboratory, into policy studies, into public service by the clear and firm articulation of the important role science and technology development can play in providing a more promising, sustainable future for our planet.