
Achieving A Balance Between Environmental Protection And Economic Development

The Role Of Scientists And Engineers

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As evidenced by the recent development in environmental regulations and various initiatives, which include tighter regulations, associated technology development and free market competition we are witnessing a rapid growth in regulatory agencies, regulated industries and other related businesses. More recently, small and medium industries in emerging industrial countries are seriously focusing on environmental protection, not necessarily for environmental protection per se, but more for business opportunities. Regardless of what motivates such activities, the fact that more countries and corporations are paying greater attention to our environment is a step in the right direction. In fact, if this is a mechanism that is effective in inviting industry's attention, we should exploit this avenue more fully.

The growth rate of environmental technologies and services is touted to be one of the major global business assessment currently valued at approximately \$500 billion by the year 2000. The emergence of international environmental regulations and related technology development signifies the crucial importance of the access to accurate technological data to support strategic planning the government industries as well as the general public.

In order for us to help Korea develop and implement appropriate public policies and regulations, and to promote a strong and competitive environmental industry, we need to reexamine the conventional approach to planning and implementation to see if there is a need for improvement or modification. We often hear that Korea is 20 years behind major industrialised nations. Obviously, this is an embarrassment for a very proud people. But we need to wake up to the fact that we have a golden opportunity to reach our goals smarter and cheaper, rather than repeating the past mistakes made by industrialised nations in the name of economic development. This can only be achieved by careful study of the history of environmental risk management and its relationship with economic development. The single most important task in studying this history is active information exchange which should yield quality technology transfer.

Korea's major trade partner/competitors have already positioned themselves to capture a leading share of the global market by supporting innovation in environmental technology. Several Asian countries and aggressively pursuing policies to achieve a balance between economic development and environmental protection. To avoid being left further behind, I believe we need to develop and enhanced communication and cooperation among various segments of our society to achieve the elusive goal of sustainable development. Therefore, it should be worthwhile for us to stop and take a serious look at where we are in terms of the status of the Korean environment, its interrelationship with its economy and that with the Asian Pacific Region and worldwide.

This is an exciting period, and we are at an important crossroads to make informed decisions to achieve our ultimate goal in a cost-effective manner. The challenge and responsibility we have at and are enormous. I believe that WE, THE KOREAN SCIENTISTS AND ENGINEERS must seize this opportunity to help implement quality information exchange and technology transfer.

PAST EXPERIENCES AND RECENT DEVELOPMENT

In the United States, wide spread public outcries over the deteriorating environment in the 1960s stimulated establishment of a highly advanced system of environmental protection, including the creation of the Environmental Protection Agency (EPA) in 1970. The EPA promulgate federal laws and regulations, and state and local agencies developed their rules and regulations. In rather a short period of time, we have achieved significant progress under the dual pressures of a rising population and rapid growth in the economy. We have successfully cleaned up the most urgent and visible problems of air, water and waste, but much remains to be done. The air we breath is much cleaner and the surface waters are less polluted by raw sewage and industrial wastewater (an unfortunate exception to this was several massive fish-kills in North Carolina during the summer of 1995). During this process, by necessity environmental regulations grew up on an emergency basis, crisis by crisis, and pollutant by pollutant. As a result, there are 16 national environmental laws overseen by 74 congressional committees and subcommittees. In 1972, we only had about 500 pages of regulation. By 1990, we had more than 10,000 pages of regulations not including the Clean Air Act Amendments and the Pollution Prevention Act of 1990.

In recent years, environmental policies and regulations have become increasingly stringent. However, more innovative and flexible implementation plans including free market incentives have been adopted. Such approaches encouraged technology development, increased business opportunities, and enhanced competition in the market place. These increased activities in environmental fields stimulated active growth in regulatory agencies, regulated industries, and numerous associated businesses. This in turn, demanded a greater number of trained personnel. This trend is expected to

continue around the world throughout this decade. Unfortunately, however, the current political climate in Washington is negatively impacting on environmental progress in the United States.

The last 25 years of environmental management experiences led us toward more holistic multimedia pollution control methods. Notwithstanding, these advances appeared to have come to recognize the importance of pollution prevention as the most logical strategy which emphasizes reduction of waste at the source to minimize environmental pollution. This realization culminated in the passing of the Pollution Prevention Act of 1990. Nevertheless, pollution prevention as perceived by many then and now is synonymous with waste reduction or waste minimization. However, such a limited view does not anticipate rapidly escalating future requirements. Appropriately, the EPA Administrator recently stated, "It will take a new generation of environmental protection to meet the challenges of the next 25 years."

Achieving environmental goals through developing and deploying new technologies for environmental protection is one of the highest national priorities in the United States. Today's technologies are often inadequate to mitigate many of the current environmental problems, not to mention the challenges of the future. In order to protect the well-being of the people and the ecosystems worldwide, the United States and other industrialised nations are developing Smarter and more cost-effective technologies.

THE COMMON SENSE INITIATIVE

In August 1994, the EPA Administrator Carol Browner proposed a major new initiative which signaled a new generation of environmental protection. "The Common Sense Initiative" is marked by a commitment to goals, combined with a built-in flexibility to achieve those goals. EPA will move away from its focus on specific problems caused by individual pollutants and will approach pollution on an industry-wide basis.

The initiative has three goals. One is to eliminate problems caused by focusing too narrowly on a single pollutant or an environmental medium. For example, when EPA rules under the Clean Air Act led to the installation of smokestack scrubbers, air quality was improved, but the scrubber waste contributed to water pollution. The second goal is to stop the practice of making policy in response to emergencies. For example, Supervened was spurred by the Love Canal disaster, and the Safe Drinking Water Act was at least partly a reaction to water contamination in New Orleans. The third goal is to try to bridge the gap separating environmentalists and industry by holding regular meetings with EPA and interested parties to discuss differences and try to reach agreement on major issues.

The Initiative will begin by focusing on six industries: iron and steel, electronics and computers, metal plating and finishing, automobiles, printing, and oil refining. These industries were selected

because of their importance to the economy and their environmental compliance, and they released 345 million pounds of toxic substances, one eighth of all Toxins Release Inventory reported emissions.

For each industry, EPA will assemble a team composed of EPA officials, industry leaders, and representatives of national and grassroots environmental organizations, along with members of state environmental commissions, local government, labor unions and other groups that want to participate.

The teams will examine each industry using the following principles:

Regulation -Each team will review all relevant regulation for the industry to identify opportunities to get better environmental results at less cost, and seek to improve new rules through increased coordination.

Pollution Prevention - The teams will promote pollution prevention as a standard business practice and a central ethic of environmental protection.

Reporting -Each team will seek to make it easier to provide, use and publicly disseminate pollution and environmental information.

Compliance -The teams will work to create a system that will assist companies that want to obey and exceed legal requirements while consistently enforcing the law against those that don't.

Permitting -The teams will work to change permitting so that it works more efficiently, encourages innovation, and creates more opportunities for public participation.

Environmental Technology -The teams will structure regulation so that industry has the incentive and the flexibility to develop innovative technologies that meet and exceed environmental standards while cutting costs.

Under this initiative, every player with a stake in the outcome will be at the table - industry, communities, environmentalists, regulators. And for the first time ever, every major topic will be on the table. The industry teams are expected to develop recommendations by the summer of 1995.

USEPA's STRATEGIC GOALS FOR THE NEXT FIVE YEARS

The plan purports to help the U.S., during the next 5 years, to achieve environmental and economic sustainability and to formulate EPA's agenda into the 21st century. The USEPA is now in the process of working with interested parties on its new five-year strategic plan. This is a rather painstaking social change in the U.S. We have used command-and-control approaches, and have not consulted other stakeholders in the past.

It might be interesting to note that I had occasions to talk about some voluntary pollution prevention activities in the US with executives of, major industries in various emerging economies.

They all quickly responded by saying that they are supposed to wait for directives from their governments. Many major industries in the US have graduated from such "command-and-control" approach, and proactively moved ahead of government regulations, and as a result, managed to increase their profit.

Central to the five plan are seven themes to be applied to all EPA programs and activities: ecosystem protection, environmental justice, pollution prevention, robust science and data, partnerships, reinventing EPA management, and environmental accountability. These themes and ideas have been evaluated and argues before, however, this planning package pills together all the major themes that EPA senior staff have been working on, and explains implementation of these themes by the various programs and regions.

Browner states that strategic plan, "The New Generation of Environmental Protection," gives EPA "a shared vision of our future and points us toward greater opportunities to harmonize environmental protection and economic growth." The strategic plan as simple as past problems nor as easily solved by the approaches of the past.

THE ENVIRONMENTAL TECHNOLOGY INITIATIVE

The USEPA currently allocates about \$120 million annually to activities under the Environmental Technology Initiative (ETI). The focus of this initiative is long-term research and pollution prevention by EPA, other federal agencies, and the private sector. The goal is to develop more advanced environmental systems and treatment techniques that can yield environmental benefits and increase exports of "green" technologies. This investment will aid in the transition away from a defense-oriented economy, by stimulating the increased use of private sector R&D resources for environmental quality-related purposes.

Work being done under ETI involves many federal agencies and is being coordinated through the White House Office of Science and Technology Policy. Federal agencies working with EPA on ETI projects include: the Departments of Commerce, Defense, Energy, and labor. The Export-Imports Bank, the overseas Private Investment Corporation, the Agency for International Development, The Trade and Development Agency, the Small Business Administration, and the US Trade Representative are also strong participants.

It is high time for those who have not participated in a proactive move toward sustainable development to recognize good environmental management as among the highest national and corporate priorities and as an important determinant to achieve our common goal of sustainable development. Failure to adapt such policies and technologies will result not only in failure to sustain economic development in the long-run, but also in the loss of worldwide market share. The

accumulation of environmental debts eventually destroy one's economy, as we have witnessed in Eastern Europe and other countries.

Because of the kind of explosive developments we are experiencing in environmental management and associated markets, it is imperative to enhance our educational systems to produce a greater number of trained personnel to meet the rising demands for such human resources not only for domestic demands, but also to provide leadership throughout the Pacific arena and beyond.

CONCLUDING REMARKS

I have enumerated only a small number of selected examples of recent development in the environmental field to illustrate that there is an enormous amount of environmental information, including publications, computerized databases, computer models, etc, that has been accumulated over the last three decades. Particularly in recent years, a massive amount of information has been produced with increasing speed. The kind of information ranges from policy development and evaluation, to science and technology research and development. In terms of databases, the federal government alone has more than 600 environment related databases as of 1992. Such an abundance of information, of course, presents problems in retrieval and efficient use of the information. Therefore, a carefully organizes management of information and distribution is essential. Perhaps, a greater understanding of available information will increase the cost-effectiveness of our limited resources. In closing, I would like to reiterate the importance of information by saying that INFORMATION is the single most important item in everything we do. Quality information is prerequisite for quality technology transfer, and high pressure sales do not equal quality technology transfer. For these reasons, I encourage my fellow Korean scientists and engineers to meet the challenge head-on to help Korea achieve the ultimate goal of sustainable development.