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The acceleration of world demand for energy during the last forty years has led to a projection of future needs far in excess of present capacity, and one which threatens exhaustion of today's conventional sources at some future time. Coupled with this premise is the realization of two inter-related facts: inadequate, uneconomic sources of energy cripple a man, his nation, and his world and lead to insecurity, famine and ignorance; on the other hand, excessive, uncontrolled use of energy sources leads to wastage of resources, pollution and human misery that likewise respects no national boundaries. These dominating concerns led to the selection of the main theme of the Ninth World Energy Conference – "The Economic and Environmental Challenges of Future Energy Requirements." This theme was broadly broken down into six main categories: energy needs, sources of energy, energy conversion and utilization, conservation of energy, economics and environmental considerations.

A total of 229 formal papers were considered by the several thousand participants who represented more than 60 countries and a number of international organizations at the Conference.

The principal thrust of the Conference was highlighted in an address by President Gerald Ford of the United States – he emphasized the growing inter-dependency of all nations of the world in meeting energy requirements in a sober, just and balanced manner, taking into account the needs of mankind to progress in a wholesome social, economic, and healthful environment. The dominating undercurrent running throughout the Conference was that conservation of energy use had become a global need and that any approaches to meeting energy demands should be viewed in that light, and not in terms of promoting energy usage to a point exceeding national needs. At the same time, the need for more energy in meeting the expanding economies of developing nations was fully recognized. Much concern was expressed on the need for integration between and within energy cycles. Concern was also expressed on the lack of rational decision-making in energy planning, as well as failure to reflect scientific and economic factors in the regulation of energy and its environmental impacts. Many discussions tended to be strictly limited within the conventional classifications of energy sources (e.g. coal vs. oil vs. nuclear power vs. hydropower vs. ...). Only limited discussion evolved on the use of risk/benefit balances to be made in selecting one or a combination of energy sources to minimize social, economic, and environmental impacts in meeting national energy demands. This was primarily a meeting in which the energy and environmental experts had their say, which national governments will be analyzing for use in the development of future energy and environmental policies. Thus, while differences on how to solve the problems were not resolved, the mechanisms were clearly outlined by which the inter-dependency of nations in meeting energy requirements,

conserving energy resources and protecting the environment with a balanced approach, could be assured. The need for international co-operation was readily apparent to all participants.

Regarding sources of energy, one consideration appeared over and over again – namely, that for reasons of cleanliness, cost and conservation, electricity would take an increasingly major share of distributed energy, and that nuclear power "which is only a contributing factor today, will be an inescapable necessity tomorrow." This position appeared most clearly in a provocative paper by John W. Simpson and Philip N. Ross, which argued that there will eventually be a switch to coal and uranium as the principal sources of energy, if not the only ones, and that the changeover was close enough to warrant planning now. Deliberate conservation of oil and gas was deemed to be a mistake, especially from the viewpoint of developing countries whose living standards may become fixed or reduced as a result. The solution proposed was not to limit energy consumption but to initiate the systematic change-over to coal and uranium and eventually to uranium alone. Other competing energy sources were considered too inefficient, inadequate, or too uncertain from a technical and economic standpoint.

From their basic premises, Messrs. Simpson and Ross drew certain strategic judgements concerning research and development. In their opinion, coal liquefaction, breeder reactors, uranium enrichment, fusion and electric vehicles should be emphasized, but gaseous fuel cells, solar power plants, geothermal systems, MHD, or new types of fuel-consuming engines should not.

The shift to the nuclear-coal base will increase the inter-dependency amongst nations: understandings will have to be reached regarding the utilization of the world's uranium resources, including their pricing, enrichment facilities, research and development, technical assistance, and, most importantly, protection against proliferation of weapons. Noting that this will take time to work out, Messrs. Simpson and Ross suggested that the planning moment for this transition was right now.

In the same spirit, Dr. Sigvard Eklund, the Director General of the IAEA, announced at the Conference that the IAEA plans to convene in 1977 a major international conference on the role of nuclear power and its relation to alternative energy sources in satisfying future energy demands. At that time, national authorities will have an opportunity to assess the international situation on problems closely related to the prospects of nuclear power, such as uranium supplies, enrichment, alternative fuel cycles, reprocessing and waste management.