# World Energy Conference delegates demand nuclear energy for development

by Susan and Ramtanu Maitra in New Delhi

The world does not face an energy crisis, but rather an economic crisis that has been a major barrier to the energy development programs of most nations, World Energy Conference (WEC) Secretary General Eric Ruttley stated at the closing press conference of the 12th Congress of the WEC on Sept. 23 in New Delhi. Ruttley's view was shared by many at the week-long conference, at which numerous speakers argued that nuclear energy is essential, both for the developing and industrialized nations.

Indian Prime Minister Indira Gandhi inaugurated the congress with a speech describing India's rapid progress in energy production, its success in developing nuclear energy, and its commitment to continue these policies despite opposition from abroad. "Three decades ago, a dynamic leader of science, Dr. Homi Bhabha, pointed out that to meet our growing energy needs, we could not remain dependent on the expansion of hydroelectric and thermal sources," she said. "He initiated our nuclear program. This aroused opposition from many countries, who accused us of imprudence and impracticality. The opposition continues and we are obstructed at every step. But Indian technology has acquired the capacity to design, fabricate and build nuclear power plants. . . .

"Two of the many reasons for the rise and fall of nations," she continued, "are the discovery of new resources and the emergence of new technologies. Economic power is employed to buttress existing advantages, rarely caring for others. Developed countries control enormous industrial production systems. Based on this current affluence and control over technology, they regulate world trade and investment directions that strengthen their own authority but make others more dependent. The world needs long-term vision, not short-term calculations."

The conference was attended by about 3,000 delegates, mostly professionals and businessmen in the energy field. After India, the largest delegations were from the United States (although the U.S. government boycotted the event due to India's refusal to grant visas to the Israeli delegation), France, and Great Britain. The 20 or so government ministers in attendance were mostly from developing nations and their mission was by and large a practical one—to get up-to-date technical and other information necessary for their own nations' energy development programs, and to pursue commercial contacts to that end.

Still there were obstacles to the "long-range vision" of technological progress that Mrs. Gandhi demanded. Her criticism of the failure of the industrialized countries to assist the development of the developing sector found expression in the final conference document, which called for technology transfer and financial assistance. But no concrete measures were endorsed by the body, and the chairman repeatedly sought to avoid the issue.

The World Energy Conference was founded in 1924, and scientists and others dedicated to global energy development and progress have participated in its work. But countervailing tendencies are also manifest, from the advocates of "zero growth" and "appropriate technologies" for the developing sector. This bias was reflected in the conference program documents, which stressed the anti-technology buzzwords "quality of life" and "conservation." The WEC officially circulated to delegates the results of a study purporting to show that efforts to promote growth of electricity production and nuclear energy are doomed to failure. By the year 2020, the study contends, sub-Saharan countries will be consuming wood as their prime energy source; South Asian nations will be using animal wastes, and Latin America will be totally dependent on hydro-electric power.

This report was dismissed by many delegates as absurd; they noted that it assumed the absence of advanced technology transfer from the industrialized countries or indigenous technology development for power generation.

Controversy arose over the issue of "alternate" energy sources—solar, wind, geothermal, and biomass—versus nuclear fission and fusion. In Secretary General Ruttley's view, the "alternates" are transitionally important in particular limited circumstances, but are minor energy sources overall. Dr. R. S. Pease, Chairman of the International Atomic Energy Agency's (IAEA) International Fusion Research Council, presented an informative review of the status of fusion development. Many delegates concluded that alternate energy

sources cannot hope to meet the requirements of developing nations, and until thermonuclear fusion becomes available, electricity generation via fission, hydro, and coal will have to carry the brunt of energy demand. Indian, French and American delegates were particularly emphatic on this point.

French delegate and assistant secretary general in NATO's Scientific Division, H. Durand, outlined the limitations of solar energy development, from the standpoint of both physics and economics. The silicon used to make photovoltaic cells, he pointed out, will never be able to attain more than 15 percent efficiency, and the cost of electricity generation by this means is four times that produced by nuclear fission.

## Electrification and nuclear energy

French representatives boasted about the "self-reliance" achieved through their nuclear-based energy program, and heralded the age of the fast breeder reactor, urging those who have developed nuclear fuel cycles for their first generation reactors to move quickly for breeder development. In this the French found allies among the Indians, who have chalked out their breeder-reactor program in detail and are expected to commission a 15-MW test reactor by the end of this year. India has begun work on the 500-MW sodium cooled breeder reactor to be commissioned in the 1990s.

The present constraints and enormous potentials for nuclear energy in the developing sector were discussed at length. International Atomic Energy Agency (IAEA) officials pointed first to the fact that while most underdeveloped nations have small and fragmented transmission grids, nuclear plants below 600-MW capacity are not generally available. According to IAEA there are some 15 countries, all developing, which could use units in the 200- to 600-MWe range—an indication of the potential market for small reactors, provided they were economically viable.

Dr. Anwar Hossain, chairman of the Bangladesh Atomic Energy Commission, declared that regional cooperation should be implemented to overcome the difficulties faced by small countries in efforts to develop the entire nuclear fuel cycle. Shared enrichment or reprocessing facilities, and even power-sharing from large-size reactors, were proposed. South Asia, with India's developed capacities at the center, is a natural region for such cooperation.

Egyptian Minister of Electricity and Energy Mohamed Meher Abaza discussed the Qattara Depression Hydropower Development project, which will be one of the major contributors to Egypt's urgently required electrical power expansion. This magnificent project will enable Mediterranean seawater to be channeled into the huge depression in Egypt's western desert, generating electricity and fostering the "greening" of the desert. Abaza outlined the plan to develop Egypt's nuclear plants over the next two decades. The two 1,000 MWe plants scheduled for completion in 1990 will be followed by six more in the next decade.

Electricity development planning was the subject of a presentation by Soviet Minister for Power and Electrification, Academician P. S. Neporozhny. Emphasizing the Soviet approach of integrated electrical and industrial-agricultural planning, Neporozhny referred to the electric power industry as the "pivot of the development of industry, transport, municipal economy and agriculture." He predicted that a commercial-quality fusion reactor will be operating in the U.S.S.R. by the year 2000. He said nothing, however, about how the underdeveloped nations might achieve nuclear power generation.

Dr. N. Tata Rao, Chairman of the Andhra Pradesh State Electricity Board and the most tireless voice in support of electric power in India, gave a lively presentation on India's past progress and future plans for electricity production growth. Pointing out that the country's 145-KWh per capita consumption of electricity is one of the lowest in the world, he asserted that he would still not be satisfied if this figure were increased tenfold overnight. He urged a renewed push for hydro and nuclear development.