Deep Divide Over Nuclear Power

J Rama Rao

The early dreams of Nuclear Power proponents appear to have faded, whereas the risks have remained, as well as the danger of misuse by military interests. Terrorism has introduced a dramatic, concrete threat. The finite nature of fossil fuels and global warming do not dispel the major safety issues and hazards associated with nuclear power. The 'accident proof' reactor has remained an unfulfilled promise now for decades.

But the friends of nuclear-based electricity generation are gratified by the fact that the discussion on nuclear policy has shifted from the fundamental problems of safety and security, to issues associated with the economy, environmental protection (global warming) and resource conservation. They would like to see a shift in the public opinion toward viewing nuclear power as one of the technologies, like coal fired power plants, windmills etc to meet the growing demands of power and to reduce global levels of greenhouse gas emissions.

The nuclear power is being pushed into the triangle that economists use to frame the debate on Energy Policy; namely economic feasibility, reliable supply and environmental compatibility. Even within this framework, many questions remain regarding the advisability of opting for nuclear power.

But the nuclear energy's unique potential for catastrophe is being concealed behind the wall of arguments that distract from the basic issues of Safety and Security. This is the result of a deliberate and tenacious strategy for years by operators and vendors in the major nuclear power producing countries.

Therefore, the urgent need of the hour is to take a look, if the industry's claims that Nuclear Energy is Safe, Cheap, CO_2 Free and Renewable. One also needs to examine its efficiency and cost-effectiveness, apart from the transparency in its functioning.

There is a lot of political talk about nuclear power being the solution to all the energy problems, but in practice not much happened. In 1989 there were 172 operating nuclear reactors in Europe. There are now 147–45% less. Since the Chernobyl disaster in 1986, only one construction process of a nuclear power plant has started in Europe (Finland).

Despite nuclear power's promise as a clean energy source that could hold down emissions of global warming gases, most environmentalists are skeptical of the latest claims by its advocates. They say that utilities, at best, will move ahead with a handful of plants that will receive lavish incentives from the government. But the risks of nuclear power are still so high, they argue, that no utility will be willing to put its own money into building a plant unless the governments heavily subsidizes it.

"What dismays me about the present situation is the extent to which the Congress and the administration, and now an occasional state legislature, have rushed to anoint it as the solution to climate change," said Peter A. Bradford, a former member of the Nuclear Regulatory Commission and former Chairman of the Public Service Commissions of both Maine and New York. If nuclear plants cannot compete without subsidies, he said, they should not be built.

The proponents of Nuclear Power profess that the present day reactors are 'accident proof' and there is no danger of accidents. It is also argued that of all the conventional options, Nuclear energy has posed the least risks in terms of mortality per billion megawatt hours of power generation and more people die in road accidents than in nuclear reactor failure accidents. Does that mean that people should carry the Snake around their neck as less people die of Snake bites? What needs to be considered are the anticipatory risks and hazards of the entire life-cycle of nuclear power i.e. from uranium mining to disposal of spent uranium, instead of considering the hazards of nuclear reactors in isolation.

Nuclear energy makes the economy dependent on uranium, which is a limited resource. If the current level of nuclear energy production is maintained, it is estimated that all (currently and future) accessible uranium would be dug up in next 50 years. There is more uranium on the planet, but it is either very difficult and / or expensive to mine or not suitable for use in electricity production. The associated energy use and CO_2 emissions would rise steeply. As per one estimate, the entire accessible uranium in India is just enough to produce 10.000 MW!

Foundation Science, PHYSICS for Class 10, authored by H C Verma PhD and published by Bharati Bhavan, in page 142, it is stated that "Unlike fuels like coal, nuclear fuels such as uranium and thorium are required in very small quantities to generate electricity in power plants. The reserves of nuclear fuels, although limited, will last for long, long time. They are therefore also classified as renewable sources of energy". This highlights, how the scientific distortion of facts is taking place even at the school level?

The present share of nuclear energy in the total global energy consumption is reported to be just 2.7%, with 442 nuclear power plants worldwide. The China has been forecasting the construction of numerous nuclear power plants over the last 25 years but so far, it has only built eleven out of which three are very small. In India, the installed capacity of the nuclear power plants is just over 3,300 MW, much lower than the power generated from Wind Mills.

If the entire accessible uranium (currently and future) is estimated to last for only next 50 years, at the current level of nuclear power production, which is hardly 3%, how does it provide global energy security? If India has to depend on imported nuclear fuel (uranium) as stated by AEC Chairman (beyond what is possible based on the domestic programme), how is country's energy security guaranteed?

It embodied the myth that economic vitality requires steadily increasing energy consumption. But people do not want supplies of raw energy, such as kilowatt-hours or barrels of oil. Rather they want the services that energy can provide - comfort, illumination, mobility, steel making etc. On the other hand the increasing energy use, costs and pollution would spiral upwards together, further imperiling National Security, the Economy and the Environment.

The present method of Economic Accounting does not internalize the environmental costs, due to environmentally harmful economic growth. Since the present calculations used to produce GNP/GDP, do not consider Environmental Accounting, namely—the destruction or depletion of natural resources, the negative impact of environmental damage on the economic welfare of the society, present and future, and the treatment

of degradation or depreciation of natural and environmental resources—this popular economic measure is extremely misleading.

The per capita consumption of energy in India, is just 3.5 percent of the per capita energy consumption of the US, 6.8 percent of Japan, 37 percent of Asia, and 18.7 percent of the world average. India's energy intensity (energy consumption per unit of GDP), however, is high compared to Japan, the US, and Asia as a whole by 3.7, 1.55 and 1.47 times respectively. This indicates inefficient use of energy with a substantial scope for energy savings.

It is nothing but suicidal trying to target for higher per capita consumption of energy, instead of trying to improve efficiency and cutting down the energy intensity, through technological innovations.

During the complex cycle of nuclear energy production (uranium ore mining, transportation, processing, enrichment, production, reprocessing, decommissioning, waste storage) a lot of energy is required and used—energy that comes mostly in the form of fossil energy. Nuclear energy is a very energy-intensive way of pro-ducing electricity.

Extensive studies have shown that each dollar invested in using energy more efficiently by the consumers reduces nearly ix times more CO_2, than a dollar invested in nuclear power. Nuclear Power is a hopeless substitute for Oil! The energy efficiency measures and renewable energy sources are cheaper and faster ways to combat climate change.

When nuclear reactors were first commercialized almost half a century ago, every self-respecting electric utility wanted one. They were encouraged by a government that saw nuclear energy as a peaceful, redemptive byproduct of the deadly power unleashed at Hiroshima. The US federal official for promoting nuclear energy, Lewis L Strauss, said it would produce electricity "Too cheap to Meter." It has never given consumers anything like that. But with the industry now consolidated so that most reactors are in the hands of a comparatively few operators, utility executives are sharply divided over whether nuclear power offers an attractive choice as they seek to satisfy a growing demand for electricity.

Nuclear energy is not only a high-risk technology in terms of safety, but also with respect to financial investment. It does not stand a chance in a market economy without state subsidies. The costs for decommissioning are very high and the cost of isolating radioactive by-products/wastes from the biosphere and safeguarding them for hundreds of thousands of years, which defy human imagination, cannot even be estimated.

There is lot of public money going into nuclear research, safety investments etc. Of the total annual energy subsidies in the EU between 1990 and 1995, 23% went to nuclear energy and only 7% to renewable energy sources. In India the entire nuclear energy is funded by public money at the cost of renewable sources of energy.

While computing the economic cost of any generating facility the economic calculation of different energy systems should include all costs and benefits for society by their production and use.

The more important issues like the problems of radiation right from Mining and Processing of uranium ore to production of Nuclear energy to the storage of Nuclear Waste are being overlooked. The quality of the uranium ore in India is so low, i.e., only 0.0407%. Getting hardly one ton of usable uranium from 3000 tons ore processed every day. The only thing that will be left after 300 days of operation per year and 30 years of mining and processing, is a mind boggling, 2 Crores and Seventy lakh (27 million) tons of RADIOACTIVE WASTES, spread all over the surrounding areas, contaminating air, soil, underground and surface waters.

Who is accountable for all these radioactive wastes, which will be left unattended after the closure of the mines and will continue to affect future generations for hundreds of thousands of years, which defy human imagination? But political expediency makes even honest people with integrity, overlook fundamental stark naked truths.

Nuclear power is not sustainable, because its fissile fuel materials are as limited as fossil fuels such as coal, oil and natural gas. It does not stand a chance in a market economy without state subsidies. It is also high-risk technology in terms of safety and also with respect to financial investments.

There is a huge potential of Energy Savings, which is estimated to be about 25 % of the energy consumption in India, through energy efficiency measures and technologies, which in combination of renewable sources of energy, are much cheaper and definitely much safer than building new nuclear power plants. Therefore the energy efficiency coupled with renewable sources of energy is faster and comparatively cheaper, safer and cleaner sources of energy available.

The above are a few thoughts and opinions compiled from various sources and are open for debate and correction, with a view to find solution for the sustainable Energy Security of India. The Human beings are at the centre of concerns for Sustainable Development and the Human beings are entitled to a healthy and productive life in harmony with nature, keeping the human being as the central focus of all developmental activities. □□□

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