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OP ARTICLE

Before it is too late

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solution will continue to elude us.

On the energy front, global electricity production would have to be double of what it is today if 85 per cent of the world's population living in non-OECD countries are to be able to access the average 5,000 kWh per capita necessary for a reasonable standard of living, as against the present average of a mere 1,000 kWh per capita (only around 650 kWh in India). This is a reasonable sapiration, considering the OECD average is around 9,000 kWh per capita. Achieving this while at the same time reducing carbon dioxide emission, an urgent necessity, is possible only through recourse to aggressive nuclear energy deployment.

I say this because nuclear energy is the only commercially viable technology presently available that can cope with the magnitude of the additional electricity requirement in a non-carbon emission mode. All other options would mean either delaying the development of the developing and underdeveloped world or allowing carbon dioxide levels to build up and still hope catastrophe would not occur even though all scientific predictions say otherwise. Unfortunately, in spite of nuclear energy being safe, economical and eco-friendly, there are impediements, raised in a discriminatory manner, that disallow a rational approach to getting over the crisis.

This is primarily the result of a mindset that seeks to achieve permanent hegemony in contrast to meeting rational security needs. This unsustainable position has brought us to the present stage of a global crist in term of security as well as climate change issues. There is an urgest need for a way out. We need a solution that delinks energy and the security dimension of specifically nuclear energy so that all countries can have hassle-free and reliable access to the latter without significant concerns on the security from:

Several developments have taken place with such an objective in mind. Naturally most such initiatives are evolutions of uranium-based reactors and fuel cycles about which there is significant experience already. Even so, it is likely to be some decades before they are available for commercial deployment. Whether this would be timely or too late from a global perspective is the moot question. I believe the latter to be true.

Today, we have reached a point where there is much greater consensus on reprocessing and recycle of fissionable materials produced in nuclear reactors simultaneously with production of electricity. Most new developments in nuclear energy anyway incorporate recycle strategies to address both the issue of sustainability and the yet-unresolved issue of permanent disposal of used nuclear fuel that contains uranium and plutonium. These materials are required to be legally safeguarded by the International Atomic Energy Agency as long as they exist.

Besides, such permanent disposal would lead to creation of plutonium mines once a significant part of radioactivity has decayed. In the absence of sustained security control over a period much longer than the institutional lifepan, this is a potentially serious security issue for future generations. The present generation has no moral right to jeopardise the security of the future generation.

With recycle becoming inevitable, thorium which also gets converted to fissile uranium in a nuclear reactor becomes an option. Thorium fisel cycle offers far greater inherent resistance to diversion of nuclear materials for weapons purpose. With today's understanding and experience on nuclear fuel technology, one can even use thorium along with low enriched uranium in a 'once-through mode' (as is the case with many power reactors in the world) with comparable utilisation efficiency for mined uranium. This can be done even in existing nuclear reactors.

Thorium thus offers a way to free the energy dimension of nuclear energy from proliferation concerns while at the same time enlarging the energy resource base. More important, this can be implemented quickly, using an existing fleet of reasons instead of waiting some decades to deploy yet-to-be-developed new reactor systems and associated fuel cycle plants. In India, we also have developed as well-kained thorium-based advanced beary water reactor, an innovative but simple configuration designed around currently available technologies that can meet next generation objectives.

To minimise the development deficit quickly, it is important to rapidly expand deployment of nuclear power and use of viable technologies that offer sufficient security confidence for that purpose wherever necessary. This would perhaps be a good confidence building measure, creat the right atmosphere for a broader consensus on global issues like climate change and security before it is too late. The logic of the market, security, environment and, most important, development at the global level would need to converge for this to happen.

The writer is former chairman of the Atomic Energy Commission

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