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Career Watch

The nuclear REVOLUTION

WITH 25 MILLION JOBS SET TO BE CREATED BY 2020, INDIA HAS BECOME A HOTBED FOR A CAREER IN NUCLEAR SCIENCE

By Deepshikha Punj

With India Inc planning to invest ₹1,00,000 crore in the nuclear technology sector, it is expected to create over 25 million new jobs by 2020. This, apart from the fact that India opened its nuclear energy sector with the Smiling Buddha or Pokhran-I in 1974, followed by Pokhran-II in 1998 and an accord with the US in 2008 has cemented India's position as a nuclear powerhouse on the global platform. Baldev Raj, director, Indira Gandhi Centre for Atomic Research (IGCAR) says, "Currently, India has an indigenous nuclear power programme, delivering about 4200 MW from 20 reactors and expects to have 20,000 MWe nuclear capacity on line by 2020 and 63,000 (Megawatt electric) MWe by 2032. Foreign technology and fuel are also expected to boost India's nuclear power plans considerably."

This has led to an augmented demand for scientists. Alex Murphy, nuclear and particle astrophysicist, Nuclear Physics Group, University of Edinburgh explains, "Highly qualified scientists, capable of making accurate evidence-based decisions, who can effectively communicate their findings to a wider audience, will be extremely valuable to any developing nation. Physicists in particular excel in this regard and find many employment opportunities."

Plans for setting up new nuclear reactors is adding to the cause. "Fast breeder and fusion reactors are two major emerging technologies internationally, which demand high quality multi-disciplinary human resources," says Raj. This industry also does not dependent on other industries and thus even the global meltdown does not have any major impact on it. "Although the field is developing irrespective of economic downturn, the security and long term sustainability of the world energy supplies are a still a major concern. After a setback following the Chernobyl incident, nuclear power generation is now considered as a promising option in the

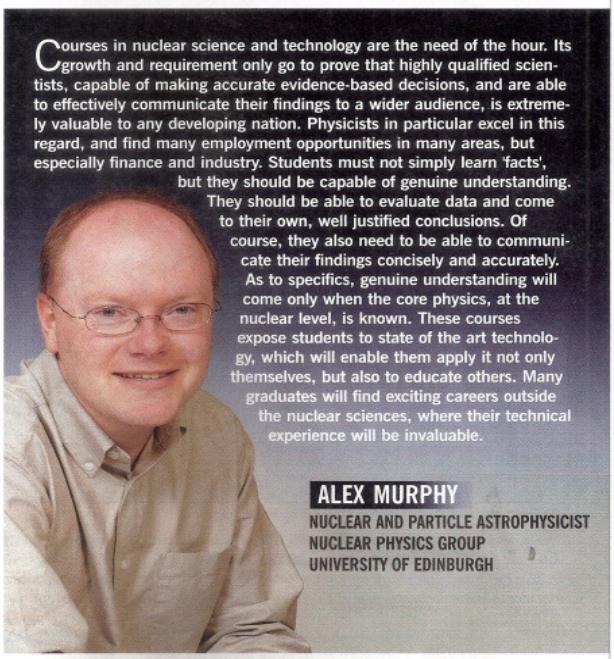
battle against climate change," says Bjoern Seitz, senior lecturer, Nuclear physics department, University of Glasgow.

The nuclear power industry and nuclear waste management require well trained graduates to replace a rapidly ageing workforce, giving great opportunities for current graduates. Similarly, the ageing population poses great challenges in the healthcare sector, where nuclear technologies are increasingly employed in the fight against cancer and many related medical imaging applications.

"India can provide high quality man power, reactor technologies and expertise and help in safety reviews, thus providing impetus to other prospective countries towards nuclear renaissance. With this, India can attain the status of a world leader in nuclear technology," says Raj. Such courses expose the students to state of the art technology, which will enable them apply it not only themselves, but also to educate others. Many graduates will find exciting careers outside the nuclear sciences where there technical experience will be invaluable.

"In many respects, the needs for both developed and developing nations, in nuclear science are very much comparable. All parts of the world will have to satisfy an increasing demand of our energy supplies, face the healthcare burden of an ever more ageing population and last but not the least, we all share a thirst for knowledge, our quest to understand the world around us," reiterates Seitz. The course will expose students to state-of-the-art technology, which will enable them apply it not only themselves, but also to educate others. Many graduates will find exciting careers outside the nuclear sciences, where there technical experience will be invaluable.

Aspirants can join the Indian Institute of Technology-Kanpur (IIT-K), which offers a post graduate programme in Nuclear Science and Technology. Delhi University also offers a three-year M Tech programme in Nuclear Science and Technology.



Courses in nuclear science and technology are the need of the hour. Its growth and requirement only go to prove that highly qualified scientists, capable of making accurate evidence-based decisions, and are able to effectively communicate their findings to a wider audience, is extremely valuable to any developing nation. Physicists in particular excel in this regard, and find many employment opportunities in many areas, but especially finance and industry. Students must not simply learn 'facts', but they should be capable of genuine understanding. They should be able to evaluate data and come to their own, well justified conclusions. Of course, they also need to be able to communicate their findings concisely and accurately. As to specifics, genuine understanding will come only when the core physics, at the nuclear level, is known. These courses expose students to state of the art technology, which will enable them apply it not only themselves, but also to educate others. Many graduates will find exciting careers outside the nuclear sciences, where their technical experience will be invaluable.

ALEX MURPHY
NUCLEAR AND PARTICLE ASTROPHYSICIST
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IIT, Madras and Amity University also have similar programmes. "Students can become professionals in nuclear industry and their subsidiaries. After getting a Master's degree, they can join scientific research, and teaching in universities and also work as technologists," says H. C. Goel, director, Amity Institute of Nuclear Science and Technology.

The present global scenario of industry and commerce has no compartmentalisation at the country level. Our depth of technical and scientific proficiency can create a lucrative market for Indian technologist in both developed and under developed countries and this may help in solving global energy crisis. Goel adds, "Since the package depends upon demand and supply, professionals in the field will be coming out in much smaller numbers from the universities and technical institutions than required. This will ensure lucrative payments inevitably."

Starting salary depends on the final degree and the chosen career path chosen. Entry level salaries in public healthcare are around ₹20 lakh per annum but offer further specialised training. Depending on the job and experience, researchers can earn between ₹24 lakh and ₹40 lakh per annum. However, those working with the industry or in the finance sector can potentially earn more. "World electricity requirement would double by 2050 and triple by 2100. There is no other alterative to nuclear as of now. Hence, there is a strong need for nuclear scientists and technologists in near and far future," says Raj.