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Economy and Politics **RSS**

Nobel laureates lobby for stalled India science project

Since the closure of the Kolar Gold Fields mines, which hosted a detector, neutrino research has become more or less defunct in India

Jacob P. Koshy

New Delhi: A group of physicists, including two Nobel laureates, have appealed to Prime Minister Manmohan Singh to help overcome environmental objections against the planned Rs900 crore India-based Neutrino Observatory (INO), the country's most ambitious basic science project, to be located deep under the Mudumalai Tiger Reserve at Masinagudi in Tamil Nadu.



Losing time: A neutrino detector being assembled at the Tata Institute of Fundamental Research in Mumbai. In a letter to the Prime Minister, physicists said further delays could hurt the project's overall success. Abhijit Bhatlekar / Mint

Further delays could defeat the purpose of the project because similar projects elsewhere could undermine India's effort, they said.

"Already plans are afoot both in USA and China for building huge underground neutrino labs. Time is running out and the competitive edge that INO had is slipping away.

Any further significant delay will be very detrimental to the success of (the) whole project, and may indeed make the project moot," says the

letter, viewed by *Mint*, and signed by 11 particle physicists from Japan, the US, Canada and Italy. They include Nobel laureates Sheldon L. Glashow of Boston University and Masatoshi Koshiba of the University of Tokyo, both of whom have discovered new properties of subatomic particles.

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Last August, *Mint* had reported on India's plans to revive neutrino research by constructing the observatory that will weigh 50,000 tonnes, host the world's biggest magnet and cost at least Rs900 crore. Planned to be built a kilometre under the surface, INO will be connected to the outside world by a 2km-long tunnel.

Since the closure of the Kolar Gold Fields mines, which hosted a detector, neutrino research has become more or less defunct in India.

Neutrinos, discovered in 1956, are neutral (no electric charge) subatomic particles with a mass that is almost zero. Research into these tiny particles have resulted in two Nobel Prizes, but scientists still do not know much about them.

Scientists say neutrinos hold vital clues to questions such as the age of the universe and the underlying structure of matter. They travel great distances—sometimes over billions of light years—and being electrically neutral, hardly react with anything.

Globally, several experiments are under way to understand fundamental particles of matter, the most high profile of these being the underground Large Hadron Collider at the France-Switzerland border near Geneva, Switzerland. India, which has contributed to the project, has announced many new proposals to boost particle research in its 11th Plan.

The proposed INO would be funded by the government's Department of Atomic Energy, the department of science and technology and the University Grants Commission. It will have three massive iron stacks, or modules, interspersed with a special detector material that will absorb cosmic radiation filtered by the dense,

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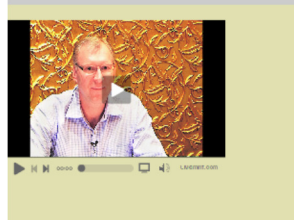
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mountainous granite over the observatory—one of the reasons why the Nilgiris was chosen.

However, some environmentalists have objected to the project.

An association of green groups known as the Friends of the Nilgiri Biosphere Reserve, which includes the World Wide Fund for Nature, or WWF, the Nilgiri Wildlife and Environmental Association and the Tamil Nadu Green Movement, said that the plying of trucks ferrying building material and the resultant debris that the construction will entail in an area declared ecologically sensitive are enough reasons for the project to be moved elsewhere.

The project, which has been cleared by the ministry of environment and forests, is awaiting clearance from the Tamil Nadu forest department.

"During the initial days of the project in 2006, the Tamil Nadu government was supportive. They even announced it in the assembly. After that it has just been stuck. We are not even told if the clearance is forthcoming or not," said Naba Mondal, a senior scientist at the Tata Institute of Fundamental Research and a spokesperson with the Neutrino Collaboration Group, a body comprising particle physicists from nearly 20 universities in India that is coordinating the INO project.

"This is a basic science project because of which it is only the initial few years that are going to see construction. Moreover, the observatory will be underground and so no forest land needs to be cleared, and post construction, the number of vehicles there is going to be highly regulated," said Mondal.

A.S. Balanathan, principal chief conservator of forests, Tamil Nadu, did not return calls seeking comment. However, his office said that the INO file was "still under process".

Some experts say the project doesn't constitute an ecological threat.

Raman Sukumar, an ecologist at the Indian Institute of Science, Bangalore, said that if the contractors and labourers involved in construction at the premises didn't stay, and the debris resulting from digging the tunnel was suitably managed, INO wouldn't really destroy anything.

"I don't see any obstruction to tiger or elephant corridors from this. There will be a temporary disturbance due to construction, but given that the site is closer to the village, far from the core tiger reserve, there's no mining or commercial activities involved and the site anyway has tunnels built by the Tamil Nadu government for a power plant, it's a safe bet," he said.

Anil Kakodkar, chairman, Atomic Energy Commission, made a presentation to a group of environment experts that included Sukumar, regarding the environmental aspects of INO earlier this year.



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