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Project in limbo over land row, clearances

The proposed India-based Neutrino Observatory is facing environmental and land acquisition hurdles

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New Delhi: India's plans to understand the mysteries of the universe by tracking a subatomic particle, through a project that could well be the country's most ambitious and expensive basic scientific research project, are being held up by environmental concerns and problems in land acquisition.

The so-called India-based Neutrino Observatory (INO) will weigh 50,000 tonnes, cost at least Rs900 crore, and will reside a kilometre under the ground at the Mudumalai Tiger Sanctuary at Masinagudi in Tamil Nadu. It will be connected to the outside world by a 2km-long tunnel.
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Environmentalists, however, are opposed to any such work in the Nilgiris biosphere where Masinagudi is located.

And the project is yet to receive a clearance from the Tamil Nadu government that will allow it to use forest land for construction.

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

Scientists say that 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.

INO envisaged at Masinagudi is funded by the government's department of atomic energy, department of science and technology and the University Grants Commission. It will have three massive iron stacks, called modules, interspersed with a special detector material that will absorb cosmic radiation filtered by the dense, mountainous granite over the observatory—one of the reasons why the Nilgiris was chosen.

"Neutrino physics is internationally one of the hottest areas of research, and a dedicated observatory and lab in India is an absolute must," said Naba Mondal, a senior physicist at the Tata Institute of Fundamental Research, Mumbai.

Mondal is also the spokesperson for the Neutrino Collaboration Group, a body of particle physicists from nearly 20 universities in India, which is coordinating the INO project. Neutrinos, he added, "simply pass through anything, into the ground and that is why we need an underground observatory to detect their presence".

Canada, Italy, Japan and the US already have specialized and large neutrino detectors. "And we want India to be the fifth," Mondal said.

neutrino observatory (INO) at the Tata Institute of Fundamental Research in Mumbai. INO may be the biggest and costliest basic science project in the country. (Abhijit Bhatlekar / Mint)

Environmentalists do not share Mondal's enthusiasm. They say that the tunnelling and construction work for INO will destroy the flora and fauna and obstruct an elephant corridor in the region. An elephant corridor is an established animal pathway in forests used by elephants to get from one area to another.

An association of environmental groups called Friends of the Nilgiri Biosphere Reserve, which includes the World Wildlife Fund, Nilgiri Wildlife and Environmental Association, and the Tamil Nadu Green movement, has said in a written statement that the sheer amount of traffic caused by trucks used for ferrying construction material, and the resulting muck and debris in a declared ecologically sensitive area are enough reasons for the project to be moved elsewhere.

Though the project has been cleared by the ministry for environment and forests, it still awaits forest land clearance from the Tamil Nadu government, which, Mondal said, will come in the next couple of weeks.

"This is a basic science project because of which it's 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.

"We still await cabinet approval after all clearances come through, and so I expect construction to start by the year-end," he added.

Meanwhile, the University of Mysore has also backtracked on a memorandum of understanding to provide land for a full-fledged campus, which will be the nodal centre for analysing data from the observatory. The Mysore university was the first choice for the scientists because of its proximity to the Masinagudi observatory, which is around 100km away.

Shivashankara Murthy, acting vice-chancellor of the Mysore university, said: "The initial agreement didn't specify how much land they needed for the campus. We were subsequently told that the project would require nearly eight acres. We can't spare more than three acres."

However, a confident Mondal said: "The Karnataka government has assured us that we will get the land for the centre."

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