

NGT ruling on INO Observatory

Why in news?

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The National Green Tribunal (NGT) upheld the environmental clearance granted to the India-based Neutrino Observatory (INO) recently.

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What does the ruling say?

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- The application for environmental clearance was referred to Environmental Appraisal Committee (EAC) by the State Environment Impact Assessment Authority of Tamil Nadu as it preferred the centre to assess a project of this nature.

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- Environment ministry (MoEFCC) gave the clearance on March 2018, but it was challenged in NGT by Pooulagin Nanbargal.

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- The INO project was approved under **category B**, even though it is about to located near an eco-sensitive national park.

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- Thus the organization objected to the category under which the project was cleared.

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- However, the NGT held that the environment ministry has the legal and technical competence to assess the INO project and upheld the environmental clearance.

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- The judgment states that it was correct on the part of the EAC and the ministry to appraise the project at their level.

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- However, the court reiterated that the INO must also obtain approval from National Board for Wildlife.

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- This is because the proposed site is about 4.9 km from Mathikettan Shola bird sanctuary bordering Kerala.

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- Any major activity within 5km from any wildlife sanctuary requires a specific approval by the National Board for Wild Life.

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- Also, NGT ruled that specific or general condition or recommendation made by the committees and expert groups on Western Ghats will be mandatorily made applicable in the current project of INO.

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What is the INO project?

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- It is a particle physics research project to primarily study the elusive sub-atomic particles called neutrinos.

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- Neutrinos are extremely tiny elementary particles that are omnipresent in universe which carries no electric charge.

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- It is considered to be the second most abundant particle in the universe after the photon, or light particle.

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- Yet, they are very difficult to detect because they pass seamlessly through all kinds of matter, unimpeded and undetected.

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- Its rest mass is almost zero (1 millionth of an electron).

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- It interacts only via weak short range subatomic forces and gravity.

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- Hence its detection needs high-end instruments and an environment that is effectively shielded from other radiant interference.

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- Hence, a cavern is being carved out at the depth of 1,300 meters (4,300 feet) below the Western Ghats stretch in Bodi West Hills in Theni district for establishing the research site.

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- An underground laboratory will be located there, nearly 1.5 km below the Earth's surface, where a giant neutrino detector is to be placed.

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OBSERVATORY UNDERGROUND

WHY NEUTRINOS
Neutrinos are subatomic particles, abundant in the universe but hard to detect. Studying these particles is expected to help answer some basic questions about the universe.

330/cu. cm
Density of neutrinos in universe.

100 trillion/second
Rate at which neutrinos pass through human body.

INO PROJECT
Nearly 1.5 km below the Earth's surface, an iron calorimeter (ICAL) detector will be placed. The project will seek to establish a mass hierarchy among known types of neutrinos.

50,000 tonnes
Magnets will make up the iron calorimeter detector.

Rs 1,585 cr
Project estimated cost, as of 2015.

25
Approximate number of institutions involved in the project.

PROJECTS ELSEWHERE

CHINA: Jiangmen Underground Neutrino Observatory; research on mass hierarchy among neutrino types.

JAPAN: Hyper-Kamiokande Detector at Kamioka Observatory in Hida; research on mass hierarchy.

EUROPE: LAGUNA (Large Apparatus studying Grand Unification & Neutrino Astrophysics).

US: DUNE (Deep Underground Neutrino) project in South Dakota will have two neutrino detectors.

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- The overhead rock will effectively shield it from natural cosmic radiation from outside.

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- Many countries are carrying out research on neutrinos, believing that it holds important clues to some basic questions on the universe.

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When will it operationalize?

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- The original timeline had envisaged experimental work starting from 2017, later advanced to 2020.

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- It is now unlikely to begin before 2025, even if construction starts next year.

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- Construction of the underground facility would take at least 5 years and hence the project cost too is likely to escalate.

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What are the challenges?

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- **Environment** - It has had to move from its initially proposed location, because the nearby Mudhumalai National Park had been declared a tiger reserve during the same time.

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- Hence this second site was selected.

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- **Litigations** - The project has been mired in all kinds of trouble such as litigation, public protests, opposition from NGOs and political parties, including the recently ended litigation with NGT.

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- **Red Tapes** - Bigger uncertainties in terms of government approvals, meanwhile, are still to come.

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- The project applied for clearance from the National Board of Wildlife only in January this year and that approval is still awaited.

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- Last year, the INO was told it would also need building approval from relevant state government agencies.

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- The building plan is being prepared and an application is likely to be moved later this month.

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- It is unclear how much time it will take to get that approval.

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- The Tamil Nadu government, on its part, has taken its time deciding on approvals for the project.

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- **Cost** - The Union government had, in 2015, approved a budget of Rs 1,583 crore for the project.

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- That budget was based on cost assessments done in 2012.

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- It is estimated the project would now cost at least 25% more than that amount.

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Source: The Indian Express

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Quick Facts

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Categories under EIA

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- The EIA Notification, 2006, broadly divides all projects into two categories, Category A and Category B, based on potential impacts over an area and on human health and natural and man-made resources.

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- Accordingly, all Category A projects required to undertake EIA and a public hearing and its clearance are granted by the Union environment ministry.

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- On the other hand, Category B projects are given a clearance by state level authorities.

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- Category B projects are further classified as B1 and B2.

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- While projects under Category B1 also require an EIA and public consultation, those falling under B2 are exempted from requirements of both EIA and public consultation.

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