

Proposed INO Project in Nilgiris

Indian scientists are trying to revive the neutrino science in the country by building an underground physics laboratory at Singara in Nilgiri hills, Tamil Nadu. The proposed Neutrino Observatory (INO), which is expected to be operational by 2012, is aimed at building a world class underground laboratory to look for and study the tiny and almost massless elementary particles called neutrinos. There are only a handful of such observatories in the world, and this Rs.950 crore India-based Neutrino Observatory (INO) is slated to be the most advanced among them. Reportedly the said project is expected to put India at the forefront of neutrino physics. It is also reported that the proposed laboratory was a dream project of former President APJ Abdul Kalam.

The Sight Selection Committee (SSC) of the INO collaboration had initially identified two potential sites and conducted feasibility study of the two sites at Rammam in Darjeeling, West Bengal and the Singara site in Nilgiri hills, Tamil Nadu for the location of the project. Both the sites had enough rock cover that would shield the laboratory from cosmic radiation. After evaluation of various criteria like long term availability, cost factors, risk and safety issues, depth, accessibility, time to install etc. the SSC opted for the Singara site which was found more suitable for the project.

Singara falls within the Nilgiri Biosphere Reserve (NBR). The NBR is a large tract of over 5,500 square kilometres of contiguous forest spread across three states. It was the first Biosphere Reserve in India, established under UNESCO's Man and Biosphere programme in September 1986. Indian scientists have built up a reputation as pioneers in neutrino experiments. In fact neutrinos produced by cosmic ray interactions in the earth's atmosphere were first detected in 1965 by a joint Indian-British-Japanese team while conducting an experiment at the Kolar Gold Field in Karnataka. But the facility at KGF was abandoned in 1992 with the closure of the mine that housed it. There is no information available as to why this prestigious observatory was shut down when it was operating at even greater depth ie 2000m as opposed to the proposed 1300m at the Singara site. The INO project is aimed at reviving the pioneering spirit of neutrino research which was abruptly suspended in 1965 with the closure of Kolar Gold Field in Karnataka.

The INO project is an impressive collaboration of almost all the major scientific institutions in our country, aimed at looking for neutrinos from various natural and laboratory sources. The traditional idea that protons, neutrons and electrons are the smallest and most fundamental particles has undergone a radical change over the years. It is known now that there are a host of even smaller particles, neutrinos being one of them. They have no charge, almost no mass, and are so tiny that they pass through absolutely every thing, including the earth. As they move through matter, there is a probability of their collision with the nucleus of an atom. When this happens they interact with the nucleus, get absorbed, and produce another harmless particle called a muon. It is this interaction that will be used to detect and study them. The India-based Neutrino Observatory (INO) will be housed in a man-made cave about 2 kilometres beneath the tallest peak of the Nilgiri Hills, Tamil Nadu, 250 kilometres south of

Bangalore

Scientists believe that the study of the neutrinos will help us understand the universe better and how it all began. It could also have vast applications in the field of astrophysics. As the neutrinos pass through matter almost undisturbed, the observatory has to be built deep underground, ensuring that all other particles and rays are naturally filtered out. For this the detector has to have a rock cover of at least one kilometre on all sides and the INO collaboration plans to drill 2.38 kilometres into the Singara hill to house the 100 kilo tonne iron detector. Neutrinos are produced in stars as well as on earth when cosmic rays smash into the upper atmosphere. According to Naba K. Mondal, INO project leader and a particle physicist at the Tata Institute of Fundamental Research in Mumbai, physicists are keen to improve their understanding of the properties of the three different types of neutrinos — electron, muon and tau neutrinos. The INO will use a 50,000-tonne magnetized iron calorimeter to detect particles called muons that are produced on the rare occasions that neutrinos interact with matter. As the detector can distinguish between muons with a positive and a negative charge, it should help researchers to work out the respective masses of the three types of neutrino. Mondal says that the new laboratory could verify results obtained by physicists at Japan's Super-Kamiokande detector suggesting that neutrinos can 'oscillate' between the three types. He claims that a few years of observations could confirm that neutrinos have mass and can oscillate.

The plan to investigate these elusive subatomic particles has been going on since 2001. The project report for the INO was submitted in 2002. The approval for the project came in 2007. Subsequently the Planning Commission also approved its funding and allocated a sum of Rs.950 crores for the project, earmarking Rs.315 crore for disbursement during the 11th Plan. The Ministry of Environment and Forest also gave its clearance in 2008.

The INO collaboration currently includes at least 100 scientists from 18 Indian institutions and the University of Hawaii. Institutions collaborating with the INO project include prestigious institutions like Bhabha Atomic Research Centre, Mumbai, Tata Institute of Fundamental Research, Mumbai, IIT Mumbai and Institute of Mathematical Science, Chennai. The INO is also looking for collaboration with researchers in Italy and Japan. Scientists in India believe that the INO project is likely to bring about a resurgence of the expertise in particle astrophysics in India. A 100-strong team of physicists has begun fabricating detector components at Tata Institute of Fundamental Research (TIFR) in Mumbai and at other collaborating institutions. However, before the work at Nilgiri can begin, INO needs to obtain a permit from Tamil Nadu's forest department.

Opposition to the project.

While the scientific community in India is thrilled about the proposed INO project, some NGO and environmental activists and organisations in Nilgiris and Chennai

have been trying to stall this project by resorting to a malicious campaign against the project both at national and international level. The organisations which are in the forefront of this campaign are as under:

- 1) The Nilgiris Wild-life and Environmental Association (AWEA)
- 2) The Tamil Nadu Green Movement
- 3) The Shola Trust
- 4) The Keystone Foundation
- 5) The Nilgiri Ecological and Animal Protection Samhiti (NEAPS)
- 6) The Sigur Nature Trust
- 7) OSAI
- 8) C.P.Ramaswami Iyer Foundation, Chennai.
- 9) The Indian National Trust for Art and Cultural Heritage (INTACH)
- 10) WWF-India.
- 11) Adivasi Munnetra Sangham, ACCORD, Just Change and ASHWINI, all NGOs based in Nilgiris founded by Stan Thekkekara, a Christian Action Group activist.

Prominent activists who lead the anti-INO campaign include N.Mohan Raj (Coordinator for WWF-India in Nilgiris), Geetha Srinivasan (Vice President of Nilgiri Wild-life and Environment Association and District President of INTACH, Nilgiris), Ajai Desai (a wild life specialist), A.Arumugam (a biologist working with WWF), Maj.Gen.S.G.Vombatkare (an environmental activist), Stan Thekkekara, his wife Mari Marcel Thekkekara, his son Tarsh Thekkekara and Mathew John of Keystone Foundation (all Christian Action Group activists).

These activists are opposing this prestigious project raking up issues like environmental pollution, destruction of wild life habitat, etc. Their main concern is allegedly the possible population explosion that happens after the establishment of every major development project. To highlight the environmental damage, they have worked out frightening figures to show that the project will create 6,30,000 tons of muck and debris and bring in material weighing 1,47,000 tons. According to their assessment, for the transportation of this much debris and material, 78000 trucks will have to make 156000 trips creating 4.68 lack hours of disturbances. They allege that the project will not benefit local people as employment opportunities would go mostly to highly skilled workers from outside. They point out that the project will require 342,000 litres of water and 3 mega watts of electricity every day and will thus lead to further deterioration in the water and power shortage in the area. They describe the Environment Impact Assessment report as completely inadequate and superficial with no hard data or assessment of damage at a larger Landscape level. They are also critical of the EIA for being silent on the impact of the project on the 15 endangered species in the area due to the blasting, noise, vibrations, human presence etc. The INO authorities have however dismissed all these allegations as baseless and irrational. Commenting on the alleged

possibility of population explosion, they point out that the the laboratory will be located deep underground and accessed by a tunnel 2 km in length. Researchers will be located at the main INO research and development center in Mysore, about 100 km away from the INO site. Except during the construction phase, the number of scientists and engineers manning the laboratory will not be more than 30 people. The present population of Masinagudi village area where the project will be housed is about 12,550. They assert that the INO project will not cause any notable increase in the population of the area. They point out that the Singara site was chosen over Rammam on the basis of a geotechnical analysis that considered physics requirements, safety, and long-term stability of the laboratory. About 13 km of tunnels have been constructed over the past decade in the vicinity of the proposed INO site to locate a large underground hydroelectric power station whose access portal is within a few hundred metres of the proposed INO tunnel portal. Due to the proximity of this hydroelectric power station, the INO authorities would not have to build any new roads, thereby causing minimum damage to the environment. Regarding transport of material, about 608,000 tons of debris (mainly granite) will be excavated. However, this debris will be stored onsite for a long time. The construction and detector material required for the project would be brought to the site over a period of 7 years. The heavy-vehicle traffic required to do so will be no more than six round trips per day which is negligible compared with the existing traffic. The water requirement is 342,000 litres of water per day, which is 0.2% of the availability at Singara. The INO officials have been engaged in talks with the local people to clarify these issues, and the local village administration has passed a resolution welcoming the INO project. The INO authorities have further clarified that the project is a pure science laboratory and not an industry and that they could build and run the underground laboratory to explore the working of nature without causing any harm to the local ecology and environment.

But the activist groups refuse to accept any of these clarifications and they are bent upon scuttling the project. They want the project to be shifted to any other suitable site. The state forest officials appear to be taking the side of the activist groups. They say that the physicists have not yet made a convincing case. The state forest department's clearance for the project is pending since 2006. The World Wide Fund for Nature-India also opposes the facility, arguing that Nilgiri is already under pressure and INO will lead to permanent detrimental impacts on wildlife. How can an underground physics laboratory, not an industrial unit, located beneath one of the hills in the Nilgiris pose any threat to the environment or to the elephant population or any other animal species in the area?

Keystone Foundation

The Keystone Foundation, an NGO functioning among the indigenous people in the Nilgiri hills in Tamil Nadu, was founded by Mathew John, a Christian Action Group activist, in 1992 with the avowed objective of enhancing the quality of life of the local people by helping them in tackling their problems of livelihood, conservation and enterprise development. The main office of the organization is located at Kotagiri in

Nilgiri hills. The organization also runs six resource centres in the area. The Foundation helps the local tribals in marketing their products like honey, spices, coffee, beeswax, etc. through its shops in the region. The Keystone Foundation has partnership with international organizations like People and Plants International, Bees for Development, Monmouth, UK and Austroproject of Vienna. The following donor partners have also supported Keystone project since 1993.

- AusAID, Govt. of Australia, New Delhi (1997-1999)
- Both Ends, Amsterdam, The Netherlands
- Bees for Development, UK (since 2007)
- Cordaid (since 2005)
- Charities Advisory Trust, UK
- CS Fund through Marin Community Foundation (since 2008)
- Danish Beekeepers Federation, Denmark
- DFID India, Govt. of U.K., New Delhi (1996-1997)
- Ford Foundation, New Delhi (since 2001)
- Hill Area Development Program, Government of Tamil Nadu, Udthagamandalam (2004)
- India Foundation for the Arts, Bangalore
- Institute for Integrated Rural Development, Aurangabad
- IDRC, New Delhi (since 2007)
- Panta Rhea Foundation through Hans Schoepflin Trust (since 2008)
- Swallows in Sweden, Lund (since 1993)
- Swiss Development Cooperation, Inter-Cooperation, Bangalore_ (2001-2006)
- The Global Green Grant Fund, US
- The Green Hotel, Mysore through Tzedakah Trust (1996)

- The Netherlands Committee of IUCN, Amsterdam
- Winrock International, New Delhi (2001-2003)

ACCORD, AMS AND ASHWINI

Stan Thekaekara, a Christian Action Group activist, has worked with various NGOs in different parts of the country since last four decades. He is a trustee of Oxfam GB and he has also worked as an adviser to Oxfam on its UK Poverty Programme. Stan along with his wife Mari Marcel Thekkekara came to Nilgiris in the mid-eighties to work among the Adivasis in the area. They together founded an NGO called ACCORD in November, 1985.

ACCORD

The Action for Community Organisation, Rehabilitation and Development (ACCORD) founded by Stan and Mari was aimed to bring about an awareness among the Adivasis of Gudalur valley about their citizenship, land and human rights and empower them to fight against all kinds of injustice and exploitation and help them to lead a life with dignity, pride and self-esteem. They taught them about their rights to the forest land and the need to assert their rights to retrieve their ancestral land which was taken away from them by the authorities by force or deceit. They helped the local Adivasis to set up village-level sangams to resist against all kinds of injustice and discrimination and to start a land rights campaign for restoration of their ancestral land. These Village Sangams eventually led to the formation of Adivasi Munnetra Sangam in 1988. A protest demonstration conducted under the aegis of Adivasi Munnetra Sangam (AMS) as part of its land rights campaign at Gudalur on December 5, 1988 was attended by about 10000 Adivasis. The AMS now claims to have a membership of 15000 Adivasis spread over 200 villages in Gudalur and Pandalur talukas of Nilgiri district. The ACCORD now functions primarily as a resource centre providing training and expertise and mobilizing the required resources for the Adivasi activists and village Sangams.

In 1987, Dr.Devadasan and Dr.Roopa joined Stan Thekkekara in starting a community health welfare programme, specifically for the Adivasi women in the Gudalur valley. They founded an organization called ASHWINI (Association for Health Welfare in the Nilgiris) in 1990 which was registered as a charitable society. In the same year, a 20-bedded hospital was also set up in Gudalur as part of the ASHWINI project. The Gudalur Adivasi Hospital also has eight sub-centres in the valley to coordinate the community health programmes in the villages and to provide first aid and other medical needs of the villagers. The ASHWINI project is financed by Action Aid of UK, CEBEMO (CORD AID) of Holland and also under funds from various state and central government schemes.

Other welfare projects started by the AMS for the Adivasis in the area include Just Change, an organization launched in 1994, which aims to establish an alternative trading mechanism that links poor Adivasi communities together and encourages them to trade among themselves, Vidyodaya school started in 1995 and the Adivasi Tea Leaf

Marketing Society which was established in February 1999 to promote tea cultivation among the Adivasis in the area.

Stan Thekkekara and his wife Mari Marcel and their son Tarsh Thekkera are presently engaged in educating the local Adivasis about the danger posed to the wildlife and eco-system in the area from the proposed neutrino observatory at Singara. Tarsh teaches tribal children in a local school. Tarsh and Mari who also work as part-time journalists have also started an extensive media campaign against the proposed neutrino project.

C.P.Ramaswami Iyer Foundation, Chennai

C.P.Ramaswami Iyer Foundation, Chennai and the C.P.R.Foundation's Environmental Education Centre at Ooty are also actively aligned with the Nilgiri Biosphere Reserve (NBR)Alliance in opposing the neutrino project. Late C.P.Ramaswami Iyer was a great statesman, academic and administrator who had also served as the Diwan of erstwhile Travancore-Cochin state. It is ironical that an institution like the C.P.R. Foundation set up as a memorial for him should engage in activities prejudicial to the country's economic and technological progress. The C.P.R.Foundation was probably dragged into this controversy because of Ms. Geetha Srinivasan, an environmental activist and a staunch opponent of the neutrino project, who also happened to be the grand daughter of late C.P.Ramaswami Iyer. She was the chairperson of the World Wide Fund for Nature in Mumbai during the late eighties and presently she is the Vice President of the Nilgiri Wildlife and Environment Association. She is also the district convener of Indian National Trust for Art, culture and heritage (INTACH). Her husband M.R.Srinivasan was a former chairman of the Atomic Energy Commission. It may be relevant to note in this regard that M.R. Srinivasan was one of the most vocal supporters of the India-US nuclear deal from the very beginning.

Comments.

The NGO and environmental activists and organisations opposing the neutrino project at Singara in Nilgiri hills are part of the same anti-development lobby which tries to stall all important development projects in different parts of India as part of a wider conspiracy by certain western intelligence and funding agencies to stall the economic progress of the country and also to strengthen the ongoing proselytisation drive in the remote and tribal areas in the country.The Christian NGO activists like Stan Thekkekara, his wife Mari Marcel Thekkekara and son Tarsh Thekkekara of ACCORD and Mathew John of Keystone Foundation who work among the Adivasi inhabitants of the Nilgiri hills with the avowed objective of their socio-economic upliftment are in reality prompted and motivated by their prime objective of promoting Christianity in the area. These activists do not want any developmental activities in the area as it will improve the employment prospects and general wellbeing of the people in the area. They want the local Adivasis to remain poor and backward and depend upon the Christian NGOs in the area for any financial or material help which alone will help the Christian

activists to fulfill their mission. This explains their total opposition and stiff resistance to all development projects in the area. The environmental activists and international organisations like WWF are all linked to this wider conspiracy.