Introduction to the Series on Megaprojects

Quietly and in complete secrecy, a major step in the history of human kind was taken at 3:25 p.m. on 2 December 1942, on a play court in the University of Chicago in the United States of America, by a small group of scientists. Energy was produced in a sustained, controlled, fission chain reaction; at something like the thirtieth attempt in suitably arranging a pile of 40,000 graphite blocks that enclosed 19,000 pieces of uranium metal and uranium oxide fuel. The sequel to this step, ITER, is scheduled for 2035, when the very first attempt at producing net energy by fusion reaction, is to be realized through the sustained, decades-long efforts of a large number of scientists, engineers and industries, drawn from all over the world.

ITER is a megaproject – dimensions fantastic, precision mind boggling, planning futuristic and exact down to even the last details of additional research needed to make the final instrument function as expected. The project to be completed, within a set time frame and expense, through close interaction and concerted action by scientists, engineers, industries and governments. India is a participating country in seven such megaprojects – from those going down to the atomic scale in realizing net energy production by thermonuclear fusion in ITER, and beyond in accelerator based research in FAIR and CERN experiments, to those exploring the universe at finer scales and farther via amazingly captured faint signals: the SKA, TMT, LIGO and INO. The Vigyan Samagam, a traveling exhibition on these seven wondrous megaprojects, with posters, models, projects and quizzes as well as insightful talks and discussions by scientists, engineers, industrialists and government, arranged jointly by the Department of Science & Technology, Department of Atomic Energy and the National Council of Science Museums of India, is touring the megacities and cities of India.

Gentle Reader, *Resonance* brings to you a series of articles on these megaprojects. The first article of the series is carried in this issue; on ITER - a project to heat hydrogen and make a 150,000,000 kelvin burning plasma, contained using magnetic fields generated by superconducting electromagnets sitting cool at 4 kelvin, with the tokamak and the magnets housed in a high vacuum vessel.

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