

India won't pull back on nuclear ambitions

Atomic-energy boss Ratan Kumar Sinha says country is on track to meet nuclear goals.

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Ratan Kumar Sinha became chairman of India's Atomic Energy Commission (AEC) on 30 April. A mechanical engineer and reactor designer, Sinha also heads the Bhabha Atomic Research Centre (BARC) in Mumbai, where research activities include weapons-related work. He tells *Nature* that neither the Fukushima nuclear accident in Japan last year nor protests over safety at home have slowed India's nuclear programme: all efforts are being made to meet the country's goal of generating 63 gigawatts of nuclear power by 2032, he says.

What are your goals and challenges as head of the AEC?

My dream is to have long-term energy independence for India through a mixture of energy options, including nuclear energy. The challenge is building a large number of nuclear power plants across the country close to population centres, while meeting high safety standards. I also dream of substantial growth in the application of radioisotopes and particle-accelerator technologies in agriculture, health care and industry.

What was the impact of Japan's Fukushima accident on India's nuclear programme?

We did a safety review of our plants, and concluded that existing designs are adequate to address external events such as tsunami and earthquakes. Even so, a few extra measures to introduce cooling water into the reactor from external sources, wherever needed, have been implemented or are under implementation.

India's nuclear power plants will use foreign-built reactors, but there have been delays in importing them. Will this cause you to revise the 63-gigawatt target?

No. At the moment we are not contemplating a revision in the target. There have been some delays in initiating the work on the ground, but significant progress has been made with international agreements and the domestic framework. We are hoping to launch the imported reactors during the period of India's current five-year plan (2012–17), and are simultaneously starting work on several indigenous reactors. The government has already approved enough sites 'in principle' to reach about 58 gigawatts.

What are the remaining hurdles?

Acquisition of land and relocation of people at some of the new sites, as well as resolution of matters related to the legal framework for vendors in India. Discussions on techno-commercial offers for two reactors in Kudankulam (with the Russian nuclear company Atomstroyexport) and another two in Jaitapur (with French energy company Areva) have reached an advanced stage. Discussions with two US vendors — Westinghouse Electric and GE Hitachi Nuclear Energy — are in progress. We are also working towards augmenting investment opportunities by incorporating joint ventures between the Nuclear Power Corporation of India and other public-sector companies. International cooperation of this magnitude in the nuclear field has been a first-time experience for us and it has, perhaps predictably, taken time to establish the rules. Hopefully, further progress will be faster.

What is the status of India's thorium programme?

We are in the process of identifying a site for the advanced heavy water reactor, which will produce most of its power from thorium. We are also doing research into optimizing thorium fuel-cycle technologies, including ways to recycle thorium-based spent fuel.

What are India's contributions to international projects?

Indian laboratories including BARC have been collaborating on the Large Hadron Collider at CERN near Geneva, Switzerland. India is also a member of the nuclear-fusion project ITER, for which we are participating in the fabrication of the largest cryostat in the world and all the associated components. Indian scientists and engineers are working on a Test Blanket Module for breeding tritium by



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Ratan Kumar Sinha says India is forging ahead with its plans for nuclear power plants.

nuclear transmutation under fusion neutron flux in ITER. These breeder blankets could establish the technical feasibility of heat extraction and tritium recovery.

You lead both India's civilian nuclear programme and a nuclear-weapons lab. How do you keep the two programmes separate?

A separation plan has been formulated as part of the international civil nuclear-cooperation agreement. India has adopted the plan, meeting all its commitments.

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