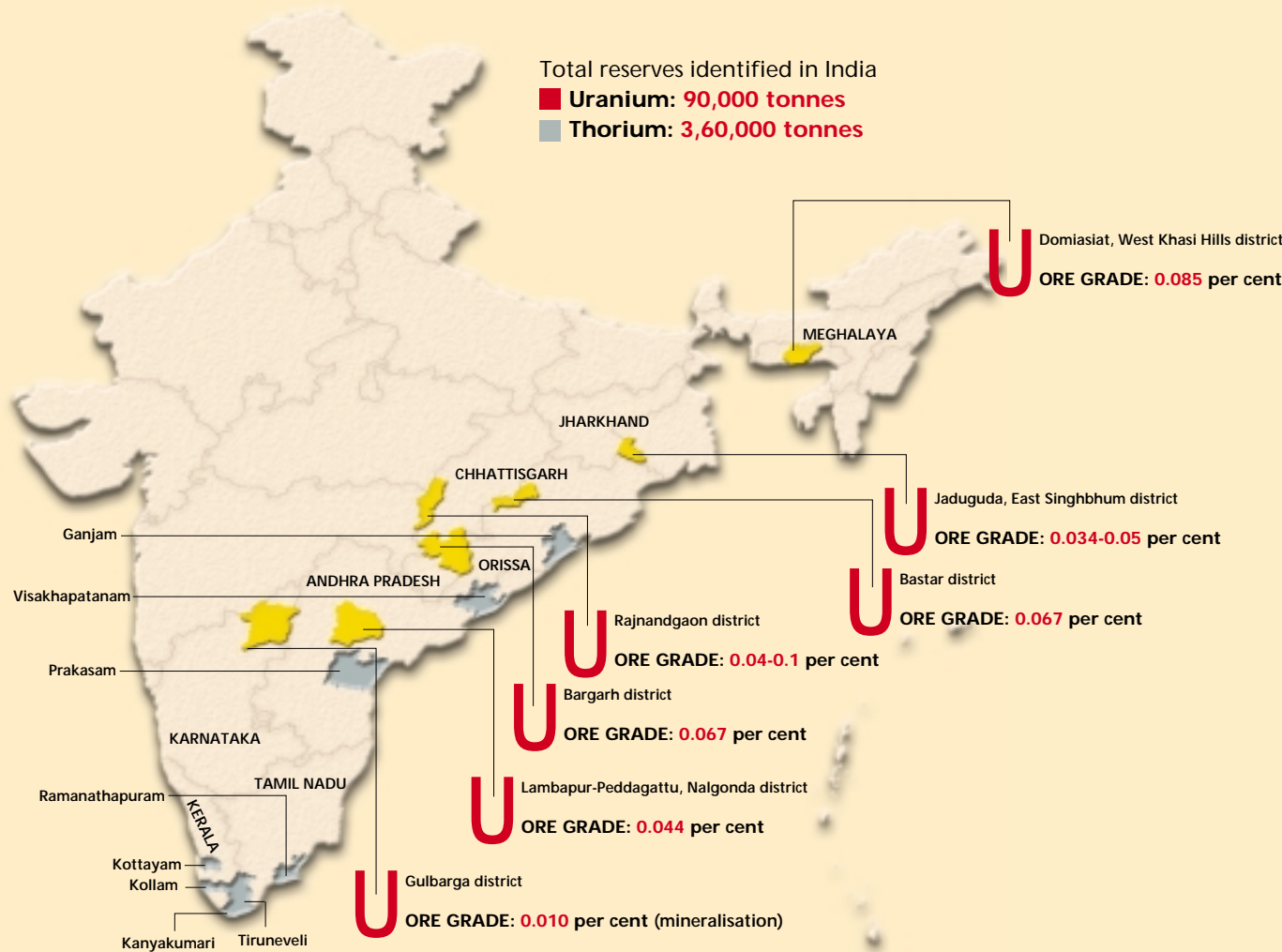


# CRITICAL QUEST

India is facing a major uranium crunch. Out of the seven reserves, only the one in Jadugoda is being exploited. Thorium on other hand is abundantly available but technology isn't yet ready to use it for power generation



## ALL REACTIONS DELAYED

Three-stage nuclear energy programme to generate 20,000 MW of electricity by 2020. Programme will begin by using scarce uranium in the first stage to thorium in the third stage by 2020

### STAGE I

Twenty-one pressurised heavy water reactors using natural uranium to generate 10,000 MW of power by 2010

**STATUS** Target achievement delayed by 10 years; uranium scarcity may delay it further

### STAGE II

Fast breeder reactors (FBRs) will use plutonium extracted from spent uranium fuel of Stage I to generate 10,000 MW by 2020, which means 12.5 per cent of India's electricity need

**STATUS** Target not possible by 2020 because of delay in Stage I and uranium scarcity. Another decade for first test reactor to be ready. Protests against FBRs; technology discarded worldwide

### STAGE III

Advanced heavy water reactors to use plutonium and new fuel of thorium. India's 3,00,000 tonnes of thorium supposed to produce electricity for 400 years

**STATUS** Fourteen years of research on a thorium reactor, but design is still on the drawing board. Peer review will take few years. At least 30 years to implement plan, say experts

## TARGETS, PROMISES AND PLANS The nuclear establishment has been claiming a lot for decades, achieving little

**FEBRUARY-DECEMBER, 1981**

Homi Sethna, chairperson of Atomic Energy Commission (AEC), declares a feasibility study at Bodel, Madhya Pradesh is under way. Government informs Parliament that uranium has been discovered in Rajnandgaon district. Atomic Minerals Division (AMD) discovers "significant" uranium reserves at Darba in Madhya Pradesh's Bastar district. Discoveries made in three zones near Brijranigad and Sileth in Tehri of Uttar Pradesh. PM Indira Gandhi tells the Rajya Sabha about a "three-point programme to increase the availability of uranium"

**MARCH-DECEMBER, 1983**

Minister Shivraj Patil tells Parliament India's 67,000 tonnes of uranium reserve can meet its nuclear fuel needs. Annual requirement is 213 tonnes. Patil says nuclear program will reach an installed capacity of 10,000 MW by the year 2000

**AUGUST 13, 1987**

Minister K R Narayanan informs Parliament that India's known uranium reserves are adequate to support an installed capacity of 10,000 MW

**FEBRUARY 24, 1988**

India proposes to increase its uranium ore production capacity to 40,000 tonnes annually in order to meet the goal of producing 10,000 MW of nuclear power by 2000

**MAY 10, 1990**

BARC director R Chidambaram declares India would produce 10,000 mw of nuclear power at the turn of the century if there are "no resource constraints"

**1991**

AEC chairman P K Iyengar says India would have to produce about 30,000 mw of nuclear energy by 2020. The country's 70,000 tonnes of uranium reserve can support the first stage of nuclear programme. Rich reserves of uranium ore are discovered in Meghalaya

**JANUARY 15, 1992**

Prime Minister Narasimha Rao says that plutonium extracted from the spent fuel and thorium reserves will be sufficient for the second and third stages of the nuclear power programme

**DECEMBER 22, 1995**

Parliament's standing committee on energy demands a review of the country's nuclear policy. It observes that low power generation has resulted in underuse of nuclear facilities

**JANUARY-FEBRUARY 1996**

UCIL's Jaduguda mill expands its capacity from 1,350 tonnes to 2,100 tonnes of uranium ore daily to process additional uranium ore of 1,000 tonnes per day produced by the new Narwa Pahar mine

**1997**

AMD discovers high quality uranium in the Bhima basin in Gulbarga district of Karnataka. DAE discovers uranium deposits, containing "up to 0.55 percent uranium oxide and small amounts of thorium oxide" in Palanad sub-basin area in Andhra Pradesh

**1997-1998**

AMD discovers sizeable deposits of uranium at Lambapur-Yellapur and Tummalapalle in Andhra Pradesh

**MARCH 2000**

National Institute of Advanced Studies says that India's current capacity to produce plutonium is limited and "there is a need to augment this capacity quickly to hold enough plutonium stockpile"