NEWS


The deal agreed by India's prime minister, Manmohan Singh, and President Bush could undermine the country's home-grown nuclear technology.

# Nuclear deal riles India's researchers

India's nuclear-power programme, which has been cut off from foreign technology by international sanctions since the country exploded its first nuclear bomb test in 1974, looks set to come in from the cold. A historic deal reached last week in Washington by US President George W. Bush and Indian Prime Minister Manmohan Singh would end India's nuclear isolation, without requiring it to give up its nuclear arsenal.

Most of India's nuclear scientists are relieved that the accord will end fuel shortages and accelerate the country's nuclear-energy programme. But many in India's nuclear establishment, proud of having built up an independent programme despite international isolation, are concerned that it could now be supplanted by cheaper foreign technologies, and that India will lose its hard-won control over its civil and military nuclear future.

"All the self-reliance so relentlessly built over the years against heavy odds will go down the drain"

Nuclear power currently generates just 3% of India's electricity, but is an attractive alternative to burning coal or imported oil and gas to meet the country's burgeoning energy needs. According to the Washington-based Population Reference Bureau, India's population will reach 1.6 billion by 2050, surpassing the 1.4 billion predicted for China.

The deal must still be passed by the US Congress, but if it goes ahead, access to cheaper enrichment and fuel services would allow India to build or buy much larger light-water reactors than at present, says Per Peterson, a nuclear physicist at the University of California, Berkeley. "Due to the economies of scale, this has the potential to greatly reduce the cost of any large expansion of nuclear-energy use in India," he explains.

India has unsuccessfully sought technology for more light-water reactors from Russia, and would also be interested in obtaining centrifuge enrichment technology, adds Frank von Hippel, professor of public and international affairs at Princeton University in New Jersey.

## Conflicting interests

But the ability to buy such technologies may scupper India's home-grown plutonium fast-breeder reactors and its ambitious thorium fuel research programme.

India has only around 50,000 tonnes of natural reserves of uranium. "That's enough for its current programme but not for the large nuclear-energy programme its nuclear establishment dreams of," says von Hippel. But it has one of the world's largest reserves of thorium — 360,000 tonnes. The ultimate aim of its nuclear programme is to develop thorium fuels, which, along with plutonium fast-breeder reactors, could allow India to become self-sufficient in nuclear energy.

"Buying uranium and enrichment on the

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world market would be much less costly. So if this agreement goes through, it would tend to undercut India's breeder reactor and reprocessing establishments," says von Hippel.

Many in the Indian nuclear establishment are also concerned at Singh's promise to accept the same restrictions as the five official nuclear weapons states. These include separating civilian nuclear facilities from military ones, allowing the International Atomic Energy Agency to inspect its civilian facilities, and maintaining a unilateral moratorium on nuclear testing.

Segregation of civilian and nuclear facilities would be expensive and impractical, says Padmanabha Krishnagopala Iyengar, former chairman of the Atomic Energy Commission and a key scientist in India's weapons development. He points out that at present both kinds of research are usually done at the same laboratories. "Nobody works full time in our weapons programme," he told *Nature*. "The moment we compartmentalize, our research and development will be crippled and creativity will end."

Segregation could leave the entire nuclear programme in a mess, agrees Annaswamy Narayana Prasad, former director of the Bhabha Atomic Research Center in Mumbai. Given the small scale of military activities, dedicating facilities for a single purpose is neither practical nor cost effective, he says.

### U-turn required

Younger scientists in India's nuclear establishment are more open to the separation of civil and military facilities. "Those who oppose it belong to an older generation with a closed mind-set," says one reactor designer at the Bhabha research centre, who asked not to be named. "The responsibility for running the nuclear programme is now on new shoulders and the present reality calls for a U-turn. Segregation is better than camouflaging."

But if nuclear cooperation means that India will find it cheaper to buy reactors from abroad, this would be a heavy blow for India's nuclear establishment. "India has been outside the nuclear club for some time, and has had to rely on endogenous resources," says Ziad Haider of the Henry L. Stimson Center, a Washington-based security think-tank. "These scientists now see their programme opened to international supervision, and becoming reliant on US technology," he says.

Iyengar agrees: "I think the Indo-US deal, if implemented, would tie our hands. All the self-reliance so relentlessly built over the years against heavy odds will go down the drain." ■

**Declan Butler and K. S. Jayaraman, New Delhi**

# Sighting of 'extinct' bird may have been a case of mistaken identity

**It was touted as the conservation discovery of a lifetime — an ivory-billed woodpecker, a bird long thought to be extinct, spotted in the Arkansas swamps. But now the finding is being called into question, which could cast doubt on several prominent US conservation measures.**

In April, biologists and bird-lovers were thrilled by a videotape, reported in *Science* by ornithologist John Fitzpatrick of Cornell University in Ithaca, New York, of what looked to be an ivory-billed woodpecker (*Campephilus principalis*). The species hadn't been confirmed in the United States since 1944, although there had been rare sightings in Cuba. The bird gradually vanished as its dense forest habitat was chopped down, making it a symbol of lost heritage.

So leading US officials, including the secretaries of the interior and agriculture, jumped at the chance to announce the bird's apparent rediscovery. They re-routed $10 million from other conservation measures to pay for efforts to save the bird's vanishing habitat. These changes came swiftly, even though some in the Bush administration and Congress have been working to reduce species protections under the US Endangered Species Act.

But the investment may be premature, a new study suggests. A team of ornithologists led by Richard Prum of Yale University in New Haven, Connecticut, plans to report what it thinks is a case of mistaken identity. The bird described in *Science*, the group says, is not an ivory-billed woodpecker after all, but a non-endangered relative, the pileated woodpecker (*Dryocopus pileatus*).

Prum's team includes the leading US authority on ivory-billed woodpeckers, Jerome Jackson of Florida Gulf Coast University in Fort Myers, who for decades has been unable to document a sighting. "I have serious questions about the *Science* report," Jackson told *Nature* in May.

Prum and his colleagues scrutinized the Cornell team's video, and believe that the bird's size and white markings suggest that it could be a pileated woodpecker, rather than an ivory-billed woodpecker. The Cornell team had considered this possibility and discounted it.

Prum declined to discuss details of his manuscript until it is published in *PLoS Biology*. The third author of the paper is Mark Robbins, an ornithologist at the University of Kansas in Lawrence.

Fitzpatrick and other co-authors of the *Science* paper also declined to comment. *PLoS Biology* plans to publish a response from the Cornell team, and a response to that from Prum's group. All three papers are expected to go online within a month.

Despite the challenge to the sighting, conservationists plan to meet in Little Rock on 2 August to discuss how to save the woodpecker's home forests. ■

**Rex Dalton**

G.M. SUTTON/CORNELL LAB ORNITHOL./NEWSCOM

Down the pecking order: a sighting of the ivory-billed woodpecker, thought to have been extinct, may instead have been a non-endangered relative.