

Kudankulam is a place in the Tirunelveli district in Tamil Nadu, India. It is situated 25 km north-east of Kanyakumari and 35 km from Nagercoil.

The place is notable as the construction site of the Kudankulam Nuclear Power Plant. It is also the location of hundreds of windmills used for power generation, eight of which are located inside the grounds of the nuclear plant.

Since the beginning of 2011, this place has been embroiled in a nuclear plant controversy over fears of the plant safety.

Kudankulam Atomic Power Project is a nuclear power station for which the construction is completed and commissioning put on hold due to the anti-nuclear protests by the locals and PMANE. It is situated in Koodankulam in the Tirunelveli district of the southern Indian state of Tamil Nadu.

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History:

An Inter-Governmental Agreement on the project was signed on November 20, 1988 by Prime Minister Rajiv Gandhi and Soviet President Mikhail Gorbachev, for the construction of two reactors. The project remained in limbo for a decade due to the political and economic upheaval in Russia after the post-1991 Soviet break up. There were also objections from the United States, on the grounds that the agreement does not meet the 1992 terms of the Nuclear Suppliers Group (NSG).^[1]

Since the plant was conceived in the mid-1980s, People's Movement Against Nuclear Energy was opposing the plant for about 25 years^[2] due to the Environmental impact of nuclear power and its threat to the people and environment.^[3]

Construction eventually began in 1997.

The cost to India was estimated to be US\$ 3 billion (Rs.13,615 Crores) in 2001.^[4]

A small port became operational in Kudankulam on January 14, 2004. This port was established to receive barges carrying over sized light water reactor equipment from ships anchored at a distance of 1.5 kilometres (0.93 mi). Until 2004 materials had to

be brought in via road from the port of Tuticorin, risking damage during transportation.^[5]

In 2008 negotiation on building four additional reactors at the site began. Though the capacity of these reactors has not been declared, it is expected that the capacity of each reactor will be 1000 MW or 1 GW.^{[6][7]} The new reactors would bring the total capacity of the power plant to 9200 MW or 9.2 GW.

In June 2011, Sergei Ryzhov, the chief designer of the light water VVER nuclear reactors used at this Nuclear Power Plant was killed in an airplane accident. The plane belonging to the Rus-Air airlines was flying from Moscow to the Karelian capital Petrozavodsk.^[8]

Technical Description

Two 1 GW reactors of the VVER-1000 model are being constructed by the Nuclear Power corporation of India Limited (NPCIL) and Atomstroyexport. When completed they will become the largest nuclear power generation complex in India producing a cumulative 2 GW of electric power.^[9] Both units are water-cooled, water-moderated power reactors.^[10] The first was scheduled to start operation in December 2009 and the second one was scheduled for March 2010. Currently, the official projections put unit 1 into operation in June 2011, and unit 2 will go in March 2012.^{[11][12][13]}

Four more reactors are set to be added to this plant under a memorandum of intent signed in 2008.^[14] A firm agreement on setting up two more reactors has been postponed pending the ongoing talks on liability issues. Under an inter-government agreement signed in December 2008 Russia is to supply to India four third generation VVER-1200 reactors of 1170 MW.^[15]

The reactors have some advanced safety features like passive heat removal system, double containment, Core Catcher, and hydrogen re-combiner instead of conventional systems.^[16]

Anti Kudankulam protestors

As of October 2011, thousands of protesters and villagers living around the Russian-built Kudankulam nuclear plant in the southern Tamil Nadu state, blocked highways and staging hunger strikes, preventing further construction work, and demanding its closure as they fear of the disasters like the Environmental impact of nuclear

power, Radioactive waste, nuclear accident similar to the radiation leak in March at Japan's Fukushima nuclear disaster.^[17]

The protesters have stated specific reasons for opposing the Kudankulam NPP project like "More than 1 million people live within the 30 km radius of the KKNPP which far exceeds the AERB (Atomic Energy Regulatory Board) stipulations. It is quite impossible to evacuate this many people quickly and efficiently in case of a nuclear disaster at Koodankulam", etc.^[18] According to S P Udayakumar, of the voluntary People's Movement Against Nuclear Energy, "the nuclear plant is unsafe" and "the safety analysis report and the site evaluation study have not been made public. No public hearing was held. It's an authoritarian project that has been imposed on the people." A Public Interest Litigation (PIL) has also been filed against the government's civil nuclear program at the apex Supreme Court. The PIL specifically asks for the "staying of all proposed nuclear power plants till satisfactory safety measures and cost-benefit analyses are completed by independent agencies".^{[19][20]} There has also been rallies and protests in favor commissioning this nuclear power plant.^{[21] [22]}

Former chairman of Atomic Energy Commission of India Srinivasan said that one should never compare the Fukushima plant with Kudankulam and added "The Fukushima plant was built on a beachfront, but the Kudankulam was constructed on a solid terrain and that too keeping all the safety aspects in mind. Also, we are not in a tsunami prone area. The plants in Kudankulam have a double containment system which can withstand high pressure. At least Rs 14,000 crore has been spent. If we don't operate the plant immediately, it will affect the economic stability of our country".^[23]

Response of the scientific community

A centre panel constituted by the Government of India, which did a survey of the safety features in the plant, said the Kudankulam reactors are the safest and fears of the people are not based on scientific principles. Dr. Muthunayagam, panel's convener, also added that the protesters have asked for some documents which are not related to the safety of the reactor hence he suspects the very nature of their questions.^[16] Nuclear scientist and principal scientific adviser to the federal Government of India Rajagopala Chidambaram has said "We have learnt lessons

from the Fukushima nuclear accident, particularly on the post-shutdown cooling system,” and also added Fukushima nuclear accident should not deter or inhibit India from pursuing a safe civil nuclear program.^[24]

1. ^ Nuclear Exports to India from Russia
2. ^ Koodankulam Struggle: 25 years of sweat and toil
3. ^ See starting section in this article
4. ^ http://www.eca-watch.org/problems/asia_pacific/india/documents/SFried_indiaprojectssurvey_jan2004.pdfAt What Cost? ECAs in India: Bankrolling Nuclear Power Plants, Mega-Dams, and Scandal-Ridden Projects; January 2004
5. ^ Kudankulam Port operational
6. ^ Dmitry Sergeev (2008-02-12). "Russia, India edge closer to major nuclear deal". Reuters. Retrieved 2008-02-12.
7. ^ [1]^[*dead link*]
8. ^ "Designer of Indian N-reactor killed in Russian plane crash - Times Of India". Timesofindia.indiatimes.com. 2011-06-22. Retrieved 2011-09-17.
9. ^ NPCIL to go into details with 4 reactor suppliers
10. ^ Nuclear Power Plant Type
11. ^ "Kudankulam Atomic Power Project". Retrieved 2011-03-16.
12. ^ "Kudankulam Atomic Power Project 1 & 2 and". Archived from the original on 2008-05-15. Retrieved 2008-06-01.
13. ^ History of the Kudankulam Project
14. ^ Four more reactors
15. ^ Details on the Next Generation Reactors
16. ^ ^a ^b "Kudankulam reactors safest: Central panel". *The Hindu*. 19 November 2011.
17. ^ Rahul Bedi (October 28, 2011). "Indian activists fear nuclear plant accident". *NZ Herald*.

18. ^ Thirteen Reasons Why We Do Not Want the Koodankulam Nuclear Power Project
19. ^ Siddharth Srivastava (27 October 2011). "India's Rising Nuclear Safety Concerns". *Asia Sentinel*.
20. ^ Ranjit Devraj (25 October 2011). "Prospects Dim for India's Nuclear Power Expansion as Grassroots Uprising Spreads". *Inside Climate News*.
21. ^ "Rally seeks power generation at Kudankulam plant". *The Hindu*. February 16, 2012.
22. ^ "Blood donation camp in support of N-plant". *The Hindu*. February 24, 2012.
23. ^ "Kudankulam plant is safe: Srinivasan". *The Times of India*. 14 November 2011.
24. ^ "R. Chidambaram bats for Kudankulam". *The Hindu*. 12 March 2012.
25. ^ http://www.dnaindia.com/india/report_kudankulam-nuclear-power-plant-issue-ends_1664495