



इस अंक में:

- नाभिकीय नारे
- तकनीकी सत्र
- नाभिकीय आंकड़ा
- नाभिकीय समाचार
- शब्द कोश
- आपको मालूम है?
- विशेष आलेख
- नाभिकीय सामान्य ज्ञान

तैयारकर्ता एवं संपादक:

जाशी केबी ,
प्रभारी अधिकारी,
टीएलडी प्रयोगशाला
kbjashi@npcil.co.in

पुनरीक्षणकर्ता :

विजयकुमार बा
प्रभारी अधिकारी, ईएसएल
सदस्य, जन जागरूकता
समिति,
vijayb@npcil.co.in

एल. रिचर्ड ,
प्रशिक्षण अधीक्षक एवं
अध्यक्ष,
जन जागरूकता समिति
richard@npcil.co.in

जारीकर्ता:

सतीश कुमार भा,
स्थल निदेशक,
कुडनकुलम न्यूक्लियर
पावर प्रोजेक्ट

प्रिय पाठकगण ,

परमाणु ऊर्जा विकास भारत में एनपीसीआईएल-महाजेनको-मित्र समझौता जापन जैसे सहयोग से द्रुत गति पकड़ रहा है। औद्योगिक स्थापनाओं में उपयोग के लिए छोटे मॉड्यूलर रिएक्टरों (एसएमआर) का आकलन किया जा रहा है। साथ ही, जर्मनी में संलयन अनुसंधान आगे बढ़ रहा है, जो अगली पीढ़ी के परमाणु प्रौद्योगिकी की ओर एक वैश्विक अभियान को दर्शाता है। पढ़कर आनंदित हों...
अध्यक्ष, जन जागरूकता समिति



नवंबर 2025 के विशिष्ट बिंदु

1

केकेएनपीपी स्थल पर 31 और स्थल के बाहर 03 जन संपर्क कार्यक्रम आयोजित किए गए

2

1,608 घंटों का जन संपर्क, 5,779 लोगों से संपर्क

3

13,240 जन जागरूकता प्रकाशन वितरित किए गए



केकेएनपीपी का जलवायु परिवर्तन के न्यूनकरण में योगदान

जलवायु परिवर्तन आज वैश्विक पर्यावरण मुद्दों में सर्वाधिक महत्वपूर्ण है। नाभिकीय विद्युत न्यूनतम कार्बन प्रौद्योगिकियों में से एक है जो बढ़ती हुई आबादी एवं सामाजिक-आर्थिक विकास के लिए विद्युत उत्पादन करते हुए ग्रीन हाउस गैसों (जीएचजी) के उत्सर्जन (अधिकतर CO₂) में कमी लाती है। CO₂ के उत्सर्जन में कमी लाने में केकेएनपीपी का योगदान (दिनांक 30 नवंबर 2025 को) अब तक इस प्रकार है।



कुल उत्पादित विद्युत इकाई

1,21,473
मिलियन यूनिट



केकेएनपीपी द्वारा कुल CO₂ उत्सर्जन में कमी

104,345,556
टन

नोट: कोयले एवं नाभिकीय ऊर्जा के औसत जीवन चक्र ग्रीन हाउस गैस उत्सर्जन क्रमशः 888 एवं 29 (टन/गीगावाट घंटा) है।

Public Awareness e-Newsletter

Kudankulam Nuclear Power Project

November 2025

Issue –161

In this issue:

- Nuclear Slogan
- Technical session
- Nuclear Database
- Nuclear News
- Lexicon
- Did you know?
- Feature article
- Nuclear Trivia



A glimpse of **Brown Headed Barbet** near Anuvijay Township, Chettikulam.

Photography by
Shri Sunil V P
Chief Superintendent
KKNPP 1&2

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Piciformes
Family:	Megalaimidae
Genus:	Psilopogon
Species:	<i>P. zeylanicus</i>

Binomial name:

Psilopogon zeylanicus

Source: en.wikipedia.org

Dear Readers,

Nuclear energy development is picking up pace, highlighted by collaborations such as the NPCIL-MahaGenCo-MITRA MoU in India. Small Modular Reactors (SMRs) are being assessed for use in industrial settings. At the same time, fusion research is advancing in Germany, reflecting a global drive toward next generation nuclear technologies. Read on happily!

-Chairman, PA Committee



Spotlight of November 2025

1

31 on-site & 03 Off-site outreach programme organised

2

1,608 hours of Public Outreach, reached 5,779 people

3

13,240 PA Publications distributed



KKNPP's contribution to climate change mitigation

Climate change is the foremost global environmental issue today. Nuclear power is one of the low carbon technologies that can contribute to reducing greenhouse gas (GHG) emissions (mostly CO₂) while generating electricity for growing populations and socioeconomic development. KKNPP's contribution in preventing the CO₂ emissions till now (As on Nov 30, 2025) is given below.



Note: Average lifecycle GHG emissions for Coal & Nuclear is 888 & 29 (tonnes/GWh) respectively.

NPCIL, MahaGenCo & MITRA Sign Major MoU to Accelerate Nuclear Power Expansion in Maharashtra

“

This MoU is timely and highly important, as clean energy is the most crucial fuel for data-centres. Maharashtra is becoming the “Data Centre Capital” of India, accounting for about 50–60% of the capacity. The reputation and experience of NPCIL in this field will benefit Maharashtra. The state government will take the initiative and be active in this project and will provide all necessary support. The steps taken by Mahagenco, energy department, Mitra in this regard are becoming a historically important event in the energy sector of Maharashtra.

”



Sh Devendra Fadnavis
Hon'ble Chief Minister of Maharashtra

Source:

timesofindia.indiatimes.com dated Nov 17, 2025



Public awareness Site visits:

Site visit commences with a visit to Nuclear Information Centre(NIC) and a structured lecture programme is conducted for about one hour on nuclear energy & safety features of KKNPP with relevance to the events at Fukushima and also addresses the queries mainly related to protection of marine organism and handling of waste. They are then taken to Model room for familiarization of site layout, simulator facility to visualize the functioning of safety systems and health physics training facility to understand the concept of radiation safety during normal operation & abnormal situation. Subsequently they are taken to the Intake structure and Desalination plant. This programme concludes with a feedback session. Two of the feedback received from the visitors are given in this section.



Public Voice



NUCLEAR POWER CORPORATION OF INDIA LTD
 நியூக்ளியர் பவர் கார்ப்பரேஷன் ஆப் இந்தியா லிமிடெட்
 (A GOVT OF INDIA ENTERPRISE)
 (ஒரு இந்திய அரசு நிறுவனம்)
KUDANKULAM NUCLEAR POWER PROJECT
 கூடங்குளம் அணுவின் திட்டம்

PUBLIC AWARENESS PROGRAM - FEED BACK FORM
 விழிப்புணர்வு நிகழ்ச்சி - கருத்து பதிவுத் தாள்

Date / தேதி: 20.11.2025

Name of the Educational Institution / Village / Organization
 கல்வி நிறுவனம் / கிராமம் / நிறுவனத்தின் பெயர்
Sai Krishna Public School

Name of KKNPP officials conducted the PA program
 விழிப்புணர்வு நிகழ்ச்சியை நடத்திய கூடங்குளம் அணுவின் நிலைய அதிகாரிகளின் பெயர்
Shri Shaji .V. John
 Shri C. Santhosh Kumar

No. of participants பங்குபெற்றவர்களின் எண்ணிக்கை 46

Date and duration தேதி மற்றும் நேரம் 20/11/2025 9:30 to 4:00

Visitors Feedback / பார்வையாளர்களின் கருத்துக்கள்
A heart-warming memory as well as an inevitable experience. We got a life time awarness and knowledge about nuclear energy its production and usage. As a student it is a golden opportunity to discover this nuclear plant, its working, importance, control etc. The officials who accompanied with us right from morning clarified all our doubts regard- ing nuclear plant. Thank You for a heart-welcoming experiance.

Signature / கையெழுத்து [Signature] Designation / பதவி Student

Name / பெயர் Karthika . S



NUCLEAR POWER CORPORATION OF INDIA LTD
 நியூக்ளியர் பவர் கார்ப்பரேஷன் ஆப் இந்தியா லிமிடெட்
 (A GOVT OF INDIA ENTERPRISE)
 (ஒரு இந்திய அரசு நிறுவனம்)
KUDANKULAM NUCLEAR POWER PROJECT
 கூடங்குளம் அணுவின் திட்டம்

PUBLIC AWARENESS PROGRAM - FEED BACK FORM
 விழிப்புணர்வு நிகழ்ச்சி - கருத்து பதிவுத் தாள்

Date / தேதி:

Name of the Educational Institution / Village / Organization
 கல்வி நிறுவனம் / கிராமம் / நிறுவனத்தின் பெயர்
சிந்து கார்பரேட்டர் மேற்கல்வியகம்

Name of KKNPP officials conducted the PA program
 விழிப்புணர்வு நிகழ்ச்சியை நடத்திய கூடங்குளம் அணுவின் நிலைய அதிகாரிகளின் பெயர்
Shri P. Sundara Rajan , R. Venkatesh murgan

No. of participants பங்குபெற்றவர்களின் எண்ணிக்கை 59

Date and duration தேதி மற்றும் நேரம் 27.11.2025 9.30 to 4.00

Visitors Feedback / பார்வையாளர்களின் கருத்துக்கள்
அணுக்கரு மின்சார உற்பத்தி பற்றி நான் ஒன்றாக புரிந்துகொண்டேன். அணுக்கரு உரை பாதுகாப்பானது என்பதைத் தெரிந்து கொண்டேன். கிணற்றை சமஸ்தில் பிணையும் பயனுள்ளது. கடல்நீரில் வாயும் உயிரினங்கள் சமஸ்தி பாதுகாப்பும் உயிரினங்கள் நான் அறிந்து கொண்டேன். சிந்து கார்ப்பரேட்டர் பயனுள்ளதாக இருந்தது. நன்றி!

Signature / கையெழுத்து [Signature] Designation / பதவி Student

Name / பெயர் சி.வாணிபதி



NPCIL Mission:

To develop nuclear power technology and to produce Nuclear Power as a safe, environmentally benign and economically viable source of electrical energy to meet the increasing needs of country.

Korean reactor (Kori NPP) cleared for extended operation until 2033

“Continued operation will contribute to the national economy as a stable energy source for future power demand growth, such as for AI and data centres, and will play a significant role in achieving carbon neutrality by 2050”



Jeon Dae-wook

Acting president of Korea Hydro & Nuclear Power

Source: WNA dated 13 Nov 2025



Generation IV Nuclear Reactors

(Source: World Nuclear Association)

GIF reactor technologies

European programme from 2010:

ALFRED LFR technology demonstrator – the Advanced Lead Fast Reactor European Demonstrator – of about 300 MWt is seen as a prelude to an industrial demonstration unit of about 300-400 MWe. ALFRED will employ mixed oxide (MOX) fuel, with about 17% plutonium in equilibrium, and able to recycle minor actinides at about 1% of feed.

A consortium was set up in December 2013 for ALFRED's construction, comprising Italy's National Agency for New Technologies, Energy and the Environment (ENEA), Ansaldo Nucleare, and Romania's Nuclear Research Institute (Institutul de Cercetari Nucleare, ICN). The group is to be known as the Fostering Alfred Construction (Falcon) consortium, which will be expanded through the participation of further European organizations. The total cost of the project is put at some €1.0 billion. ALFRED will be built at ICN's facility in Mioveni, near Pitesti in southern Romania, where a fuel manufacturing plant is in operation for the country's two operating Candu reactors.

The MYRRHA LFR project is initially a 57 MWt accelerator-driven system with a liquid lead-bismuth (Pb-Bi) spallation target that in turn couples to a Pb-Bi cooled, subcritical fast nuclear core. Later it will become a European fast neutron technology pilot plant for lead and a multi-purpose research reactor. Belgium's SCK-CEN is leading the project and will provide a total of about €560 million. The unit is rated at 100 thermal MW. It will be built at SCK-CEN's Mol site. A reduced-power model of MYRRHA called Guinevere started up at Mol in March 2010.





Updated as on Dec 03, 2025

Source: <https://pris.iaea.org/PRIS>

OPERATIONAL REACTORS

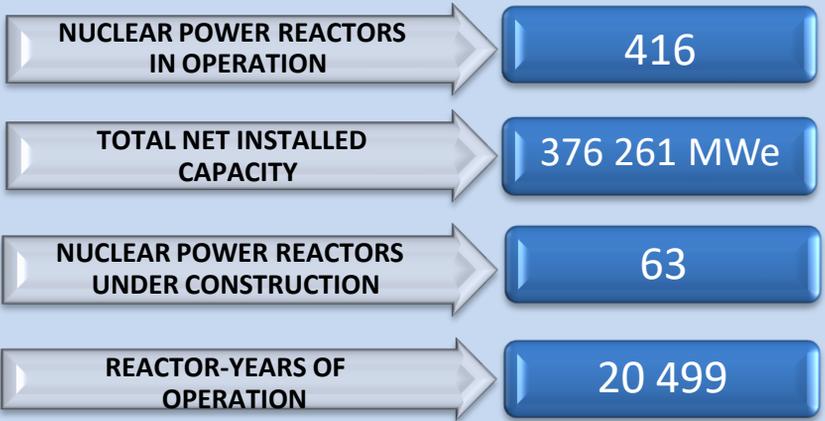
Country	MWe #	No. of Reactors
ARGENTINA	1641	3
ARMENIA	416	1
BELARUS	2220	2
BELGIUM	3463	4
BRAZIL	1884	2
BULGARIA	2006	2
CANADA	12714	17
CHINA	55320	57
CZECH REP	3963	6
FINLAND	4369	5
FRANCE	63000	57
HUNGARY	1916	4
INDIA	7550	21
IRAN	915	1
JAPAN	12631	14
KOREA	25609	26
MEXICO	1552	2
NETHERLANDS	482	1
PAKISTAN	3262	6
ROMANIA	1300	2
RUSSIA	26802	36
SLOVAKIA	2308	5
SLOVENIA	688	1
SOUTH AFRICA	1854	2
SPAIN	7123	7
SWEDEN	7008	6
SWITZERLAND	2973	4
UKRAINE	13107	15
UAE	5348	4
UK	5883	9
USA	96952	94
Total	376261	416

Net Electrical Capacity

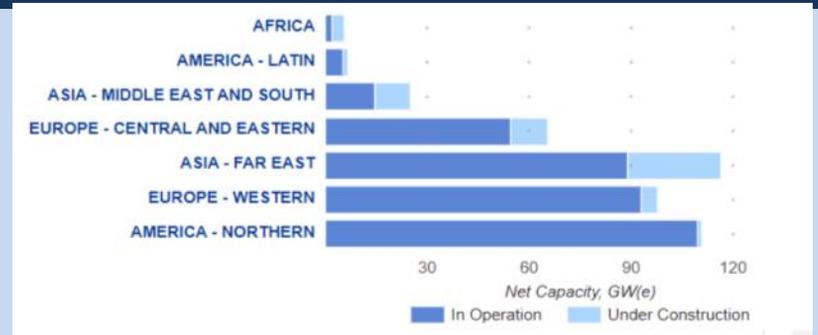
Source: <https://pris.iaea.org/PRIS>
www.nucnet.org



Current Status:



Regional Distribution of Nuclear Power Plants:



New connections to the grid: (Year 2025)

RAJASTHAN-7 (700 MW(e) *, PHWR, INDIA) on 17 March 2025

- ❖ Construction Start Date : 18 Jul, 2011
- ❖ First Criticality : 19 Sep 2024
- ❖ Grid Connection : 17 Mar 2025

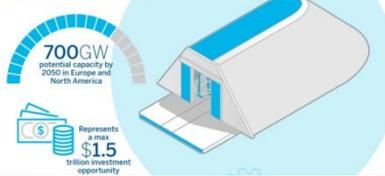


* Gross Electrical Capacity



Study evaluates potential market for SMRs in industrial sector Nov 14

Can small modular reactors (SMRs) decarbonise industries?



The small modular reactor market could support the decarbonisation of at least 11 industrial sectors that make up the majority of industrial energy demand by 2050 in North America and Europe with a potential market of 700 GW by 2050, a study by LucidCatalyst has concluded. Data centres, chemicals, and coal repowering (i.e., coal-to-nuclear transition) are expected to drive near-term demand, with synthetic aviation fuels representing the largest long-term opportunity," the study says. "Without SMRs, these industrial sectors may face constrained growth or be forced to default to carbon-intensive alternatives due to the lack of clean, reliable energy.

Source: www.world-nuclear-news.org

Trump administration lends \$1 billion to restart Three Mile Island nuclear reactor Nov 19



The Trump administration said on Tuesday it has loaned Constellation Energy Corp \$1 billion to restart its nuclear reactor at a Pennsylvania plant formerly known as Three Mile Island. Constellation said the loan will help it lower the cost of financing and leverage private investment to restore power to the grid. Constellation said it has hired hundreds of workers, completed infrastructure inspections and ordered major equipment for the reactor. It will need to revamp cooling towers, install a main power transformer among other equipment, and refuel before producing electricity.

Source: <https://defence.in>



Chinese MSR achieves conversion of thorium-uranium fuel Nov 04



The experimental TMSR-LF1 thorium-powered molten salt reactor (MSR) in Wuwei, Gansu Province, has achieved the first successful conversion of Thorium-Uranium nuclear fuel, the Shanghai Institute of Applied Physics of the Chinese Academy of Sciences announced. The TMSR-LF1

uses fuel enriched to under 20% uranium-235, has a thorium inventory of about 50 kg and conversion ratio of about 0.1. A fertile blanket of lithium-beryllium fluoride (FLiBe) with 99.95% Li-7 is used, and fueled with uranium tetrafluoride (UF4). Molten salt reactors (MSRs) use molten fluoride salts as primary coolant, at low pressure. They may operate with epithermal or fast neutron spectrums, and with a variety of fuels. Much of the interest today in reviving the MSR concept relates to using thorium (to breed fissile uranium-233), where an initial source of fissile material such as plutonium-239 needs to be provided. There are a number of different MSR design concepts, and a number of interesting challenges in the commercialisation of many, especially with thorium.

Source: www.world-nuclear-news.org

Russia and India discuss potential new nuclear energy projects Nov 10

Developing new large and small-scale nuclear power plant projects and wider nuclear fuel cycle cooperation were discussed during talks between Rosatom and India's Department of Atomic Energy. According to the Russian state corporation, the technical specifications



for the construction of a new Russian-designed nuclear power plant in India with VVER-1200 reactor units are currently being prepared and new areas of cooperation are also being discussed, including the construction of small nuclear power plants of Russian design, with floating power units one possible option. The talks included a review of progress at the Kudankulam Nuclear Power Plant construction project. Rosatom said: "Unit 3 is currently undergoing pre-startup operations and preparing for one of the most important milestones - the testing of the safety systems for the open reactor. In parallel, construction and installation work and the delivery of equipment to power unit 4 continues, and construction of the third stage - power units 5 and 6 - is also actively under way."

Source: www.world-nuclear-news.org

Six German states unite for fusion research Nov 14



The German states of Bavaria, Hamburg, Hesse, Mecklenburg-Western Pomerania, Saxony and Schleswig-Holstein have formed the Alliance for Fusion Research. The six states have each made significant preliminary contributions in fusion

research. These efforts are now "to be pooled, networked, and significantly expanded". Close coordination and mutual support among the partners have been agreed upon, also with regard to Germany's High-Tech Agenda and the Federal Government's Action Plan on Nuclear Fusion. The alliance said it remains open to further technological developments and partners.

Source: www.world-nuclear-news.org



QUICK FACTS

Nuclear Power Plants (NPPs) Construction Hotspot

The majority of current construction is concentrated in **Asia**, particularly in **China and India**.



Created with mapchart.net

As of late 2025, there are around **70 reactors under construction globally**, with 59 of them located in Asia.

Source: www.leanrs.com, WNA



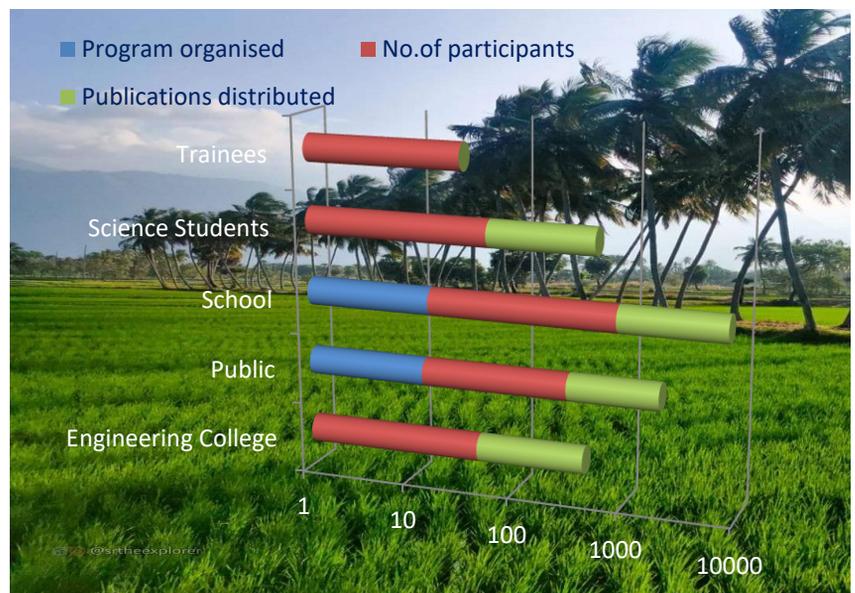
Nuclear Slogan



PA activity conducted at KKNPP Site



As a part of public awareness programme, visits of Public from districts such as Tirunelveli, Kanyakumari and Tuticorin and also from Kerala to KKNPP were organised. The visitors of KKNPP were provided with a detailed information on nuclear power generation and its safety principles.





Few glimpses from Site Visit

At
site

**St. Michael College of
Engineering & Technology,
Kalayarkoil
(Nov 01)**



**RJ Mantra English School,
Virudhunagar
(Nov 03)**



**Students from
Government Schools,
Tirunelveli District,
Organized by District
Administration, Tirunelveli
(Nov 04)**



**Hilleya Matric.Hr.Sec.School
(I Batch), Devarkulam
(Nov 06)**





Few glimpses from Site Visit

At
site

**Staffs from Kerala State
Electricity Board Limited,
Thiruvananthapuram
(Nov 06)**



**Auxilium High School,
Thiruvananthapuram
(Nov 07)**



**Sri Ramana Academy,
Rajapalayam
(Nov 10)**



**Officials from KGS, Kaiga
(Nov 10)**





Few glimpses from Site Visit

At
site

**Trainees from NPCIL-
KKNPP & CIPET Skill Centre,
Radhapuram
(Nov 11)**



**Sree Chitirai Tirunal
College of Engineering,
Thiruvananthapuram
(Nov 12)**



**Hilleya Matric.Hr.Sec.School
Devarkulam
(Nov 13)**



**Members from Neeloor
Friends Recreation Club,
Kottayam
(Nov 14)**





Few glimpses from Site Visit

At
site

**General Public from
Vadakku Vallioor , Vallioor
(Nov 15)**



**Apprentice Trainees,
Kudankulam
(Nov 15)**



**Fatima Public School
(Senior Secondary),
Thiruvananthapuram
(Nov 17)**



**Students from
Government Schools,
Tirunelveli District,
Organized by District
Administration, Tirunelveli
(Nov 18)**





Few glimpses from Site Visit

At
site

**Visit of NDRF, Arakkonam
(Nov 19)**



**The Indian Agriculture
College, Radhapuram
(Nov 19)**



**Sai Krishna Public School,
Kerala
(Nov 20)**



**V.T.M.N.S.S.G. H.S.S
Dhanuvachapuram,
Thiruvananthapuram
(Nov 21)**





Few glimpses from Site Visit

At site

Members from Gazetted Elders' Meet, Thiruvananthapuram (Nov 22)



Govt.HSS Thirupuram Thiruvananthapuram (Nov 24)



Officials from EDF Nuclear Project India Pvt. Ltd, Mumbai (Nov 24)



Students from Government Schools, Tirunelveli District, Organized by District Administration, Tirunelveli (Nov 25)





Few glimpses from Site Visit

At
site

**Carmel Higher Secondary
School, Nagercoil
(Nov 26)**



**Hindu Nadar's Higher
Secondary School,
Kadambur,
(Nov 27)**



**Members from C.S.I.
Keezharoor, Kerala
(Nov 28)**



**Family members of the
KKNPP Retired officials,
Anuvijay Township
(Nov 29)**



More on Schulten-Reactor



Rudolf Schulten

The main developer of the pebble bed reactor design

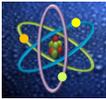
Rudolf Schulten (16 August 1923 – 27 April 1996) was a German physicist who was professor at RWTH Aachen University and the main developer of the pebble bed reactor design.

AVR reactor

The idea took root and in due course a 46 MWth (megawatt thermal) experimental pebble bed reactor (the Arbeitsgemeinschaft Versuchsreaktor, or AVR reactor) was built at the Jülich Research Centre in Jülich, West Germany. It operated for 21 years.

HTR-MODUL project

Some of the last pebble fuel tested in the AVR was for a low enriched uranium (LEU) fuel cycle anticipated for use in the HTR-MODUL project design by Interatom/SIEMENS.



Schulten-Reactor

The term "**Schulten-Reactor**" refers to the **Pebble-Bed Reactor** (PBR) design, which was primarily developed and promoted by the German physicist **Professor Rudolf Schulten** (1923–1996).

Key Features of the Schulten-Reactor (PBR)

Fuel Elements: The nuclear fuel (uranium, thorium, or plutonium kernels) is encased in a protective coating of silicon carbide, which is then compacted into hard, billiard-ball-like spheres, typically about 6 cm in diameter, made of pyrolytic graphite. These spheres are called fuel pebbles.

Core Design: The core is not made up of fixed fuel rods but is a container (or vessel) filled with approximately 100,000 to 400,000 of these fuel pebbles, which are continually added from the top and removed from the bottom during operation.

Coolant: An inert gas, typically helium, circulates through the spaces between the pebbles to carry heat away from the core.

The high operating temperature makes these reactors suitable not only for electricity generation but also for providing process heat for industrial applications like hydrogen production.

Safety Features: The design is renowned for its inherent safety. Even in the event of a total cooling failure, the reactor is designed to dissipate heat by natural radiation and conduction due to the high heat capacity of the graphite, preventing the fuel from melting. The core passively heats to an "idle" temperature and stays there.

History and Development:

- ❖ The original concept for a pebble-bed reactor was conceived by Farrington Daniels in the 1940s.
- ❖ Rudolf Schulten took this concept and became the main developer, starting in the late 1950s in West Germany.
- ❖ Schulten led the design and construction of the experimental AVR reactor (Arbeitsgemeinschaft Versuchsreaktor) at the Jülich Research Centre, which operated from 1967 to 1988, achieving a world-record high gas outlet temperature of 950°C.

Modern PBRs, such as the ones currently being developed and operated in China (HTR-10 and HTR-PM), are based on the principles pioneered by Schulten.

Source: Wikipedia, www.nae.edu,
<https://inis.iaea.org/>

See left

PA outreach programme conducted outside KKNPP:



Date	Name of the Institution	No. of participants	Publications distributed
Nov 07	Sree Chitra Tirunal Central School, Trivandrum	2000	3600
Nov 22	UGC-Malaviya Mission Teacher Training Centre (MMTTC) University of Kerala	65	65
Nov 28	Bethany Navajeevan Institutions, Venkode, Puthukadai, KK District	2500	0
Grand Total		4565	3665

As a part of PA outreach activity, Seminars, Workshop, Lectures and exhibitions were conducted at Educational Institutions and Organizations.



Sree Chitra Tirunal Central School, Trivandrum hosted an inspiring science exhibition designed to spark creativity, scientific curiosity, and innovation among young minds.

Date: Nov 07 2025

Students from neighbouring schools actively took part, presenting their ideas with great enthusiasm. KKNPP's participation added immense value to the event through its detailed models and exhibits. The team highlighted the crucial role of nuclear energy in achieving India's sustainable development goals and explained the robust safety systems incorporated at KKNPP, creating a deeper awareness among students and visitors.

No. of participants	2000
Publications distributed	3600

Few glimpses

PA exhibition at Sree Chitra Tirunal Central School, Trivandrum KK Dist. on Nov 07, 2025





Few glimpses

Outside KKNPP

PA lecture at MMTC, University of Kerala, Trivandrum

PA at MMTC, University of Kerala, Trivandrum on Nov 22, 2025

Malavia Mission Teaher Training Center (MMTC) organized 185th Faculty induction programme.

Date: Nov 22, 2025

Sh A V SATHISH, OIC-Nuclear Information center, KKNPP delivered an awareness lecture on "Nuclear Energy Is Clean And Green Energy" during the programme.

A total of 65 individuals participated in the event.



PA Lecture at Bethany Navajeevan Institutions, Venkode, Puthukadai, KK district On Nov 28, 2025

PA Lecture at Bethany Navajeevan Institutions KK Dist

Bethany Navajeevan Institutions, Venkode, Puthukadai, KK district celebrated Annual day, "Triumph 2025".

Date: Nov 28, 2025

Sh A V SATHISH, OIC-Nuclear Information center, KKNPP participated as Chief Guest and delivered an inspirational lecture to the students emphasizing the significance of nuclear energy in ensuring the nation's sustainable development during the event.

A total of 2500 numbers of students including teachers participated in the event.





Nuclear Energy and Sustainable Development

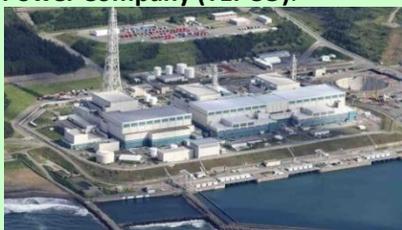
Source: World Nuclear Association



Did you know?

World's Largest Nuclear power Plant (by Reactors)

- ▶ Historically and nominally, **Kashiwazaki-Kariwa** is widely regarded as the “world’s largest nuclear power plant” (by reactor count + capacity).
- ▶ The Kashiwazaki-Kariwa plant is located in the Niigata Prefecture on the coast of the Sea of Japan. It is operated by the **Tokyo Electric Power Company (TEPCO)**.



- ▶ Total Reactors: 7 operating units on a single site.
- ▶ Net Electrical Capacity: 7,965 MW, which is what officially makes it the largest nuclear power generating station in the world.
- ▶ Significance: When fully operational, the plant can satisfy about 5% of Japan's total power demand and generate enough electricity for roughly 16 million households.
- ▶ Reactor Types: The plant utilizes a mix of reactor types: Units 1-5: Boiling Water Reactors (BWR); Units 6-7: Advanced Boiling Water Reactors (ABWRs), a Generation III reactors.
- ▶ In a strictly *operational* sense (recent & active generation), **Kori Nuclear Power Plant** (South Korea), has **8 reactor units** listed with 7,489 MW electrical capacity is among the top contenders today.

Source: asianews.network, Wikipedia & www.ciphernews.com

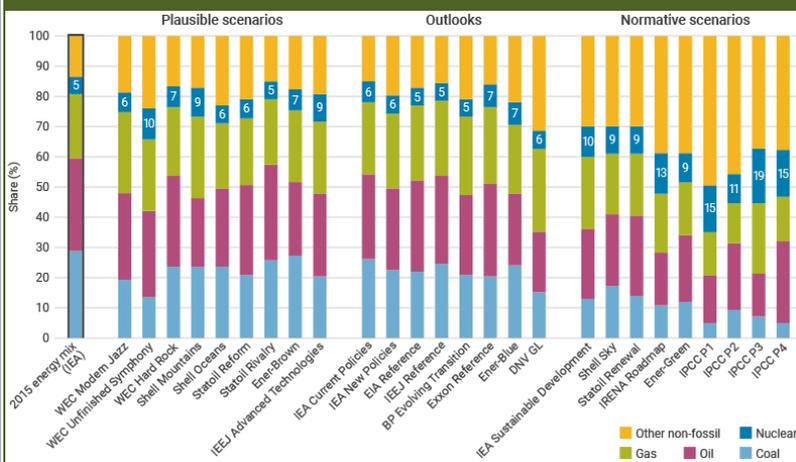
Can nuclear contribute to sustainable development goals?

Despite the crucial role that nuclear will need to play if the UN’s SDGs are to be achieved, there remains some opposition to the growing recognition of the energy source’s credentials for contributing towards sustainable development.

Fundamentally, nuclear energy’s competitive position from a sustainable development perspective is robust due to its energy density and internalization of health and environmental costs. Using nuclear energy brings multiple sustainability advantages over available alternatives, explaining its expanded role in almost all major studies that outline plausible pathways towards sustainable energy provision (see Box 2). An analysis of nuclear energy’s characteristics within a sustainable development framework shows that the approach adopted within the nuclear energy sector is consistent with a central goal of sustainable development of passing a range of assets to future generations while minimising environmental impacts and burdens.

Box 2: Nuclear energy’s role in sustainable energy transitions:

Predicting the future of energy supply is complex, and uncertainties are high. However, it is striking that in almost all forward-looking normative scenarios, nuclear energy’s share in the mix grows substantially. The more ambitious scenario for nuclear is in its aim for decarbonization and sustainability. In the IPCC’s P3 'middle-of-the-road' scenario, for example, nuclear generation grows six-fold by 2050.



Primary energy mix by 2040 and share of nuclear energy (source: World Energy Council)





Prepared & Edited by:

K.B.Jashi,
OIC, TLD Lab &
Member, PA Committee
kbjashi@npcil.co.in

Reviewed by:

Vijayakumar B,
OIC, ESL &
Member, PA Committee
headesl.kknpp@npcil.co.in

L Richard
Training Superintendent
& Chairman,
PA Committee
richard@npcil.co.in

Issued by:

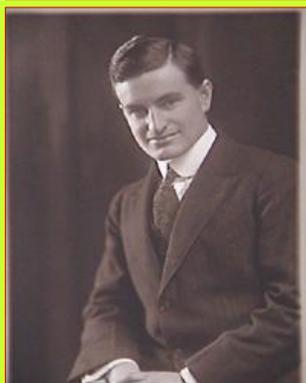
Sathish Kumar B
Site Director,
Kudankulam Nuclear
Power Project

Contact details:

Public Awareness Committee
Kudankulam Nuclear Power Project
Kudankulam-627106
E-Mail: paawarenesskk@npcil.co.in



Which scientist pioneered the pebble-bed reactor design and also made major contributions to chemistry and solar energy research?



Farrington Daniels

❖ **Leadership Roles:**

Daniels served as President of the American Chemical Society (ACS) and was known for promoting science as a tool for improving human life. His interdisciplinary approach connected chemistry, energy, and environmental thinking decades before these became mainstream concerns.

❖ **TLD (Thermoluminescent Dosimetry)**

In the 1950s, he conducted landmark experiments on the thermoluminescence of crystals—work that led to the development of **Lithium-fluoride-based TLDs** widely used today for personal and environmental radiation monitoring

Source: www.ne.anl.gov,
Wikipedia, www.usni.org

Farrington Daniels

Farrington Daniels (1889–1972) was an influential American physical chemist whose work spanned photochemistry, nuclear reactor concepts, and solar energy research.

❖ **Photochemistry & Chemical Kinetics:**

Daniels was one of the early leaders in photochemistry—the study of how light interacts with molecules. He helped establish foundational principles on reaction rates and activation energy. His textbook “Experimental Physical Chemistry” became a classic in the field and guided generations of chemists.

❖ **Manhattan Project (World War II):**

During WWII, Daniels worked on the Manhattan Project at the University of Chicago’s Metallurgical Laboratory. He contributed to developing methods for handling radioactive materials and reactor chemistry, strengthening the scientific groundwork for early nuclear reactors.

❖ **Pebble-Bed Reactor Concept:**

In the 1940s, Daniels proposed the **Daniels Pile**, one of the earliest versions of what we now call the pebble-bed reactor. His design used graphite-coated uranium “pebbles” for safer, more stable high-temperature operation—an idea far ahead of its time and still influential in modern Generation IV reactor designs.

❖ **Solar Energy Pioneer:**

After the war, Daniels shifted his focus to peaceful energy solutions. He became a global advocate for solar energy, researching solar cookers, solar furnaces, and solar heating systems. His book “Direct Use of the Sun’s Energy” (1964) is considered a landmark work that helped establish solar power as a serious scientific field.

See left