

Current Affairs

Rising sea level

- The World Meteorological Organisation (WMO) has found in a new report that the world's sea level is rising at an unprecedented rate, portending potentially disastrous consequences for the weather, agriculture, the extant groundwater crisis, and social disparities.
- The report, entitled 'State of the Global Climate 2022', was published last week.

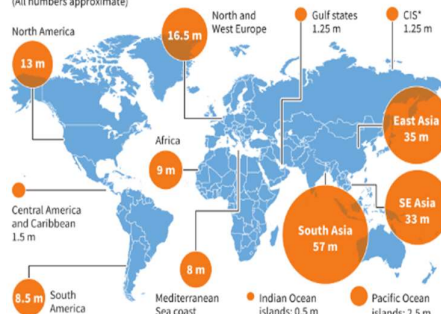
About the report

- Along with accelerating sea-level rise, the report focused on:
 - a consistent rise in global temperatures,
 - record-breaking increases in the concentration of greenhouse gases as well as glacier loss,
 - sustained drought-like conditions in East Africa,
 - record rainfall in Pakistan, and
 - unprecedented heatwaves that struck Europe and China in 2022.
- It also merits individual attention for the unique crises it can precipitate, especially for coastal areas,
 - the communities there that depend on life in the sea, and
 - its ability to render the loss of land.

Sea level rise could hit two metres by 2100

Global sea levels could rise by more than two metres by the end of the century – resulting in the displacement of almost 200 million people – if global warming continues at its current rate, new research suggests

POPULATION DISPLACED BY 2100: Assuming two-metre rise in sea level (All numbers approximate)



How much is the sea rising?

- The **rate of global mean sea-level [GSML] rise has doubled between the first decade of the satellite record and the last.**
- Since the 1990s, scientists have been measuring sea-level rise using satellite altimeters.
- These instruments send radar pulses to the sea surface and measure the time they take to get back and the change in their intensity.
 - The higher the sea level, the faster and stronger the return signal.
- Researchers are able to determine GSML by collecting this data from different points on earth and calculating the average.
 - To calculate the rate of change in the GSML — i.e. how fast or slow the sea level is changing — we can calculate the difference in the GSML across a few years, usually a decade, and then divide the difference by the number of years.
 - This provides an estimate of the rate of sea-level change.
- According to the WMO report, **the sea level has been rising in the three decades for which satellite altimeter data is available (1993-2022).**
 - But, while the rate of sea-level rise was 2.27 mm/year in 1993-2002,
 - it shot up to 4.62 mm/year in 2013-2022.

What causes accelerated sea-level rise?

- The WMO report points to the following factors as being responsible for a rising GSML:
 - “ocean warming,
 - ice loss from glaciers and ice sheets, and
 - changes in land water storage”.
- The report also quantifies the individual contribution of these factors to yield, what researchers call the “**GSML budget**”.
- According to the report, in 2005-2019, **loss of glaciers and ice sheets contributed 36% to the GSML rise.**
 - Ocean warming — the phenomenon of rising mean ocean temperatures — contributed 55%, and
 - changes in the storage of land water contributed less than 10%.
- As increasing concentrations of carbon dioxide and other greenhouse gases drive global warming, 90% of the ‘extra’ heat is stored in the oceans.
- This leads to ocean warming.
 - And **as the ocean heats up, it undergoes thermal expansion, which in turn leads to a rise in the GSML.**
 - One measure of ocean warming is the **ocean heat content (OHC).**
- As per the report, OHC measures in 2022 touched a new record.
- The report also says that the earth’s ice cover, known as the cryosphere, has thinned.
 - The cryosphere includes:
 - the Arctic and Antarctic regions (called “sea ice”),
 - glaciers,

- the ice sheets of Greenland and Antarctica (area of ice on land covering more than 50,000 km²),
- seasonal snow cover, and
- permafrost (mass of land that remains below 0 degree Celsius for at least two straight years).

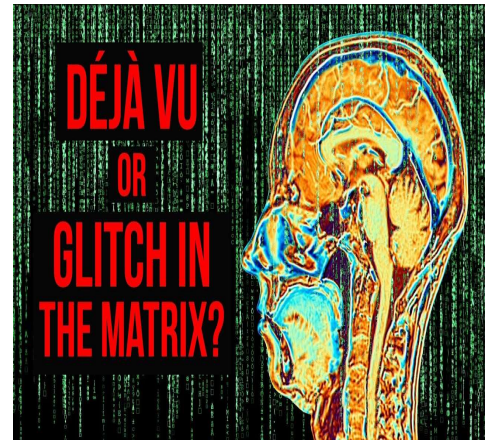
What problems will sea-level rise cause?

- The accelerated pace will cause changes in land cover, i.e., “what will be land and what will be sea”, in the future.
 - As rising seas swallow more of the land cover, particularly in coastal areas, coastal communities will face an “acute shortage of land for human use”.
 - This land crunch will mean that those who are better off will be able to cope better than marginalised groups, leading to an **increase in social disparities** between people living in coastal areas.
- Second, weather formations such as cyclones are known to typically originate in the open seas.
 - As the GSML continues to rise, along with a rise in ocean temperatures, the chances of cyclones could increase, affecting coastal communities and leading to **large economic liabilities for tropical countries such as India and South Africa**, which have high population densities.
 - South Africa was affected by five cyclones in over two months in 2022, leading to the displacement of “hundreds of thousands of people”.
- Third, as the GSML continues to rise, more sea water could seep into the ground, leading to the **groundwater — which is usually freshwater — turning more and more saline**.
 - This can **exacerbate water crises** in coastal areas as well as agriculture in adjacent regions.

Source: The Hindu

Science behind Déjà vu

- Have you ever moved to a new city, and somehow felt like it's familiar? Or met a person for the first time, but had the sense you'd met them before? Then you can count yourself among **those who've experienced déjà vu**.
- In 1876, Emile Boirac, a French philosopher and researcher, coined the term, which means “already seen.”
 - But intellectuals have tried to explain the phenomenon as far back as Plato, who saw it as evidence of past lives.
- More recently, Sigmund Freud described this as a “**recollection of unconscious fantasy coupled with a desire to improve the present situation.**”
 - Carl Jung thought it was related to the **collective unconscious**, while modern Hollywood describes it as a ‘glitch in the matrix’.
- “Déjà vu is literally **a person's subjective experience of repeating a particular set of events, activities, thoughts and feelings, even though that has never in reality occurred before.**” - James J Giordano, professor of neurology at Georgetown University in Washington D.C.
- Around 90 percent of the population has experienced déjà vu and the frequency of it decreases as we age.



A real mystery in science

- Our brain basically works like a time and space machine.
 - It takes everything in our present and relates it to something similar or dissimilar in our past.
 - This way, it will be able to essentially plan the future.
 - But there's a possibility that these signals could get mixed up.
- Giordano suggests the phenomenon could have to do with an area in the middle of the brain called the **thalamus**.
 - All information such as hearing, taste, touch etc. must pass through the thalamus to the brain's cerebral cortex (the outermost layer) for further interpretation and processing.
- And if the speed of those interactions is a bit different, it then feels to us as if we're experiencing the present, as though we remember it.
 - So what our brain has done is literally confused the present with the past.
- Roderick Spears, associate professor of migraine research and clinical sciences at Brown University in Providence, Rhode Island, agrees that there is no solid explanation of why and how déjà vu happens.
- It's also difficult for researchers to reach a conclusion, as déjà vu is a difficult phenomenon to reproduce in a laboratory setting.

A window to a parallel universe?

- Over the decades, scientists have come up with various theories about why and how it happens.
- One popular theory from a neurological perspective is **dual processing** – in which information is stored and retrieved through different processes in the brain.
 - For example, you are sitting in your living room reading this article. The smell of your mom's cooking is in the air, your pet is cuddled up on the sofa, you hear the notification sound on your mobile, and feel the sunlight touching your skin.

- All these sensations add up during processing and are interpreted as a single event.
- According to the dual processing theory, **when there is a slight delay in the brain while processing one of these inputs, it interprets the experience as two separate events, giving you the feeling of familiarity.**
- There are also studies linking déjà vu with a parallel universe.
 - Theoretical physicist Dr. Michio Kaku believes that déjà vu is a form of memory glitch that happens when “fragments of memories stored in the brain... are elicited by moving into an environment that resembles something we’ve already experienced.”
 - But he also theorizes about the possibility of flipping between different universes – and whether déjà vu could be trying to tell us something about our position in those universes.

Deja vu as a symptom of stress

- There are also studies suggesting that **stress could be a factor in déjà vu.**
- The brain works better when it is rested and energized.
 - When you are under excessive stress, or worrying a lot, the brain gets tired. So what can happen is the pattern of our brain activity changes a bit.
 - Given those changes, it is not uncommon to experience déjà vu.
- Spears added that **highly educated people tend to get déjà vu more often than less educated people.**
 - People who travel a lot, who remember their dreams and people who hold liberal beliefs can more often experience it.

Is it a sign of an unhealthy brain?

- Not at all - Giordano.
 - Déjà vu happens to healthy people all the time, and is most common between the ages of 15 and 25.
- But Spears advises anyone experiencing it more than a few times a year – for example multiple times a month – to seek medical attention.
 - He further notes that if déjà vu is associated with loss of consciousness, or an abnormal dream-like state, then it could be a symptom of something serious.
- “Things to look out for include, experiencing déjà vu for more than a few seconds, or having a difficult time distinguishing between what’s real and what’s not. Or you might notice someone developing unconscious behaviors like playing with their hair or not being able to hold objects in their hand. Also, an increased heart rate or an overwhelming sense of fear should prompt medical evaluation,” Spears said.
- That’s because in rare cases, déjà vu is a sign of a seizure, specifically an epileptic seizure.
- “The temporal lobe is where most seizures come from. It happens when the lobe is over activated and the person is semi conscious, but not completely out. This can produce feelings of déjà vu,” Spears said.
- But while there’s widespread agreement on what déjà vu feels like, and various theories as to what causes it, scientists still don’t have a definitive answer when it comes to this eerie sensation.
- “We just don’t have a solid structural explanation yet,” said Spears.

Source: Indian Express

Abetment to suicide

- A special CBI court on Friday (April 28) **cleared actor Sooraj Pancholi of the charge of abetting the suicide of actor Jiah Khan** in 2013 due to lack of evidence.
- Responding to the acquittal, Rabia Khan, Jiah’s mother, said that she will approach the High Court regarding this issue.

What is the case about?

- Actor Jiah Khan died by suicide at her Juhu home on June 3, 2013.
- On June 11, actor Sooraj Pancholi was arrested on the basis of a six-page note written by the actor.
 - In the note, Jiah wrote about the “trauma and abuse” suffered at the hands of her “lover” (not mentioned by name in the letter).
 - After Khan’s death, her mother and other relatives accused Sooraj of “not respecting Jiah” and “using foul language, hitting her”.
 - These accusations were dismissed by Sooraj and his father, actor Aditya Pancholi.
- Pancholi was charged under section 306 (abetment of suicide) of the Indian Penal Code.
 - The trial in the case began in 2019.
 - The Central Bureau of Investigation, examined 22 witnesses in the case, including Khan’s mother Rabia and her sisters.
- Notably, Rabia had sought for Pancholi to face charges of murder, claiming that Khan had not died by suicide.
 - She filed multiple pleas in the Bombay High Court and Supreme Court to this effect.



What is the crime of ‘abetment of suicide’?

- **The Indian Penal Code, 1860 makes abetment of suicide a punishable offence.**
- Section 306 of the IPC prescribes either a **jail term of up to ten years or a fine or both.**
 - “If any person commits suicide, whoever abets the commission of such suicide shall be punished with imprisonment of either imprisonment for a term which may extend to ten years, and shall also be liable to fine.”
- Generally, the fine is paid to the kin of the deceased.
- The IPC also has a separate chapter on abetment and describes who is an abettor under Section 108.
 - Abetment is defined as including instigating, engaging in a conspiracy or assisting in committing the offence.

How serious is the offence of abetment?

- Abetment of suicide is a serious offence that is tried in a Sessions court and is cognizable, non-bailable and non-compoundable.
- A **cognizable offence** is one in which a police officer can make an arrest without a warrant from a court.
 - A non-bailable offence means bail is granted to the accused at the discretion of the court, and not as a matter of right.
- A **non-compoundable offence** is one in which the case cannot be withdrawn by the complainant even when the complainant and the accused have reached a compromise.
 - The court cannot allow withdrawal of a case involving a non-compoundable offence, and every such complaint is necessarily followed by a trial where evidence is held against the accused.

So does that mean abetment of suicide is the same as murder?

- No, it does not. The Supreme Court clarified this issue in 1997 in the case of ‘**Sangarabonia Sreenu v State of Andhra Pradesh**’.
- Despite the intention of the accused to drive a person to commit suicide, abetment of suicide is not the same as murder.
 - Although in both cases, causing the death of another person is a common factor, the two are distinct offences.
- In the case of a murder, the final ‘act’ of causing the death of a person is committed by the accused which is not the case in abetment of suicide.

How will a court determine if the accused has abetted the suicide?

- There are two primary ingredients of the crime of abetment of suicide.
 - First is a **suicidal death**.
 - The second ingredient is the **intention of the accused to abet such suicide**.
- Legally, whether a death is a suicide or not is a determination of a fact, which means evidence has to be evaluated to pronounce that death is a suicide.
- In common parlance, the word suicide is liberally attributed to every case of self-destruction, but suicide is never presumed.
 - A determination of suicide is made when the deceased person is understood to have known the probable consequence of what the self-harm is about to do to the person and yet, does so intentionally.
- Once such a determination is made, then the **intention of the person accused of abetment of suicide is looked into.**
- **The only exception to this is the abetment of the suicide of a woman married for seven years or less.**
- Through an amendment in 1983 in the Code of Criminal Procedure, the law was changed to presume that the husband is guilty if his wife commits suicide within seven years of the marriage.
 - The amendment was made to curb rising dowry deaths that were categorised as suicides.

How is the intention to drive a person to suicide determined by the court?

- The intention is discerned from acts of the accused in proving any crime.
 - Multiple rulings of the Supreme Court, including a 2002 ruling in the case of ‘**Sanjay Singh v State of Madhya Pradesh**’, have held that a comment or a statement uttered in haste, anger would not amount to abetment of suicide.
- In a recent 2017 ruling, the apex court also said that **instigation, involvement of the accused must be connected strongly and any remoteness in these features would be insufficient to charge the accused with the offence.**
- Suppose, Person A says “go, die” to Person B and B happens to hang herself to death subsequently, Person A cannot be charged with abetment to suicide.
 - Firstly, A did not intend to instigate B to commit suicide and merely uttered the words in a fit of anger.
 - In such a case, the court would look into Person A’s general behaviour towards B and determine the intention.
- In the same case, if a husband and his family have subjected the wife to continuous physical abuse since the marriage and drove her to commit suicide, they can be held liable for the offence.
 - **Instigation has to have certain continuity, happen continuously over a reasonable period of time.**
 - **The suicide must also be a direct consequence of the instigation and cannot be a mere coincidence or very remote to the committing of suicide.**
- Additionally, if the deceased person is found to be very sensitive compared to a reasonable person, the court has said that the charge of abetment to suicide would weaken.

Source: Indian Express

Centre stance on same-sex marriage

- The Supreme Court heard arguments on Thursday on behalf of the government from Solicitor General Tushar Mehta in the case seeking legal recognition of same sex marriage.
- While urging the Court to leave the issue to Parliament, Mehta argued that the law cannot be re-drafted again to allow same-sex marriage. Here are six key arguments of the Centre.
- 1. **Religious definitions of marriage:**
 - The Centre's first submission was that various religions have always recognised marriage only between a man and a woman.
 - Mehta argued that if a new idea of marriage has to be imagined, then it must be Parliament and not the Court which can create it.
 - It is essential to note that marriage, even under the so-called secular Special Marriage Act, 1954, originates in personal law.
 - The said secular enactments were enacted not as a means to create a new social legal institution, but rather as a means to overcome some limitations of religious personal laws," he said.
- 2. **'Legitimate' interest of state:**
 - Responding to the argument of the petitioners that the state can have no role in regulating personal relationships, Mehta argued that **the state has a 'legitimate' interest in regulating marriage.**
 - "The right to marry is not absolute and is always subject to the statutory regime provided by the competent legislature," he argued.
 - He also cited several aspects of marriage which the state has regulated, such as age of consent to marriage, prohibition of bigamy, prescription of prohibited degrees of marriage (which means one can't marry their lineal ascendants, such as parents, grandparents, etc.), judicial separation, and divorce.
 - Mehta told the Court that if the petitioner's argument were to be accepted, the law on bestiality or incest can also be challenged on the same grounds that the state cannot regulate personal relationships.
 - The Bench agreed with the Centre that an absolute statement that the state can have no interference in regulating personal relationships might not be correct.
 - CJI DY Chandrachud in an oral observation gave the example of a parent-child relationship that is regulated by the state.
- 3. **The right to privacy:**
 - In the landmark 2017 decision recognising the right to privacy as a fundamental right, the **Supreme Court had held that sexual orientation is an essential component of identity.**
 - "Equal protection demands protection of the identity of every individual without discrimination," a concurring opinion by Justice Chandrachud had stated.
 - The Centre argued that while the right to privacy exists, it cannot be extended to marriage.
 - When consulting adults want a societal acceptance of the relationship by way of marriage, the Centre argued that they are conferred with a public status by the state.
- 4. **Parliament must decide:**
 - The Centre has repeatedly said that the decision on same-sex marriage can only be made in Parliament.
 - The argument essentially is that there exists a democratic right of people to regulate themselves and that it cannot be mandated by a Court.
 - Mehta on April 26 had cited a string of rulings from the US Supreme Court, including the **2022 Dobbs v Jackson case**, on the limits of judicial review.
 - In the Dobbs ruling, the US Supreme Court held that abortion neither finds express mention in the US Constitution nor is deeply rooted in the nation's history and tradition, and therefore cannot be a protected constitutional right.
 - The Centre also argued:
 - that the Court will be venturing into unknown arenas if it legislates on same-sex marriage, and
 - that could raise several unintended consequences in law.
- 5. **Interpreting the law:**
 - The key argument of the Centre is that the Court cannot interpret the Special Marriage Act to include same-sex marriage in a meaningful way.
 - Mehta argued that the Court will have to examine the "entire architecture of the Act rather than examine a few words like husband, wife, etc.,"
 - mentioning several instances where simply replacing the words wife and husband with person would not be compatible with the rest of the legislation.
 - Mehta cited instances where the law provides specific rights to a wife.
 - For example, he argued that "the law says that the wife acquires the domicile of the husband upon marriage. So who will be the wife in a same-sex marriage?"
 - Another example he cited was on the issue of divorce.



- Under the Special Marriage Act, a wife may seek divorce on the ground that her husband has, since solemnisation of the marriage, been guilty of rape, sodomy, or bestiality.

6. Effect on personal laws:

- The Centre argued that personal laws will inevitably be affected even if the Court only looks at the Special Marriage Act.
 - Last week, before the arguments began, the Court made it clear that it will restrict the scope of the challenge only to secular laws and not religious laws.
- However, Mehta argued that it might not be possible for the court to interpret the Special Marriage Act in isolation without touching personal laws.
 - Under Section 19 of the Special Marriage Act, the parties married under the secular law lose their right to family property, although they will continue to be governed under their personal laws in all other aspects such as divorce, inheritance and adoption.

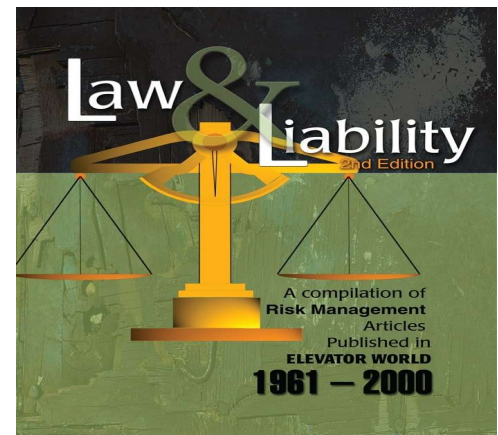
Source: Indian Express

Ambiguities in nuclear liability law

- The issues regarding India's nuclear liability law continue to hold up the more than a decade-old plan to build six nuclear power reactors in Maharashtra's Jaitapur, the world's biggest nuclear power generation site under consideration at present.
- The issues arising out of the liability law "would have to be solved before any contract" could be signed between India and France.

What is the law governing nuclear liability in India?

- Laws on civil nuclear liability ensure that compensation is available to the victims for nuclear damage caused by a nuclear incident or disaster and set out who will be liable for those damages.
- The international nuclear liability regime consists of multiple treaties and was strengthened after the 1986 Chernobyl nuclear accident.
- The umbrella Convention on Supplementary Compensation (CSC) was adopted in 1997 with the **aim of establishing a minimum national compensation amount**.
 - The amount can further be increased through public funds, (to be made available by the contracting parties), should the national amount be insufficient to compensate the damage caused by a nuclear incident.
- **Even though India was a signatory to the CSC, Parliament ratified the convention only in 2016.**
- To keep in line with the international convention, India enacted **the Civil Liability for Nuclear Damage Act (CLNDA) in 2010**, to put in place a speedy compensation mechanism for victims of a nuclear accident.
 - The CLNDA provides for strict and no-fault liability on the operator of the nuclear plant, where it will be held liable for damage regardless of any fault on its part.
- It also specifies the amount the operator will have to shell out in case of damage caused by an accident at ₹1,500 crore and requires the operator to cover liability through insurance or other financial security.
 - In case the damage claims exceed ₹1,500 crore, the CLNDA expects the government to step in and has limited the government liability amount to the rupee equivalent of 300 million Special Drawing Rights (SDRs) or about ₹2,100 to ₹2,300 crore.
 - The Act also specifies the limitations on the amount and time when action for compensation can be brought against the operator.
- India currently has 22 nuclear reactors with over a dozen more projects planned.
 - All the existing reactors are **operated by the state-owned Nuclear Power Corporation of India Limited (NPCIL)**.



What does the CLNDA say on supplier liability?

- The international legal framework on civil nuclear liability, including the annex of the CSC is based on the **central principle of exclusive liability of the operator of a nuclear installation and no other person**.
- In the initial stages of the nuclear industry's development, foreign governments and the industry agreed that excessive liability claims against suppliers of nuclear equipment would make their business unviable and hinder the growth of nuclear energy, and it became an accepted practice for national laws of countries to channel nuclear liability to the operators of the plant with only some exceptions.
- Two other points of rationale were also stated while accepting the exclusive operator liability principle —
 - one was to avoid legal complications in establishing separate liability in each case and
 - the second was to make just one entity in the chain, that is the operator to take out insurance, instead of having suppliers, construction contractors and so on take out their own insurance.

- Section 10 of the annex of the CSC lays down “only” two conditions under which the national law of a country may provide the operator with the “right of recourse”, where they can extract liability from the supplier —
 - one, if it is expressly agreed upon in the contract or
 - two, if the nuclear incident “results from an act or omission done with intent to cause damage”.
- However, India, going beyond these two conditions, for the first time introduced the concept of **supplier liability over and above that of the operator’s in its civil nuclear liability law, the CLNDA**.
 - The architects of the law recognised that defective parts were partly responsible for historical incidents such as the Bhopal gas tragedy in 1984 and added the clause on supplier liability.
- So, apart from the contractual right of recourse or when “**intent to cause damage**” is established, the CLNDA has a Section 17(b) which states that the operator of the nuclear plant, after paying their share of compensation for damage in accordance with the Act, shall have the **right of recourse**
 - where the “nuclear incident has resulted as a consequence of an act of supplier or his employee, which includes supply of equipment or material with patent or latent defects or sub-standard services”.

Why is the supplier liability clause an issue in nuclear deals?

- **Foreign suppliers of nuclear equipment from countries as well as domestic suppliers have been wary** of operationalising nuclear deals with India as it has the only law where suppliers can be asked to pay damages.
- Concerns about:
 - potentially getting exposed to unlimited liability under the CLNDA and
 - ambiguity over how much insurance to set aside in case of damage claims have been sticking points for suppliers.
- Suppliers have taken issue with two specific provisions in the law, Section 17(b) and Section 46.
 - The latter clause goes against the Act’s central purpose of serving as a special mechanism enforcing the channelling of liability to the operator to ensure prompt compensation for victims.
- Section 46 provides that **nothing would prevent proceedings other than those which can be brought under the Act, to be brought against the operator**.
- This is not uncommon, as it allows criminal liability to be pursued where applicable.
 - However, in the absence of a comprehensive definition on the types of ‘nuclear damage’ being notified by the Central Government, Section 46 potentially allows civil liability claims to be brought against the operator and suppliers through other civil laws such as the law of tort.
 - **While liability for operators is capped by the CLNDA, this exposes suppliers to unlimited amounts of liability.**

What are existing projects in India?

- The **Jaitapur nuclear project** has been stuck for more than a decade — the original MoU was signed in 2009 with EDF’s predecessor Areva.
- Other nuclear projects, including the nuclear project proposed in Kovvada, Andhra Pradesh, have also been stalled.
- Despite signing civil nuclear deals with a number of countries, including the U.S., France and Japan, **the only foreign presence in India is that of Russia in Kudankulam — which predates the nuclear liability law.**



Source: The Hindu

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