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MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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DTE

Sept 5

ALLIGATOR GAR FISH

(Syllabus: GS Paper 3 – Env & Eco)

Carnivorous alligator gar, the latest threat for Srinagar's idyllic Dal Lake?

Context: A non-native **alligator gar fish**, known for its **crocodile-like head** and razor-sharp teeth, was **found in one of Kashmir's idyllic lakes**, raising apprehensions about its impact on the native fish species.

- The rare, **carnivorous fish** was caught by the Jammu and Kashmir **Lake Conservation and Management Authority** (LCMA) during the routine deweeding process near Sher-e-Kashmir International Convention Centre (SKICC).



Alligator Gar Fish

- A close relative of the **bowfin species**.
- Known for **its crocodile-like head** and razor-sharp teeth.
- One of the **biggest freshwater fish in North America** and the largest species in the 'gar' family.
- Grows rapidly and has a **lifespan of 20-30 years**.
- Can survive in cold water (11-23 degrees Celsius).
- **Geographical distribution:** Northern and Central America and Mexico.
- **Threats:** A predator fish that poses a threat to native species and the overall ecosystem.
- **IUCN Status:** Least Concern.

About Dal Lake

- **Location:** Srinagar, the capital of Jammu and Kashmir.
- It is one of the **world's largest natural lakes** and the **second-largest lake in J&K.**
- Also known as the **"Jewel in the crown of Kashmir" or "Srinagar's Jewel".**
- It is also an important source for fishing and water plant harvesting.
- The floating gardens, known as **"Raad" in Kashmiri**, blossom with lotus flowers during July and August.

INDIAN EXPRESS

Sept 5

INVASIVE ALIEN SPECIES

(Syllabus: GS Paper 3 – Env & Eco)

Biodiversity loss: 37,000 'alien species' introduced by human activities, says report

Context: In the most extensive study on invasive species carried out till date, the **Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)** in its new publication – the **"Assessment Report on Invasive Alien Species and their Control"** – has found that there are 37,000 alien species, including plants and animals.

Key Points

- Invasive alien species are one of the **five major direct drivers of biodiversity loss** globally, alongside land and sea use change, direct exploitation of organisms, climate change, and pollution.
- Number of alien species has been rising **continuously for centuries** in all regions..
- The **water hyacinth is the world's most** widespread invasive alien species on land. **Lantana,** a flowering shrub, and the **black ra**t are the second and third most widespread globally.
  - The brown **rat and the house mouse** are also widespread invasive alien species.
- Invasive alien species like **Aedes albopictus and Aedes aegyptii** spread diseases such as **malaria, Zika and West Nile Fever**, while others also have an impact on livelihood.

Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES): It is an independent intergovernmental body **established to strengthen** the science-policy interface for biodiversity and ecosystem services, working in a **similar way to the IPCC**, which is the **UN's climate science body**.

- **It proposed:** A new term for ecosystem services, calling them **"Nature's Contributions to People" (NCPs).**
- **Formation:** 2012.
- **Headquarter:** Bonn, Germany.

Invasive/Alien Species: **Organisms that are not native** to a specific area and pose a threat to native species.

- They have the **potential to lead to the extinction of indigenous plants and animals**, diminish biodiversity, engage in resource competition with native organisms, and modify habitats.

NIIF
(Syllabus: GS Paper 3 – Economy)

NIIF, Actis eye Macquarie's Vibrant green platform

Utpal Bhaskar
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NEW DELHI

India's National Investment and Infrastructure Fund Ltd (NIIF) and private equity firm Actis Llp are among four contenders vying to acquire Macquarie Asset Management's Green Investment Group platform Vibrant Energy, two people aware of the development said.

Vibrant Energy has a 1.5-gigawatt (GW) portfolio in the commercial and industrial (C&I) sector. JP Morgan is managing the transaction with four bidders being shortlisted from among the non-binding offers submitted for the deal valued at around $250 million.

Macquarie, one of the largest foreign infrastructure investors in India, has also hired Bank of America Corp. (BofA) to sell around 450 megawatts (MW) of solar power projects of its Stride platform for around $300 million. Last week, *The Economic Times* reported about Indonesia's Sun Energy and energy trading firm Vitol submitting bids to acquire Vibrant Energy.

India's C&I energy sector

Context: India's **National Investment and Infrastructure Fund Ltd (NIIF)** and private equity firm Actis Llp are among four contenders vying to acquire **Macquarie Asset** Management's Green Investment Group platform **Vibrant Energy**.

Key Points

- **India's green energy space** has witnessed tremendous interest, given the country's ever-increasing demand for power.
- **India recently set a new record**, with power demand reaching 239.9GW, exceeding India's power sector planning body, the Central Electricity Authority's (CEA) projections of 230GW.
- India has an installed **renewable energy capacity of 172GW**, with an additional 128GW either under development or have been bid out.

National Investment and Infrastructure Fund (NIIF)

- **About:** It is a **quasi-sovereign wealth fund (Category-II Alternative Investment Fund)** to attract investment from **both domestic and international sources** for infrastructure projects in various sectors such as transportation, energy, urban development, and more.
- **Set up:** In December 2015 as a **Category-II Alternate Investment Fund.**
- **Objective:** Creating this organisation was to **catalyse capital** into the country and support its growth needs across sectors of importance.
  - Investing in core infrastructure sectors, such as transportation, energy and digital.
  - It is a collaborative investment platform for international and Indian investors.
- NIIF is sponsored and anchored by the **Government of India, which holds a 49%** interest in it and other stakes by the private firms.

ECONOMIC TIMES

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BIOGAS

(Syllabus: GS Paper 3 – Env & Eco)

Pursuing Green, Energy Giants Zero in on Biogas

RIL plans to set up 100 CBG plants, while Adani Total Gas plans to set up 5 plants in 5 yrs

Kalpana.Pathak@timesgroup.com



Mumbai: India is the pioneer of biogas. The first bio-gas plant was set up in 1897 when a British civil engineer Charles James, worked on the drainage of Homeless Leper Asylum in Matunga, Bombay. Biogas took off and it has been since powering our kitchens, community facilities and dairy farms.

But now the humble biogas has caught the fancy of some leading energy players of India Inc. Last week Reliance Industries announced its plans to set up 100 compressed biogas (CBG) plants. Adani Group's Adani Total Gas is planning to set up five CBG plants in the next five years with more to follow in future.

Additionally, Pune-based Thermax has joined hands with EverEnviro Resource Management to establish Thermax Bioenergy Solutions to set up bio-CNG projects. According to industry sources EverEnviro alone has planned an investment of nearly ₹10,000 crore in the segment over the next few years. EverEnviro's wholly owned subsidiary Green Growth Equity Fund (GGEF), is planning to set up 14 CBG plants in the country.

Oil marketing companies aren't far behind. Indian Oil Corporation, Hindustan Petroleum Corporation (HPCL) and Bharat Petroleum Corporation (BPCL) have issued hundreds of letters of intents for setting up of compressed biogas (CBG) plants.

CBG, is a greener fuel produced from waste/biomass sources. It has properties like compressed natural gas (CNG) and can be used for automotive, industrial and commercial uses.

According to the Indian Biogas Association, the sector will see 5,000 plants being set up by 2030 at an investment of ₹1.75 lakh crore.

So, what changed to make biogas attractive for these companies?

"It's the technical, financial and social aspect of bio-gas," says Gaurav Kedia, chairman, Indian Biogas Association (IBA).

"The technology is now getting mature, so people can now set up large scale biogas plant. On the financial front, there's not only support from the government's end but also availability of a ready market to pull the gas," said Kedia, adding that organic fertiliser from these plants is finding many takers specially after the Covid-19 pandemic, which made people very health conscious.

"So, the overall scenario makes it very lucrative right now."

While Gail has decided to insert CBG into the city gas grid, last month IBA made a case for fixing fair and remunerative price of organic fertiliser or 'fermented organic manure' (FOM) at about ₹5.5 per kg to support biogas plants in the country. The government recently announced the Market Development Assistance (MDA) Scheme, under which ₹1,451 crore was approved to promote organic fertilizer.

Context: The private firm Reliance Industries recently announced its plans to set up 100 **compressed biogas (CBG)** plants. **Adani Group's Adani Total Gas** is planning to set up five CBG plants in the next five years with more to follow in future.

Compressed Biogas (CBG)

- **About:** It is a **mixture of Methane (CH4), Carbon-dioxide (CO2)** and small quantities of other gases. A highly purified biogas comprising of **up to 90% methane with high calorific value**, a perfect green renewable automotive fuel.
- **Produced by:** Anaerobic fermentation of organic matter in an oxygen-free environment.
- The precise **composition of biogas depends** on the type of feedstock and the production method used.
- **Usage:** As **cooking and lighting fuel**; and the left over slurry serves as an enriched manure
- India is the pioneer of biogas. The **first bio-gas plant** was set up in 1897.
- **Less emission:** It produces **20-60 percent less emissions** in comparison to fossil fuels.
- **Reduced import:** On imported Liquid Natural Gas, hence saving the forex reserves.
- **Green source:** Generated from the bio-waste sources like agricultural residue, cattle dung, filter cake.
- **Benefits:** Helps farmer in enhancing their income, enhance infrastructure development leading to rural development, job creation among others – making it a classic case of sustainable development.
  - CBG is also being considered to produce Green Hydrogen and could be used as a replacement for Piped Natural Gas for domestic use.

BUSINESS STANDARD

Page 1

CENTRAL BANK DIGITAL CURRENCY

(Syllabus: GS Paper 3– Economy)

CBDC can fix cross-border payment problems: Das

RBI governor flags issues of high cost, low speed, limited access

ANJALI KUMARI
Mumbai, 4 September

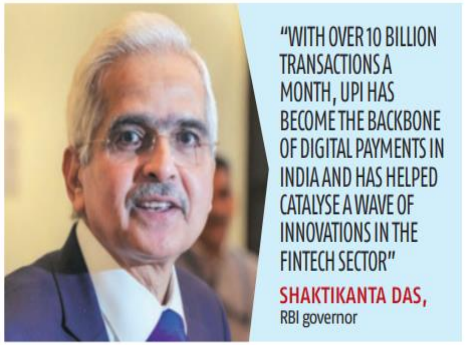
Reserve Bank of India (RBI) Governor Shaktikanta Das on Monday flagged the issue of high costs and low speed associated with cross-border payments and said the central bank digital currency (CBDC) instant-settlement feature could play an important role in addressing those issues.

"Notwithstanding the progress made so far, the key challenges to existing cross-border payments continue to be high cost, low speed, limited access, and insufficient transparency," Das said in his keynote address at the G20 TechSprint Finale organised by RBI and Bank for International Settlements (BIS).

He said faster, cheaper, more transparent, and more inclusive cross-border payment services would deliver widespread benefits to people and economies worldwide. "It would also support economic growth, international trade, and financial inclusion."

Under India's G20 presidency, the fourth edition of G20 TechSprint was launched on May 4 with the theme 'Technology solutions for cross-border payments'.

Last year, the RBI launched two CBDC pilot projects — for retail and wholesale segments. Das said the RBI was slowly and steadily expanding the pilot to more banks, more cities, more people, and more use cases. "The empirical data that we are generating would go a long way in shaping the policies and future course of action. With its instant-settlement feature, I believe, CBDCs can play an important role in making cross-border payments cheaper, faster, and more secure," Das said. Commenting that the Unified Payments Interface (UPI) has been a game-changer for India's digital payments ecosystem, Das said it helped to drive financial inclusion by bringing millions of unbanked individuals into the formal financial system.



"WITH OVER 10 BILLION TRANSACTIONS A MONTH, UPI HAS BECOME THE BACKBONE OF DIGITAL PAYMENTS IN INDIA AND HAS HELPED CATALYSE A WAVE OF INNOVATIONS IN THE FINTECH SECTOR"

SHAKTIKANTA DAS, RBI governor

Fiat Money: It is a type of currency that is not backed by any commodity such as gold or silver. Ex.-Notes and Coins.

Legal Tender: It is a form of money that is backed by the government (mostly by the central bank) and cannot be refused by any citizen of the country for settlement of any kind of transaction.

Context: Recently, the **Reserve Bank of India (RBI) Governor highlighted** the challenges of **high costs and slow processing** in cross-border payments, emphasizing the potential of the **central bank digital currency (CBDC)** instant-settlement feature to offer a solution to these issues.

Central Bank Digital Currency (CBDC)

- **About:** It represents a **legal tender and is a liability** of the central bank, with its value denominated in the nation's currency, reflected on the central bank's financial statement.
- This **digital form maintains an equal exchange** rate with traditional "**fiat currency",** with the only distinction being its digital nature.
- It can be readily converted or traded at an equivalent rate with physical cash and conventional central bank deposits of the same denomination.
- **Transactions using CBDCs** or digital "**fiat currencies"** are conducted through blockchain-backed wallets.
- **CBDCs, while initially inspired by Bitcoin**, differ significantly from decentralized virtual currencies and cryptocurrencies because they are **government-issued and carry the legal status of 'legal tender.'**
- **Objective:** To reduce risks and minimize expenses associated with the management of physical currency, including the costs related to replacing worn-out notes, transportation, insurance, and logistical operations.

Global Trends

- **Bahamas**: First economy to launch its nationwide **CBDC — Sand Dollar**. **Nigeria** is another country to have rolled out **eNaira in 2020**. **China** became the world's first major economy to pilot a digital currency **e-CNY.**

TIMES OF INDIA Sept 5

GEOGRAPHICAL INDICATION (GI) TAG

(Syllabus: GS Paper 3 – IPR Policy)

Odisha: GI tags for Rayagada shawls, Koraput's kala jeera rice likely

Context: Recently, **Rayagada shawls** and **Koraput Kalajeera Rice**, an aromatic rice variety, have been granted **Geographical Indication (GI) status**.

Rayagada shawls (Kapdaganda)

- Kapdaganda is the esteemed traditional shawl of the Dongria Kondh tribe, a **particularly vulnerable indigenous community** residing in the **Niyamgiri hills of Rayagada** and Kalahandi districts.
- This **shawl holds** immense significance **as it represents a vital part of their cultural** and ethnic heritage.
- The artistic and craftwork of the **Dongria Kondh** people beautifully portrays the mountains' importance in their lives.
- **Due to the high demand for this shawl** among both local and international tourists, some traders have begun producing inexpensive imitations of the handwoven Kapdaganda, potentially diluting its cultural and artistic value.

Koraput Kalajeera Rice

- The farmers of **Koraput district in Odisha** have cultivated Kalajeera rice over generations.
- Known as the **'Prince of Rice,'** it is a fragrant variety of rice.
- This rice is **highly popular among consumers** due to its black color, aromatic scent, delicious taste, and pleasing texture.
- Ancient texts suggest that Kalajeera rice may enhance memory and help manage diabetes.
- It is believed to **boost hemoglobin levels** and metabolism in the body.
- This fragrant grain possesses several beneficial properties, including antispasmodic, stomachic, carminative, antibacterial, astringent, and sedative qualities.

What is GI Tag?

- It is a symbol used on items that come from a particular geographical area and have qualities or a reputation linked to that place of origin.
- **Nodal Ministry:** Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
- **Tenure:** 10 Years
- **Regulated By:** Geographical Indications of Goods (Registration & Protection) Act, 1999.
- **India's First GI Product:** Darjeeling Tea (2004-05)

KYLINXIA ZHANGI
(Syllabus: GS Paper 3 – Env & Eco)

Three-Eyed "Fossil Monster" – 520 Million-Year-Old Fossil Reveals Amazing Detail of Early Animal Evolution

Context: Researchers from the University of Leicester and the Yunnan Key Laboratory for Palaeobiology employed advanced scanning technology to **recreate a 'fossil monster'** that lived half a billion years ago.

Kylinxia zhangi

- Kylinxia, an **extinct arthropod**, inhabited the early Cambrian period, approximately 520 million years ago.
- The **fossil of this species was discovered** near Chengjiang, located in the Yunan Province of southern China.
- Kylinxia is one of the **approximately 250 exceptionally** well-preserved fossilized animals documented in the area, collectively referred to as the Cambrian Chengjiang biota.

Key Features of Kylinxia

- It possessed a segmented body consisting of a **head, thorax, and abdomen**.
- Kylinxia **had three eyes on its head and a pair** of formidable claws, likely employed for hunting purposes.
- The creature exhibited a **fused head shield**, a segmented trunk, and legs with joints.
- Its head comprised six segments, reminiscent of the structure found in modern insects.

What Are Arthropods?

- Arthropods are **invertebrate organisms** characterized by jointed legs. They constitute approximately **75% of all known animal** species on Earth.
- Arthropods are highly adaptable and can thrive in diverse habitats, ranging from the **depths of deep-sea hydrothermal** vents to the highest mountain regions.

INDIA'S CRUDE OIL IMPORT

(Syllabus: GS Paper 2 – IR)

Share of Russia Crude in Oil Imports Falls to 34% in Aug

Analysts say imports down due to maintenance work at Indian refineries

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New Delhi: Russia's share in India's crude oil imports fell to 34% in August from 42% in July as state-run refiners sharply reduced imports from Russia.

Supplies from Russia fell 23% month-on-month to 1.47 million barrels per day (mbd) in August, even as India's overall crude imports fell 5% to 4.35 mbd, according to energy cargo tracker Vortexa. Russia's seaborne crude exports to China, however, increased to 1.4 mbd in August from 1.3 mbd in July.

Indian state refiners took 852,000 barrels per day of Russian oil in August, 30% less than in July while private sector refiners' intake of 617,000 barrels per day was 13% lower than in July.

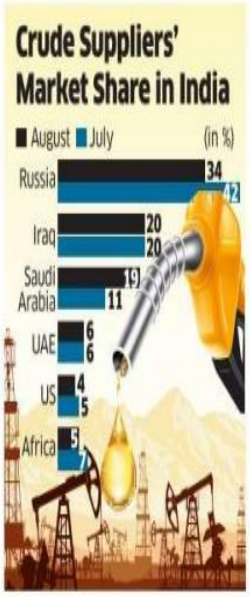
Imports from Russia fell due to the planned maintenance work at some refineries in India as well as a reduction in the availability of Russian supplies, analysts said. "There is no indication that Russia's crude exports will see a rebound in the near term, which means that India's imports of Russian crude will likely remain subdued," said Serena Huang, analyst at Vortexa.

Russian exports are shrinking as the country is focused on slashing crude production and meeting its increased domestic fuel demand, an industry executive said. The key beneficiary of a drop in Russian supplies to India was Saudi Arabia, which exported 820,000 barrels per day to Indian refiners in August, 70% more than in July. This boosted Saudi Arabia's share in the Indian crude market to 19% in August from 11% in July. The share of other top suppliers barely changed, with Iraq at 20%, the UAE at 6% and the US at 5%.

"Russian Urals discounts to dated Brent have narrowed in recent weeks as a result of lower supplies, which has likely dampened the appetite of Indian refiners as well," Huang said.

Urals, the flagship Russian grade, comprised 73% of Russian supplies imported by India in August, lower than 83% in July. The Urals had mostly traded below the G7-imposed price cap of $60 per barrel but has breached the cap in recent weeks. Urals is trading around $69 per barrel while the international benchmark Brent is around $88.

Indian state refiners take Russian oil on a delivered-at-port basis, leaving the suppliers with transportation and insurance risks, which increase when the oil is priced above the cap.



Context: Russia's share in India's crude oil imports fell to 34% in August from 42% in July as state-run refiners sharply reduced imports from Russia.

- **Supplies from Russia fell 23%** month-on-month to 1.47 million barrels per day (mbd) in August, even as India's overall crude imports fell 5% to 4.35 mbd.
- **Russia's seaborne crude exports to China**, however, increased to 1.4 mbd in August from 1.3 mbd in July.
- **Imports from Russia declined because** of the planned maintenance work at some refineries in India, coupled with a decrease in the availability of Russian supplies.

India's Oil Import/Consumption

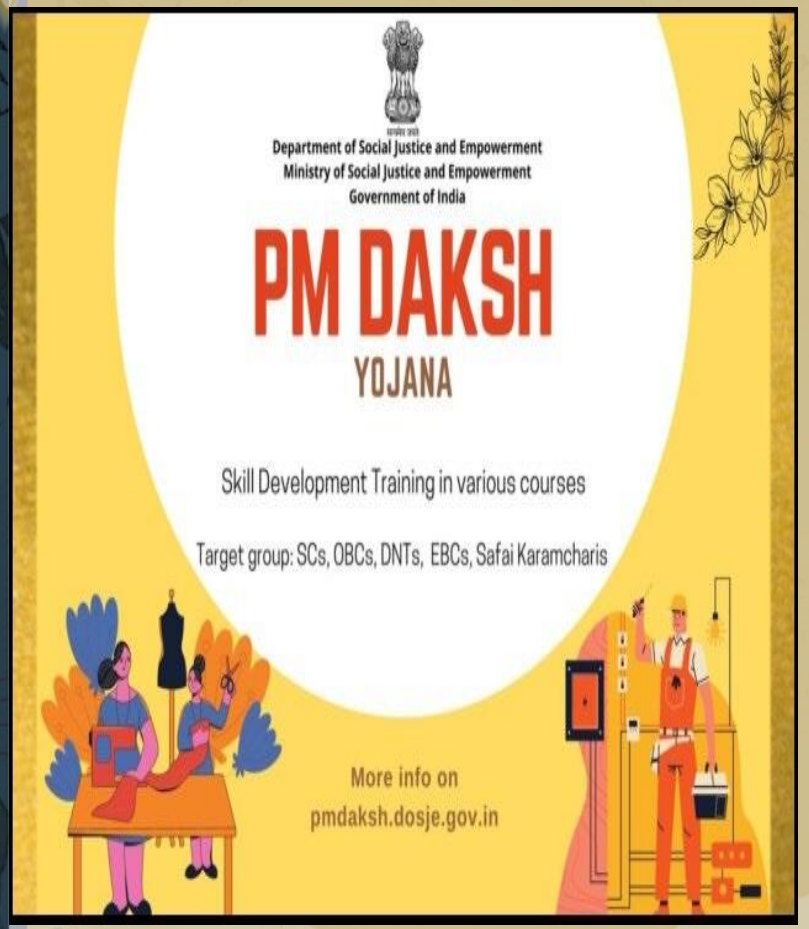
- **India ranks as the world's third-largest oil consumer**, with a daily consumption of approximately 5 million barrels, trailing only the **United States and China**.
- The **country's oil demand is experiencing** an annual growth rate of 3-4%.
- Based on these projections, India's oil consumption could potentially reach approximately 7 million barrels per day within the next decade.
- **India's Dependence on OPEC Countries:** India's imports from OPEC countries constitute 85% of our total crude imports and 94% of the gas imports.
- **India ranks a distant 21st** in crude oil production and **26th in natural gas** production.
- **Russia has continued to be the single largest** supplier of crude oil for India, which is converted into petrol and diesel at refineries.
- **Saudi Arabia was India's second largest supplier** and **Iraq was the third** biggest supplier of crude oil in March 2023.

PIB

Sept 5

PM-DAKSH YOJANA
(Syllabus: GS Paper 2 – Govt Scheme)

The Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana



Context: Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana.

PM-DAKSH Yojana

- **Launched:** 2020-21
- **Implementation:** National Scheduled Castes Finance and Development Corporation (NSFDC),
  - National Backward Classes Finance & Development Corporation (NBCFDC),
  - National Safai Karamcharis Finance and Development Corporation (NSKFDC)
- **Eligibility:** Marginalized persons of SC, OBC, EWS, Denotified tribes, Sanitation workers including waste pickers, manual scavengers, transgenders and other similar categories.
- **Target Group:** SCs, OBCs, EBCs, DNTs Safai Karamcharis including waste pickers>
- **Objective:** To enhance competency **level of the target groups** to make them employable both in **self- employment and wage-employment** for their socio-economic development.

DTE

Sept 5

GLOBAL WARMING

(Syllabus: GS Paper 3 – Env & Eco)

Study warns of a billion human deaths if global warming reaches or exceeds 2°C

Context: If **global warming** reaches or **exceeds two degrees Celsius by 2100,** it could lead to deaths of roughly a billion people, quantifying future harms caused by carbon emissions has found as per study **published in journal Energies**.

Key Points

- The analysis suggested aggressive **energy policies to enable immediate** and substantive decreases in carbon emissions.
- It also **recommended a heightened level of government**, corporate and citizen action to accelerate the decarbonisation of the global economy, aiming to minimise the number of projected human deaths.
- The **oil and gas industry**, which includes many of the world's most profitable and powerful companies, directly and indirectly emits more than **40 per cent of carbon emissions.**
- The researchers found that peer-reviewed literature on the human mortality costs of carbon emissions converged on the "1,000-tonne rule".
  - The rule is an estimate that a future person is killed prematurely every time 1000 tonnes of fossil fuels are burned.

Global Warming

- "Global warming" denotes the **general alteration of Earth's climate**, characterized by a substantial rise in the planet's temperature due to human activities occurring within a relatively brief timeframe.
- Even a **minimal increase of one degree in temperature** qualifies as an instance of global warming. An increment of 0.4 percent over a century is regarded as a matter of concern.
- The **IPCC (Intergovernmental Panel on Climate Change)**, comprised of 2500 scientists, has monitored the **Earth's temperature increase**, and their findings indicate a 0.6-degree warming within a mere 9-year period.

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