

### NEWSPAPER HIGHLIGHT

China led global coal power expansion in 2021, with about 25,000 MW of new plants, followed by India with about 6,100 MW, reported the Global Energy Monitor which conducts an annual survey of coal power capacity under development or deployment. Worldwide, however, coal-plant capacity under development declined 13% last year. After rising in 2020 for the first time since 2015, total coal power capacity under development slid last year to a record low of 457 gigawatts (GW), from 525 gigawatts. Thirty-four countries are mulling new coal plants, down from 41 countries in January 2021. China, South Korea, and Japan have pledged to stop funding new coal plants in other countries, but China continued to lead globally in domestic development of new coal plants, commissioning more coal capacity than the rest of the world combined.

279 number of candidates who switched parties during the 2022 assembly polls, according to poll rights body Association for Democratic Reforms (ADR). The National Election Watch and ADR analysed the self-sworn affidavits of the candidates and 85 MLAs, who changed parties during 2017 to 2022 and contested the polls in Uttar Pradesh, Uttarakhand, Punjab, Goa and Manipur this year.

32.79 lakh, the number of foreigners to visit India in 2020, despite the country's long spell of nationwide lockdown and other restrictions due to the pandemic, according to the annual report of the Ministry of Home Affairs 2020-21. The maximum number of foreigners who visited India during this period was from the U.S. (61,190) followed by Bangladesh, the U.K., Canada, Portugal and Afghanistan. Other countries include Germany, France, Republic of Korea and Iraq.

The Union government and Netflix kicked off a partnership, with the release of two minute films on seven women change-makers, titled Azadi ki Amrit Kahaniya. They announced the production of more such shorts and a serial on the Freedom Struggle to celebrate 75 years of Independence.

The 193 members of the United Nations General Assembly adopted by consensus on Tuesday a

### TWISTED BILAYER GRAPHENE

1. Researchers from the Indian Institute of Science (IISc), Bengaluru, have discovered that the twisted bilayer graphene may possess a new phase that exhibits what is called charge density wave states. Twistrionics is the study of how the angle (the twist) between layers of two-dimensional materials, such as bilayer graphene, can change their electrical properties.

2. Graphene is an allotrope of carbon consisting of a single layer of atoms arranged in a two-dimensional honeycomb lattice. This 2-dimensional material comprising a single layer of carbon atoms arranged in a hexagonal lattice. It is the building-block of Graphite.

3. Graphene is the world's thinnest, most electrically and thermally conductive material. It is flexible, transparent and incredibly strong. Graphene possesses several interesting properties by itself, and, it can be combined with other materials to form useful devices. One such material is twisted bilayer graphene.

4. **Twisted bilayer graphene (TBG) is made by placing two layers of graphene on top of each other such that they are aligned well, and then twisting one layer so that it makes a well-calibrated, known angle with respect to the former.**

5. When such a twist is given, the lattice shows what is called moire patterns. Moire patterns are wavy fringelike patterns that we see, for example, when two layers of synthetic fabric overlap and move with respect to each other.

### SBI INCREASED MLCR

1. The State Bank of India (SBI), India's largest commercial bank, raised the marginal cost of funds-based lending rates (MCLR) by 10 basis points (bps) across tenures to 7.1%. MCLR, which RBI instituted with effect from April 1, 2016, is the lowest interest rate that a bank or lender can offer. It is applicable to fresh corporate loans and floating rate loans taken before October 2019.

2. **EBLR - The RBI then switched to the external benchmark linked lending rate (EBLR) system where lending rate is linked to benchmark rates like repo or Treasury Bill rates. Banks linked their EBLR to the RBI's repo rate, which declined from 5.40% to 4% since October 2019.** When the RBI hikes the repo rate, EBLR will go up and vice versa.

3. The share of EBLR loans in total advances was 39.2% in December 2021. Raising MCLR - The SBI raising the MCLR signals that the soft rates regime that has prevailed since 2019 may be over. The lending rate revision by SBI is likely to be followed by other banks in the days to come. MCLR-linked loans had the largest share (53.1%) of the loan portfolio of banks as of December 2021.

4. As a result of the increase in MCLR, borrowers who have taken home, vehicle, and personal loans will find their equated monthly instalments (EMIs) rising in the coming months. With the RBI set to withdraw the accommodative policy (the willingness to expand money supply to boost economic growth), lending rates are expected to rise further in the coming months.

5. **Banks expect a hike repo rate - the main policy rate - as the RBI seeks to suck out liquidity from the system to rein in inflation. Indicating upward pressure on interest rates, the yield on 10-year benchmark government bonds has reached 7.15%.** On the other hand, the cost of funds is set to increase, prompting banks to hike lending rates. Deposit rates will also rise meaningfully over the next 1-2 months. This means a fixed deposit holder is sitting on a negative return, as there is high inflation now.

### EPISODICALLY ACCRETING YOUNG STAR

1. Indian astronomers from the Aryabhata Research Institute of Observational Sciences (ARIES) have discovered Gaia 20eae belonging to the extremely rare group of young stars that exhibit episodic accretion. Episodically accreting young stars are young, low-mass stars that have not initiated hydrogen fusion in their core.

resolution requiring the five permanent members of the Security Council to justify their use of the veto. The push for reform, which was greeted with applause in the chamber, was revived by Russia's invasion of Ukraine. The measure is intended to make veto-holders United States, China, Russia, France and Britain "pay a higher political price" when they use the veto to strike down a Security Council resolution.

The Supreme Court turned the heat on Uttarakhand and Himachal Pradesh to take "corrective measures" against the peddling of communal hate in 'dharam sansad' events and warned that the Chief Secretaries of the two States will be held responsible for any "untoward statements" made during these programmes.

In the first year of the pandemic-induced lockdown, helplines run by the Union Home Ministry received over 13,000 distress calls, and 11,000 of them were for food and shelter, says the Ministry's report for 2020-21.

Addressing the annual Raisina Dialogue here, External Affairs Minister S. Jaishankar said the citizens of the world are getting affected by events, such as the pandemic and violence, and reminded the Western guests that there are other challenges in the Indo-Pacific region and that they should look beyond the crisis in Ukraine.

India's net direct tax collections amounted to ₹14,09,640.83 crore for FY22, which is the highest collection ever, signalling that the Indian economy has bounced back after two years of the pandemic, Central Board of Direct Taxes (CBDT) Chairman J.B. Mohapatra said.

Advertisers could be reluctant to spend on Twitter if Elon Musk pushes ahead with plans to promote unfettered speech on the social media platform, analysts said, after the world's richest person clinched a deal to buy the firm for \$44 billion.

A Supreme Court Bench led by Chief Justice of India N.V. Ramana on Tuesday said efforts were under way to improve the infrastructure of courts across the country and the issue may come up for discussion in a conference of Chief Justices and Chief Ministers scheduled in the weekend. The CJI, speaking for the Bench, said the Supreme Court had already collected statistics and

2.They are fuelled by gravitational contraction and deuterium fusion (pre-main-sequence phase of the star). These pre-main-sequence stars are surrounded by a disc from which it steadily feeds on the matter from the disc-shaped region of gas and dust surrounding the star to gain mass. This process is known as mass accretion from the circumstellar disc of the star. On occasions their feeding rate increases.

3.This is known as the periods of enhanced mass accretion from their circumstellar disc. During such episodes, the brightness of the star increases by 4-6 magnitudes in the optical bands. So far 25 such rare groups of stars have been discovered.

4.**Episodic Accretion-Episodic accretion is a process where stars accrete (grow by accumulation) via a disk from a more spherically distributed envelope which adds mass to the disk and makes it unstable on an irregular basis.** Such instability dumps extra material onto the star and the accretion rate and luminosity increase.

#### SELF-AMPLIFYING mRNA VACCINE

1.A self-amplifying mRNA vaccine ARCT-154 - developed by Arcturus Therapeutics Holdings - has shown promising results against Covid-19 in ongoing phase 1/2/3 trials. An mRNA vaccine use messenger RNA that encodes the spike protein of the coronavirus.

2.This means that the mRNA directs the cell to produce copies of the spike protein, so that the immune system will recognise the spike if and when actual infection takes place, and mount a response. A self-amplifying mRNA vaccine is an improvement on the traditional RNA platform. 3.It encodes 4 extra proteins in addition to the vaccine antigen, and these enable amplification of the original strand of RNA once inside the cell. The self-amplifying mRNA vaccines promise the flexibility of plasmid DNA vaccines with enhanced immunogenicity and safety.

4.The key to realizing the full potential of these vaccines is efficient delivery of nucleic acid to the cytoplasm of a cell, where it can amplify and express the encoded antigenic protein. Advantages - The basic advantage is that it requires a smaller dose. The new vaccine can be easier stored, and it has lower cost because its 'self-amplifying' design allows for smaller doses.

#### RAISINA DIALOGUE 2022

1.Prime Minister will inaugurate the 7th edition of the Raisina Dialogue 2022, India's flagship multilateral foreign policy and geo-economics conference. The Raisina Dialogue is an annual conference on geopolitics and geoeconomics addressing issues facing the global community. It takes its name from the Raisina Hill, the seat of the Indian government.

2.The conference is organised by Ministry of External Affairs (MEA) in collaboration with the Observer Research Foundation (ORF). Since its inception, the Raisina Dialogue has emerged as a leading global conference on international affairs featuring the participation of heads of state, ministers, journalists, academics and researchers.

3.**The first Raisina Dialogue was held in 2016 with the theme, "Asia: Regional and Global Connectivity". Raisina Dialogue 2022, based on the theme "Terranova- Impassioned, Impatient, Imperilled", will be modelled along six thematic pillars Rethinking Democracy:** trade, technology and ideology; End of Multilateralism: a networked global order;

4.Water Caucuses: turbulent tides in the Indo-Pacific; Communities Inc: first responders to health, development, and planet; Achieving Green Transitions: common imperative, diverging realities; Samson vs Goliath: the persistent and relentless technology wars.

#### KURIL ISLANDS

1.Japan's Diplomatic Bluebook for 2022 has described the Kuril Islands (which Japan calls the Northern Territories and Russia as the South Kurils) as being under Russia's "illegal occupation". This is the first time in about two decades that Japan has used this phrase to describe the dispute over the Kuril Islands.

2.**Kuril Islands/ Northern Territories: These are a set of four islands situated between the Sea of Okhotsk and the Pacific Ocean near the north of Japan's northernmost prefecture, Hokkaido.** Both Moscow and Tokyo claim sovereignty over them though the islands have been under Russian control since the end of World War II.

3.Basis for these differing claims: According to Tokyo, Japan's sovereignty over the islands is confirmed by several treaties like

**submitted a report on the issue.**

**A group of over 100 retired bureaucrats on Tuesday urged Prime Minister Narendra Modi to call for an end to “politics of hate”. They said his “silence, in the face of this enormous societal threat, is deafening”. In an open letter to Mr. Modi, 108 signatories under the Constitutional Conduct Group highlighted the recent spate of communal tension.**

the Shimoda Treaty of 1855, the 1875 Treaty for the exchange of Sakhalin for the Kuril Islands (Treaty of St. Petersburg), and the Portsmouth Treaty of 1905 signed after the Russo-Japanese war of 1904-05 which Japan had won.

4. Russia, on the other hand, claims the Yalta Agreement (1945) and the Potsdam Declaration (1945) as proof of its sovereignty and argues that the San Francisco Treaty of 1951 is legal evidence that Japan had acknowledged Russian sovereignty over the islands.