

JUNE  
22

# CRUX 10

10 News. 10 Sources. One Place



MK Yadav Sir

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## Centre is scuttling Karnataka's rice scheme, says Cong.

**The Hindu Bureau**  
NEW DELHI

The Congress on Wednesday said the Union government discontinued the sale of foodgrains from the Central pool under the Open Market Sale Scheme (OMSS) to State governments to "scuttle" the Karnataka government's Anna Bhagya Scheme and claimed that the Narendra Modi government was "anti-poor".

The Anna Bhagya Scheme is one of the five pre-poll guarantees of the Congress under which 10 kg rice is promised to every below poverty line family. Now, the Punjab government has come forward to supply the rice.

Congress General Secretary Jairam Ramesh said the Karnataka government was willing to pay the Food Corporation of India

**'The FCI continues to sell rice at ₹2,000 per quintal for ethanol production and blending of petrol. Food security should be of paramount concern at all times'**

₹3,400 per quintal but that window was closed. "But the FCI continues to sell rice at ₹2,000 per quintal for ethanol production and blending of petrol. Food security should be of paramount concern at all times," he said.

A recent order of the FCI had said the sale of wheat and rice under the OMSS (domestic) for State governments is discontinued. However, northeastern States, hill States and States facing law and order situations and natural calamities were exempt from the order.

**Context:** Oppositions alleged that the Union government discontinued the sale of foodgrains from the Central pool under the **Open Market Sale Scheme (OMSS)** to State governments to "scuttle" the Karnataka government Anna Bhagya Scheme and claimed that the Narendra Modi government was "anti-poor".

- The **Anna Bhagya Scheme** is one of the five pre-poll guarantees of the Congress under which 10 kg rice is promised to every below poverty line (BPL) family in the State.
- Now, the Punjab government has come forward to supply the rice required for **Karnataka Anna Bhagya Scheme**.

### Open Market Sale Scheme

- **About:** It refers to **selling of foodgrains by Government / Government agencies** at predetermined prices in the open market from time to time.
- **Objectives:** It aims to **enhance the supply of grains** especially during the lean season and thereby to moderate the general open market prices especially in the deficit regions.
- **Nodal Ministry:** Ministry of **Consumer Affairs, Food and Public Distribution**.
- **Features:** In addition to maintaining buffer stocks and making a provision for meeting the requirement of the Targeted Public Distribution Scheme and Other Welfare Schemes (OWS), Food Corporation of India (FCI) on the instructions from the Government, **sells wheat and rice in the open market from time to time.**
  - The FCI conducts a **weekly auction** to conduct this scheme in the open market using the platform of commodity exchange **NCDEX (National Commodity and Derivatives Exchange Limited)**.
  - The State Governments/ Union Territory Administrations are also allowed to **participate in the e-auction**, if they require wheat and rice outside TPDS and OWS.
- **e- Auction:** For transparency in operations, the FCI has switched over to **e- auction for sale under Open Market Sale Scheme (Domestic)**.
- **3 schemes:** The present form of OMSS **comprises 3 schemes as under:**
  - **Sale of wheat** to bulk consumers/private traders through e-auction.
  - **Sale of wheat** to bulk consumers/private traders through e-auction by dedicated movement.
  - **Sale of Raw Rice Grade 'A'** to bulk consumers/private traders through e-auction.

# Sensex hits all-time high

## ROLLER-COASTER RIDE

## Nifty settles at record close; FPI flows drive the rally



### MOVERS AND SHAKERS

	% change from Dec1*
Tata Motors	32.6
ITC	31.7
Power Grid Corp	16.3
Nestlé India	14.0
Larsen & Toubro	13.8
Infosys	-21.5
Bajaj Finserv	-7.3
SBI	-6.8
Wipro	-6.8
TCS	-6.3

On December 1 last year, Sensex hit its intra-day record peak of 63,583.07; Source: Bloomberg/NSDL  
Compiled by BS Research Bureau

### FPI BOOST



Data up to June 21, 2023

**SUNDAR SETHURAMAN**  
Mumbai, 21 June

The benchmark Sensex hit a new all-time high in intra-day trade on Wednesday, while the Nifty50 index fell short of the milestone by a whisker, propelled by sustained inflows from foreign portfolio investors (FPIs) and gains in index heavyweights.

The Sensex ended the session at 63,523 with a gain of 195 points, or 0.3 per cent, while the Nifty settled at 18,857, adding 40 points, or 0.2 per cent. These were the fresh closing highs for the benchmark indices. HDFC Bank, HDFC, and Reliance Industries accounted

for most of the gains. The Sensex also surpassed its previous life-time high of 63,583, made on December 1, 2022, by hitting 63,588 in intra-day trade on Wednesday. The Nifty, on the other hand, touched an intra-day high of 18,876, just 12 points short of its record high of 18,888. From this year's lows in March, the Sensex and Nifty have gained more than 10 per cent, driven by robust FPI inflows.

Though FPIs were net sellers during the initial part of the year, they have become aggressive buyers since April. So far this year, they have been net buyers of over

₹53,000 crore worth of domestic shares. On Wednesday, FPIs were net buyers to the tune of ₹4,013 crore, while their domestic counterparts bought shares worth ₹550 crore, according to provisional data from the exchanges. Strong macro indicators and optimistic growth outlook have made both domestic and foreign investors bullish on Indian equities, even as valuations have gone past historical levels.

"India's equity market is driven largely by FPI flows, especially passive index flows. India benefits due to its strong macroeconomic outlook and corporate earnings growth, which is expected to record 14 per cent and 15 per cent growth in FY24 and FY25, respectively," said Pratik Gupta, CEO & co-head, Kotak Institutional Equities.

Turn to Page 6 ▶

## FPI inflows help ₹ bounce back

The rupee recovered from a two-day losing streak to gain ground against the dollar on Wednesday. This came as banks sold the Greenback on behalf of exporters and for more foreign fund inflows into domestic equities, dealers said. The rupee settled at 82.04 a dollar on Wednesday as compared to the previous close of 82.12.

6 ▶

**Context:** The benchmark Sensex hit a new all-time high in intraday trade, while the Nifty 50 index fell short of the milestone by a whisker, propelled by sustained inflows from foreign portfolio investors (FPIs) and gains in index heavyweights.

### SENSEX

- **About:** SENSEX is the benchmark index of the Bombay Stock Exchange (BSE) in India.
  - The SENSEX index is made up of 30 of the BSE's largest and most actively traded stocks, and it serves as a gauge for the Indian economy.
  - It is a market capitalization-weighted and float-adjusted.
- **Origin:** Sensex is India's oldest stock index, having been established in 1986 by Standard & Poor's (S&P).
  - It is a bellwether index as well as an investable index that tracks the performance of India's 30 largest and most financially healthy corporations.
  - The SENSEX is re-evaluated twice a year, between June and December.
- **Calculation Method:** When it first started, it was computed using market capitalization, but in September 2003, it switched to a free-float capitalization technique.
  - This strategy is similar to the market-capitalization weighted method, which weights firms based on their percentage of the index's overall market capitalization.
  - The Indian rupee (INR) and US dollar (USD) are used to calculate the SENSEX.
- **Limitations:** Because the index uses the float rather than the outstanding shares of a firm, it excludes restricted stocks that can't be sold easily, such as those held by corporate executives.
- **Significance:** The Sensex is used by many investors across the world as a barometer of the general status of the Indian economy, which has developed significantly in recent decades.

# Solar park scheme gets 2-yr extension

Staff Writer

feedback@livemint.com

NEW DELHI

The ministry of new and renewable energy (MNRE) has extended the scheme for the development of solar parks and ultra mega solar park projects till FY26 instead of FY24. A notification from the ministry said the extension would not entail any additional financial implication.

The scheme was rolled out in December 2014 to support states and union territories set up solar parks with a view to creating the infrastructure needed for setting up of solar power projects.

A solar park is large chunk of land developed with transmission infrastructure, roads, water, drainage and communication network among others, with all clearances.

Under the scheme, the ministry provides central financial assistance (CFA) of up to ₹25 lakh per solar park for prepa-

ration of detailed project report (DPR). Beside this, CFA of up to ₹20 lakh per MW or 30% of the project cost, including grid-connectivity cost, is also provided on achieving the milestones prescribed in the scheme.

The extension follows slow progress in the development of solar parks.

Union minister for MNRE RK Singh told Parliament in March that of the 57 solar parks with an aggregate capacity 39.28 GW, only nine had been fully completed and another eight partially complete as of February 2023.

Reasons for the delay include "challenges in acquisition of clear land, mismatch in timelines between solar projects and power evacuation infrastructure, environmental issues like Great Indian Bustard (an endangered bird) issue, regulatory challenges like non-approval of solar tariff by SERCs, etc," he said.

**A notification from the ministry said the extension would not entail any additional financial implication**

**Context:** New Delhi: The union ministry of new and renewable energy has extended the scheme for 'Development of Solar Parks and Ultra Mega Solar Park Projects' till FY26.

## Key Points

- The extension comes in the backdrop of a **laggard progress** in the development of solar parks.
- The extension would **not entail any additional financial implication**.
- The scheme was scheduled to **end in March 2024**.
- The scheme was **rolled out in December 2014** to support states and union territories in setting up solar parks at various locations in the country with a view to create required infrastructure for setting up of solar power projects.
- A **solar park is large chunk of land developed with common infrastructure facilities** like transmission infrastructure, road, water, drainage, communication network among others, with all statutory clearances.
- Under the scheme, the ministry provides **Central Financial Assistance (CFA) of up to ₹25 lakh per solar park** for preparation of Detailed Project Report (DPR).
- Beside this, **CFA of up to ₹20 lakh per MW or 30% of the project cost**, including grid-connectivity cost, whichever is lower, is also provided on achieving the milestones prescribed in the scheme.

## Solar Park Scheme

- **Origin:** It was launched by the **Ministry of New & Renewable Energy** in 2014.
- **Key Features:** It **proposes to provide financial support** by the Government of India to establish solar parks.
  - It was **proposed to set up at least 25 Solar Parks** and Ultra Mega Solar Power Projects.
  - It **aimed at over 20,000 MW of solar power installed capacity** within a span of 5 years starting from 2014-15.
  - The **capacity of the Scheme has now been enhanced from 20,000 MW to 40,000 MW** in 2017.
  - There are **eight modes** under which the scheme is being implemented.
- **India's largest solar park:** Under this scheme, India's largest solar park of 4750 MW is being set up by **NTPC in Rann of Kutch, Gujarat**.

# Govt withdraws draft livestock Bill as animal rights groups raise red flag

Rights groups have said that proposed draft Bill will open a 'Pandora's Box' of cruelties on animals

HARIKISHAN SHARMA  
NEW DELHI, JUNE 21

THE CENTRE has withdrawn the draft Livestock and Livestock Products (Importation and Exportation) Bill, 2023, which aimed at regulating import and export of animals, including dogs and cats, and proposed to treat livestock as a "commodity", following criticism from animal welfare activists.

This Bill was supposed to replace a 125-year-old law – the Live-stock Importation Act, 1898.

The Department of Animal Husbandry & Dairying, which comes under Ministry of Fisheries, Animal Husbandry and Dairying, issued an office memorandum Tuesday to withdraw the draft Bill.

The existing law is a "pre-constitutional/pre-independence Central Act", and... a "need has been felt to align it with contemporary requirements and circumstances"

On June 7, the department had circulated the draft Bill, seeking public comments and suggestions, drawing severe criticism from animal rights groups over several of proposed provisions.

According to the department, the existing law is a "pre-constitutional/pre-independence

Central Act", and therefore, a "need has been felt to align it with the contemporary requirements and prevailing circumstances related to sanitary and phyto-sanitary measures".

"However, during the consultation, it has been viewed that enough time is required to understand the proposed draft and to make further comments/suggestions. Further, the representations have been made expressing concerns on proposed draft in involving sensitivity and emotions with animal welfare and related aspects, and, hence, would need wider consultation," department said.

"Considering the aforesaid views and with the approval of the competent authority, the proposed draft Bill stands withdrawn," said memorandum is-

sued by Joint Secretary GNSingh.

The draft Bill proposed inclusion of felines and canines in the definition of livestock. It defined livestock as "all equines (all live equine irrespective of purpose, including donkeys, horses, mules, asses, hinnies), bovine (all bovine animals including cattle, buffalo, bullocks or any animals falling in the category of bovidae), caprines, ovines, swines, canines, felines, avian, laboratory animals, aquatic animals and any other animal which may be specified by the Central Government by notification in the Official Gazette from time to time, except those prohibited in any other Act".

In the existing livestock importation law, felines and canines are not included in the definition of livestock.

The proposed draft Bill also defined the livestock and livestock products as a "commodity". It defined "commodity" as livestock, products of livestock origin, livestock genetic material, biological products and pathological material of livestock origin.

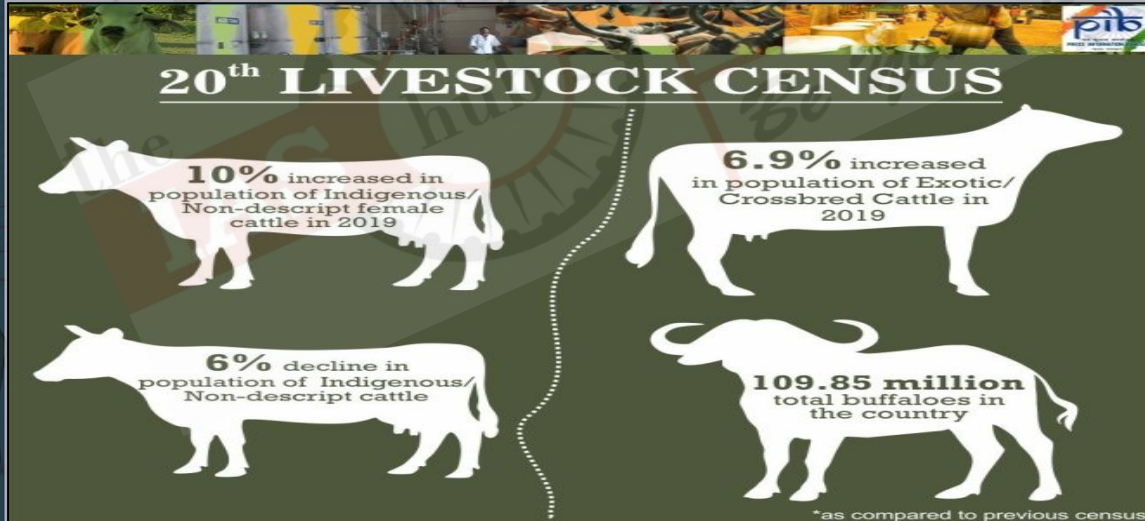
The draft Bill also had provisions to regulate the livestock exports, while the existing law regulates only import of livestock. Besides, the existing law gives powers to the state governments to make rules, while the proposed Bill had no such provisions.

As soon as the draft of the Bill was released in public domain, it drew sharp criticism over several provisions. Animal rights groups said that the proposed draft Bill will open a "Pandora's Box" of cruelties on animals.

**Context:** The Centre has withdrawn the proposed draft of the Livestock and Livestock Product (Importation and Exportation) Bill, 2023.

## Livestock Product (Importation and Exportation) Bill, 2023

- **About:** The Bill is meant to replace the **Live-stock Importation Act, 1898**, and the **Live-stock (Amendment) Act, 2001**.
  - It frames guidelines for the **import and export of live animals**, which has raised concerns among animal lovers.
- **Present law:** The present law that regulates import of live-stock is 125 years old.
  - The **Live-stock Importation Act, 1898**, in force till date, has only 5 Sections: Section 1 (Short title and local extent); Section 2 (Definitions); Section 3 (Power to regulate importation of live-stock), Section 3A (Power to regulate Importation of live-stock products); Section 4 (Power of State Government to make rules); and Section 5 (Protection to persons acting under Act).
- **New proposal:** The earlier law regulates only importation of live-stock, while the proposed **draft Bill has provisions to regulate livestock exports also**.
  - The Section 4 of the proposed Bill **provides the government the power** to make arrangements for promotion and development of exports of livestock and livestock products.
- **Criticism:** The proposed Livestock and Livestock Products [Importation and Exportation] Bill, **allowing the live export of animals from India**, is a blanket free pass for the abuse of millions of animals farmed for food and other uses.



## Joha rice -- the Nutraceutical of choice in diabetes management

**Context:** Scientists explored the **nutraceutical properties of aromatic Joha rice**.

### Key Points

- Joha rice, **aromatic rice cultivated in the Northeastern region of India** is effective in lowering the blood glucose and preventing diabetes onset and hence is an effective nutraceutical of choice in diabetes management.
- Joha is a **short-grain winter paddy** known for its significant aroma and noteworthy taste.
- The traditional claims are that the consumers of Joha rice have **low incidence of diabetes and cardiovascular diseases**, but these needed scientific validation.
- Through in vitro laboratory analysis, they detected two unsaturated fatty acids viz., **linoleic acid (omega-6) and linolenic (omega-3) acid**.
- These essential fatty acids (which human cannot produce) can **help maintain various physiological conditions**.
- **Omega-3 fatty acid prevents several metabolic diseases** such as diabetes, cardiovascular diseases, and cancer. Joha has also proved to be effective in lowering the blood glucose and preventing diabetes onset in diabetic rats.
- The researchers also found that **scented Joha rice has a more balanced ratio of omega-6 to omega-3** in comparison to the widely consumed non-scented variety.
- The ratio of **omega-6 to omega-3 essential fatty acids (EFA)** of required by human beings for maintaining the proper diet is around one.
- They have used this **Joha rice to make rice bran oil**, a patented product that they claim to be effective in diabetes management.
- Besides, Joha rice is also **rich in several antioxidants, flavonoids, and phenolics**.
- Some of the reported bioactive compounds are **oryzanol, ferulic acid, tocotrienol, caffeic acid, catechuic acid, gallic acid, triclin**, and so on, each with reported antioxidant, hypoglycaemic and cardioprotective effects.

# 9th Annual International Day of Yoga led by Prime Minister

**Context:** Prime Minister led the 9th annual **International Day of Yoga** celebrations on 21 June 2023, at the iconic North Lawn of the UN Headquarters in New York City.

- The theme for this year is '**Yoga for Vasudhaiva Kutumbakam**'. "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future".

## **International Yoga Day**

- International Yoga Day is celebrated annually on **June 21**.
- It is a day **dedicated to raising awareness about the numerous benefits of practicing yoga** and promoting its holistic approach to health and well-being.
- Yoga is an **ancient practice** that originated in India and has gained worldwide popularity for its physical, mental and spiritual benefits.
- The history of International Yoga Day **dates back to September 2014** when India's Prime Minister proposed the idea during his address to the United Nations General Assembly.
- He emphasised the importance of yoga as a holistic approach to health and well-being and suggested that **June 21 should be declared as International Yoga Day**.
- His proposal received overwhelming support from the UN member states, leading to the adoption of **June 21 as International Yoga Day by the United Nations General Assembly** on December 2014.

## UNDP partners with DAY-NULM towards empowering women entrepreneurs

**Context:** The **United Nations Development Programme (UNDP)** and the **Deendayal Antyodaya Yojana-National Urban Livelihoods Mission (DAY-NULM)** entered into a collaborative partnership aimed at empowering women to make well-informed career choices in the field of entrepreneurship.

- The partnership will **provide support for women looking to start and expanding their own enterprises**, particularly in sectors such as care economy, digital economy, electric mobility, waste management, food packaging and more.
- Focused on fostering entrepreneurship **development and accelerating enterprise growth**, the three-year project, extendable beyond 2025, will cover eight cities in the initial phase.

### **Deendayal Antyodaya Yojana-National Urban Livelihoods Mission (DAY-NULM)**

- It is a scheme under the **Ministry of Housing and Urban Affairs** that focuses on reducing poverty and vulnerability of the urban poor households.
- Under the scheme urban areas **extends the coverage to all the 4041 statutory cities and towns**, there by covering almost the entire urban population.
- The scheme has **two component one for urban India and other for rural India**:
  - The **Urban component named as Deen Dayal Antyodaya Yojana** will be implemented by the Ministry of Housing and Urban Poverty Alleviation.
  - The **rural component named as Deen Dayal Upadhyaya Grameen Kaushalya Yojana** will be implemented by the Ministry of Rural Development.

# Why this neurodegenerative disease needs 'rare' tag

Anuja.Jaiswal@timesgroup.com

**New Delhi:** Experts and medical practitioners have demanded the inclusion of the progressive neurodegenerative disease — Amyotrophic lateral sclerosis (ALS) — in the national rare disease policy to enable patients to get affordable care and treatment. The demand came ahead of the Global ALS/MND (motor neurone disease) Awareness Day, to be observed on Wednesday.

ALS Care and Support Foundation called for greater attention to the special needs of the ALS community. It has been estimated that around 75,000 to 1,00,000 people with ALS live in India. "ALS affects an estimated 4,50,000 people worldwide with an average survival rate of just two to five years. Every 90 minutes, someone is diagnosed with ALS and every 90 minutes, someone passes away from this disease," an expert said.

Dr Nirmal Surya, leading

## AN EXPERT SAYS

**ALS affects an estimated 4,50,000 people worldwide with an average survival rate of just two to five years. Every 90 minutes, someone is diagnosed with ALS and every 90 minutes, someone passes away from this disease**

neurologist and chairman of the Indian Academy of Neuro-rehabilitation, said: "Imagine a scenario where your mind is razor sharp but you are unable to control your muscle movement. So much so that you gradually lose the power of mobility and speech, the ability to swallow or chew and even breathe. Ultimately, the patient needs permanent ventilator support. This is ALS, the rarest of rare diseases."

The progressive nature of

ALS presents unique challenges, requiring comprehensive and multidisciplinary support, including exorbitant specialised medical care, assistive devices, and access to palliative care services.

"However, it is also true that a person living with ALS can lead a productive life. Early intervention, comprehensive and committed care and support, and advancements in research can significantly enhance the quality of life for those affected with the disease," said Satvinder Kaur, co-founder of the ALS Care & Support Foundation. A prime example is Stephen Hawking, a world-renowned physicist, who lived with ALS for several decades.

Talking to **TOI**, professor M Gourie-Devi, senior consultant neurologist, Sir Ganga Ram Hospital, said that in Western countries, people developed ALS in their 60s while in India it was observed that nearly one-third of patients were younger in the age group

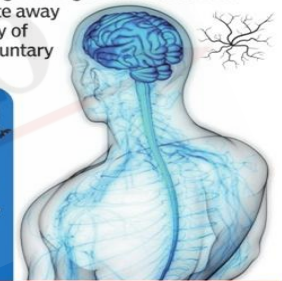
of 40 to 50 years. "About 50% of ALS patients survive for three to five years after the onset of symptoms, while 30 % beyond five years and around 20% may survive longer as it depends on site of onset, rate of progression and availability of assistive devices," she said, adding that patients having difficulty in swallowing and breathing die early.

"By integrating ALS into the policy framework, we can enhance awareness among medical practitioners, thereby enabling early and accurate diagnosis, access to affordable treatment options and assistive devices, and supportive therapies that can improve the quality of life and extend the life-span," said Dr Gourie-Devi.

Prof Rajinder K Dhamija, Director of the Institute of Human Behaviour and Allied Sciences, said: "Focussed attention on the needs of the ALS community aligns with international best practices in rare disease management."

## WHAT IS ALS

Amyotrophic lateral sclerosis (ALS) is a rare condition that progressively damages motor neurons in the brain and spinal cord, stopping them from sending messages to muscles. The muscles gradually weaken, waste away and twitch. Eventually, the ability of the brain to start and control voluntary movement is lost



## SYMPTOMS

Usually it is first noticed in arms, hands, legs or swallowing muscles, which first lose their strength and then their ability to move. As the damage progresses, symptoms spread to other parts of the body and the condition becomes more debilitating

## PREVALENCE

- > Around 75,000 to 100,000 people live with ALS in India
- > It is slightly more common in men than women
- > Prevalence is 4 per 1 lakh population in India
- > Average survival rate is

- just 2 to 5 years after symptoms develop
- > Known to usually affect those in the 60s, the disease, is being diagnosed in those above 40s also
- > No cure or definitive treatment for it

**Context:** Experts and medical practitioners have demanded the inclusion of the progressive neurodegenerative disease - **Amyotrophic lateral sclerosis (ALS)** - in the national rare disease policy to enable patients to get affordable care and treatment.

- The demand came ahead of the **Global ALS/MND (motor neurone disease) Awareness Day**, to be observed on 21st June.

## Amyotrophic lateral sclerosis

- Amyotrophic lateral sclerosis is a **fatal type of motor neuron disease**.
- It is characterized by **progressive degeneration of nerve cells** in the spinal cord and brain.
- It's often called **Lou Gehrig's disease**, after a famous baseball player who died from the disease.
- ALS it is one of the most devastating of the disorders that **affects the function of nerves and muscles**.
- ALS **does not affect mental functioning or the senses** (such as seeing or hearing), and it is not contagious. Currently, there is no cure for this disease.
- ALS most commonly **affects people of any racial or ethnic group** between the ages of 40 and 70, although it can occur at a younger age.

## Scientists from Gujarat institute develop biodegradable paper supercapacitor from seaweed

This supercapacitor can fully charge a device within 10 seconds

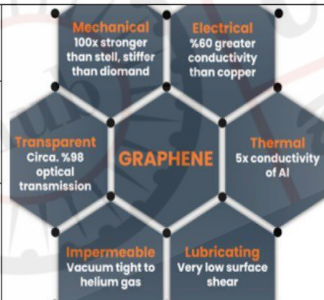


NEXT NEWS >

By DTE Staff  
Published: Wednesday 21 June 2023



Aspect	Description
	Graphene is a <b>one-atom-thick layer of carbon atoms arranged in a hexagonal lattice</b> . It is the <b>thinnest, strongest, and most conductive material</b> in the world, while also being flexible, transparent, and impermeable to gases. It was <b>discovered in 2004</b> , but it has been difficult to produce <b>high-grade large-scale graphene</b> .
Applications	Electronics, sensors, displays, solar panels, batteries, supercapacitors, composites, aerospace, etc.
Market Size	The global graphene market was valued at over <b>\$175 million in 2022</b> and is expected to grow at a CAGR of over 46% between 2023 and 2030
Research and Production	Leading countries in graphene research and production include <b>China, the US, Brazil</b> , the UK, Japan, South Korea, Russia, and Singapore
India's Progress	India's progress in graphene has been <b>slower compared to leading countries like China and Brazil</b> . <ul style="list-style-type: none"> <li>India opened its <b>first Graphene Innovation Centre</b> in Thrissur, Kerala last year (2022)</li> <li>Tata Steel has succeeded in <b>growing graphene (about 50 micrometres large domains)</b> using annealing and extracting atomic carbon from steel surface</li> <li><b>IIT Roorkee-incubated Log 9</b> has patented a technology for graphene-based ultracapacitors</li> </ul>



**Context:** Scientists at Gujarat Energy Research and Management Institute (GERMI) have developed the **thinnest, lightweight and biodegradable paper-based supercapacitor**.

### Key Points

- A supercapacitor is an **electrochemical charge storage device** with a fast charging/discharging cycle, high power density and a longer life cycle.
- This supercapacitor which can **fully charge a device within 10 seconds**, has been developed from seaweed (marine macroalgae).
- The device is of **high tensile strength and performance**, as well as cost-effective, according to the researchers.
- The product can be used in **electronics, memory backup systems, airbags, heavy machines, electric vehicles**, etc.; hence, it holds a huge business prospect.
- Scientists **extracted cellulose nanofibers from seaweed** and reduced them into graphene oxide and zinc oxide.
- Nanowires were **grown over the extracted seaweed cellulose nanofibers** using hydrothermal methods to get the anodic paper supercapacitor.
- The **marine cellulose-based material** used in developing the flexible and thinnest paper supercapacitor can be used in almost all smart electronic devices.
- It can also be a **source of revenue for coastal communities** that cultivate seaweed, an essential commodity for manufacturing the paper supercapacitor, the researchers noted.
- **Seaweeds are macroalgae attached to rock** or other substrata and are found in coastal areas, said Bhutiya.
- They are **classified as chlorophyta (green), rhodophyta (red) and phaeophyta (brown)** on the basis of their pigmentation.
- Among them, **chlorophyta holds more potential components** - carbohydrates, lipids, proteins and bioactive compounds - in the cell wall. Green seaweed has a high amount of a particular type of cellulose in its cell wall.

## LIGHTNING IN ALPS

(Syllabus: GS Paper 1 - Geography)

### Lightning activity in the European Eastern Alps doubled in 40 years. What does this indicate?

Higher frequency of thunderstorms that bring lightning have a link with global warming



NEXT NEWS >

By Preetha Banerjee  
Published: Wednesday 21 June 2023



**Context:** Lightning activity in the higher European Eastern Alps doubled in the 2010s compared to the 1980s, according to a new study.

- Warming in the **European Eastern Alps** and surrounding regions is more pronounced than the rest of Europe.
- Some scientific models have predicted that climate change can be a factor behind the **increase in lightning activity**, making it a good indicator of the climate crisis.
- **More lightning strikes occur in the higher Alps** than the rest of the landscape and the lightning season also begins a month earlier.

#### Alps

- The Alps emerged during the **Alpine orogeny** (mountain-building event), an event that began about 65 million years ago as the Mesozoic Era was drawing to a close.
- Alps are young fold mountains with rugged relief and high conical peaks.
- They are the **most prominent of western Europe's physiographic regions**. Some 750 miles long and more than 125 miles wide at their broadest point between **Garmisch-Partenkirchen, Germany, and Verona, Italy**, the Alps cover more than 80,000 square miles.
- The Alps **extend north from the subtropical Mediterranean coast** near Nice, France, to Lake Geneva before trending east-northeast to Vienna, Austria. There they touch the Danube River and meld with the adjacent plain.
- Because of their **arclike shape**, the Alps separate the marine west-coast climates of Europe from the Mediterranean areas of France, Italy, and the Balkan region.

#### Lightning

- Lightning is a **giant spark of electricity** in the atmosphere between clouds, the air, or the ground.
- In the early stages of development, **air acts as an insulator** between the positive and negative charges in the cloud and between the cloud and the ground.
- When the **opposite charges build up** enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that is known as lightning.
- The flash of lightning temporarily **equalizes the charged regions** in the atmosphere until the opposite charges build up again.
- **Lightning can occur between opposite charges** within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).

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