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MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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INDIAN EXPRESS

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DIGITAL INDIA BILL 2023

(Syllabus: GS Paper 2 – Governance)



In digital Bill, Govt may ban some new tech citing user harm, security

SOUMYARENDRA BARIK
NEW DELHI, SEPTEMBER 28

THE CENTRE is planning to regulate the deployment of emerging technologies and could categorically prohibit some of these new age technologies where it sees a risk to the user, or a national security risk, *The Indian Express* has learnt.

"But, whatever the government decides, its reasons for barring any technology will be recorded in writing," a senior government official said, requesting anonymity since the draft of the Digital India Bill is yet to be finalised, and deliberations are private.

The Digital India Bill, which is the imminent successor to the Information Technology Act, 2000, is a key part of a comprehensive legal framework which encompasses various legislative measures such as the recently-notified Digital Personal Data Protection Act, 2023, the draft Indian Telecommunication Bill, 2022, and a policy addressing the governance of non-personal data.

CONTINUED ON PAGE 2

EXPLAINED

On Govt radar

THE MOTIVATION is to preempt technologies that could have a "disruptive impact" on users. While the government is still considering the emerging technologies, solutions like blockchain and metaverse could be on its radar.

Context: The government is currently developing a comprehensive strategy to oversee the implementation of emerging technologies. **As part of this initiative**, there is a possibility of imposing explicit restrictions on certain cutting-edge technologies, particularly those deemed hazardous to users' well-being or those posing potential **national security threats.**

Digital India Bill 2023

- **Aim**: The Digital India Bill 2023 aims to replace India's existing Information Technology Act of 2000 and provide comprehensive oversight of the digital landscape.
- This Bill will **operate in coordination** with other significant laws and policies, including but not limited to the **Digital Personal Data Protection Act**, the **National Data Governance Policy**, and the Indian Penal Code amendments addressing **cybercrime**.

Provisions of Bill

- **Classification**: The regulations seek to categorize intermediaries, including social media platforms, **e-commerce platforms, AI platforms**, and fact-checking platforms, with specific rules tailored to each category.
- **Risk Assessments for Intermediaries:** Intermediaries will be required to conduct risk assessments and **utilize this data to classify** themselves into relevant categories based on their operations and services.
- **Establishment of a New Internet Regulator**: A new regulatory authority for the internet will be established, akin to existing **bodies like TRAI or SEBI**.
- **Additional Provisions**: MeitY could potentially designate activities such as deliberate misinformation, identity theft, and cyberbullying of children as punishable offenses.
- **Fundamental Rules**: Some of the foundational rules **currently applicable to internet platforms, including safe harbo**r provisions, may undergo modifications in light of these proposed regulations.
- **Penalties for Violations:** The regulations may introduce penalties for violations and user-related harms associated with emerging technologies, encompassing generative **AI platforms like ChatGPT**, as part of the regulatory framework.

Information Technology Act, 2000

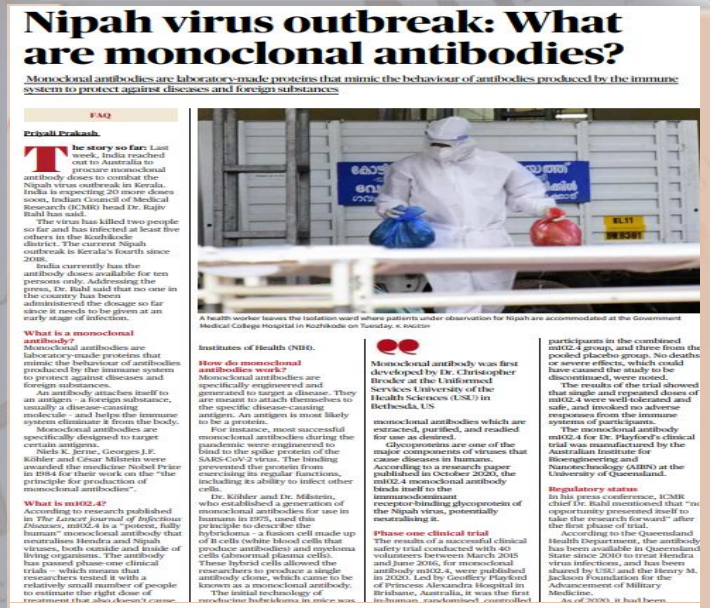
- IT Act, 2000, governs all **activities related to the use of computer resources**.
- It **covers all 'intermediaries'** who play a role in the use of computer resources and electronic records.
- **Section 69 of the IT Act:** It confers on the Central and State governments the power to issue directions to intercept, monitor or decrypt any information generated, transmitted, received or stored in any computer resource.

THE HINDU

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NIPAH VIRUS

(Syllabus: GS Paper 3 – Sci & Tech (Diseases))



Nipah virus outbreak: What are monoclonal antibodies?

Monoclonal antibodies are laboratory-made proteins that mimic the behaviour of antibodies produced by the immune system to protect against diseases and foreign substances

FAQ

Priyali Prakash

The story so far: Last week, India reached out to Australia to procure monoclonal antibody doses to combat the Nipah virus outbreak in Kerala. India is expecting 20 more doses soon, Indian Council of Medical Research (ICMR) head Dr. Rajiv Bahl has said.

The virus has killed two people so far and has infected at least five others in the Kozhikode district. The current Nipah outbreak is Kerala's fourth since 2018.

India currently has the antibody doses available for ten persons only. Addressing the press, Dr. Bahl said that no one in the country has been administered the dosage so far since it needs to be given at an early stage of infection.

What is a monoclonal antibody?

Monoclonal antibodies are laboratory-made proteins that mimic the behaviour of antibodies produced by the immune system to protect against diseases and foreign substances.

An antibody attaches itself to an antigen - a foreign substance, usually a disease-causing molecule - and helps the immune system eliminate it from the body.

Monoclonal antibodies are specifically designed to target certain antigens.

Niels K. Jerne, Georges J.F. Köhler and César Milstein were awarded the medicine Nobel Prize in 1984 for their work on the "the principle for production of monoclonal antibodies".

What is m102.4?

According to research published in *The Lancet Journal of Infectious Diseases*, m102.4 is a "potent, fully human" monoclonal antibody that neutralises Hendra and Nipah viruses, both outside and inside of living organisms. The antibody has passed phase-one clinical trials – which means that researchers tested it with a relatively small number of people to estimate right dose of treatment that also doesn't cause

A health worker leaves the isolation ward where patients under observation for Nipah are accommodated at the Government Medical College Hospital in Kozhikode on Tuesday. K. SOJITH

Institutes of Health (NIH).

How do monoclonal antibodies work?

Monoclonal antibodies are specifically engineered and generated to target a disease. They are meant to attach themselves to the specific disease-causing antigen. An antigen is most likely to be a protein.

For instance, most successful monoclonal antibodies during the pandemic were engineered to bind to the spike protein of the SARS-CoV-2 virus. The binding prevented the protein from exercising its regular functions, including its ability to infect other cells.

Dr. Köhler and Dr. Milstein, who established a generation of monoclonal antibodies for use in humans in 1975, used this principle to describe the hybridoma - a fusion cell made up of B cells (white blood cells that produce antibodies) and myeloma cells (abnormal plasma cells). These hybrid cells allowed the researchers to produce a single antibody clone, which came to be known as a monoclonal antibody.

The initial technology of producing hybridoma in mice was

Monoclonal antibody was first developed by Dr. Christopher Broder at the Uniformed Services University of the Health Sciences (USU) in Bethesda, US

monoclonal antibodies which are extracted, purified, and readied for use as desired.

Glycoproteins are one of the major components of viruses that cause diseases in humans. According to a research paper published in October 2020, the m102.4 monoclonal antibody binds itself to the immunodominant receptor-binding glycoprotein of the Nipah virus, potentially neutralising it.

Phase one clinical trial

The results of a successful clinical safety trial conducted with 40 volunteers between March 2015 and June 2016, for monoclonal antibody m102.4, were published in 2020. Led by Geoffery Playford of Princess Alexandra Hospital in Brisbane, Australia, it was the first in-human, randomised, controlled

participants in the combined m102.4 group, and three from the pooled placebo group. No deaths or severe effects, which could have caused the study to be discontinued, were noted.

The results of the trial showed that single and repeated doses of m102.4 were well-tolerated and safe, and invoked no adverse responses from the immune systems of participants.

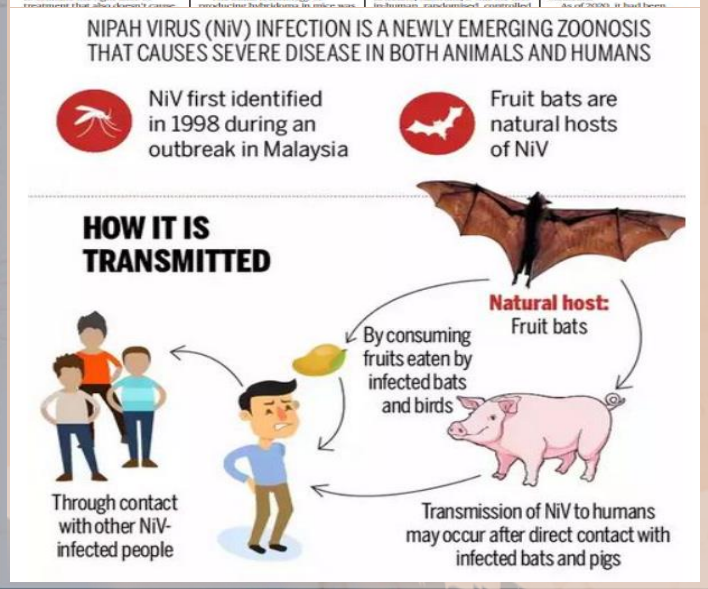
The monoclonal antibody m102.4 for Dr. Playford's clinical trial was manufactured by the Australian Institute for Bioengineering and Nanotechnology (AIBN) at the University of Queensland.

Regulatory status

In his press conference, ICMR chief Dr. Bahl mentioned that "no opportunity presented itself to take the research forward" after the first phase of trial.

According to the Queensland Health Department, the antibody has been available in Queensland State since 2010 to treat Hendra virus infections, and has been shared by USU and the Henry M. Jackson Foundation for the Advancement of Military Medicine.

As of 2020, it had been



Context: In a significant development, **India has taken proactive** steps to address the **Nipah virus outbreak in Kerala**. Last week, the Indian government initiated contact with Australia to secure monoclonal antibody doses, a crucial resource in combating the deadly virus.

Nipah Virus (NIV)

- **About:** It is a zoonotic virus, meaning it can be transmitted from animals to humans.
- **Responsible for Nipah Virus encephalitis**: RNA virus belonging to the Paramyxoviridae family, Henipavirus genus, and is closely related to the Hendra virus.
- **Initial occurrence of the outbreak:** Malaysia (1998) and Singapore (1999).
- The estimated case **fatality rate for the Nipah Virus ranges from 40% to 75%**, which can vary depending on the outbreak's local epidemiological surveillance and clinical management capabilities.
- **Spread:** The virus can be transmitted to humans either through contact with infected animals, consumption of contaminated food, or through direct person-to-person transmission. **Fruit bats** are recognized as the natural reservoir of the virus.
- **Symptoms**: Acute encephalitis and respiratory illnesses
- **Prevention**: Currently, there are **no vaccines** for both humans and animals.

PIB

Sept 27

UNFPA
(Syllabus: GS Paper 1 – Social Issue)

India Ageing Report 2023 Unveils Critical Insights into Elderly Care in India

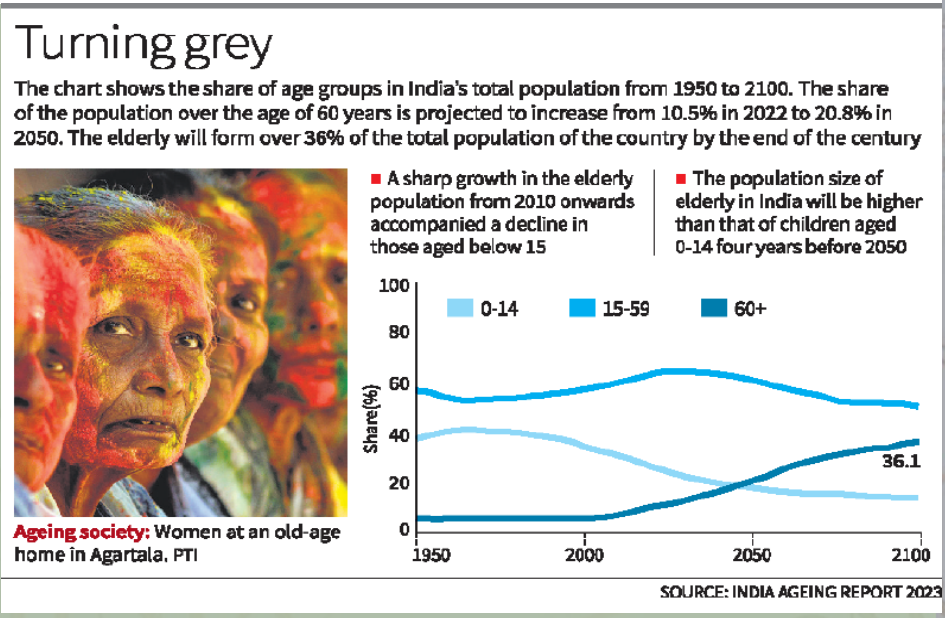
Context: The United Nations Population Fund, India, has **released the "2023 India Ageing Report,"** which projects a significant increase in the elderly population in India.

Major Findings of the Report

- **Elderly Population:** The population of people aged 80+ years is projected to grow by around 279% between 2022 and 2050.
- **Elderly Ppopulation share**: In 2050, it is projected that the elderly demographic in India will comprise more than 20% of the overall population, which marks a significant increase from the current share of approximately 10% in 2021.
- **Gender Differences in Life Expectancy**: Women, on average, have a longer life expectancy compared to men, with variations across states.
- **Inter-State Variations**: States in southern India and some northern states like Himachal Pradesh and Punjab report a higher share of elderly population compared to the national average in 2021.

UN Population Fund (UNFPA)

- **About**: Originally known as the United Nations Fund for Population Activities from 1969 to 1987.
- It is a trust fund and it is the largest international source of assistance for population programs.
- **Regulated by**: United Nations Development Programme (UNDP).
- **Establishment**: 1969



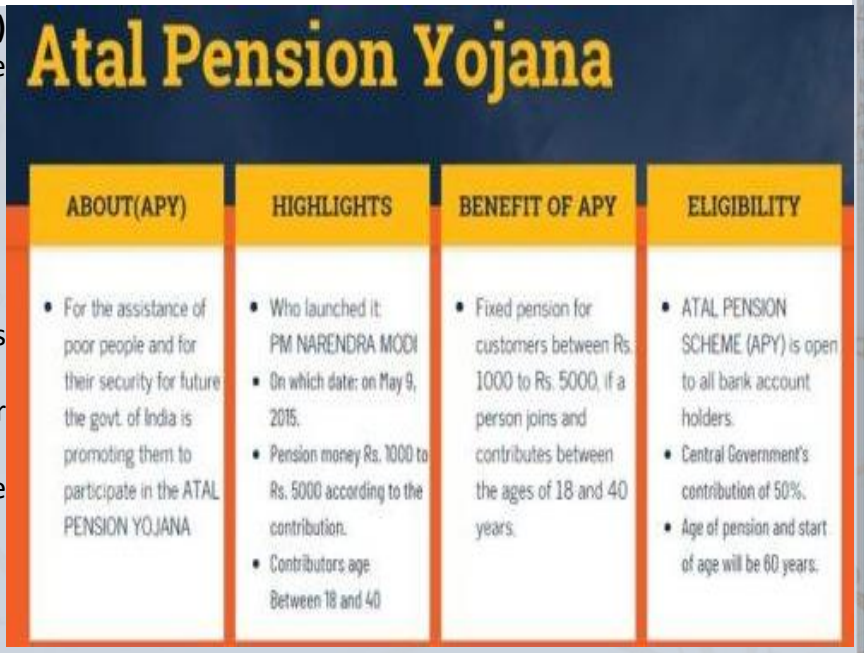
International Institute for Population Sciences (IIPS)

- **About:** IIPS is a prominent research and training institution specializing in population studies, Located: Mumbai, India.
- **Establishment**: 1956 through collaboration between the Government of India, the United Nations, and the Sir Dorabji Tata Trust.
- **Nodal Ministry**: Ministry of Health & Family Welfare
- **Regional Center**: IIPS serves as a regional center for the Asia and Pacific region, making it a hub for population research and studies in this geographic area.

ATAL PENSION YOJANA
(Syllabus: GS Paper 2 – Govt Scheme)

PFRDA asks govt to hike guaranteed pension under Atal Pension Yojana

Context: The Pension Fund Regulatory and Development Authority **(PFRDA)** recently penned a letter to the government, seeking an enhancement in the guaranteed pension amount provided by the **Atal Pension Yojana (APY)**.



Atal Pension Yojana (APY)

- **Launched:** 2015
- **Nodal Ministry:** Ministry of Finance
- **Administered By:** Pension Fund Regulatory and Development Authority
- **Eligibility:** Any Indian citizen in the age group of 18-40 years having savings bank account/ post office savings bank account.
- **Aim:** To provide social security for the people working in an unorganised sector as people working in such sectors mainly belong to a low-income group.
- **Coverage:** The Scheme has been implemented comprehensively across the country covering all states and Union Territories.
- **Guaranteed Pension**: 1000 to 5000 per month from the age of 60 years.

Pension Fund Regulatory and Development Authority

- **About:** It is a statutory regulatory body set up under PFRDA Act enacted in 2014.
- **Objective**: To promote old age income security by establishing, developing, and regulating pension funds and to protect the interests of subscribers to schemes of pension funds and related matters.
- **Nodal Ministry**: Ministry of Finance.
- **Headquarters:** New Delhi
- **Composition:** Chairperson and not more than six members, of whom at least three shall be Whole-Time Members, to be appointed by the Central Government.

HINDUSTAN TIMES Page 7

NATIONAL BOARD FOR WILD LIFE

(Syllabus: GS Paper 3 – Env and Eco)

Wildlife board's key panel to take call on how to conserve grasslands

Jayashree Nandi
letters@hindustantimes.com

NEW DELHI: The standing committee of the national board for wildlife will take a call on how to conserve disappearing grasslands in the country.

Not recorded or protected as forests, but supporting critical wildlife species, grasslands are on the brink, at least three standing committee members told the panel headed by Union environment minister Bhupender Yadav.

"The maximum number of threatened species such as Great Indian Bustard, Lesser Florican, Caracal etc. are found in grasslands. The grassland ecosystems are suffering most from habitat loss and degradation. It will be too late if there is no focus given to conservation of these ecosystems," HS Singh, former principal chief conservator of forests (PCCF) and member of NBWL informed the panel on August 29, minutes of the meeting dated September 20 show.

Members said while there is an administrative framework for the conservation of habitats of larger faunal species like tigers, elephants, wetlands, corals, mangroves etc. both in the ministry and also in the states, there is none for grasslands.

Member secretary of NBWL, Bivash Pandav, said that as per the Indian Grassland and Fodder Research Institute, Jhansi, a national institute under the control of Indian Council of Agricultural Research, over 100 million hectares of grasslands stand degraded. "Many natural grasslands have either degraded or lost due to agricultural expansions, overgrazing, large areas being converted to plantations/ protected areas/ industrial establishment," he said.



There are five grasslands which have existed in the country for centuries. AP

The five ethnic grasslands which have existed in the country for centuries are Banni in Gujarat, Shola in the Western Ghats, the Thar desert in Rajasthan and Gujarat, the Terai, and Kangeyam in Tamil Nadu.

The Indian Council of Forestry Research and Education (ICFRE), Dehradun, has suggested a site-specific GIS plan depending upon the existing grasslands. Pandav recommended that the Indian Forest Survey Report (IFSR) consider the inclusion of grasslands as a distinct and separate chapter in its biennial report.

"This would enable the generation of real-time data pertaining to these ecosystems, ensuring a more comprehensive and up-to-date assessment. To enhance our efforts in preserving and managing tropical grasslands, there is a proposal to establish a dedicated cell specifically tasked with the responsibility of overseeing and addressing matters related to these ecosystems," he said.

Another member, professor R Sukumar from Indian Institute of Science, said that grasslands have suffered significant damage due to extensive plantation activities apart from invasion by weeds, particularly in Western Ghats. The standing committee decided that the environment ministry will organise a workshop on the conservation of grasslands and invite suggestions from experts. The report of the workshop shall then be placed before the committee.

The issue of conserving grasslands and other ecosystems is particularly significant because on August 4, the Centre notified the Forest Conservation Amendment Act 2023. One of the contentious provisions of the law is that it exempts unrecorded deemed forests from the modified law on forest conservation.

Forest governance in India was majorly influenced by a Supreme Court judgement in 1996 in TN Godavarman vs Union of India, in which the court interpreted the meaning of forest as its dictionary definition, expanding the purview of the forest conservation law. The December 1996 judgment said forests will not only include forest as understood in the dictionary sense, but also any area recorded as forest in official records, irrespective of ownership. This brought hope to recognise ecologically rich land such as grasslands, so called wastelands, scrub forests, etc that were not recorded as forests in government records but still needed to be protected because they were significant natural features. But the FC Amendment Act states that it will recognise land that has been declared or notified as a forest in accordance with the provisions of the Indian Forest Act, 1927 or under any other law.

Context: National **Wildlife Board's Standing Committee** to Decide Conservation Strategies for Vanishing Grasslands.

- Many **natural grasslands have either degraded or lost** due to agricultural expansions, overgrazing, large areas being converted to plantations / protected areas/ Industrial establishment.
- The **issue of conserving grasslands** and other ecosystems is particularly significant because on August 4, the Centre notified the **Forest Conservation Amendment Act 2023.**

National Board For Wild Life (NBWL)

- It is a **statutory organization** constituted in 2003 under the **Wildlife Protection Act**,
- 1972 (2003 Amendment)
- It is **chaired by the Prime Minister** and its vice chairman is the **Minister of Environment.**
- **Mandate:** The Board is responsible for the promotion of conservation and
- development of wildlife and forests.
- It is responsible for publishing status reports of wildlife at **least once in 2 years**.
- **No alteration of boundaries** in national parks and wildlife sanctuaries can be done
- without recommendation of the NBWL.

Forest Conservation Amendment Act 2023

- **Exempted Categories of Land**: The Act exempts some types of land from the Act, including forest land along a railway line or a public road maintained by the government.
- **Assignment/Leasing of Foreign Land:** The Actl extends the prior approval requirement for assigning forest land to all entities, including government-owned ones. The approval must be subject to terms and conditions prescribed by the central government.
- **Land Under the Purview of the Act**: It defines forest land as either land that is notified as a forest under the IFA, 1927 or any other law, or land that is notified as a forest on or after Oct 25, 1980, in a government record.
- **Permitted Activities in Forest Land**: The Act restricts de-reservation of forests or use of forest land for non-forest purpose**s, but the central government may approve such use with conditions.**

PIB

Sept 27

GREEN AMMONIA

(Syllabus: GS Paper 3 – ENV AND Eco)

Green Ammonia Imported through VOC Port, Tamil Nadu for the first time

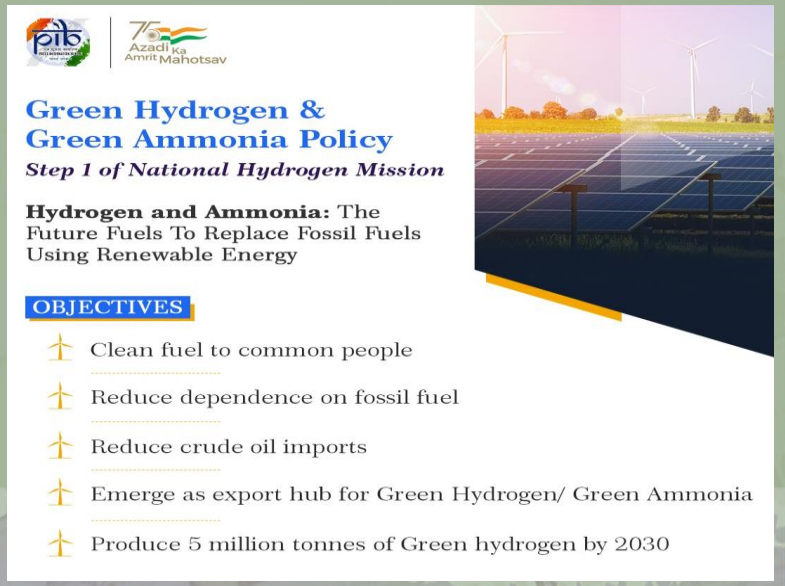
- **Context**: Recently, **Chidambaranar Port Authority** , Tamil Nadu successfully handled 3×20 ISO Green Ammonia Containers, **weighing 37.4 tons of Green Ammonia**, from Damietta Port, Egypt.

Green Ammonia

- **Ammonia**: Ammonia, a sharp-smelling gas, plays a pivotal role in the manufacturing of agricultural fertilizers.
- **Green Ammonia**: Green ammonia production refers to a process where the creation of ammonia is entirely reliant on renewable energy sources and is devoid of carbon emissions.
- **Production**: Traditionally, ammonia is **primarily synthesized** from **methane, water**, and air through a combination of steam methane reforming (SMR) to produce hydrogen and the Haber process.
- **Green ammonia involves** slashing emissions from ammonia production by taking natural gas out of the equation and instead making hydrogen by splitting water with electricity sourced from renewables.
- The rest of the **Haber-Bosch process** remains the same, powered by renewable electricity.

The Haber-Bosch Process

- The typical ammonia production method involves extracting hydrogen from natural gas using steam, which generates carbon dioxide (CO_2) as a by-product.
- Subsequently, this hydrogen is combined with nitrogen from the atmosphere under high pressure and elevated temperatures, a process known as the Haber-Bosch process.



DTE Sept 27

MGNREGS
(Syllabus: GS Paper 3 – ECONOMY)

Monsoon 2023: What's pushing demand for work under MGNREGS?

Context: During this monsoon season, an analysis reveals that there **has been a significant increase in the demand** for rural employment through the Mahatma Gandhi National Rural Employment Guarantee Scheme **(MGNREGS)** when compared to previous years.

- According to the India Meteorological Department (IMD), **29 percent of districts** — or 210 of India's 713 districts — are facing a rainfall deficit.
- **In states such as** Maharashtra, Gujarat, Assam, Arunachal Pradesh, Tamil Nadu and Puducherry, the demand has remained higher than that of COVID-19 years.



Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)

- **Objective: Guaranteed Right to Work:** MGNREGS is a demand-driven scheme, that seeks to provide guaranteed 100 days of wage employment per year to every rural household whose adult members volunteer to do unskilled manual work.
- **Features:** Legal right to work, a time-bound guarantee of work and unemployment allowance (within 15 days), Decentralised planning – i.e. Gram Sabha recommends work, demand-driven scheme.
- **MGNREGA Act, 2005:** It specifies a list of works that can be undertaken to generate employment such as water conservation, land development, construction, agriculture.

- **Role of MGNREGA in addressing rural distress:** Jobs to unskilled/semi-skilled, Reduction in poverty levels, Women labour force participation, Benefits to agri-sector, Rural Development, Creation of rural assets, Reviving MSME sector.
- **MGNREGA: Challenges:** Employment provided remains below guaranteed minimum, Non-payment of unemployment allowance, Low wage rate, Corruption and leakages, Poor quality of assets and inefficient monitoring and maintenance, Regional disparity, Too much centralisation weakening local governance, Insufficient budgetary allocation.

TIMES OF INDIA Page 1

GREEN REVOLUTION

(Syllabus: GS Paper 2 – Economy)

MS, who brought food security to India, dead

Father Of Green Revolution To Organic Advocate

U.Tejonmayam@timesgroup.com



Geneticist MS Swaminathan who led India's push in the 1960s to become grain surplus, promoting the use of hybrid varieties and chemical fertilisers as the need of the hour, passed away

FULL COVERAGE: P 16

at his residence in Chennai at 11.15am Thursday. He was 98.

Swaminathan convinced the government that the high-yielding dwarf wheat which US scientist Norman Borlaug introduced in Mexico was the answer to India's grain shortage. He adapted the seeds to suit Indian conditions and trained farmers in their cultivation. In Punjab alone, the wheat yield increased nearly three-fold in five years – from 1.9 million tonnes in 1965-66 to 5.2 million tonnes in 1970-71.

Swaminathan was lauded as the 'Father of the Green Revolution'. But he knew even then that intensive use of fertiliser was a short-term measure to tide over near-famine conditions. In later years, he batted for what he called an Evergreen Revolution through organic farming.

▶1943 Bengal famine, P 16

'Appa knew the power of women with knowledge'

Your appa changed our lives": Those voices of women farmers I met Wednesday in a Villupuram village 150km from Chennai have been echoing in my mind. They were encouraged by my father to start a group for knowledge and resource sharing to increase production, **writes Soumya Swaminathan**.



He believed that when women were empowered with knowledge, they would care for crops without harming the environment, and bulk up yields.

▶Read Tribute On P 16

Context: Dr. **M.S. Swaminathan**, a renowned geneticist who spearheaded India's agricultural transformation in the **1960s by advocating for the adoption of hybrid crop** varieties and chemical fertilizers to achieve self-sufficiency in grain production, has sadly passed away.

Green Revolution in India

- **In India led by**: M.S. Swaminathan (Father of green revolution in India).
- **Initiated by**: Intensive Agriculture District Program (IADP) as an experimental project.
- This program was implemented in **seven districts across India**.
- **M.S. Swaminathan Invites Norman:** Norman Borlaug proposed a revolution similar to those witnessed in Mexico and Japan for Indian agriculture.
- **Launch of the High-Yielding Variety (HYV) Program:** This pivotal moment marked the inception of the High-Yielding Variety (HYV) program, which played a central role in the Green Revolution.

Father of Green Revolution

- **Begging Bowl:** In 1940, India earned the label of a "begging bowl" from Richard Bradly.
- He initiated the Green Revolution during the 1960s, and he is globally recognized as the **'Father of the Green Revolution.'**

Objectives of Green Revolution

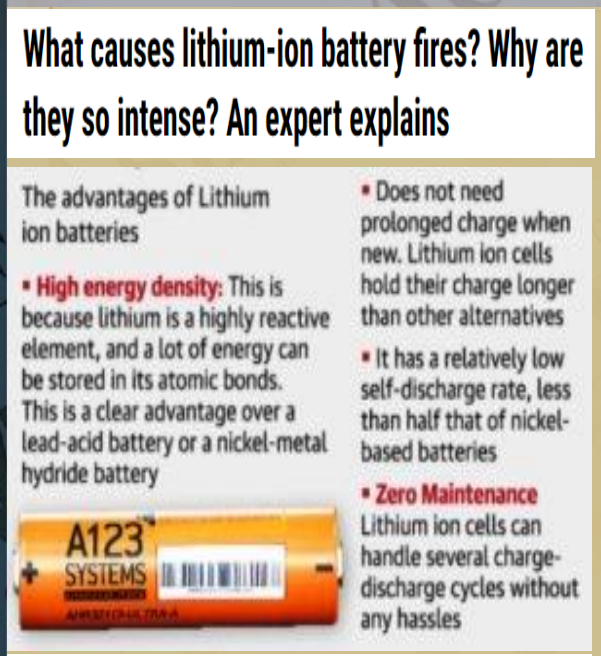
- **Short Term:** The revolution was launched to address India's hunger crisis during the second Five Year Plan.
- **Long Term**: The long term objectives included overall agriculture modernization based on rural development, industrial development; infrastructure, raw material etc.

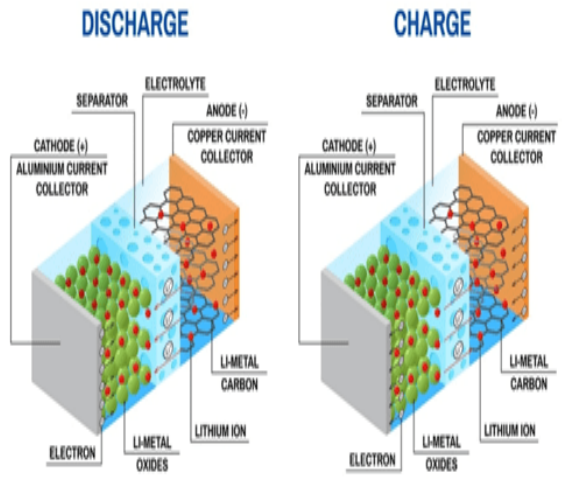
DTE

Sept 27

LI-ION BATTERY

(Syllabus: GS Paper 3 – Sci and Tech)





Context: In the **recent month, Australia has witnessed** a concerning trend with at least two significant lithium-ion battery fires.

- When **a lithium-ion battery fire breaks out**, the damage can be extensive. These fires are not only intense, they are also long-lasting and potentially toxic.
- The reality is that **lithium-ion batteries in electric vehicles** are very safe. In fact, from 2010 to June 2023, only four electric vehicle battery fires had been recorded in Australia.

About Li-ion Battery

- **Type**: rechargeable battery.
- **Battery Structure**: Electrolyte and Electrodes in Li-Ion Batteries
- The **Nobel Prize in Chemistry for 2019** was collectively granted to John B. Goodenough, M.M Stanley Whittingham, and Akira Yoshino in recognition of their contributions to the advancement of lithium-ion batteries.
- **Applications**: Electronic gadgets, Electric Vehicle, Tele-communication, Aerospace, Industrial applications

Li-ion Battery Recycling Technology

- This technology is used to extract valuable materials from discarded batteries in an efficient and environmentally friendly way.
- **Indigenous Technology**: To be capable of handling various types of discarded Li-ion batteries.
- **Highly Efficient**: Capable of extracting over 95% of Lithium, Cobalt, Manganese, and Nickel, yielding around 98% pure oxides/carbonates.
- **Developed By**: Centre of Excellence on E-waste Management.
- **Mission LiFE**: It is India's global initiative to combat climate change and promote sustainable living.

LIVEMINT

Page 8

LINE OF ACTUAL CONTROL

(Syllabus: GS Paper 3 – Security)

India moves to secure key flashpoint at LAC

Rahul Singh
letters@hindustantimes.com

NEW DELHI: Racing to reshape the strategic landscape of Ladakh, where China's predatory conduct and military ambitions have led to a lingering border spat, India is on the verge of completing an ambitious project to provide much-needed alternative connectivity to a remote, strategically important outpost near the contested Line of Actual Control (LAC), top officials aware of the matter said on Thursday.

The new road to Daulat Beg Oldi (DBO), India's northernmost military base, will permit movement of soldiers, weapons and logistics to reinforce the front lines. The new road cannot be sighted from across the LAC, an advantage denied by the only existing road to DBO from Darbuk, said one of the officials requesting anonymity. And the fact that it is farther away from the LAC also means that it is less vulnerable to attacks from across the line.

It will be ready to support critical military movement by November-end and is expected to be fully blacktopped in a year, he added. Around 2,000 people are working on meeting the deadline.

The construction of the 130km road from Sasoma in the Nubra Valley to DBO near the Karakoram Pass has entered its final and most challenging phase that will require the Border Roads Organisation (BRO) to finish a stretch in steep glaci-

on the Shyok River, Hindustan Times has learnt.

Work on the Sasoma-Saser La-Saser Brangsa-Gapshan-DBO road gathered momentum three years ago in the backdrop of escalating military tensions between India and China: the two countries have been locked in a standoff since May 2020 and a full resolution of the border crisis through ongoing negotiations still appears elusive.

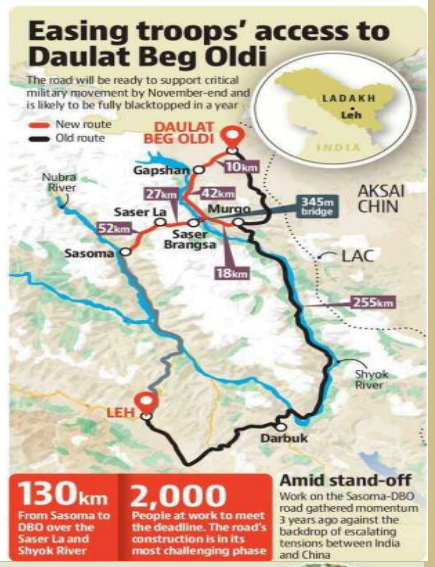
Depsang, which falls in the DBO sector, is one of the problems areas.

"Latest technologies are being employed to clear construction hurdles in the final lap," said a second official, who also asked not to be named. The road falls under Hardness Index-III, which is BRO's topmost classification for tough projects.

The existing 255km Darbuk-Shyok-Daulat Beg Oldi (DS-DBO) road runs close to the LAC. Sasoma and Darbuk can be reached from Leh via two different road axes.

Several key sections of the Sasoma-Saser La-Saser Brangsa-Gapshan-DBO road have been completed, the officials said, sharing granular details with HT.

Of the 52km stretch between Sasoma and the 17,600-foot Saser La, 46 kilometres have been blacktopped and only 6 kilometres remain, but this glaciated patch is the most difficult to build and BRO is using geocells (three-dimensional, expandable panels made of





Context: In a significant move set to redefine the **geopolitical dynamics of Ladakh**, India is nearing the final stages of a major infrastructure project aimed at bolstering connectivity to a crucial and isolated outpost near the disputed **line of Actual Control (LAC)**.

- This initiative comes as a response **to China's assertive actions and military** aspirations in the region, which have exacerbated an ongoing border dispute.

Line of Actual Control (LAC)

- **About**: The LAC is the demarcation that separates Indian-controlled territory from Chinese-controlled territory known as **Mc Mohan Line.**
- **Three Areas:** Western (Ladakh, Kashmir),
  - Middle (Uttarakhand, Himachal) and
  - Eastern (Sikkim, Arunachal).
- As **LAC is not fully and officially demarcated**, it has led to differing perceptions regarding the alignment, with China making territorial claims in the following areas.
- The **countries disagree on the exact location** of the LAC in various areas, so much so that India claims that the LAC is 3,488 km long while the Chinese believe it to be around 2,000 km long.

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