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THE HINDU Page 1

GREAT INDIAN BUSTARD

(Syllabus: GS Paper 3 - Env & Eco)

Are critically endangered Great Indian Bustards now migrating to Pakistan?

SPECIAL

Mohammed Iqbal
JAIPUR

The recent sighting of three Great Indian Bustards (GIBs) deep in Pakistan's Cholistan desert has given rise to speculation that the endangered birds might have flown across the international border from India's Desert National Park (DNP). GIBs are critically endangered in Pakistan because of lack of protection and rampant hunting.

An Islamabad-based wildlife photographer, Syed Rizwan Mehboob, released pictures and a video of the GIBs after spotting them in southern Punjab province's Cholistan game reserve earlier this month. Though he did not claim that the GIBs had arrived from India, environmental activists in Jaisalmer district say the birds might have migrated due to their shrinking habitat.



Beyond borders: A Great Indian Bustard clicked in Pakistan's Cholistan reserve by Syed Rizwan Mehboob.

Conservation project

The GIB – the State bird of Rajasthan – is considered India's most critically endangered bird and is protected under the Wildlife Protection Act. Its population of about 150 in Rajasthan accounts for 95% of its total world population.

The captive breeding of GIBs was taken up in the DNP through a project executed by the Dehradun-based Wildlife Institute of India in 2019. As many as 24 GIB chicks are being reared in DNP by a team supported by the International Fund for Houbara Conservation of United Arab Emirates.

As Rajasthan shares the international border with Pakistan's Sindh and Punjab provinces, it is suspected that the GIBs might have flown across to the neighbouring country's desert amid fears that they could become easy prey for the poachers there.

CONTINUED ON » PAGE 10

Context: The recent sighting of three Great Indian Bustards (GIBs) deep in Pakistan's Cholistan desert has given rise to speculation that the endangered birds might have flown across the international border from India's Desert National Park (DNP).

Great Indian Bustard

- **About**: It is the State bird of Rajasthan and is considered India's most critically endangered bird.
- **Flagship species:** It is considered the flagship grassland species, **representing the health of the grassland ecology.**
- **Habitat**: Its population is **confined mostly to Rajasthan and Gujarat.** Small populations occur in Maharashtra, Karnataka and Andhra Pradesh.
- **Threats**: The bird is under constant threats due to **collision/electrocution with power transmission lines,** hunting (still prevalent in Pakistan), habitat loss and alteration as a result of widespread agricultural expansion, etc.
- **Protection Status:**
  - **International Union for Conservation of Nature Red List:** Critically Endangered
  - **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**: Appendix I
  - **Convention on Migratory Species (CMS):** Appendix I
  - **Wildlife (Protection) Act, 1972:** Schedule 1
- **Concerns:** The grassland habitat in the Cholistan desert, where the GIBs were killed, is very similar to the habitat in R**ajasthan's Desert National Park (DNP), where the GIB's last remnant wild population is found.**
  - As Rajasthan shares the **international border with Pakistan**'s Sindh and Punjab provinces, the birds will **become an easy prey for the gun-toting poachers there.**
  - The hunting of the rare bird will not only drastically reduce India's GIB population, bu**t will also affect the desert ecosystem.**

Government's Initiatives:

- **Integrated Development of Wildlife Habitats:** It is kept under the **species recovery programme under the Integrated Development of Wildlife Habitats** of the Ministry of Environment, Forests and Climate Change (MoEFCC).
- **Habitat Improvement and Conservation Breeding of Great Indian Bustard-An Integrated Approach by MoEFCC:** The objective of the programme is to build up a captive population of Great Indian Bustards and to release the chicks in the wild for increasing the population.
- **Project Great Indian Bustard:** Rajasthan government has launched 'Project Great Indian Bustard' with an aim of constructing breeding enclosures for the species and developing infrastructure to reduce human pressure on its habitats.

BUSINESS STANDARD

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RABI AND KHARIF CROPS

(Syllabus: GS Paper 3 - Agriculture)

Late paddy harvesting delays sowing of wheat

SANJEEB MUKHERJEE
New Delhi, 21 October



The sowing of rabi crops continued at a steady pace as farmers hurried to make the best use of the residual soil moisture owing to rain in October.

However, wheat sowing is yet to start due to a delayed harvest of paddy in the northern states.

Paddy harvesting has been delayed in the main states of Punjab, Haryana, UP and even Madhya Pradesh because of the late withdrawal of the southwest monsoon, which has left the fields wet.

Post-monsoon rain in India between October 1 and 21, according to the India Meteorological Department (IMD), was almost 73 per cent more than normal with the bulk of it falling in UP, Uttarakhand, Haryana, Rajasthan, and Madhya Pradesh.

Traders say in many places farmers are waiting for a few more days of bright sunshine before going in for extensively harvesting paddy so that they can get full value for the crop.

Paddy, with a high moisture content, or of an inferior quality owing to a prolonged exposure to moisture, fetches lower prices in the market. In some places the buyer insists that the paddy is adequately dried, which leads to an additional expenditure for the farmer.

Wheat is sown in around 30.5 million hectares each year, but this year, the talk in trade circles is that there could be a 10-15 per cent increase in acreage because farmers may shift from crops such as chana and lentil (masur) to wheat.

Among other crops, though it is early days, the acreage of mustard, which is the biggest oilseed grown during the rabi season, is almost 41 per cent more than last year while that under grams is around 86 per cent more than last year. Mustard is sown in around 6.4 million hectares in the full season and market sources say like in wheat, here too, there could be a 5-10 per cent jump in the area covered this year.

Meanwhile, in the case of wheat, the Centre last week raised the minimum support price (MSP) for the 2023-24 marketing season by 5.46 per cent.

With the hike, the new MSP of wheat will be ₹2,125 per quintal as against ₹2,015 per quintal earlier. In absolute terms, this is the highest increase since 2017-18.

However, despite the hike, market players are wary whether farmers will be convinced to sell the next crop to the government if the situation does not change dramatically because the open market rate of wheat is ₹400-500 per quintal more than even the revised MSP.

This year due to market prices being higher than the MSP, farmers opted to sell their produce to private players, leading to an almost 57 per cent drop in official procurement to around 19 million tonnes (MT) as against 43.3 MT last year.

In a related development, a delegation of flour millers recently met senior government officials to request them to liquidate a part of inventories held by the government in November-December because open market prices have jumped in the past few days. "We don't expect the government to sell 7-8 MT of wheat from its stocks as it did last year but some support is needed because prices are soaring," a senior flour miller said.

TRACKING RABI SOWING

	2021	2022* (million hectares)	% Change
RICE	0.19	0.27	42.11
GRAM	0.21	0.39	85.71
MUSTARD	1.07	1.51	41.12
TOTAL*	1.72	2.51	45.93

*Till October 21
Note: Total might not match as all crops haven't been included; Wheat sowing has not been reported yet
Source: Government of India

Context: The sowing of rabi crops continued at a steady pace as farmers hurried to make the best use of the residual soil moisture owing to rain in October.

Rabi and Kharif crops

- **Kharif crops or monsoon crops:** They are domesticated plants cultivated and harvested during the rainy (monsoon) season in South Asia, which lasts between April and October depending on the area.
  - Ideally, the Kharif crops are **harvested in the monsoon season** which begins as early as May in some parts of the Indian subcontinent.
  - Kharif crops are **generally harvested from 3rd week of September to October.**
  - **Major Rabi Crops are** Paddy, maize, bajra, jowar, soybean, castor, cotton, sugarcane, turmeric, chilly, bitter gourd, guar, okra, brinjal,turmeric, ragi.
  - **Location**: Assam, West Bengal, coastal regions of Odisha, Andhra Pradesh, Telangana, Tamil Nadu, Kerala and Maharashtra
- **Rabi crops**: They are agricultural crops sown in winter and harvested in the spring in South Asia.
  - The term is **derived from the Arabic word for "spring"**, which is used in the Indian subcontinent, where it is the spring harvest (also known as the "winter crop").
  - Rabi Crops are **harvested in the spring season** while it is sown in winter.
  - The rabi crops are **sown around mid-November, preferably after the monsoon rains** are over, and harvesting begins in April / May.
  - **A good rain in winter spoils the rabi crops** but is good for Kharif crops.
  - **Major Rabi Crops** are wheat, followed by barley, mustard, sesame and peas.
  - **Location:** Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Uttarakhand and Uttar Pradesh.

Zaid Crops

- **Zaid crops:** These crops are mainly grown in the summer season during a period called the zaid crop season.
  - They grow for a short time period between kharif and rabi crops, mainly from March to June.
- **Climate conditions**: They require warm dry weather as major growth period and longer day length for flowering.
- **Major Zaid crops**: Seasonal fruits, vegetables, fodder crops etc.
- **Location**: Most of the northern and northwestern states

INDIAN EXPRESS

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REGULATION OF FOREIGN DONATIONS

(Syllabus: GS Paper 2 - Polity & Governance)

FCRA: SC to examine plea against cancellation of NGO registration

EXPRESS NEWS SERVICE
NEW DELHI, OCTOBER 21

THE SUPREME Court Friday said it will examine if questions arising in connection with a petition challenging the cancellation/ non-renewal of registration of NGOs under Foreign Contribution (Regulation) Act, 2010, by the Union Home Ministry, are covered by its April 2022 judgment upholding amendments to the Act.

A bench presided by Justice K M Joseph said it will look into this although both the petitioner and the Centre said that the issues were indeed covered by the April 8 ruling in the Noel Harper and Others vs Union of India case.

Appearing for the petitioner NGO Global Peace Initiative, Senior Advocate Sanjay Hegde submitted that most of the issues were gone into in the Noel Harper judgment and said the court could dispose it of while granting him liberty to make a representation to the government for ancillary issues arising after the amendment.

The bench, also comprising Justice Hrishikesh Roy, said it will examine whether the questions were covered by the ruling and posted it for hearing on Nov 21.

Context: The Supreme Court will examine if questions arising in connection with a petition challenging the cancellation/ non-renewal of registration of NGOs under Foreign Contribution (Regulation) Act, 2010, by the Union Home Ministry, are covered by its April 2022 judgment upholding amendments to the Act.

Regulation of funding under FCRA Act

- **Regulation of foreign donations**: FCRA regulates foreign donations and ensures that such **contributions do not adversely affect the internal security of the country.**
  - The Act, first enacted in 1976 was amended in the year 2010 and then 2020.
- **Section 5 of the Foreign Contribution (Regulation) Act, 2010**: It gives the Union government "unchecked and unbridled powers" to declare an organisation as being one of political nature and deny it access to funds from sources abroad.
- **Implementation**: FCRA is implemented by the **Ministry of Home Affairs.**
- **Applicability**: The provisions of the Act apply to the territory of India, to citizens of India who may be outside India and to companies or their branches outside India that are registered or incorporated in India.
  - The entities covered by the Act include an individual, a Hindu undivided family, an association, or a registered company.
- **Prior Reference Category under the Act:** It implies that **to donate to such an NGO,** a foreign donor has to take prior clearance from t**he Ministry of Home Affairs.**
- **Recent amendment (2020)**: The amendments mandated that **registered NGOs open a designated account in the main branch of the State Bank of India** in Delhi in which the foreign contributions to their various causes would exclusively land.

Foreign Contribution Under FCRA

- **Foreign contribution under FCRA:** It covers any "donation, delivery or transfer made by any foreign source of any article" as long as it is **not given as a gift for personal use, or if its market value in India** at the time it was made is "not more than such sum as may be specified from time to time by the Central government".
- **Exceptions**: Any currency, or security can fall under the ambit of the Act though it **excludes any money received** "by **way of fee** or **towards cost in lieu of goods or services** rendered by such person in the ordinary course of his business, trade or commerce whether within India or outside India".
  - Neither are **donations made by Non-Resident Indians (NRIs)** considered to be "foreign contribution" although a donation from a person of Indian origin who has assumed foreign nationality is treated as as "foreign contribution".

Not eligible to receive Foreign Contribution:

- A host of entities are barred from receiving foreign funds, including **election candidates**, those connected with a **registered newspaper, judges, government servants or employees** of any entity controlled or owned by the government and members of any legislature.
- **Political parties and their office** bearers, too, are prohibited from receiving foreign funds.

LIVEMINT Page 13

AGNI-PRIME MISSILE
(Syllabus: GS Paper 3 - Sci & Tech)

India successfully test fires medium-range ballistic missile

Balasore: India on Friday successfully test-fired indigenously-developed new generation medium-range ballistic missile Agni Prime from the Odisha coast, Defence Research and Development Organization (DRDO) sources said. The sleek missile was test fired from a mobile launcher from the A.P.J. Abdul Kalam Island at around 9.45 am, they said. The solid-fuelled canisterised missile met all mission parameters during the test, they added. PTI

Other ranges of Agni missiles

- **Agni I**: It is a Medium Range Ballistic Missile with a Range of 700-800 km.
- **Agni II:** It is also a Medium Range Ballistic Missile with a Range more than 2000 km.
- **Agni III:** It is also an Inter-Medium Range Ballistic Missile with Range of more than 2,500 Km
- **Agni IV:** It is also an Inter-Medium Range Ballistic Missile with Range is more than 3,500 km and can fire from a road mobile launcher.
- **Agni-V:** The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km.
- **Agni- VI:** The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of ICBM 11,000–12,000 km (Under development).

Context: India successfully test-fired indigenously-developed new generation medium-range ballistic missile Agni Prime from the Odisha coast

Agni-Prime Missile

- **About**: The Agni Prime, known also as the Agni P, is a medium-range ballistic missile developed by the **Defence Research and Development Organisation** as a successor for Agni-I and Agni-II missiles.
  - Agni-P is a new generation advanced variant of the Agni class (under IGMDP - Integrated Guided Missile Development Program).
- **Two-stage:** Agni-P is a **two-stage canisterised solid propellant missile** with dual redundant navigation and guidance system.
  - It has been termed as a new generation advanced variant of Agni class of missiles with improved parameters, including manoeuvring and accuracy.
- **Range**: It is a canisterised **surface-to-surface ballistic missile** with a range capability between 1,000 and 2,000 km.
- **Key Features:** The missile comes with new composites, propulsion systems, and innovative guidance and control mechanisms, besides the latest navigation systems.

Agni Missiles

- **Agni class of missiles**: They are the mainstay of India's nuclear launch capability, which **also includes the Prithvi** short-range ballistic missiles, submarine-launched ballistic missiles and fighter aircraft.
  - The first missile of the series, Agni-I was developed under the Integrated Guided Missile Development Program (IGMDP) and tested in 1989.
- **Key features:** Agni missiles are long range, nuclear weapons capable surface to surface ballistic missile.
- **Separated from the IGMDP**: After its success, Agni missile program was separated from the IGMDP upon realizing its strategic importance.

IGMDP

- IGMDP (Integrated Guided Missile Development Program) was **conceived by Dr. A.P.J. Abdul Kalam to enable India attain self-sufficiency in the field of missile technology.** It was approved by the Government of India in 1983 and completed in March 2012.
- **The 5 missiles (P-A-T-N-A) developed under this program are**: Prithvi, Agni, Trishul, Nag and Akash.

ECONOMIC TIMES

Page 2

GENERAL CONSENT TO CBI

(Syllabus: GS Paper 3 - Internal Security)

Maha Restores Gen Consent for CBI to Probe Cases

Our Political Bureau

Mumbai: The Maharashtra government has restored the general consent for the Central Bureau of Investigation to probe cases in the state. The Maha Vikas Aghadi government had withdrawn the general consent two years ago.

Chief minister Eknath Shinde on Friday cleared the Maharashtra home department's move to allow CBI to investigate cases in the state. The decision was finalised in August following which the state home department headed by deputy chief minister Devendra Fadnavis sent a proposal to allow CBI to investigate cases in the state again.



Oppn parties have often alleged that central probe agencies have been let loose against their leaders for political reasons

The development is important as probes into several thousand crores of fraud in public sector banks have been delayed as the withdrawal of general consent forced CBI to apply for individual consent to probe each case.

National opposition parties have often alleged that central probe agencies have been let loose against their party leaders for political reasons at the behest of the BJP leadership. BJP has denied the charge. The MVA government move to withdraw general consent followed the allegations. Trinamool-administered West Bengal too has withdrawn general consent for CBI. The restoration of powers to CBI comes amid BJP allegations against leaders of the NCP, Congress and the Shiv Sena in Maharashtra.

Context: The Maharashtra government reversed the previous Maha Vikas Aghadi (MVA) government's decision of withdrawing the general consent to the Central Bureau of Investigation (CBI) to probe cases in the State.

Consent of States for CBI Investigations

- **Constitutional Basis**: "Police'' is Entry 2 in the **State List** under the Seventh Schedule of the Constitution.
  - The legal foundation of the CBI has been construed to be based on **Entry 80 of the Union List which provides for the extension of powers of the police force** belonging to one State to any area in another State but not without its permission.
- **Legal Basis**: According to Section 6 of the **Delhi Special Police Establishment Act of 1946** under which the CBI functions, the State's consent is required to extend CBI investigation beyond Union Territories.
- **Two types of consent for a probe by the CBI:**
  - **General Consent:** When a state gives a general consent (Section 6 of the Delhi Special Police Establishment Act) to the CBI for probing a case, the agency is not required to seek fresh permission every time it enters that state in connection with investigation or for every case.
    - A general consent is given to facilitate that seamless investigation in a case of corruption or violence.
  - **Specific Consent:** When a general consent is withdrawn, CBI needs to seek case-wise consent for investigation from the concerned state government.
    - If specific consent is not granted, the CBI officials will not have the power of police personnel when they enter that state.
    - This hurdle impedes seamless investigation by the CBI.

SC Judgement (Advance Insurance Co. Ltd case, 1970 case)

- A Constitution Bench held that the **definition of "State", as contained in The General Clauses Act, includes Union Territories as well**.
- The CBI, being a force constituted for Union Territories as recognised under the Delhi Special Police Establishment Act of 1946, c**an conduct investigation into the territories of the States only with their consent.**

TIMES OF INDIA

Page 1

FINANCIAL ACTION TASK FORCE (FATF)

(Syllabus: GS Paper 3 - Internal Security)

Pak removed from FATF grey list on terror financing

Global terror-financing watchdog FATF on Friday announced Pakistan's removal from its grey list, saying the country has largely completed its action plans on anti-money laundering and financing of terrorism. The exit from the increased monitoring list means greater access to foreign loans and aid. Pakistan has been on the FATF grey list since June 2018.

India responded by saying that FATF scrutiny had forced Pakistan to take some action against well-known terrorists, including those involved in attacks against the entire international community in Mumbai on 26/11. "It is in global interest that the world remains clear that Pakistan must continue to take credible, verifiable, irreversible and sustained action against terrorism and terrorist financing emanating from territories under its control," said foreign ministry spokesperson Arindam Bagchi. P8

Context: Global terror-financing watchdog FATF on Friday announced Pakistan's removal from its grey list, saying the country has largely completed its action plans on anti-money laundering and financing of terrorism.

Financial Action Task Force (FATF)

- **About**: It is an **inter-governmental body** that sets international standards seeking to prevent international financial crimes that aid terrorism.
- **Origin**: The FATF was **established in July 1989 by a G-7 Summit in Paris,** initially to examine and develop measures to combat money laundering.
- **Objective:** The FATF has developed the FATF Recommendations, or FATF Standards, which ensure a co-ordinated global response to prevent organised crime, corruption and terrorism.
- **Composition**: The FATF **currently comprises 37 member jurisdictions and two regional organizations** (European Commission and Gulf Cooperation Council), representing most major financial centers in all parts of the globe.
  - **India has been a member of the FATF since 2010.**
  - India is also a member of its regional partners, the Asia Pacific Group (APG) and the Eurasian Group (EAG).
- **Headquarters**: Its Secretariat is located at the **Organisation for Economic Cooperation and Development (OECD**) headquarters in **Paris.**
- **Lists under FATF:**
  - **Grey List (also known as the "increased monitoring list")**: Countries that are considered safe haven for supporting terror funding and money laundering are put in the FATF grey list.
    - Grey listing means FATF has placed a country **under increased monitoring** to check its progress on measures against money laundering and terrorism financing.
    - **Countries in Grey List:** Syria, Turkey, Myanmar, Philippines, South Sudan, Uganda, and Yemen.
  - **Black List**: Countries known as Non-Cooperative Countries or Territories (NCCTs) are put in the blacklist. These countries support terror funding and money laundering activities.
    - The FATF revises the blacklist regularly, adding or deleting entries.
    - Currently, **Iran and Democratic People's Republic of Korea (DPRK) are under High-risk Jurisdiction or black list.**
- **Sessions**: The FATF Plenary is the decision-making body of the FATF.
  - It **meets three times per year.**

PIB

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JAL JEEVAN MISSION

(Syllabus: GS Paper 3 - Economy and Infrastructure)

"Quality, quantity and continuity" are the core principle for success of Jal Jeevan Mission (JJM) – Vice President

Context: The Vice President launched Jal Jeevan Survekshan (JJS) Toolkit - 2023 and JJS-2023 Dashboard.

Jal Jeevan Survekshan (JJS) Toolkit

- **Developed by**: The Ministry of Jal Shakti.
- **Objective**: to **help the States/ UTs understand the assessment criteria and the overarching purpose of the Survekshan** is to incentivize the States/ District functionaries to strive for better performance and improve water service delivery in rural households.

Jal Jeevan Mission

- **About**: Launched in 2019, it envisages **supply of 55 litres of water per person per day to every rural household** through Functional Household Tap Connections (FHTC) by 2024.
- **Nodal Ministry**: Ministry of Jal Shakti.
- **Objective**: The mission **ensures functionality of existing water supply systems and water connections,** water quality monitoring and testing as well as sustainable agriculture.
    - It also ensures conjunctive use of conserved water; drinking water source augmentation, drinking water supply system, grey water treatment and its reuse.
- **Funding Pattern:** The fund sharing pattern **between the Centre and states** is 90:10 for Himalayan and North-Eastern States, 50:50 for other states, and 100% for Union Territories.
- **Implementation**: based on a community approach to water and **includes extensive Information, Education and Communication** as a key component of the mission.
    - **Paani Samitis plan, implement, manage, operate and maintain** village water supply systems.
    - These c**onsist of 10-15 members, with at least 50% women members** and other members from Self-Help Groups, Accredited Social and Health Workers, Anganwadi teachers, etc.
    - The committees **prepare a one-time village action plan,** merging all available village resources.
    - The plan is **approved in a Gram Sabha before implementation.**

PIB

Oct 22

KRISHI VIGYAN KENDRA (KVK)

(Syllabus: GS Paper 3 - Agriculture)

Special focus by Department of Agriculture Research and Education on 'Campaign 2.0 on Swachhta and reducing pendency in government' in 113 Institutes and over 700 Krishi Vigyan Kendras (KVKs) of ICAR

Context: The government has announced Special Campaign 2.0 from October 2 to October 31, 2022, with a focus on "Swachhata (cleanliness) and reducing pendency in government".

Key Points

- During this campaign, **special attention is being given to the field/ outstation offices of the Department of Agriculture Research and Education** and its attached and autonomous bodies.
- All the 113 Institutes and over 700 **Krishi Vigyan Kendras (KVKs) of Indian Council of Agricultural Research (ICAR)**, an autonomous body under the department, are **taking part in Special Campaign 2.0** .
- During this campaign a total of 7,215 activities across the **thematic areas have been undertaken by the KVKs,** involving the participation of over 3 Lakh people (KVK staff, farmers, members of civil society, school children and other dignitaries).
- **Activities related to crop residue management** were conducted by the KVKs.
    - Villages were **adopted for promoting agricultural waste management** using vermicomposting technology (a simple technology for converting biodegradable waste into organic manure with the help of earthworms.).
    - School children were oriented on various topics like hygiene, sanitation and cleanliness.

Krishi Vigyan Kendra (KVK)

- **About**: Is an **integral part of the National Agricultural Research System (NARS).** The first KVK was established in 1974 at Puducherry.
- **Mandate**: **technology assessment and demonstration** for its application and capacity development.
    - It aims at **assessment of location specific technology modules** in agriculture and allied enterprises, through technology assessment, refinement and demonstrations.
    - KVKs also **produce quality technological products** (seed, planting material, bio-agents, livestock) and make it available to farmers.
- **Funding**: The KVK **scheme is 100% financed by the Government of India** and the KVKs are sanctioned to Agricultural Universities, ICAR institutes, related Government Departments and Non Government Organizations (NGOs) working in Agriculture.
- **Functions**: KVKs act as a **bridge between the laboratories and farmland.** .
- **Significance**: These are crucial to **fulfilling the target of doubling farmers' income.**

DST Oct 22

EARTHQUAKE ASSESSMENT

(Syllabus: GS Paper 1 - Geography)

New Geophysical Research Laboratory can improve earthquake occurrence assessment & related hazards in NE

The North-East Geophysical Research Laboratory (NEGRL) has been established in Shillong for **tracking earthquakes through a multidisciplinary approach by** carrying out pre- and co-seismic signatures in North-East India using a variety of observational/modelling techniques.

Key Points

- **Multi-pronged approach of the laboratory**: can **identify and characterize earthquake precursors in the neo-tectonic environment present** in the NE Indian region and hence improve earthquake occurrence assessment and related hazards in the region.
- **Unique approach**: It **involves earthquake seismology, lithospheric deformation, continuous monitoring** of the atmosphere and ionosphere, and electromagnetic methods, which are being carried out by the laboratory, which has been upgraded from the earlier "Shillong Geophysical Research Centre."
- **Significance**: Studies being undertaken at NEGRL will contribute to a **better understanding of the earthquake sources** and their generation mechanisms, leading to an improved characterization of earthquake occurrence and hazards and assessment of the threats they pose to the local population in the Northeast.
    - NEGRL is a premier research organization under Department of Science and Technology

Seismic Zones in India

- **Four seismic zones (II, III, IV, and V) in India**: based on **scientific inputs** relating to seismicity, earthquakes occurred in the past and tectonic setup of the region.
- **Seismic Zone II**: Area with minor damage earthquakes corresponding to intensities V to VI of MM scale (MM-Modified Mercalli Intensity scale).
    - It comprises of major parts of peninsular region and Karnataka Plateau.
- **Seismic Zone III**: Moderate damage **corresponding to intensity VII** of MM scale.
    - It comprises of Kerala, Goa, Lakshadweep islands, remaining parts of Uttar Pradesh, Gujarat and West Bengal, Parts of Punjab, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Maharashtra, Odisha, Andhra Pradesh, Tamil Nadu and Karnataka.
- **Seismic Zone IV**: Major **damage corresponding to intensity VII** and higher of MM scale.
    - It comprises of remaining parts of Jammu and Kashmir, Himachal Pradesh, National Capital Territory (NCT) of Delhi, Sikkim, Northern Parts of Uttar Pradesh, Bihar, West Bengal, parts of Gujarat, small portions of Maharashtra near the west coast and Rajasthan.
- **Seismic Zone V:** Area d**etermined by pro seismically** of certain major fault systems and is seismically the most active region.
    - Earthquake zone V is the most vulnerable to earthquakes, where historically some of the country's most powerful shocks have occurred.
    - Earthquakes with magnitudes in excess of 7.0 have occured in these areas, and have had intensities higher than 9.
    - It comprises of the entire northeastern India, parts of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Rann of Kutch in Gujarat, part of North Bihar and Andaman & Nicobar Islands.

Earthquakes

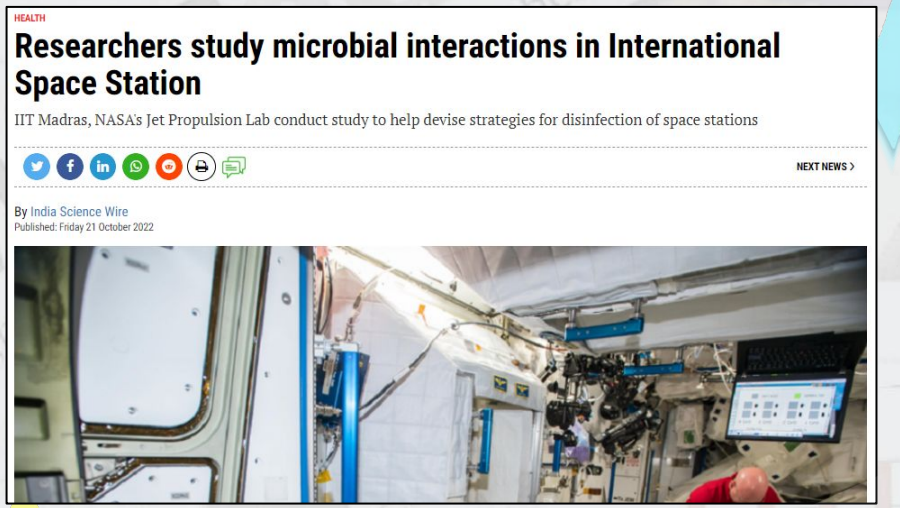
- **About**: An earthquake is the **shaking of the earth**. It is a natural event.
- **Cause**: It is caused **due to release of energy**, which generates waves that travel in all directions.
    - The **vibrations called seismic waves** are generated from earthquakes that travel through the Earth and are recorded on instruments called **seismographs.**
- **Location**: The location below the earth's surface where the earthquake starts is called the **hypocenter**, and the location directly above it on the surface of the earth is called the **epicenter**.

DTE

Oct 22

KLEBSIELLA PNEUMONIAE DISEASE

(Syllabus: GS Paper 3 - Sci & Tech)



HEALTH

Researchers study microbial interactions in International Space Station

IIT Madras, NASA's Jet Propulsion Lab conduct study to help devise strategies for disinfection of space stations

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By India Science Wire

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International Space Station

- **About**: is a space station, or a habitable artificial satellite, in low Earth orbit.
- **Launch**: Its first component launched into orbit in 1998, and the ISS is now the largest human-made body in low Earth orbit.
  - It circles the Earth in roughly 92 minutes and completes 15.5 orbits per day.
- **Objectives**: The ISS serves as a microgravity and space environment research laboratory in which crew members conduct experiments in biology, human biology, physics, astronomy, meteorology, and other fields.
- **Joint project**: The ISS programme is a joint project between five participating space agencies: NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada)
- **Ownership**: Its ownership and use has been established by intergovernmental treaties and agreements.

Context: Researchers at Indian Institute of Technology Madras (IIT Madras) and NASA Jet Propulsion Laboratory (JPL) have studied the interactions between microbes in the International Space Station (ISS).

Key Points

- **Key findings:** The study **found that Klebsiella pneumoniae**, a major microbe that resides on the ISS, is **beneficial to various other microbes** also present on the ISS, especially the bacteria from the Pantoea genus.
  - This bacterial family **includes members like E coli, Salmonella, etc**, which are also present in the human gut.
- **Significance**: The study will help devise **strategies for the disinfection of space stations** to minimise any potential impact of microbes on the health of astronauts.
  - Studying the microbes inhabiting the space station becomes important to understand the risks associated with short-term and long-term space travel on the health of astronauts.
- **No Threat**: The microbial strains found in this study pose no threat to the space station astronauts.

Klebsiella pneumoniae

- **About**: It is a **gram-negative**, nonmotile, lactose-fermenting, encapsulated, facultatively anaerobic, rod-shaped **bacterium**.
- **Affected individuals**: The **illness from this bacterium affects middle-aged and older men** with debilitating diseases.
- **Disease**: This patient population will suffer from impaired respiratory host defences, including persons with diabetes, alcoholism, malignancy, liver disease, and certain occupational exposures.
- **Transmission** The bacteria are **not airborne.**
  - Klebsiella Pneumoniae is **spread through direct person-to-person contact**, such as when someone with contaminated hands touches a wound.
  - Many of these infections are **obtained when a person is in the hospital for some other reason** in what is known as a nosocomial infection.
- **Symptoms**: common symptom in a non-hospital environment caused by Klebsiella bacteria is pneumonia, typically in the form of bronchitis.
  - Individuals with Klebsiella pneumonia tend to cough up the usual sputum, as well as having fever, nausea, and vomiting.
  - It has a **death rate of around 50%**, even with proper medication and antimicrobial therapy
- **Treatment**: **can be treated with antibiotics** provided so long as the wounds are not antibiotic-resistant.
  - Uncomplicated cases caused by susceptible strains may be treated with most oral agents.
  - Complicated cases may be treated with oral quinolones or with intravenous third-generation cephalosporins.

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