theIASHub

APRIL
20

CRUX 10

10 News. 10 Sources. One Place

THE HINDU | ET | BS | TOI | The Indian EXPRESS | livemint | pib | DownToEarth – FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH | Science Reporter | विज्ञान एवं प्रौद्योगिकी मंत्रालय MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

Table of Contents

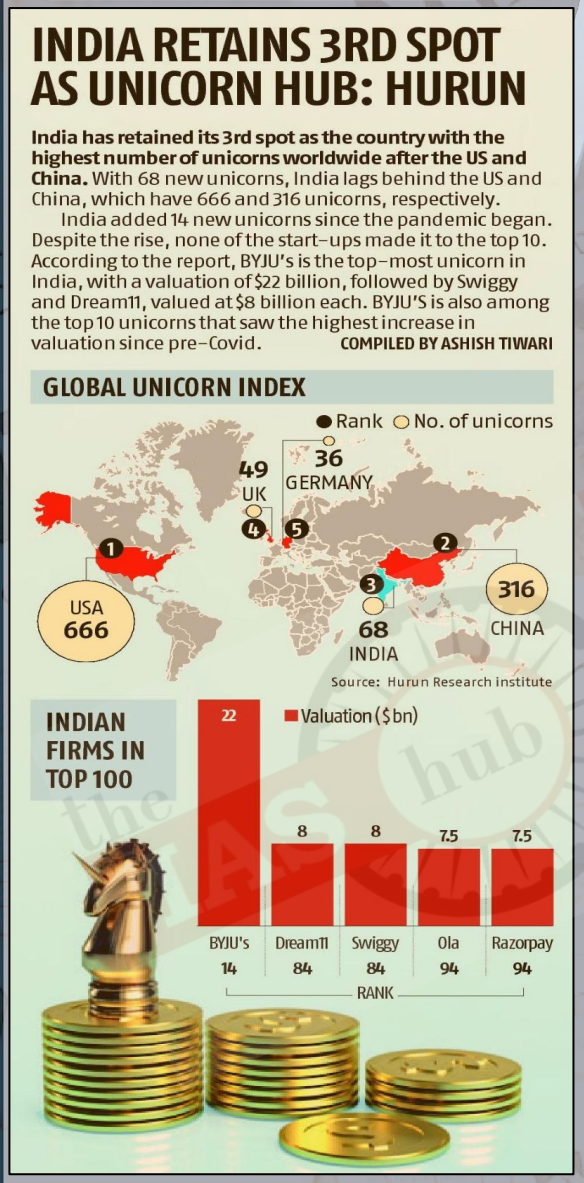
1. Unicorn Startup
2. Parvatmala Pariyojana
3. VVPAT
4. Bhoodan Gramdan Movement
5. Animal Birth Control Rules
6. Marine Litter Pollution
7. World Population Report
8. Hakki Pikki Tribes
9. National Quantum Mission
10. EMIC Waves

BUSINESS STANDARD

Page 2

UNICORN STARTUP

(Syllabus: GS Paper 3 - Economy)



INDIA RETAINS 3RD SPOT AS UNICORN HUB: HURUN

India has retained its 3rd spot as the country with the highest number of unicorns worldwide after the US and China. With 68 new unicorns, India lags behind the US and China, which have 666 and 316 unicorns, respectively.

India added 14 new unicorns since the pandemic began. Despite the rise, none of the start-ups made it to the top 10. According to the report, BYJU's is the top-most unicorn in India, with a valuation of $22 billion, followed by Swiggy and Dream11, valued at $8 billion each. BYJU'S is also among the top 10 unicorns that saw the highest increase in valuation since pre-Covid. COMPILED BY ASHISH TIWARI

GLOBAL UNICORN INDEX

INDIAN FIRMS IN TOP 100

Context: India has retained its **3rd spot as the country** with the highest number of unicorns worldwide after the US and China.

- With 68 new unicorns, **India lags behind the US and China,** which have 666 and 316 unicorns, respectively.

Key Points

- India **added 14 new unicorns** since the pandemic began.
- Despite the rise, **none of the start-ups made it to the top 10.**
- BYJU's is the top-most unicorn in India, with a valuation of $22 billion, followed by Swiggy and Dream11, valued at $8 billion each.
- **BYJU'S** is also among the top 10 unicorns that saw the **highest increase in valuation** since pre-Covid.
- The report also mentioned that **India and China produce more offshore unicorns** than any other country.
- Founders from **India co-founded 70 unicorns outside,** while China co-founded 32 outside of China, compared with 316 in China.

Unicorn startup

- **About**: Unicorns are **privately held, venture-capital backed startups** that have reached a **value of $1 billion**.
  - The term was first popularised by venture capitalist **Aileen Lee.**
- **Very rare and require innovation**: Because of their sheer size, **unicorn investors tend to be private investors or venture capitalists,** which means they are out of the reach of retail investors.
- **Based on growth potential**: The valuation of unicorns is not expressly linked to their current financial performance, but **largely based on their growth potential as perceived by investors** and venture capitalists who have taken part in various funding rounds.

PIB April 20

PARVATMALA PARIYOJANA

(Syllabus: GS Paper 3 - Infrastructure)

Shri Nitin Gadkari says under Parvatmala Pariyojana Government plans to develop more than 250 projects with Ropeway length of over 1,200 km in 5 years

Context: Union Minister for Road Transport and Highways said under **"Parvatmala Pariyojana",** the Government of India plans to develop 250+ projects with a Ropeway length of 1,200+ km over 5 years.

Parvatmala Pariyojana

- **About**: The **National Ropeways Development Programme - "Parvatmala"** was announced recently by the Union Finance Minister in the Union Budget for 2022-23 to improve connectivity in hilly areas.
  - This will be a **preferred ecologically sustainable alternative** in place of conventional roads in difficult hilly areas.
  - This may also **cover congested urban areas,** where conventional mass transit systems are not feasible.
- **Objectives**: The idea is to **improve connectivity and convenience** for commuters, besides promoting tourism.
- **Implementation**: The scheme is being presently started in regions like **Uttarakhand, Himachal Pradesh, Manipur, Jammu & Kashmir and the other North Eastern states.**
- **Nodal Ministry:** The **Ministry of Road Transport and Highways (MORTH)** will have responsibility for development of ropeway and alternative mobility solutions technology, as well as construction, research, and policy in this area.

TIMES OF INDIA

Page 10

VVPAT

(Syllabus: GS Paper 2 - Polity & Governance)

EC gets rolling for 2024, starts with paper trail machines

9L New Ones To Be Made, 3L To Be Junked, 6L To Be Serviced, Upgraded

Bharti.Jain@timesgroup.com

New Delhi: With a year to go before the 2024 general election, the Election Commission has started preparing to get the voter-verifiable paper audit trail (VVPAT) machines in order, by starting manufacturing of 8.9 lakh VVPATs, retiring 2.7 lakh 'obsolete' M2 model VVPATs, and identification of 3.4 lakh VVPATs for preventive maintenance and another 2.4 lakh for upgrade to the latest M3 format.

VVPATs are connected to EVMs and enable the voter to see a paper printout of the vote cast by him, before it falls into a dropbox.

A senior EC functionary told **TOI** that the poll panel ordered 3.4 lakh VVPATs to be sent back between February and August 2022 to Bharat Electronics Ltd (BEL) and Electronics Corporation of India Ltd (ECIL), the two PSUs that exclusively manufacture VVPATs, for "preventive maintenance" tasks T1-T4. "The corrective tasks under T1-T4 include removing fall error, contract error, deplete error, length errors etc," the officer told **TOI**. "Such defects in no way give an erroneous result...it only signifies stoppage of functioning during poll process and consequent replacement," said the officer.



After every election, analysis of non-functional EVMs and VVPATs is carried out by the technical expert committee

Incidentally, there is an overlapping of T1, T2, T3 or T4 tasks in these VVPATs. Of the 3.4 lakh VVPATs sent to BEL/ECIL, 2.6 lakh are identified for T1 task, which involves fixation of paper tensioner wire to mitigate the problem of length error, installation of modified hood of contrast sensor to mitigate contrast error, and installation of modified paper exit guide and electrically conductive and optically transparent assembly to rectify fall error of printed ballot slips. Around 1.9 lakh VVPATs require T2 task — replacement of degraded sensors. T3 task on 2.2 lakh VVPATs has not yet started, while the T4 task involves removal and replacement of defective multi-layer ceramic capacitors where MLCC defects are expected to be less than 5%, as and when VVPATs become non-functional during use.

EC had, while informing the chief electoral officers of states and UTs on January 27, 2022 about the plan to shift 3.4 lakh M3 VVPATs to the manufacturers for tasks T1 to T4, had reiterated the standard operating procedures for movement and transportation of VVPATs. This included asking the CEOs to invite national and state political parties to remain present at the time of opening and closing of warehouses; and marking of the VVPATs of the said series as 'defective' — used as classification to represent movement of defective (non-functional) machines as well as those destined for upgrade or other rework.

After every poll, analysis of non-functional EVMs and VVPATs is carried out by the technical expert committee (TEC), along with BEL and ECIL, to reduce replacement rates. In 2019 Lok Sabha elections, 17.4 lakh VVPATs were deployed and used for the first time in every polling station throughout the country.

On the basis of analysis and suggested corrective action, work of T1-T4 rectification was initiated and VVPATs falling in these categories were ordered to be sent to manufacturers for corrections irrespective of the fact whether VVPATs had become non-functional.

Context: With a year to go before the 2024 general election, the Election Commission has started preparing to get the **voter-verifiable paper audit trail (VVPAT) machines** in order, by starting manufacturing of 8. 9 lakh VVPATs, retiring 2. 7 lakh 'obsolete' M2 model VVPATs, and identification of 3. 4 lakh VVPATs for preventive maintenance and another 2. 4 lakh for upgrade to the latest M3 format.

Voter-verifiable paper audit trail (VVPAT)

- **About**: Voter verifiable paper audit trail (VVPAT) is a method of providing **feedback to voters using EVMs.**
  - A VVPAT is intended as **an independent verification system f**or voting machines designed to allow voters to verify that their vote was cast correctly, and to provide a means to audit the stored electronic results.
  - It **contains the name of the candidate** for whom vote has been cast and symbol of the party/individual candidate.
- **Significance and the need:**
  - The VVPAT helps to **detect potential election fraud** or malfunction in the Electronic Voting Machine.
  - It provides a means to **audit the stored electronic results.** It serves as an additional barrier to change or destroy votes.
  - The EVMs with VVPAT system ensure the **accuracy of the voting system** with fullest transparency and restores the confidence of the voters.
  - EVMs and VVPATs also **speed up the election process** as counting votes on EVMs takes much lesser time than counting paper ballots.

DTE

APRIL 20

BHOODAN GRAMDAN MOVEMENT

(Syllabus: GS Paper 2 - Polity & Governance)

Why this Maharashtra village is fighting for the long forgotten Gramdan Act?

In a society that is moving towards hyper-individualism, the community here takes a collective approach

NEXT NEWS >

By Shagun,
Published: Wednesday 19 April 2023



Bhoodan Gramdan Movement

- The Bhoodan Gramdan Movement was **led by Vinobha Bhave.**
- He encouraged zamindars to **voluntarily donate land** to the landless people.
- This movement later came to be known as the **bloodless revolution.**

Context: In December 2022, Mendha (Lekha), a village deep inside the forest area of Gadchiroli district in Maharashtra, moved the Nagpur bench of the Bombay High Court for implementing **Gramdan**, a historic act born out of a **movement by Vinoba Bhave** in the 1960s but has now been long forgotten.

- The act gives **wide powers and responsibilities** to the gram-mandal (Gram Sabha) for the administration, development and welfare of the village.

Gramdan

- **Gramdan** is an expansion of **Bhoodan movement** started in 1951 by Gandhian Vinoba Bhave.
- While **Bhoodan meant redistribution of land from bigger landowners to the landless**, under Gramdan, the entire village will put its land under a common trust.
    - This way, the land will not be sold outside the village or to one who has not joined Gramdan in the village. But the landowners can continue to cultivate it and reap the benefits.
- Today, **seven states in India have 3,660 Gramdan villages,** the highest being in Odisha (1309). The states are Andhra Pradesh, Bihar, Maharashtra, Odisha, Rajasthan, Tamil Nadu and Uttar Pradesh.
- Different states have their own acts, but some of the **basic salient features of the Gramdan Act are:**
    - At least **75 percent of the landowners in the village should surrender** land ownership to the village community. Such land should at least be 60 percent of the village land.
    - **Five per cent of the surrendered land is distributed** to the landless in the village for cultivation. Recipients of such land cannot transfer the same without the permission of the community.
        - The rest remains with the donors; they and their descendants can work on it and reap the benefits. But they cannot sell it outside the village or to one in the village who has not joined Gramdan.
    - All the cultivators who have **joined Gramdan should contribute 2.5 percent** of their income to the community.

THE HINDU

Page 1

ANIMAL BIRTH CONTROL RULES

(Syllabus: GS Paper 3 - Env & Eco)

Centre asks States to enforce new rules to check stray dog numbers

A.M. Jigeesh
NEW DELHI

As stray dog attacks increase, the Centre has decided to reach out to the States, local self-governments (LSGs) and resident welfare associations (RWAs) on implementing the new set of Animal Birth Control Rules prepared by the Animal Husbandry Ministry recently.

Notified on March 10, the rules put the onus of maintaining and controlling the population of stray dogs on LSGs and RWAs.

Talking to *The Hindu*, Secretary of Animal Welfare Board of India (AWBI) S.K. Dutta said the Rules of 2001, based on the Prevention of Cruelty to Animals Act, 1960, were amended to "adopt humane procedures for controlling stray animal population through open methods of surgeries and operations".



Local bodies have been tasked with sterilisation, immunisation of stray dogs. S.S. KUMAR

The decision is also based on several Supreme Court judgments, Dr. Dutta said. "Local bodies were not following the 2001 Rules. We got a number of complaints on cruelty to animals. The Ministry, in consultation with AWBI, revised the rules," he said. The Ministry has requested all Chief Secretaries and State government departments to ensure proper implementation of the new rules. "It is the duty of the local authorities to control the population of stray animals. They will be held responsible for any violation and animal-human conflicts," Dr. Dutta said.

The rules also suggest euthanasia for "incurably ill and mortally wounded dogs" under expert guidance.

Context: As stray dog attacks increase, the Centre has decided to reach out to the States, local self-governments (LSGs) and Resident Welfare Associations (RWAs) on implementing the new set of **Animal Birth Control Rules** prepared by the Ministry of Animal Husbandry recently.

- The Central Government has notified the **Animal Birth Control Rules,** under **Prevention of Cruelty to Animal Act, 1960** and after superseding the Animal Birth Control (Dog) Rules, 2001.
- The Rules put the **onus of maintaining and controlling** the population of stray dogs on **LSGs and RWAs**.

Highlights of Rules

- **Animal Birth Control programme for the sterilization and immunization** of stray dogs are to be carried out by the respective local bodies/municipalities/Municipal Corporations and Panchayats.
- **Animal Birth Control Programme** needs to be carried out by AWBI (Animal Welfare Board of India) recognized organization.
- The Municipal Corporations need to implement the **ABC and Anti Rabies Program jointly.**
- Also, the Cruelty involved for carrying out the **ABC programme** needs to be addressed.
- The Rules also provide guidelines on **how to deal with the human and stray dog conflicts** without relocating the dogs in an area.

DTE

APRIL 20

MARINE LITTER POLLUTION

(Syllabus: GS Paper 3 - Env & Eco)

CSE launches coastal cities' coalition to fight marine litter crisis

Policies to strengthen land-based waste management need better implementation, say experts

By DTE Staff
Published: Wednesday 19 April 2023



Context: Delhi-based non-profit Centre for Science and Environment (CSE) has launched a coalition of coastal cities to fight **marine litter pollution across India.**

- The **Coalition of Coastal Cities to Combat Marine Litter** was launched on April 19, 2023 at a workshop organised and spearheaded by CSE.

Key Points

- One of the key challenges faced by the global marine ecosystem is **abandoned, lost or discarded fishing gear (ALDFG).**
- A large part of **ALDFG** is lost in deep seas, making it difficult to recover.
- India loses 15,276 tonnes of gillnets annually.
- Most of the waste from beaches comprises multi-layered and low-value **plastics, polystyrene, plastic products like cutlery and carry bags and cigarette butts.**
- The other contributors to marine litter include **flood waters, discharge of untreated municipal sewage, automobile and industrial waste** generated at the coasts and waste from shipbreaking yards.

India's Initiatives

- The **Plastic Waste Management Rules, 2016** clearly stipulate that urban local bodies (ULBs) should ban less than 50 micron thick plastic bags and not allow usage of recycled plastics for packing food, beverage or any other eatables.
- The Rules also require that **local bodies should provide separate collection,** storage and processing of plastic waste in their areas.
- The government has set an ambitious target of **eliminating single-use plastics by 2022.**
- India is a signatory to **MARPOL (International Convention on Prevention of Marine Pollution).**
- In addition, Prevention of Marine Pollution is also dealt with by **Merchant Shipping Rules, 2009** framed under the Merchant Shipping Act, 1958.

Global Efforts

- The 1972 Convention on the **Prevention of Marine Pollution by Dumping Wastes and Other Matter (or the London Convention)**
- The 1996 **Protocol to the London Convention (the London Protocol)**
- The 1978 **Protocol to the International Convention for the Prevention of Pollution from Ships (MARPOL).**
- The **United Nations Environment Program (UNEP)** considers plastic marine debris and its ability to transport harmful substances as one of the main emerging issues affecting the environment.
- At the 2015 G7 summit in Bavaria, Germany, the risks of microplastics were acknowledged in the **Leaders' Declaration.**
- **GloLitter Partnerships (GLP)** is a project launched by the International Maritime Organization (IMO) and the Food and Agriculture Organization of the United Nations (FAO) and initial funding from the Government of Norway.
- The United Nations Environment Programme launched the **Clean Seas Campaign** in 2017 to galvanize a global movement to turn the tide on plastic by reducing the use of unnecessary, avoidable and problematic plastics including single-use plastics and phasing out intentionally added microplastics.

WORLD POPULATION REPORT

(Syllabus: GS Paper 1 - Indian Society)

STATE OF WORLD POPULATION REPORT 2023

India world's most populous with 142.86 cr by mid-'23: UN report

68% in working population group of 15-64 years

ESHA ROY & ANURADHA MASCARENHAS
NEW DELHI, PUNE, APRIL 19

WITH ITS population estimated to touch 142.86 crore by the middle of this year, marginally ahead of China at 142.57 crore, India is on track to be the world's most populous country, according to the UNFPA's State of World Population Report 2023 released on Wednesday.

According to the report, 68 per cent of India's total population is between the ages of 15 and 64 years, which is considered the working population of a country. About 25 per cent is between 0-14 years; 18 per cent between 10 and 19 years, 26 per cent between 10 and 24 years, and 7 per cent above 65 years.

Last year, China remained the

CONTINUED ON PAGE 2

EXPLAINED
PAGE 13

DEMOGRAPHIC INDICATORS

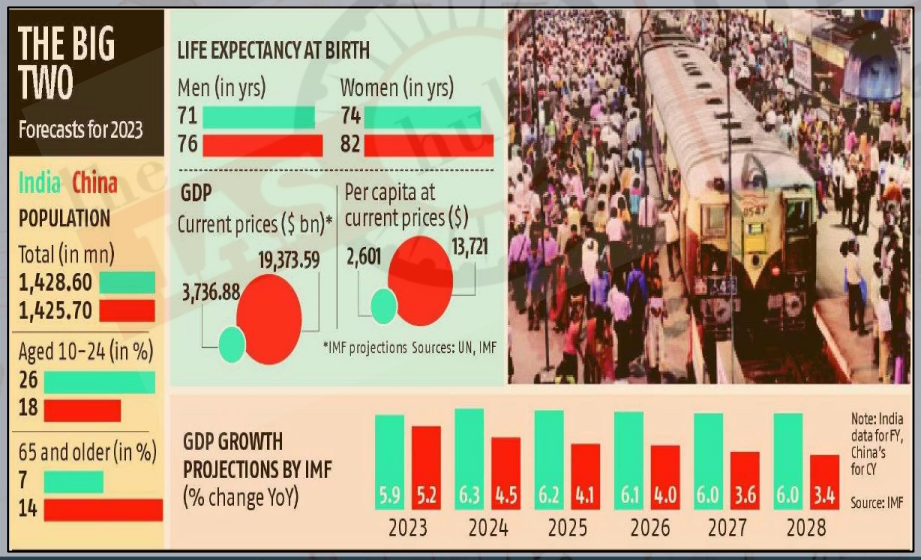
	Population	15-64 years	65+	TFR	Life expectancy
India	1,428.6 mn	68%	7%	2.0	72.5 yrs
China	1,425.7 mn	69%	14%	1.2	79 yrs
World	8,045 mn	65%	10%	2.3	73.5 yrs

UNFPA's State of World Population Report 2023

EXPLAINED

Skilling, education hold key

WHILE ITS working population (15-64 years) comprises 68% of the total population, India must focus on education and skilling, especially among rural youth, to capitalise on this demographic dividend. Manufacturing and district-level entrepreneurship plans are possible job creation solutions for the large workforce.



Context: India is expected to be the most populous country by the middle of this year and overtake China, according to the latest data from the **United Nations Population Fund (UNFPA).**

- The **UNFPA's 'The State of World Population Report, 2023'**, titled '8 Billion Lives, Infinite Possibilities: The Case for Rights and Choices' released said India's population is projected to be 1,428.6 million while that of China's 1,425.7 million, a difference of 2.9 million.

Key Points

- It will be the first time that **India's population will overtake China's since 1950** when the UN began to collect and release population data.
- 25% of India's population is in the **age group of 0-14**, 18% in 10-19, 26% in 10-24, 68% in 15-64, and 7% above 65.
- The corresponding figures for **China are 17%, 12%, 18%, 69%, and 14%,** which means the country has nearly 200 million above the age of 65.
- **China is doing better than India** in the context of life expectancy, which in the case of women is 82 and 76 that of men. The figures for India are 74 and 71.

United Nations Population Fund (UNFPA)

- **About**: It is a **subsidiary organ of the UN General Assembly** and works as a sexual and reproductive health agency.
  - The **UN Economic and Social Council (ECOSOC)** establishes its mandate.
- **Origin**: It was established as a **trust fund in 1967** and began operations in 1969.
  - In 1987, it was officially renamed the United Nations Population Fund but the original abbreviation, 'UNFPA' for the United Nations Fund for Population Activities was retained.
- **Objective**: UNFPA works directly to tackle **Sustainable Development Goals on health (SDG3), education (SDG4) and gender equality (SDG5).**
- **Funding**: UNFPA is **not supported by the UN budget,** instead, it is entirely supported by voluntary contributions of donor governments, intergovernmental organizations, the private sector, foundations and individuals.
- **Report**: State of World Population Report.

HAKKI PIKKI TRIBES
(Syllabus: GS Paper 1 - Indian Society)

Hakki Pikki Tribals were Bird Hunters who Turned to Medicine After Project Tiger

Stranded 31 members of the tribe had reached Sudan on a routine business trip to sell Ayurvedic medicines when fighting broke out among military factions

Mrunmayee.Kulkarni
@timesgroup.com

Bengaluru: The Hakki Pikki tribe has captured national headlines after 31 members of the tribe were left stranded in Sudan where war suddenly broke out. The 31 had reached Sudan on a routine business trip to sell Ayurvedic medicines when fighting broke out among military factions in the country.

Prabhu, one of the 31 members, told **ET** that they had been living in Sudan for the past 10 months. While business during Ramadaan wasn't profitable, they were looking to recover their losses but war broke out. "We have been locked down in this house and keep hearing firing. Our rations are running out. I don't know whether we will die of a gunshot or hunger first," he said.

He said the commissioner of the Karnataka State Disaster Management Authority, Manoj Rajan, contacted him, asking "us to stay indoors and assured that we will be rescued soon". No one from the embassy in Khartoum has contacted them, he added.

The nomadic tribe has undergone displacement and loss of livelihood for generations. The community is known for the strange names they give for their children. A father of a newborn often names his child based on the first thing that comes to his mind. The community has members with names such as Congress, Mysore Pak, Cycle etc.

'We have been locked down in this house and keep hearing firing. I don't know if we will die of a gunshot or hunger first'

The tribe was engaged in their traditional occupation of hunting birds, till it was outlawed under the Wildlife Protection Act, 1972. Their traditional habitat was taken away when the government established wildlife sanctuaries and national parks to conserve forests. After eviction from forests, the state created agricultural colonies to settle them around Bengaluru, Mysuru, Mandya and borders of Tamil Nadu and Andhra Pradesh.

Today, Hakki Pikki tribe members do odd jobs, work in farms or sell jewelry. They are also known for knowledge of traditional and herbal medicine in high demand in African countries as they are less expensive than allopathic medicines. The popularity of the medicines turned the once bird-hunters to global traders of herbal medicine.

Hunsur-based NGO Deed's director S Srikanth said the community suffered after the creation of tiger reserves as they lost their land. "While the community is capable and earns enough money to survive, they need stability in the form of land and government jobs. They need to be brought into the mainstream with education," he said.



Context: The **Hakki Pikki tribe** has captured national headlines after 31 members of the tribe were left stranded in Sudan where war suddenly broke out.

- The 31 had reached Sudan on a routine business trip to **sell Ayurvedic medicines** when fighting broke out among military factions in the country.

Hakki Pikki tribes

- **About**: The Hakki Pikki tribes are **semi nomadic tribal people,** have four clans namely the **Gujrathioa, Kaliwala, Mewara and Panwara.**
  - The Hakki Pikki, meaning **"bird catchers"** in Kannada.
  - It is a **Scheduled Tribe in Karnataka.**
- **Language**: They speak many south Indian languages such as **Kannada, Tamil, Telugu and Malayalam** along with **Vagribooli** which is similar to Gujarati.
- **Origin**: The origin of Hakki Pikki tribal communities has a rich history and is said to be an **ancestral relation with the legendary Rana Pratap Singh.**
  - The Hakki Pikki tribal community are a **Kshatriya or warrior tribal community** who had to migrate to southern India after their defeat with Mughal kings.

PIB

April 20

NATIONAL QUANTUM MISSION

(Syllabus: GS Paper 3 - Sci & Tech)

Cabinet approves National Quantum Mission to scale-up scientific & industrial R&D for quantum technologies

Context: The Union Cabinet approved the **National Quantum Mission (NQM),** aiming to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in **Quantum Technology (QT).**

- This will accelerate QT led economic growth, **nurture the ecosystem** in the country and make India one of the leading nations in the development of Quantum Technologies & Applications (QTA).

Key Points

- **Four thematic hubs** will be established in different institutions across the country to boost research and development in the field.
- The mission will be led by the **Department of Science & Technology** under a mission director.
- The Centre will form a **mission secretariat** which will have a governing body to steer the work under the leadership of scientists from the quantum field.
- The **Mission Technology Research Council** will work as a scientific advisory body for the governing body.
- The center outlining the **eight-year-long framework** for the mission said that it will work at developing 20-50 qubit quantum computers and quantum communication over a distance of 2000 kilometers in the next three years.

Quantum technology

- Quantum technology is a field of physics and engineering that studies and applies the **principles of quantum mechanics** to the development of new technologies.
- Quantum mechanics is the branch of physics that **describes the behavior of matter and energy at a microscopic scale**, where the classical laws of physics do not apply.
- Quantum technology includes v**arious types of technologies**, such as quantum computing, quantum cryptography, and quantum sensing.
- While the classical computer is transistor-based, **quantum computers are going to work on atoms.**
- Quantum computers **use quantum bits (qubits)** instead of classical bits to perform calculations.
- **The advantage of quantum computing is that it can** solve problems much faster with more authenticity.

DST

April 20

EMIC WAVES

(Syllabus: GS Paper 3 - Sci &Tech)

Scientists probe characteristics of a form of plasma wave identified in the Indian Antarctic station, Maitri

Context: Scientists have identified **Electromagnetic Ion Cyclotron (EMIC) waves,** a form of plasma waves in the Indian Antarctic station, Maitri, and studied its characteristics.

- The study can **help understand the impact of energetic particles** in the radiation belts on the low orbiting satellites.

Key Points

- These waves play an important role in **precipitation of killer electrons** (electrons having speed close to speed of light, which form the radiation belt of planet Earth), which are hazardous to our space-borne technology/instruments.
- More than 99% of the matter in the **visible universe consists of plasma.**
- Sun, solar wind, the **interplanetary medium**, near-Earth region, magnetosphere (the cavity in which the Earth lies and stays protected from the wrath of the Sun), and upper part of our atmosphere all consist of plasma - the fourth state of matter.
- The study of plasma waves provides us with **information on regions inaccessible** to us, transport mass and energy across different regions, how they interact with charged particles, and control the overall dynamics of the Earth's magnetosphere.
- One such wave is the **Electromagnetic Ion Cyclotron (EMIC)**, traversing plasma waves observed in the Earth's magnetosphere.
- They can r**esonate with electrons** with a wide energy range - from 500 keV to hundreds of MeV, and make them precipitate to high-latitude atmosphere.

Secure Top Rank with theIAShub Courses

Prelims 2023 Courses

01 Prelims Crash Course Score Enhancement Program (SEP)

02 INA Current Affairs (Prelims)

03 TACKLE - Prelims Test Series

04 Geography - Prelims Crash Course

Quality Enrichment Courses (Mains 2023)

01 Quality Enrichment Program (QEP)

02 Science of Answer Writing (SAW)

Prelim Cum Mains 2024 Courses

01 NEEV GS Foundation 2024/25

02 INA Current Affairs Pre Cum Mains - 2024

FREE Download PDF

Login to theiashub.com

- Aaj Ka Quality Enrichment (Toppers' Favourite PDF)
- News-CRUX-10 (10 News. 10 Sources. One Place)
- Monthly Editorials (The Hindu & Indian Express)
- Daily Quiz (Prelims)
- Government Schemes & Ministry Wise Year End Review
- Free Enrichment PDFs (Tailor Made Crisp Study Material)



Log On To Our Unique
Free Answer Writing Sessions with Toppers (FAST) Portal
& Start Practicing!

SCAN HERE

9560082909

t.me/theiashub

/mkyadav

www.theiashub.com

www.theiashub.com