theIAShub

the IAS hub
Be Your Dream.

MAY
23

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 मन्त्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY
सत्यमेव जयते



MK Yadav Sir

Table of Contents

1. Shipbuilding Assistance
2. Prohibition of e-Cigarettes
3. PARAKH
4. India-Pacific Summit
5. Papua New Guinea
6. Global Biodiversity Framework
7. NVS-01 Navigation Satellite
8. FDTD Simulation
9. Mount Etna Volcano
10. Harappan Sites

BUSINESS STANDARD

Page 6

SHIPBUILDING FINANCIAL ASSISTANCE

(Syllabus: GS Paper 3 - Infrastructure)

Centre to finance 30% in green shipping projects

DHRUVAKSH SAHA
New Delhi, 22 May

Following a sequence of moves to accelerate the green transition of Indian shipping, the Ministry of Ports, Shipping, and Waterways (MoPSW) on Monday said it would provide almost a third of the financial support for green shipping projects in the country.

Under the financial assistance for the shipbuilding scheme of the Centre, the ministry provides 20 per cent (with 3 per cent reduction each year) of funds for all vessels built by the industry. For green shipping, this will now be raised to 30 per cent of the project cost to incentivise the construction of vessels running on alternative fuels.

"The primary aim is to let the shipbuilding industry know that green ships will be prioritised," it said.

"Since the announcement is new, we only have the broad contours of the policy. We are yet to formulate the whole policy. Issues like yearly reduction, types of fuels covered under the policy, etc will be put in the fine print," said a senior government official who was a part of the deliberations.

The official clarified that for now, the green funding policy will only apply to vessels and not allied infrastructure.

It was not immediately clarified whether there would be a new fund created for this scheme or whether the ministry would utilise the residual funds from the existing ₹4,000-crore shipbuilding assistance scheme.

The decision was taken at MoPSW's annual chintan shivir, chaired by Union Minister Sarbananda Sonowal.

With the move, the ministry hopes to get the wheels moving for India's shipbuilding industry.

According to the ministry's response to a question in Parliament, so far, ₹241 crore has been used up from the entire fund for shipbuilding assistance — which is barely 6 per cent. The scheme's operational period ends in three years.

The ministry also decided to accelerate its Green Tug Transition Programme. Four state-owned ports — Jawaharlal Nehru Port (Navi Mumbai), VO Chidambaranar Port (Tuticorin), Paradip Port (Paradip in Odisha's Jagatsinghpur district), and Deendayal Port (Kandla) — will procure two green tugboats each.

Meanwhile, Deendayal Port and VO Chidambaranar Port will be developed as green hydrogen hubs over the next fiscal year. Moreover, a single window system will be introduced to monitor river and sea cruises.

Sonowal was quoted by the ministry as saying he would review the progress with respect to these targets in a mid-year chintan after a few months and mentioned strict action may be taken in case of delay in the completion of the project.

Context: Following a sequence of moves to accelerate the green transition of Indian shipping, the Ministry of Ports, Shipping, and Waterways (MoPSW) would provide almost a third of the **financial support for green shipping projects** in the country.

- Under the **financial assistance for the shipbuilding scheme** of the Centre, the ministry provides 20 per cent (with 3 per cent reduction each year) of funds for all vessels built by the industry.
- For **green shipping**, this will now be raised to 30 percent of the project cost to incentivise the construction of vessels running on alternative fuels.

Shipbuilding Financial Assistance (SBFA)

- **About**: It was introduced by the **Ministry of Shipping for Indian shipyards** in 2018.
- **Objectives**: To **encourage domestic ship building.**
- **Key Features:** Financial assistance is being granted to Indian shipyards equal to **20% of the lower of contract price or actual payments** received of each vessel built by them.
  - The **Contract Price** will apply only for the ships that are built in India for a period of 10 years.
  - **Financial aid** is only provided to ships that are built and delivered within three years from the contract date.
  - The policy also envisioned to create **Grievance Redressal Forum** to address primary issues faced by the shipbuilding industries.

THE HINDU

Page 12

PROHIBITION OF ELECTRONIC CIGARETTES

(Syllabus: GS Paper 2 - Health)

Centre seeks stricter implementation of ban on e-cigarettes

Press Trust of India
NEW DELHI

With electronic cigarettes easily available online and at tobacco shops despite a ban, the Union Health Ministry has issued a public notice for stricter implementation of the Act which prohibits their manufacture, sale and advertisements.

The Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act came into force in 2019.

The Ministry has directed all producers, manufacturers, importers, exporters, distributors, advertisers, transporters, including couriers, social media and shopping websites, shopkeepers, retailers and others not to directly or indirectly produce, manufacture, import, export, transport, sell, distribute and store e-cigarettes, whether as a complete product or any part thereof. It has also asked them not to advertise e-cigarettes.

"Offence of production, manufacture, import, export, transport, sale [including online sale], distribution, storage and advertisement of electronic cigarettes is cognisable and punishable as per the statutory provisions of the Act," the Ministry added.

'Weak enforcement'

Binoy Mathew, manager, Voluntary Health Association of India, said, "The ban on electronic cigarettes was introduced to protect our younger generation from a new form of toxic addiction. However, its enforcement has been weak, resulting in the market being flooded with cheap and unbranded Chinese-made electronic cigarettes."

Context: With e-cigarettes easily available online and at tobacco shops despite a ban, the Union Health Ministry has issued a public notice for stricter implementation of the Act which prohibits manufacture, sale and advertisements of **electronic cigarettes.**

- In 2019, the Union Cabinet has approved the Promulgation of the **Prohibition of Electronic Cigarettes (production, manufacture, import, export, transport, sale, distribution, storage and advertisement) act, 2019.**
- Electronic-cigarettes are battery-operated devices that produce aerosol by heating a solution containing nicotine, which is the addictive substance in combustible cigarettes.

Key Features of Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act 2019

- The **prohibition of e-cigarettes includes all forms** of Electronic Nicotine Delivery Systems [ENDS), Heat Not Burn Products, e-Hookah, and the like devices.
- Any production, manufacturing, import, export, transport, sale (including online sale), distribution or advertisement (including online advertisement) of e-cigarettes shall be a **cognizable offence.**
- The above-mentioned activities are punishable with an **imprisonment of up to one year or fine up to Rs. 1 lakh or both f**or the first offence; and imprisonment of up to three years and fine up to Rs. 5 lakh for a subsequent offence.
- **Storage of electronic-cigarettes** shall also be punishable with imprisonment up to 6 months or fine up to Rs 50,000 or both.
- The owners of existing stocks of e-cigarettes on the date of commencement of the act will have to **suo moto declare and deposit these stocks** with the nearest police station.
- The **Sub-Inspector of Police** has been designated as the Authorized Officer to take action under the act.
- The Central or State Governments may also **designate any other equivalent officer(s)** as Authorized Officer for enforcement of the provisions of the act.
- It enforces **Article 47 of the Indian Constitution** which mentions about State's responsibility to promote Public Health.
- It also enforces Sustainable Development Goals, National Monitoring Framework for **Prevention and Control of Non-communicable Diseases and National Health Policy, 2017.**

PIB MAY 23

PARAKH

(Syllabus: GS Paper 2 - Education)

Ministry of Education and PARAKH (The National Assessment Centre) organize the 1st National level workshop on assessment with States and UTs

Context: A **workshop on school assessments**, examination practices and equivalence of boards across the country was organised by the Ministry of Education and **PARAKH** which focused on discussion on equivalence across educational boards.

PARAKH (Performance Assessment, Review and Analysis of Knowledge for Holistic Development)

- **About**: It has been launched as part of the implementation of the **National Education Policy (NEP)-2020.**
  - The **NEP-2020 suggested the establishment of a standard-setting body** to provide guidance to school boards on new assessment practices and to encourage collaborations between them.
  - It will function as a **component of the NCERT.**
  - The government is expecting that PARAKH will c**onduct the National Achievement Survey (NAS) in 2024.**
- **Functions**: It envisaged a standard-setting body to **advise school boards regarding new assessment patterns** and latest research, and promote collaborations between them.
  - It will be responsible for conducting recurring learning outcome assessments like the **National Achievement Survey (NAS) and State Achievement Surveys.**
  - It will focus on three main assessment areas: e**xtensive assessments, school-based assessments, and examination improvements.**
  - It will **establish norms, standards and guidelines** for assessment and evaluation for all recognized school boards in India.
  - The benchmark assessment framework will **end the stress on rote learning.**

INDIA PACIFIC ISLANDS SUMMIT

(Syllabus: GS Paper 2 - International Relations)

Pacific Isle Nations Large Ocean Countries, Not Small States: PM

Announces 12-point action plan to boost bilateral ties with 14 nations in Indo-Pacific region

DipanjanRoy.Chaudhury
@timesgroup.com

NEW DELHI: Prime Minister Narendra Modi on Monday announced a 12-point action plan in a bid to boost bilateral ties with the 14 nations in the Indo-Pacific region.

Modi was speaking at the 3rd India-Pacific Islands Cooperation Summit in Papua New Guinea, where he affirmed that India believes in multilateralism and supports a free, open and inclusive Indo-Pacific region. The action plan covers several sectors, including health, climate and capacity building.

The Pacific island nations are "large ocean countries and not small island states", Modi said at the Summit, which he co-chaired with Papua New Guinea PM James Marape. All the 14 Pacific Island countries participated in the summit.

Marape said he sees Modi as the leader of the Global South and will rally behind India's leadership at international forums. "We are victims of global power play... You (PM Modi) are the leader of Global South. We will rally behind your (India) leadership at global forums," Marape said.

Modi said India is ready to share its experiences and capabilities with Pacific-island countries. "India is proud to be your development partner," he said. "You can count on India as a reliable partner. We are ready to share our experiences and capabilities with you without hesitation. We believe in multilateralism and support a free, open and inclusive Indo-Pacific."

On the impact of the pandemic, Modi said, "Challenges related to climate change, natural disasters, hunger, poverty and health were already there, now new problems are arising... I am happy that India stood by its friendly Pacific Island countries in times of difficulty."

Modi went on to say that India considers it its responsibility to convey the concerns of the Global South, their expectations and their aspirations to the world through the G20. "This was my effort in the last two days at the G7 summit as well," he said.

Earlier in the day, Modi and Marape held a bilateral meeting in Port Moresby and discussed cooperation in commerce, technology, healthcare and climate change.

Calling the talks productive, Modi said they covered the full range of bilateral relations between India and Papua New Guinea.

The two leaders also launched a translation of the Tamil classic 'Thirukkural' in the Tok Pisin language of Papua New Guinea.

The book, launched by the prime ministers of India and Papua New Guinea, was co-authored by Subha Sasindran and Governor Sasindran Muthuvel of West New Britain Province. Modi arrived in the Indo-Pacific country on Sunday night as part of the second leg of his three-country tour.

This is Modi's first tour of Papua New Guinea. It is also the first-ever visit by any Indian prime minister.

US- PAPUA NEW GUINEA SECURITY DEAL

Monday also saw the US sign a new security pact with Papua New Guinea, as it continues to compete with China for influence in the Pacific. Papua New Guinea is the most populous Pacific island nation. Its location just north of Australia makes it strategically significant. It was the site of fierce battles during World War II. The pact 'will improve security ties, enhance capacity of Papua New Guinea's defence force and increase regional stability'.

'WILL RALLY BEHIND INDIA'

We are victims of global power play... You (PM Modi) are the leader of Global South. We will rally behind your (India) leadership at global forums: Papua New Guinea PM James Marape

India's PIC Commitment

Super-specialty cardiology hospital in Fiji

Dialysis units, sea ambulances in all 14 Pacific Island Countries (PICs)

In 2022, India conducted Jaipur Foot Camp in Fiji. This year, India will organise camp in Papua New Guinea

Jan Aushadi Kendras & yoga centres



Upgrading Centre of Excellence for IT in PNG and transforming it into a 'Regional Information Technology and Cybersecurity Hub'

24x7 emergency helpline in Fiji and other PIC nations

SME development; machinery and technology supplies, capacity-building programmes

Converting at least one government building into a solar-powered building

Addressing water scarcity, desalination units

'Sagar Amrut Scholarship' scheme; 1,000 ITEC training opportunities in next 5 years

Context: Prime Minister announced a 12-point action plan in a bid to boost bilateral ties with the 14 nations in the **Indo-Pacific region**.

- PM was speaking at the **3rd India Pacific Islands Cooperation Summit** in Papua New Guinea, where he affirmed that India believes in multilateralism and supports a free, open and inclusive Indo-Pacific region.

India Pacific Islands Cooperation

- **About**: Forum for India-Pacific Islands cooperation (FIPIC) is a multinational grouping for **cooperation between India and 14 Pacific Islands nations.**
- **Countries include:** Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Samoa, Solomon Islands, Palau, Papua New Guinea, Tonga, Tuvalu and Vanuatu.
  - All Head of state/head of government of the above countries met in Suva, Fiji in November **2014** for the first time where the **annual summit was conceptualised.**
- **India's Significance:** The FIPIC initiative marks a serious **effort to expand India's engagement in the Pacific region.**
  - A major part of **India's engagement with these countries** is through development assistance under South-South Cooperation, mainly in capacity building (training, scholarships, grant-in-aid and loan assistance) and community development projects.
  - In 2015, **FIPIC Trade Office at Federation of Indian Chambers of Commerce & Industry** (FICCI) to promote Trade & Investment opportunities between India & Pacific Island Countries.

PIB MAY 23

PAPUA NEW GUINEA

(Syllabus: GS Paper 2 - International Relations)

Prime Minister honoured with the highest civilian award of Papua New Guinea

Context: Governor-General of **Papua New Guinea (PNG)** conferred Prime Minister with the **Grand Companion of the Order of Logohu (GCL).**

- This is the **highest civilian award** of PNG and recipients of the award are titled "Chief".

Papua New Guinea

- Papua New Guinea, officially the **Independent State of Papua New Guinea**, is a country in **Oceania** that comprises the eastern half of the island of New Guinea and its offshore islands in **Melanesia** (a region of the southwestern Pacific Ocean north of Australia).
- Its capital, located along its **southeastern coast**, is Port Moresby.
- The country is the **world's third largest island country.**
- Papua New Guinea is a **Commonwealth** realm with Charles III as King of Papua New Guinea.
- The **monarch** is represented by the Governor-General of Papua New Guinea.
- The Prime Minister heads the cabinet, which consists of 31 members of Parliament from the ruling coalition, which make up the government.

India PNG Relations

- **Political Relations:** India and Papua New Guinea have **formalized diplomatic relations since 19 May 1976.**
  - India opened its **High Commission in Port Moresby** in April 1996.
  - The two countries have been **working closely in international fora,** including the Commonwealth, Non-Aligned Movement and the United Nations Organization.
- **Diaspora**: There are approximately 3,000 members of Indian Diaspora in PNG.
- **Economic & Commercial Relations**: In 2017, PNG and India entered an **Economic Partnership Agreement** with a focus on investments and infrastructure projects in Papua New Guinea to facilitate more trade with India.



DTE

MAY 23

GLOBAL BIODIVERSITY FRAMEWORK

(Syllabus: GS Paper 3 - Env & Eco)

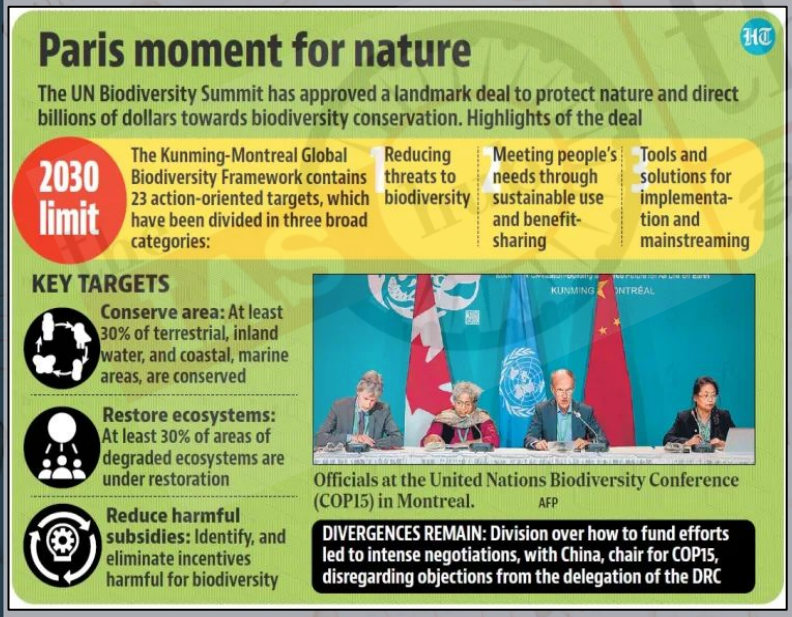
World Biodiversity Day 2023: Are we on track to meet targets under global framework

With just around 7 years to achieve the targets set under the Global Biodiversity Framework, the progress so far is unimpressive

NEXT NEWS >

By Vibha Varshney
Published: Monday 22 May 2023





Context: The International Day for **Biological Diversity,** celebrated on May 22 each year, is a reminder of the promise made in Montreal last December.

- The theme of the international day this year is appropriately From agreement to action: **Build back biodiversity.**

Key Points

- It's just five months since the **Kunming Montreal Global Biodiversity Framework (GBF)** was agreed upon and understandably, not much has been done.
- The framework has a total of four goals with 23 targets which have to be met by 2030.
- At the **15th Conference of Parties (COP15)** in 2022, it was decided that investment is important for meeting the targets of GBF.
- It was decided that **developed countries would provide $20 billion** in international finance to developing nations by 2025 and $30 billion by 2030. This is yet to happen.
- While **G7 provided specific numbers for funding** for climate change in a recent statement, a similar number for biodiversity was missing.
- Members states also agreed to realign their **National Biodiversity Strategy and Action Plan** to the GBF. However, only Spain has submitted the realigned NBSAP this year.

Kunming-Montreal Agreement

- **About**: The **15th Conference of Parties (COP15)** to the UN Convention on Biological Diversity (CBD) adopted the **Kunming-Montreal Global Biodiversity Framework (GBF) on** December 19, 2022.
- **Objective**: The **Chinese-brokered deal** is aimed at saving the 30% of world's lands, oceans and species from pollution, degradation and climate change by 2030. (**30 by 30 target)**)

LIVE MINT

Page 10

NVS-01 NAVIGATION SATELLITE

(Syllabus: GS Paper 3 - Sci & Tech)

Navigation satellite launch on 29 May

The Indian Space Research Organization (ISRO) will launch navigation satellite 'NVS-01' onboard its Geosynchronous Satellite Launch Vehicle (GSLV) from Sriharikota in Andhra Pradesh on 29 May.

The mission is designed to deploy the NVS-01 navigation satellite, weighing 2,232 kg, into a Geosynchronous Transfer Orbit (GTO).

"The launch of the GSLV-F12/NVS-01 mission is scheduled on Monday at 10:42 hours IST from the second launch pad at Satish Dhawan Space Centre in Sriharikota," the Bengaluru-headquartered national space agency said in a release. Subsequent orbit raising manoeuvres will be used for taking the satellite to the intended orbit, the space agency said.

NVS-01 is the first of the second-generation satellites envisaged for the Navigation with Indian Constellation (NavIC) services, it said. NavIC is India's own indigenous satellite navigation system similar to the prominent Global Positioning System (GPS), which belongs to the United States. **PTI**

Context: The Indian Space Research Organisation (ISRO) will launch navigation satellite **'NVS-01'** onboard its **Geosynchronous Satellite Launch Vehicle (GSLV)** from Sriharikota in Andhra Pradesh on May 29.

- The mission is designed to deploy the **NVS-01 navigation satellite**, weighing 2,232 kilograms, into a Geosynchronous Transfer Orbit (GTO).

NVS-01

- **About**: It is a navigation satellite that is a part of the **Navigation with Indian Constellation System (NavIC) system,** which is a regional satellite navigation system that provides positioning, navigation and timing services to India and its neighbouring countries.
  - It will replace the navigational capabilities of satellite **IRNSS-1G,** launched in 2016, in the constellation due to its malfunction.
  - With a mission life of 12 years, the **NVS-01 satellite aims to enhance the existing navigation infrastructure** by incorporating advanced technologies and capabilities.
- **NavIC constellation system:** NavIC consists of **seven satellites in geostationary and geosynchronous orbits** and a network of ground stations operating 24 x 7.
  - NavIC offers **two services:**
    - Standard Position Service (SPS) for civilian users
    - Restricted Service (RS) for strategic users.
  - These two services are provided in **both L5 and S-band frequencies.**
  - NavIC also **provides a signal in the L1 band** that is interoperable with other global navigation satellite systems (GNSS) such as GPS, GLONASS, Galileo and BeiDou.
  - **NavIC covers India and a region up to 1500 km** beyond its boundary, with an accuracy of better than 20 meters.

DST

MAY 23

FINITE DIFFERENCE TIME DOMAIN SIMULATION

(Syllabus: GS Paper 3 - Sci & Tech)

Structural modification can improve catalytic efficiency

Context: Scientists initiated a study to understand, by experiment and through a simulation method called **Finite Difference Time Domain (FDTD) simulation**, how to improve the catalytic efficiency of the catalyst.

- In this experiment, a comparative study was done to **investigate the catalytic reactivities of gold nanorod-molybdenum disulfide quantum dots** (AuNR-MoS2 QDs) composite, which has a rod-like structure and gold nanosphere-molybdenum disulfide quantum dots (AuNS-MoS2 QDs) composite.
- The **catalytic efficiency** of the as-prepared composites was then investigated to reduce p-nitrophenol, taken as the model reaction.

Key Points

- **Catalysts** are essential in many chemical, biological, and industrial processes as they can enhance reaction rates, improve efficiency, provide selectivity, promote sustainability, offer versatility, and have biological significance.
- They are **indispensable tools** and have a significant impact on our life.
- In general, **metal nanocomposites are efficient catalysts** with numerous advantages, including high surface area, tunable properties, enhanced stability, versatility, green and sustainable catalysts, and catalyst cycling.
- The **kinetics of the catalytic reduction** of p-nitrophenol reveals that the AuNR-MoS2 QDs composite demonstrates the highest catalytic efficiency, emphasising the role of the structural aspect.
- In addition, **Finite Difference Time Domain (FDTD) simulation** indicates that, in general, the electric field intensity increases for gold nanorod-molybdenum disulfide quantum dots composites when compared with only gold nanosphere-molybdenum disulfide quantum dots composite, gold nanorod, and gold nanosphere.
- Such study will **help scientists design more efficient catalysts,** especially for photodegradation of dyes or polyaromatic hydrocarbons.

DTE

MAY 23

MOUNT ETNA VOLCANO

(Syllabus: GS Paper 1 - Geography)



Context: Europe's most active **volcano Mount Etna** erupted, forcing flights from eastern Sicily's largest city Catania to be grounded due to a lack of visibility.

Mount Etna

- Mount Etna is an **active stratovolcano on the east coast of Sicily, Italy,** in the Metropolitan City of Catania, between the cities of Messina and Catania.
- It lies above the convergent plate margin **between the African Plate and the Eurasian Plate.**
- Mount Etna is in an almost constant state of activity and it's considered a United Nations Educational, Scientific and Cultural Organization **World Heritage Site.**
- The **volcano's height increased by over 30 metres** following a six-month period of activity.
- It is **one of the tallest active volcanoes** in Europe, and the tallest peak in Italy south of the Alps with a current height of 3,357 m, though this varies with summit eruptions.

Stratovolcano (Composite volcano)

- **Cone-shaped volcanoes** built from many layers of lava, pumice, ash, and tephra.
- **Due to multiple layers of viscous material,** rather than fluid lava, composite volcanoes tend to form tall peaks rather than rounded cones.
- Sometimes the summit crater collapses to form a **caldera**.
- Composite volcanoes are **responsible for the most catastrophic eruptions** in history.
- So far, **Mars is the only place in the solar system** besides Earth known to have stratovolcanoes.

INDIAN EXPRESS Page 1

HARAPPAN SITES

(Syllabus: GS Paper 1 - Indian Heritage)

PAGE 1 ANCHOR

At Harappan site, a mystery buried in time: Whose graves are these?

GOPAL KATESHIYA
KHATIYA (KUTCH), MAY 22

THE DRY, arid soil on a 16-hectare expanse on the outskirts of Khatiya village in Gujarat's Kutch district has thrown up several surprises — a shell bangle, pottery shards, stones blades, even human skeletal remains. Since 2018, a multi-disciplinary international team of archeologists has discovered 500 graves and excavated 197 of those here, but deep below, the site holds the key to an enduring mystery: whose graves are these?

Led by Rajesh S V, Assistant Professor in the Department of Archaeology in the University of Kerala, the researchers say that while it is established that the cemetery, believed to be 5,000 years old, belonged to the 'pre-urban' phase of the Harappan civilisation, they are still looking for clues to see if the burial ground — arguably the largest such cemetery — could have served a big human settlement in the vicinity or if it was a common facility for a cluster of smaller settlements.

The Harappan civilisation, one of the oldest in the world, is said to have thrived along the banks of river Indus from around 5,000 BC to 1,000 BC. While the 2,500-year-long period from 5,000 BC to 2,600 BC is known as the 'pre-urban' Harappan phase, between 2,600 BC and 1,900 BC is the 'urban' Harappan phase. From there on, the civilisation declines and 1,900 BC to 1,000 BC is considered the 'post-urban' Harappan period.

So far, the findings at the burial site are consistent with its pre-urban Harappan status.

The fragment of a shell bangle collected from the Khatiya cemetery and tested at Physical Research Laboratory (PRL), Ahmedabad, was found to be dating back to 2,850 BC. Prof



During the excavation of Juna Khatiya site. *University of Kerala*



Abhayan G S, Assistant Professor of Kerala University who is a co-director of the excavation project at Khatiya, said, "The pottery found as burial goods at the Khatiya site, mainly redware, buffware and grayware, is comparable to the pre-urban Harappan pottery of Sindh and Balochistan and North Gujarat."

However, he said, "The soil in Khatiya is acidic, facilitating faster decomposition of bodies. Therefore, researchers are finding it hard to extract DNA from samples excavated from this site."

This could then hold the answer to the Khatiya puzzle — who are the people whose remains were interred in these graves and where did they come from?

While Dholavira, the UNESCO World Heritage Site and one of the biggest metropolises of the Harappan civilisation, is also in Kutch, it is 150 kilometres away from Khatiya that's among the western-most of the Harappan sites in India. Given the distance, researchers say, it's unlikely that people in the pre-urban settlements of Dholavira were buried at the Khatiya site.

"Desalpar and Khirsara, Kotda Bhadli and Nadapa are the other well-known Harappan sites in western Kutch. But each of them is a site of urban and post-urban periods of the Harappan civilisation and more than 50 km away from Khatiya. Being a pre-urban Harappan cemetery, there is a possibility that either there was a big settlement in Khatiya or there

CONTINUED ON PAGE 4

Context: The dry, arid soil on a 16-hectare expanse on the outskirts of **Khatiya village in Gujarat's Kutch district** has thrown up several surprises - a shell bangle, pottery shards, stones blades, even human skeletal remains.

- The burial site, spread over 16 hectares in a Kutch village, is considered to be the largest pre-urban **Harappan cemetery.**



Harappa

- **1st Indus site** to be discovered.
- Two rows of **six granaries.**
- The largest number of **wheat grains.**
- **Red sandstone torso** of nude male.
- Evidence of **Coffin burial.**
- Two types of burial practice- extended burials in a pit and urn burials

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