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TOPICS COVERED (PCS Special)

- 1. Svalbard glaciers suffered 'extreme' melting in 2024**
स्वालबार्ड ग्लेशियरों ने 2024 में 'अत्यधिक' पिघलन झेली

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Svalbard glaciers suffered 'extreme' melting in 2024

In the summer of 2024, Svalbard's glaciers experienced a meltdown unlike anything recorded before. Scientists found that in just six weeks, the islands lost nearly 1% of their total ice, close to what Greenland loses in a year. This sudden loss was triggered by record-high temperatures and warm, moist air flowing into the Arctic. Events like this, once thought rare, are projected to become more common, leading to faster rapid sea-level rise and greater risks to coastal communities.

Svalbard glaciers suffered 'extreme' melting in 2024

स्वालबार्ड ग्लेशियरों ने 2024 में 'अत्यधिक' पिघलन झेली

In the summer of 2024, Svalbard's glaciers experienced a meltdown unlike anything recorded before.

2024 की गर्मियों में, स्वालबार्ड के ग्लेशियरों ने पहले कभी दर्ज न की गई पिघलन का अनुभव किया।

• Scientists found that in just **six weeks**, the islands lost nearly **1% of their total ice**, close to what **Greenland** loses in a year.

वैज्ञानिकों ने पाया कि केवल **छह हफ्तों** में द्वीपों ने अपनी कुल बर्फ का लगभग **1%** खो दिया, जो कि एक वर्ष में **ग्रीनलैंड** द्वारा खोई जाने वाली बर्फ के करीब है।

• This sudden loss was triggered by **record-high temperatures** and **warm, moist air** flowing into the **Arctic**.

इस अचानक नुकसान का कारण **रिकॉर्ड उच्च तापमान** और गर्म, नम हवा का

आर्कटिक में प्रवाह था।

- Events like this, once thought rare, are projected to become more common, leading to faster **sea-level rise** and greater risks to **coastal communities**.

इस तरह की घटनाएँ, जिन्हें कभी दुर्लभ माना जाता था, के अधिक सामान्य होने का अनुमान है, जिससे तेजी से समुद्र स्तर में वृद्धि और तटीय समुदायों के लिए अधिक जोखिम पैदा होगा।

TOPICS COVERED (GS Paper I: History, Society and Geography)

1. NDA govt. will complete Polavaram project: A.P. CM

एनडीए सरकार पोलावरम परियोजना पूरी करेगी: आंध्र प्रदेश मुख्यमंत्री

2. The 'silver fox' of Chinese diplomacy

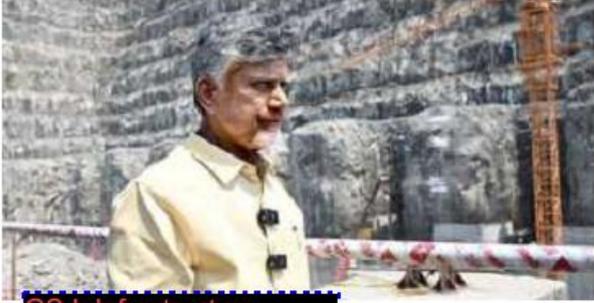
चीनी कूटनीति का 'सिल्वर फॉक्स'

3. Saffron's southern face

केसरिया का दक्षिणी चेहरा

4. Crediting care work: a T.N. story

देखभाल कार्य का श्रेय: एक तमिलनाडु कहानी



GS I: Infrastructure

NDA govt. will complete Polavaram project: A.P. CM

The National Democratic Alliance (NDA) government has taken responsibility to dedicate the Polavaram irrigation project to the nation, Andhra Pradesh Chief Minister N. Chandrababu Naidu said on Saturday. "The Polavaram irrigation project has been brought back on track despite being ignored for five years by the previous government. The onus of dedicating the project to the nation in 2027 is now on the NDA in Andhra Pradesh," he said.

- The onus of dedicating the project to the nation in 2027 is now on the **NDA in Andhra Pradesh**," he said
"इस परियोजना को 2027 में राष्ट्र को समर्पित करने की जिम्मेदारी अब आंध्र प्रदेश में एनडीए पर है," उन्होंने कहा।

NDA govt. will complete Polavaram project: A.P. CM एनडीए सरकार पोलावरम परियोजना पूरी करेगी: आंध्र प्रदेश मुख्यमंत्री

The National Democratic Alliance (NDA) government has taken responsibility to dedicate the Polavaram irrigation project to the nation, Andhra Pradesh Chief Minister N. Chandrababu Naidu said on Saturday. राष्ट्रीय जनतांत्रिक गठबंधन (एनडीए) सरकार ने पोलावरम सिंचाई परियोजना को राष्ट्र को समर्पित करने की जिम्मेदारी ली है, ऐसा आंध्र प्रदेश के मुख्यमंत्री एन. चंद्रबाबू नायडू ने शनिवार को कहा।

- "The **Polavaram irrigation project** has been brought back on track despite being ignored for **five years** by the previous government.
"पोलावरम सिंचाई परियोजना को पिछली सरकार द्वारा पांच वर्षों तक नजरअंदाज किए जाने के बावजूद फिर से पटरी पर लाया गया है।



The 'silver fox' of Chinese diplomacy

Wang Yi

The Communist Party of China Politburo member, with more sway than other Ministers due to his seniority in the party structure, is now the unassailable Czar of President Xi Jinping's foreign policy

SS I: World History

Suhasini Haidar

In June 2014, days after Prime Minister Narendra Modi had been sworn in for the first time, one of the first high-level visitors from outside the SAARC region was Wang Yi. Mr. Wang, who was appointed the Foreign Minister of China in 2013, travelled to New Delhi as Special Envoy of President Xi Jinping to meet Mr. Modi, whom he called an "old friend of China", referring to Mr. Modi's visits during his tenure as Gujarat Chief Minister, and said the NDA's return to power had "injected a new vitality into an ancient civilisation".

Mr. Wang's mission was clear – to secure a visit by Mr. Xi to Delhi that September, and to invite Mr. Modi to Beijing soon after. Both visits were cleared quickly. A few days after Mr. Wang's visit on June 8-9, the government also decided to put off two other engagements: the India-U.S.-Japan trilateral (the Quad was not revived until 2017), set for June 23-24 in Delhi, was cancelled, and Mr. Modi postponed his visit to Japan that had been fixed for July 3-5, ostensibly due to an upcoming Parliament session, much to his hosts' disappointment. Speculation in South Block was rife: did the Chinese Foreign Minister have something to do with the decisions, to clear the "optics" before the Xi visit in September 2014?

Called the 'silver fox' for his grey haired visage as much as for his slick manner, Wang Yi is now the unassailable Czar of Xi Jinping's foreign policy, with more sway than other Ministers due to his seniority in the party structure.

Insiders point out that he wears several hats now – he was elevated to the elite 24-member Politburo in 2022, and is Director of the Office of the Central Commission for Foreign Affairs. He was elevated to the Politburo after the informal retirement age of 68, another sign of his clout, and although he handed over charge as Foreign Minister to Qin Gang in December 2022, he was brought back within months.

Like Russian Foreign Minister Sergey Lavrov, and more recently

External Affairs Minister S. Jaishankar, Mr. Wang is part of a breed of seasoned and professional Foreign Ministers who present and sell their leader's political vision in diplomatic terms. In the 2010s, he was credited with China's 'wolf warrior' diplomacy, of abrasive and assertive public messaging that reflected China's hard power status. However, when Chinese popularity dipped worldwide, especially after the COVID-19 pandemic, Mr. Wang was also credited with abandoning the policy, mending fences, and replacing 'wolf warrior' diplomats in embassies worldwide with more polished colleagues.

Mr. Wang's education in state-fare began, as many in his generation's did, when he was "sent down" as part of the 'Xiaxiang' movement during the Cultural Revolution to work in the icy climes of Heilongjiang province, where he was recruited by the 'Northeast Construction Army Corps', after finishing his schooling in 1969. He studied Japanese history and language during college thereafter in Beijing, and joined the Foreign Ministry in 1982. He served twice in the Chinese Embassy in Japan, including as Ambassador from 2004 to 2007.

Backroom talks

South Block mandarins had an introduction to Mr. Wang's manner, more suave but also more purposeful than his predecessors, in the early 2000s. As Vice Foreign Minister for Asian Affairs, he had conducted many of the backroom negotiations to prepare for Prime Minister Atal Behari Vajpayee's visit to Beijing in 2003. Officials at the time remember his hard bargaining for a deal on India's recognition of China's control over Tibet and for China to recognise Sikkim as an Indian State. Eventually, Indian officials felt disappointed that although the joint declaration issued had an explicit paragraph saying India "recognises that the Tibet Autonomous Region is part of the territory of the People's Republic of China and reiterates that it does not allow Tibetans to engage in anti-China political activities in India", the paragraph on Sikkim was not a similarly unequivocal declaration, with



ILLUSTRATION: R. RAJESH

only a designation of 'Sikkim State' referring to the opening of border trade at Nathu-La pass.

"He is suave and sophisticated, but also quite tenacious, and can dig his heels in during negotiations, so it is necessary to always be vigilant," says former Ambassador to China Ashok Kanha, who was posted to Beijing in 2014-2016, and had served on the China desk in the 2000s. "Indian officials have often had to push back in talks, but found him a result-oriented interlocutor," he added.

As a former Director of China's "Taiwan affairs office" (2008-2013), Mr. Wang has been keen for India to refer

to its 'One China' policy recognising Beijing's control over all of China, including Taiwan. However, New Delhi decided to stop including the phrase in its statements since 2010, in protest against Chinese policy of issuing stapled visas to Indians from Arunachal Pradesh and Jammu & Kashmir. When pressed by Mr. Wang to reaffirm India's adherence to the 'One China' policy, former External Affairs Minister Sushma Swaraj, who had been briefed about Mr. Wang's persuasive skills, once retorted: "If China affirms its One India policy, we will consider it". Nonetheless, Mr. Wang has persisted, including this

week in talks with External Affairs Minister S. Jaishankar, where the Chinese side slipped a line on Taiwan into its readout. The Ministry of External Affairs had to scramble to clarify its position.

Diplomatic missions

As Foreign Minister, Mr. Wang is known for many diplomatic missions over the past decade, including bringing U.S. Secretary of State Rex Tillerson to Beijing to kickstart talks for Mr. Xi's Mar-a-Lago summit with U.S. President Donald Trump in April 2017 and brokering talks between Iran and Saudi Arabia to reopen diplomatic ties in 2023. He also helped with U.S.-North Korea talks; more recently between Cambodia and Thailand, Afghanistan and Pakistan, between Myanmar's military junta and armed ethnic groups as well as a bid in 2023 to bring Russia and Ukraine to the table for talks.

India has often been concerned about his 'South Asian' groupings, including a recent one with Pakistan and Bangladesh on trade, which appear to be part of a plan to create a 'SAARC minus India'. As Foreign Minister, but also Special Representative for border talks, Mr. Wang now deals in Delhi with both Mr. Jaishankar and National Security Adviser Ajit Doval, and is known for his tough but smooth-talking engagement style during the four-year military standoff after PLA transgressions along the Line of Actual Control and the Galwan clashes, and earlier, during the Doklam standoff.

Setting up the first "inter-governmental organisation for international mediation" in Hong Kong in May this year, Mr. Wang outlined his vision. "The birth of the mediation centre will help transcend the 'you-lose-I-win' zero-sum mentality, promote the amicable resolution of international disputes and foster more harmonious international relations," he said. However, for interlocutors bruised during hard-fought diplomatic negotiations with him, Mr. Wang's version of "win-win" is more aligned to the old maxim – when Beijing says "win-win", it means China must "win twice".

THE GIST

After finishing his schooling in 1969, Wang Yi was "sent down" as part of the 'Xiaxiang' movement during the Cultural Revolution to work in the icy climes of Heilongjiang province

He studied Japanese history and language during college thereafter in Beijing, and joined the Foreign Ministry in 1982

He was appointed the Foreign Minister of China in 2013 by President Xi Jinping, and elevated to the elite 24-member Politburo in 2022

The 'silver fox' of Chinese diplomacy

चीनी कूटनीति का 'सिल्वर फॉक्स'

The Communist Party of China Politburo member, with more sway than other Ministers due to his seniority in the party structure, is now the unassailable Czar of President Xi Jinping's foreign policy

चीनी कम्युनिस्ट पार्टी के पोलितब्यूरो सदस्य, पार्टी संरचना में अपनी वरिष्ठता के कारण अन्य मंत्रियों की तुलना में अधिक प्रभाव रखने वाले, अब राष्ट्रपति शी जिनपिंग की विदेश नीति के अजेय ज़ार हैं

- In **June 2014**, days after **Prime Minister Narendra Modi** had been sworn in for the first time, one of the first high-level visitors from outside the **SAARC** region was **Wang Yi**.
जून 2014 में, प्रधानमंत्री नरेंद्र मोदी के पहली बार शपथ लेने के कुछ ही दिनों बाद, सार्क क्षेत्र से बाहर के पहले उच्च-स्तरीय आगंतुकों में से एक वांग यी थे।
- Mr. Wang, who was appointed the **Foreign Minister of China in 2013**, travelled to **New Delhi** as **Special Envoy of President Xi Jinping** to meet Mr. Modi, whom he called an "old



friend of China”, referring to Mr. Modi’s visits during his tenure as **Gujarat Chief Minister**, and said the **NDA’s** return to power had “injected a new vitality into an ancient civilisation”.

वांग, जिन्हें 2013 में चीन का विदेश मंत्री नियुक्त किया गया था, नई दिल्ली गए, राष्ट्रपति शी जिनपिंग के विशेष दूत के रूप में श्री मोदी से मिलने के लिए, जिन्होंने उन्होंने “चीन का पुराना मित्र” कहा, श्री मोदी के गुजरात के मुख्यमंत्री कार्यकाल के दौरान किए गए दौरों का हवाला देते हुए, और कहा कि एनडीए की सत्ता में वापसी ने “एक प्राचीन सभ्यता में नई ऊर्जा का संचार किया है”।

- Mr. Wang’s mission was clear — to secure a visit by Mr. Xi to **Delhi** that September, and to invite Mr. Modi to **Beijing** soon after. Both visits were cleared quickly.

वांग का मिशन स्पष्ट था — उस सितंबर में शी जिनपिंग की दिल्ली यात्रा सुनिश्चित करना, और जल्द ही श्री मोदी को बीजिंग आमंत्रित करना। दोनों यात्राओं को जल्दी मंजूरी मिल गई।

- A few days after Mr. Wang’s visit on **June 8-9**, the government also decided to put off two other engagements: the **India-U.S.-Japan trilateral (the Quad was not revived until 2017)**, set for **June 23-24** in **Delhi**, was cancelled, and Mr. Modi postponed his visit to **Japan** that had been fixed for **July 3-5**, ostensibly due to an upcoming **Parliament session**, much to his hosts’ disappointment.

वांग की 8-9 जून की यात्रा के कुछ दिनों बाद, सरकार ने दो अन्य कार्यक्रमों को भी स्थगित करने का निर्णय लिया: **भारत-अमेरिका-जापान त्रिपक्षीय (क्वाड को 2017 तक पुनर्जीवित नहीं किया गया था)**, जो 23-24 जून को दिल्ली में होना था, रद्द कर दिया गया, और श्री मोदी ने अपनी जापान यात्रा, जो 3-5 जुलाई के लिए तय थी, स्थगित कर दी, स्पष्ट रूप से आगामी संसद सत्र के कारण, जिससे उनके मेज़बानों को निराशा हुई।

- Speculation in **South Block** was rife: did the Chinese **Foreign Minister** have something to do with the decisions, to clear the “optics” before the **Xi** visit in **September 2014**?

साउथ ब्लॉक में अटकलें तेज़ थीं: क्या चीनी विदेश मंत्री का इन निर्णयों से कुछ लेना-देना था, ताकि सितंबर 2014 में शी की यात्रा से पहले “दृश्य” साफ़ किया जा सके?

- Called the ‘**silver fox**’ for his grey haired visage as much as for his slick manner, **Wang Yi** is now the unassailable **Czar** of **Xi Jinping’s** foreign policy, with more sway than other Ministers due to his seniority in the party structure.

अपने सफ़ेद बालों वाले रूप और चतुर अंदाज़ के कारण ‘सिल्वर फॉक्स’ कहे जाने वाले वांग यी अब शी जिनपिंग की विदेश नीति के अजेय ज़ार हैं, पार्टी संरचना में अपनी वरिष्ठता के कारण अन्य मंत्रियों से अधिक प्रभाव रखते हुए।

- Insiders point out that he wears several hats now — he was elevated to the elite **24-member Politburo in 2022**, and is **Director of the Office of the Central Commission for Foreign Affairs**.

जानकार बताते हैं कि अब वे कई भूमिकाएँ निभाते हैं — उन्हें 2022 में 24 सदस्यीय पोलितब्यूरो में पदोन्नत किया गया, और वे केंद्रीय विदेशी मामलों के आयोग कार्यालय के निदेशक हैं।

- He was elevated to the **Politburo** after the informal retirement age of **68**, another sign of his clout, and although he handed over charge as **Foreign Minister** to **Qin Gang** in **December 2022**, he was brought back within months.

उन्हें 68 वर्ष की अनौपचारिक सेवानिवृत्ति आयु के बाद पोलितब्यूरो में पदोन्नत किया गया, जो उनके प्रभाव का एक और संकेत है, और यद्यपि उन्होंने दिसंबर 2022 में विदेश मंत्री का कार्यभार छिन गांग को सौंप दिया था, उन्हें कुछ ही महीनों में वापस बुला लिया गया।

- Like **Russian Foreign Minister Sergey Lavrov**, and more recently **External Affairs Minister S. Jaishankar**, Mr. Wang is part of a breed of **seasoned Foreign Ministers** who present and sell their leader’s **political vision** in diplomatic terms.

जैसे रूस के विदेश मंत्री सर्गेई लावरोव, और हाल ही में विदेश मंत्री एस. जयशंकर, वैसे ही श्री वांग भी अनुभवी विदेश मंत्रियों की उस श्रेणी में हैं जो अपने नेता की राजनीतिक दृष्टि को कूटनीतिक शब्दों में प्रस्तुत और प्रचारित करते हैं।

- In the **2010s**, he was credited with China’s ‘**wolf warrior**’ **diplomacy**, of abrasive and assertive public messaging that reflected China’s **hard power status**.

2010 के दशक में उन्हें चीन की ‘वुल्फ वॉरियर’ कूटनीति का श्रेय दिया गया, जिसमें आक्रामक और दृढ़ सार्वजनिक संदेश थे, जो चीन की सख्त ताकत की स्थिति को दर्शाते थे।



- However, when Chinese popularity dipped worldwide, especially after the **COVID-19 pandemic**, Mr. Wang was also credited with **abandoning the policy, mending fences, and replacing 'wolf warrior' diplomats with more polished colleagues**.
हालांकि, जब चीन की लोकप्रियता विश्व स्तर पर गिरी, विशेष रूप से **कोविड-19 महामारी** के बाद, श्री वांग को इस नीति को **त्यागने**, संबंध सुधारने और **'वुल्फ वॉरियर' राजनयिकों** को अधिक परिष्कृत सहयोगियों से बदलने का श्रेय भी दिया गया।
- Mr. Wang's education in state-fare began during the **Cultural Revolution**, when he was "sent down" as part of the **'Xiexiang' movement** to work in the icy climes of **Heilongjiang province** after finishing schooling in **1969**.
श्री वांग की राज्य-शिक्षा की शुरुआत **सांस्कृतिक क्रांति** के दौरान हुई, जब उन्हें **'Xiexiang आंदोलन'** के हिस्से के रूप में **1969** में पढ़ाई पूरी करने के बाद **हेइलॉंगजियांग प्रांत** की ठंडी जलवायु में काम करने के लिए "भेजा गया"।
- He studied **Japanese history and language** during college in **Beijing**, and joined the **Foreign Ministry in 1982**.
उन्होंने **बीजिंग** में कॉलेज के दौरान **जापानी इतिहास और भाषा** का अध्ययन किया और **1982** में **विदेश मंत्रालय** में शामिल हुए।
- He served twice in the **Chinese Embassy in Japan**, including as **Ambassador from 2004 to 2007**.
उन्होंने **जापान में चीनी दूतावास** में दो बार सेवा की, जिसमें **2004 से 2007 तक राजदूत** के रूप में भी शामिल है।

Backroom talks

गुप्त वार्ताएँ

- **South Block Mandarins** had an introduction to Mr. Wang's manner, more suave but also more purposeful than his predecessors, in the **early 2000s**.
साउथ ब्लॉक के अधिकारियों ने श्री वांग के व्यवहार से परिचय पाया, जो अपने पूर्ववर्तियों से अधिक परिष्कृत लेकिन अधिक उद्देश्यपूर्ण थे, **2000 के शुरुआती वर्षों** में।
- As **Vice Foreign Minister for Asian Affairs**, he had conducted many of the backroom negotiations to prepare for Prime Minister **Atal Behari Vajpayee's visit to Beijing in 2003**.
एशियाई मामलों के उप-विदेश मंत्री के रूप में, उन्होंने प्रधानमंत्री **अटल बिहारी वाजपेयी की 2003 में बीजिंग यात्रा** की तैयारी के लिए कई गुप्त वार्ताएँ कीं।
- Officials at the time remember his **hard bargaining** for a deal on India's recognition of **China's control over Tibet** and for **China to recognise Sikkim** as an Indian State.
उस समय के अधिकारी उनकी **कठिन सौदेबाजी** को याद करते हैं, जिसमें भारत द्वारा **तिब्बत पर चीन के नियंत्रण की मान्यता** और **चीन द्वारा सिक्किम को भारतीय राज्य मानने का समझौता** शामिल था।
- Eventually, Indian officials felt **disappointed** that although the joint declaration had an explicit paragraph saying India "**recognises that the Tibet Autonomous Region is part of the territory of the People's Republic of China**", the paragraph on



Sikkim was not as unequivocal, only mentioning 'Sikkim State' while referring to border trade at **Nathu-La pass**.

अंततः भारतीय अधिकारी निराश हुए कि यद्यपि संयुक्त घोषणा में स्पष्ट रूप से कहा गया था कि भारत "तिब्बत स्वायत्त क्षेत्र को चीन जनवादी गणराज्य का हिस्सा मानता है", लेकिन सिक्किम पर अनुच्छेद उतना स्पष्ट नहीं था और केवल **नाथु-ला दर्रे** पर सीमा व्यापार का उल्लेख करते हुए 'सिक्किम राज्य' कहा गया।

- "He is **suave and sophisticated**, but also quite **tenacious**, and can dig his heels in during negotiations, so it is necessary to always be **vigilant**," says former Ambassador to China **Ashok Kantha**.

"वह परिष्कृत और समझदार हैं, लेकिन साथ ही काफी दृढ़ भी हैं और वार्ताओं में अपनी बात पर अड़े रह सकते हैं, इसलिए हमेशा सतर्क रहना ज़रूरी है," कहते हैं चीन में भारत के पूर्व राजदूत **अशोक कान्था**।

- Indian officials have often had to push back in talks, but found him a **result-oriented interlocutor**.

भारतीय अधिकारियों को वार्ताओं में अक्सर पीछे धकेलना पड़ा, लेकिन उन्होंने उन्हें एक परिणाम-उन्मुख वार्ताकार पाया।

- As former Director of China's '**Taiwan affairs office**' (2008–2013), Mr. Wang has been keen for India to refer to its '**One China**' policy.

चीन के '**ताइवान मामलों के कार्यालय**' (2008–2013) के पूर्व निदेशक के रूप में, श्री वांग चाहते थे कि भारत अपनी '**वन चाइना नीति**' का उल्लेख करे।

- However, since 2010, New Delhi stopped including the phrase in protest against **China's stapled visas** to Indians from **Arunachal Pradesh and Jammu & Kashmir**. हालांकि, 2010 से नई दिल्ली ने चीन द्वारा **अरुणाचल प्रदेश और जम्मू-कश्मीर** के भारतीयों को **स्टेपल्ड वीजा** देने की नीति के विरोध में इस वाक्यांश को शामिल करना बंद कर दिया।

- When pressed by Mr. Wang to reaffirm India's adherence to the '**One China**' policy, former External Affairs Minister **Sushma Swaraj** once retorted: "**If China affirms its One India policy, we will consider it.**"

जब श्री वांग ने भारत से '**वन चाइना नीति**' पर फिर से प्रतिबद्धता जताने के लिए दबाव डाला, तो पूर्व विदेश मंत्री **सुषमा स्वराज** ने जवाब दिया: "**यदि चीन अपनी वन इंडिया नीति स्वीकार करता है, तो हम इसे विचार करेंगे।**"

- Nonetheless, Mr. Wang has persisted, including this week in talks with **External Affairs Minister S. Jaishankar**, where the Chinese side slipped a line on **Taiwan** into its readout, forcing the **Ministry of External Affairs** to clarify.

फिर भी, श्री वांग ने दबाव बनाए रखा, यहाँ तक कि इस सप्ताह **विदेश मंत्री एस. जयशंकर** के साथ वार्ता में, जहाँ चीनी पक्ष ने अपने बयान में **ताइवान** पर एक पंक्ति जोड़ दी, जिससे **विदेश मंत्रालय** को स्पष्टीकरण देना पड़ा।

Diplomatic missions

कूटनीतिक मिशन

- As **Foreign Minister**, Mr. Wang is known for many diplomatic missions, including: **विदेश मंत्री** के रूप में, श्री वांग कई कूटनीतिक मिशनों के लिए जाने जाते हैं, जिनमें शामिल हैं:



- Bringing **U.S. Secretary of State Rex Tillerson** to Beijing in **2017** for Mr. Xi's **Mar-a-Lago summit** with U.S. President **Donald Trump**.
2017 में अमेरिकी विदेश मंत्री रेक्स टिलरसन को बीजिंग लाना, ताकि राष्ट्रपति शी का मार-ए-लागो शिखर सम्मेलन अमेरिकी राष्ट्रपति डोनाल्ड ट्रम्प के साथ हो सके।
- Brokering talks between **Iran and Saudi Arabia** to reopen diplomatic ties in **2023**.
2023 में ईरान और सऊदी अरब के बीच कूटनीतिक संबंध फिर से शुरू कराने के लिए मध्यस्थता।
- Helping in **U.S.-North Korea** talks, and later between **Cambodia and Thailand, Afghanistan and Pakistan, Myanmar's military junta and ethnic groups**, and in **2023** an effort to bring **Russia and Ukraine** to the table.
अमेरिका-उत्तर कोरिया वार्ताओं में मदद, और बाद में कंबोडिया और थाईलैंड, अफगानिस्तान और पाकिस्तान, म्यांमार की सैन्य जुंटा और जातीय समूहों के बीच, तथा 2023 में रूस और यूक्रेन को वार्ता की मेज़ पर लाने का प्रयास।
- **India has often been concerned about his 'South Asian' groupings, including one with Pakistan and Bangladesh on trade, seen as a plan to create a 'SAARC minus India'.**
भारत अक्सर उनकी 'दक्षिण एशियाई समूहबद्धता' को लेकर चिंतित रहा है, जिसमें पाकिस्तान और बांग्लादेश के साथ व्यापार भी शामिल है, जिसे 'भारत के बिना सार्क' बनाने की योजना के रूप में देखा जाता है।
- As **Special Representative for border talks**, Mr. Wang engages with both **S. Jaishankar** and **National Security Adviser Ajit Doval**, known for his **tough but smooth-talking style** during the four-year **LAC standoff** and the **Galwan clashes**, and earlier the **Doklam standoff**.
सीमा वार्ता के विशेष प्रतिनिधि के रूप में, श्री वांग एस. जयशंकर और राष्ट्रीय सुरक्षा सलाहकार अजीत डोभाल दोनों से बातचीत करते हैं। वह चार साल के एलएसी गतिरोध और गलवान संघर्ष, और पहले डोकलाम गतिरोध के दौरान अपने कठोर लेकिन सहज बोलने के अंदाज़ के लिए जाने जाते हैं।
- In **May 2025**, he set up the first **"intergovernmental organisation for international mediation"** in **Hong Kong**, outlining his vision of promoting amicable resolution of disputes.
मई 2025 में, उन्होंने हांगकांग में पहला "अंतरराष्ट्रीय मध्यस्थता के लिए अंतर-सरकारी संगठन" स्थापित किया, और विवादों के सौहार्दपूर्ण समाधान को बढ़ावा देने की अपनी दृष्टि प्रस्तुत की।
- However, interlocutors feel that Mr. Wang's version of **"win-win"** actually means **"China must win twice."**
हालांकि, वार्ताकारों का मानना है कि श्री वांग की "विन-विन" की परिभाषा वास्तव में "चीन को दो बार जीतना चाहिए" का मतलब है।

Great Leap Forward (1958–1962)

- The Great Leap Forward (GLF) was an economic and social campaign initiated by the Communist Party of China (CPC) under the leadership of Mao Zedong.
- Period: 1958–1962.



- Objective: To transform China from a primarily agrarian economy into a modern socialist society through rapid industrialization and collectivization.
-

Historical Background

- After the success of the Chinese Communist Revolution in 1949, the new leadership sought to rapidly modernize China.
 - The First Five-Year Plan (1953–1957) emphasized Soviet-style industrialization with state-owned enterprises.
 - Mao was dissatisfied with the relatively slow pace of industrial growth and wanted a distinctly Chinese model, less dependent on the Soviet Union.
 - In 1958, the CPC announced the Great Leap Forward as a second push towards building a socialist economy.
-

Key Features of the Great Leap Forward

Collectivization of Agriculture

- Small farms were merged into People's Communes, each containing around 5,000 households.
- Communes combined agriculture, industry, education, and defense into a single unit.
- Private property and individual farming were abolished.

Industrial Ambitions

- Emphasis on rapid steel production.
- Peasants and local communes were mobilized to build “backyard furnaces” to smelt steel, diverting labor away from agriculture.
- The target was to surpass Britain's steel output within a few years.

Decentralized Economic Planning

- Decision-making was pushed down to local cadres instead of central experts.
- Local officials exaggerated production figures to meet quotas, leading to severe misreporting.

Mobilization of Mass Labour

- Instead of relying on advanced technology, China tried to rely on sheer numbers of people working simultaneously on agricultural and industrial projects.
 - Large-scale irrigation and dam projects were carried out with manual labor.
-

Consequences of the Great Leap Forward



Economic Consequences

- Steel output rose initially, but most of the steel produced in backyard furnaces was of **poor quality and unusable**.
- Agricultural productivity plummeted due to:
 - Diversion of labor to industry.
 - Faulty agricultural practices (e.g., “**deep plowing**” and **close planting** encouraged by Mao, based on pseudoscience).
 - Over-reporting of grain yields, leading to excessive state procurement.

Famine

- Resulted in the **Great Chinese Famine (1959–1961)**, considered one of the worst in human history.
- Death toll estimates range from **15 million to 45 million people**.
- Food shortages were worsened by poor policy, natural disasters, and restricted imports.

Political Consequences

- Mao’s prestige was initially high but fell after the failure.
- **Liu Shaoqi and Deng Xiaoping** took more control over economic management, introducing pragmatic reforms.
- The campaign exposed the dangers of excessive **centralization, collectivization, and ideological overconfidence**.

Cultural Revolution (1966–1976)

- The **Great Proletarian Cultural Revolution** was launched by **Mao Zedong** in 1966 in the People’s Republic of China.
- Mao’s objective was to **reassert Communist ideology**, eliminate “bourgeois” elements, and strengthen his political control after setbacks like the **Great Leap Forward (1958–62)**.

Key Features

- **Leadership:** Spearheaded by Mao, supported by the **Red Guards (student youth groups)**.
- **Target:** Teachers, intellectuals, bureaucrats, and even Communist Party members accused of being “capitalist roaders.”
- **Action:** Widespread campaigns of criticism, humiliation, and “struggle sessions” against perceived enemies.
- **Education:** Universities and schools were closed; education was disrupted for a decade.
- **Cultural Impact:** Ancient traditions, art, temples, and books were destroyed in the name of eliminating the “Four Olds” (Old Customs, Old Culture, Old Habits, Old Ideas).
- **Economic Impact:** Production was affected as millions were mobilised in political campaigns instead of productive activities.

Xiaxiang’ Movement (Rustication Movement)



TELEGRAM CHANNEL: <https://t.me/patrioticIAS>

YOUTUBE CHANNEL: <https://www.youtube.com/@PatrioticIAS>

CONTACT: 9971932488



- The **Xiexiang Movement** (上山下乡运动), meaning “Up to the Mountains and Down to the Countryside Movement,” was a **major socio-political campaign** during the Cultural Revolution.
- It began in the **late 1960s** and was aimed at redistributing urban youth to rural areas.

Key Features

- **Participants:** Millions of educated urban youths (zhiqing, “educated youth”) were **sent to live and work in rural villages**.
- **Objective:**
 - Reduce urban unemployment.
 - “Re-educate” youth through manual labour alongside peasants.
 - Spread revolutionary ideology in rural China.
 - **Scale:** Between **1968 and 1979**, an estimated **17 million youths** were relocated from cities to countryside.
 - **Process:** Organised by local party committees; youths often lived in poverty, with limited opportunities for return to cities.

PATRIOTIC IAS



Saffron's southern face

C.P. Radhakrishnan

The BJP leader, who rose to prominence after his 1998 Lok Sabha election victory from Coimbatore, soon after a series of blasts shook the city, is the party's Vice-Presidential candidate

GS I: Geography of TN

B. Kolappan

A series of bomb blasts on February 14, 1998 in Coimbatore proved to be a significant turning point in the career of C.P. Radhakrishnan, the BJP-led NDA's Vice-Presidential candidate. The explosions occurred at various locations, including near a rally that was to be addressed by BJP leader L.K. Advani, just before the second phase of the Lok Sabha elections. The blasts claimed 58 lives.

The blasts, orchestrated by Al-Umma — a radical Islamist organisation born in the aftermath of the Babri Masjid demolition — had polarised the political terrain of the city. Founded by S.A. Basha in 1993, Al-Umma had previously targeted the RSS office in Chennai, resulting in the deaths of 11 people. The Coimbatore blasts turned the tide in favour of the BJP, which was then part of the AIADMK alliance.

Three BJP candidates secured victories, including Mr. Radhakrishnan, who won the Coimbatore Lok Sabha seat with a margin of over 1.4 lakh votes. Following this success, the BJP and its allies, led by A.B. Vajpayee, formed the government at the Centre. However, the government lasted only one year, as AIADMK leader Jayalalith-



aa withdrew her support.

Subsequently, the BJP formed an alliance with the DMK, then the ruling party in Tamil Nadu. Mr. Radhakrishnan was re-elected from Coimbatore — the 'capital of the Kongu region' and an industrial hub of Tamil Nadu — further propelled his political ascent.

Turn to the Sangh

Mr. Radhakrishnan, a businessman who runs textile units, comes from a family of Congress supporters. However, his political leanings shifted towards the Janata Party and Jan Sangh.

He accompanied the late Prime Minister Chandra Shekhar on a nationwide padayatra from Kaniyakkumari in 1983. He also worked closely with the Hindu Munnani, founded by Rama Gopalan, who spearheaded the Hindutva ideology in Tamil Nadu. Later, he joined the RSS, eventually becoming the

president of the Sangh in Tiruppur.

A member of the socially dominant and economically prosperous Kongu Vellalar community, he became the secretary of the BJP's Tamil Nadu unit in 1996. He served as the party's president between 2003 and 2006. Within the Tamil Nadu BJP, while the late L. Ganesan was the blue-eyed boy of L.K. Advani, Mr. Radhakrishnan had a similarly close bond with Vajpayee. An avid sportsman, he is a table-tennis champion.

The communally polarised Kongu belt, following the Coimbatore bomb blasts, prepared the ground for the emergence of BJP leaders from the Kongu Vellalar community, known as Gounders. The Kongu region is also a stronghold of the AIADMK, now an ally of the BJP, which elected more MLAs from the party in the last two Assembly elections in the State. AIADMK leader and former Chief Minister

Edappadi K. Palaniswami is also a member of the community.

As the Kongu region is a key focus for the BJP leadership, it has consistently chosen leaders from the area and rewarded them accordingly. In many ways, Mr. Radhakrishnan is the first prominent BJP face from the region. After him came L. Murugan, hailing from the Scheduled Caste, who became the BJP's State president and is now a Union Minister. K. Annamalai, an IPS officer-turned-politician, is also a Kongu Vellalar. The party's All India Mahila Morcha leader and MLA Vanathi Srinivasan also belongs to the community.

By nominating Mr. Radhakrishnan as the Vice-Presidential candidate, the BJP seeks to offer the community a prominent national presence after a gap of many years. After Dr. P. Subbarayan, a Congress leader and Union Minister, and C. Subramaniam, who served as Union Minister and Maharashtra Governor, the community did not secure a vital place in national politics.

The BJP appointed Mr. Radhakrishnan as the Governor of Jharkhand before transferring him to the Raj Bhavan in Maharashtra. His position as Vice-President is expected to bolster the BJP's influence in the Kongu region.

Saffron's southern face केसरिया का दक्षिणी चेहरा

The BJP leader, who rose to prominence after his 1998 Lok Sabha election victory from Coimbatore, soon after a series of blasts shook the city, is the party's Vice-Presidential candidate बीजेपी नेता, जो 1998 लोकसभा चुनाव में कोयंबटूर से जीत के बाद प्रमुखता से उभरे, जब धमाकों की श्रृंखला ने शहर को हिला दिया था, पार्टी के उपराष्ट्रपति पद के उम्मीदवार हैं

• A series of bomb blasts on February 14, 1998 in Coimbatore proved to be a significant turning point in the career of C.P. Radhakrishnan, the BJP-led NDA's Vice-Presidential candidate.

14 फरवरी, 1998 को कोयंबटूर में हुए बम धमाकों की श्रृंखला

सी.पी. राधाकृष्णन (बीजेपी-एनडीए के उपराष्ट्रपति पद के उम्मीदवार) के करियर का एक महत्वपूर्ण मोड़ साबित हुई।

- The explosions occurred at various locations, including near a rally that was to be addressed by BJP leader L.K. Advani, just before the second phase of the Lok Sabha elections. The blasts claimed 58 lives.
ये धमाके कई जगहों पर हुए, जिनमें से एक स्थल पर बीजेपी नेता एल.के. आडवाणी की रैली होनी थी, लोकसभा चुनाव के दूसरे चरण से ठीक पहले। धमाकों में 58 लोगों की जान गई।
- The blasts, orchestrated by Al-Umma — a radical Islamist organisation born in the aftermath of the Babri Masjid demolition — had polarised the political terrain of the city.
ये धमाके अल-उम्मा द्वारा किए गए — यह एक कट्टरपंथी इस्लामी संगठन था जो बाबरी मस्जिद विध्वंस के बाद उभरा — और इसने शहर के राजनीतिक परिदृश्य को ध्रुवीकृत कर दिया।
- Founded by S.A. Basha in 1993, Al-Umma had previously targeted the RSS office in Chennai, resulting in the deaths of 11 people.
1993 में एस.ए. बाशा द्वारा स्थापित अल-उम्मा ने पहले चेन्नई में आरएसएस कार्यालय को निशाना बनाया था, जिसमें 11 लोगों की मौत हुई थी।
- The Coimbatore blasts turned the tide in favour of the BJP, which was then part of the AIADMK alliance.



कोयंबटूर धमाकों ने बीजेपी के पक्ष में माहौल बदल दिया, जो उस समय एआईएडीएमके गठबंधन का हिस्सा थी।

- Three **BJP candidates** secured victories, including Mr. Radhakrishnan, who won the **Coimbatore Lok Sabha seat** with a margin of over **1.4 lakh votes**.
तीन बीजेपी उम्मीदवारों ने जीत हासिल की, जिनमें श्री राधाकृष्णन शामिल थे, जिन्होंने कोयंबटूर लोकसभा सीट 1.4 लाख से अधिक वोटों से जीती।
- Following this success, the **BJP and its allies**, led by **A.B. Vajpayee**, formed the government at the Centre.
इस सफलता के बाद, बीजेपी और उसके सहयोगियों ने अटल बिहारी वाजपेयी के नेतृत्व में केंद्र में सरकार बनाई।
- However, the government lasted only **one year**, as **AIADMK leader Jayalalitha** withdrew her support.
हालाँकि, यह सरकार केवल एक साल चली, क्योंकि एआईएडीएमके नेता जयललिता ने अपना समर्थन वापस ले लिया।
- Subsequently, the BJP formed an alliance with the **DMK**, then the ruling party in Tamil Nadu. Mr. Radhakrishnan was re-elected from Coimbatore in the **1999 general elections**.
इसके बाद बीजेपी ने डीएमके के साथ गठबंधन किया, जो उस समय तमिलनाडु की सत्तारूढ़ पार्टी थी। श्री राधाकृष्णन 1999 के आम चुनावों में कोयंबटूर से फिर से चुने गए।
- His election from Coimbatore — the '**capital**' of the **Kongu region** and an industrial hub of **Tamil Nadu** — further propelled his political ascent.
उनका कोयंबटूर से चुनाव — जो कोंगु क्षेत्र की 'राजधानी' और तमिलनाडु का औद्योगिक केंद्र है — ने उनके राजनीतिक उत्थान को और तेज किया।
- **Turn to the Sangh संगठन की ओर रुख**
- Mr. Radhakrishnan, a businessman who runs textile units, comes from a family of **Congress supporters**. However, his political leanings shifted towards the **Janata Party** and **Jan Sangh**.
श्री राधाकृष्णन, एक व्यवसायी जो वस्त्र इकाइयाँ चलाते हैं, कांग्रेस समर्थक परिवार से आते हैं। हालाँकि, उनकी राजनीतिक झुकाव जनता पार्टी और जन संघ की ओर हो गया।
- He accompanied the late **Prime Minister Chandra Shekhar** on a nationwide padayatra from **Kanniyakumari in 1983**. He also worked closely with the **Hindu Munnani**, founded by **Rama Gopalan**.
उन्होंने पूर्व प्रधानमंत्री चंद्रशेखर के साथ 1983 में कन्याकुमारी से देशव्यापी पदयात्रा की। उन्होंने हिंदू मुन्नानी (जिसकी स्थापना राम गोपालन ने की थी) के साथ भी करीबी काम किया।
- Later, he joined the **RSS**, eventually becoming the **president of the Sangh in Tiruppur**.
बाद में, वे आरएसएस से जुड़े और अंततः तिरुपुर में संघ के अध्यक्ष बने।
- A member of the **Kongu Vellalar community**, he became the **secretary of the BJP's Tamil Nadu unit in 1996**. He served as the party's **president between 2003 and 2006**.
कोंगु वेल्लालर समुदाय के सदस्य, वे 1996 में बीजेपी की तमिलनाडु इकाई के सचिव बने। उन्होंने 2003 से 2006 के बीच पार्टी के अध्यक्ष के रूप में कार्य किया।
- Within the Tamil Nadu BJP, while the late **L. Ganesan** was close to **L.K. Advani**, Mr. Radhakrishnan had a similarly close bond with **Vajpayee**.
तमिलनाडु बीजेपी में, जहाँ एल. गणेशन एल.के. आडवाणी के करीबी थे, वहीं श्री राधाकृष्णन का रिश्ता वाजपेयी से उतना ही करीबी था।
- An avid sportsman, he is a **table-tennis champion**.
एक उत्साही खिलाड़ी, वे टेबल-टेनिस चैम्पियन हैं।
- The communally polarised **Kongu belt**, following the **Coimbatore bomb blasts**, prepared the ground for the emergence of **BJP leaders from the Kongu Vellalar community**.
साम्प्रदायिक रूप से ध्रुवीकृत कोंगु क्षेत्र, कोयंबटूर बम धमाकों के बाद, कोंगु वेल्लालर समुदाय से बीजेपी नेताओं के उभरने की ज़मीन बनी।
- The **Kongu region** is also a stronghold of the **AIADMK**, now an ally of the BJP.
कोंगु क्षेत्र एआईएडीएमके का गढ़ भी है, जो अब बीजेपी की सहयोगी है।
- AIADMK leader and former Chief Minister **Edappadi K. Palaniswami** is also a member of the community.
एआईएडीएमके नेता और पूर्व मुख्यमंत्री एडप्पाडी के. पलानीस्वामी भी इस समुदाय के सदस्य हैं।



- As the **Kongu region** is a key focus for the BJP leadership, it has consistently chosen leaders from the area and rewarded them accordingly.
चूँकि **कोंगु क्षेत्र** बीजेपी नेतृत्व के लिए मुख्य केंद्र है, इसलिए पार्टी ने लगातार इस क्षेत्र से नेताओं को चुना और उन्हें तदनुसार पुरस्कृत किया।
- In many ways, Mr. Radhakrishnan is the **first prominent BJP face** from the region. After him came **L. Murugan, K. Annamalai, and Vanathi Srinivasan**, all from the Kongu belt.
कई मायनों में, **श्री राधाकृष्णन** इस क्षेत्र से **पहला प्रमुख बीजेपी चेहरा** हैं। उनके बाद **एल. मुरुगन, के. अन्नामलाई, और वनाथी श्रीनिवासन** (सभी कोंगु क्षेत्र से) आए।
- By nominating Mr. Radhakrishnan as the **Vice-Presidential candidate**, the BJP seeks to offer the **community a prominent national presence** after many years.
श्री राधाकृष्णन को **उपराष्ट्रपति पद का उम्मीदवार** बनाकर, बीजेपी इस **समुदाय को राष्ट्रीय स्तर पर प्रमुख उपस्थिति** देना चाहती है।
- The BJP appointed Mr. Radhakrishnan as the **Governor of Jharkhand**, later transferring him to the **Raj Bhavan in Maharashtra**.
बीजेपी ने **श्री राधाकृष्णन** को पहले **झारखंड का राज्यपाल** नियुक्त किया, बाद में उन्हें **महाराष्ट्र राजभवन** में स्थानांतरित कर दिया।
- His position as **Vice-President** is expected to bolster the BJP's **influence in the Kongu region**.
उनका **उपराष्ट्रपति** का पद बीजेपी के **कोंगु क्षेत्र में प्रभाव** को मज़बूत करने की उम्मीद है।

Kongu Region

- **Kongu Region** refers to the **western part of Tamil Nadu**, historically known as **Kongu Nadu**.
- It is a **geographical, cultural, and historical region**, comprising the fertile western districts of Tamil Nadu.
- Known for its **agriculture, textile industry, trade networks, and distinct cultural traditions**, it played an important role in South Indian history.

Geographical Background

- The Kongu region is located in **western Tamil Nadu**, bordered by the **Western Ghats, Eastern Ghats, and the Kaveri River basin**.
- Major districts forming part of the Kongu region today: **Coimbatore, Erode, Tiruppur, Salem, Namakkal, Karur, Dharmapuri, Krishnagiri, Nilgiris**.
- Rivers: Mainly nourished by the **Kaveri River and its tributaries** like Bhavani, Amaravathi, and Noyyal.
- Agro-climatic Zone: Part of the **Western Agro-Climatic Zone of Tamil Nadu**, with fertile soils and irrigation sources.

Historical Background

- In ancient Sangam literature, the region is referred to as **Kongu Nadu**, a part of the Tamilakam cultural-geographical division.
- The name “Kongu” is derived from the Tamil word “**Kongu**” (**honey**), symbolizing fertility and prosperity.
- Historically ruled by several dynasties:
 - **Cheras** (part of their western dominions).
 - **Gangas of Talakad** (3rd–10th centuries CE).
 - **Cholas and Pandyas** (medieval period).



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- Later, came under **Vijayanagara Empire** and **Madurai Nayakas**.
- During colonial rule, it was under the **Madras Presidency**.

Economy

• Agriculture:

- Fertile lands of Kaveri basin support crops like **paddy, sugarcane, turmeric, banana, coconut, and groundnut**.
- Famous for **Erode turmeric** (with GI tag) and **Kangeyam cattle breed**.

• Industry:

- Known as the “**Manchester of South India**” due to textile hubs in **Coimbatore and Tiruppur**.
- **Tiruppur:** Major centre of cotton knitwear exports (over 50% of India’s knitwear exports).
- Engineering industries, foundries, and pump manufacturing in Coimbatore are nationally significant.

PATRIOTIC IAS



Crediting care work: a T.N. story

While the disparity in payment for male and female workers remains as stark as ever, the Tamil Nadu government's **Kalaiginar Mahalir Urimai Thogai scheme** recognises the unpaid labour, giving many women dignity, self-respect, and financial independence. **Meghna M.** does a SWOT analysis to see what works and what needs to be done better

GSF Society

For S. Maheswari, 45, receiving ₹1,000 a month under the Kalaiginar Mahalir Urimai Thogai scheme means being able to afford her diabetes medicines. "It's very difficult to run a family of four with just my monthly earning of ₹10,000. I have to ensure the education of two children, look after my disabled husband, and do the household chores. My health takes a back seat," says the resident of Mahabalipuram, who runs a tea stall.

The medicines cost about ₹1,500. She started taking the pills only after the scheme was introduced because she finally had enough money to spend on necessities.

Introduced in 2023, the scheme is aimed at recognising women for doing the domestic work in their household that has historically fallen on the women's shoulders. The government gives ₹1,000 a month to women heads of families earning less than ₹2.5 lakh a year. With the scheme, Tamil Nadu became the first State in the country to recognise women's unpaid domestic and care work to society and compensate them for it. Since then, many other States have followed suit. Among them are Karnataka, Maharashtra, and Jharkhand.

About 81.5% women take part in unpaid domestic work, compared with 27% men, in India, according to the Time Use Survey 2024 released in February. In a day, women spent, on an average, 289 minutes on unpaid domestic services for household members, while men spent 88 minutes. Women also spent 137 minutes a day caring for their household members, compared with 75 minutes for men.

Saving up

As the scheme nears its second anniversary, women across the State say that the modest sum has not only helped them buy household items but has also given them financial independence and enabled them to save for education, get increased access to healthcare, and start businesses. The scheme benefits more than 1.14 crore people. However, it is not without shortcomings: many women report that they have been left out of the scheme or have received benefits only sporadically in the last two years.

"This ₹1,000 might seem to be a very small amount, but it gives me the confidence that I can handle emergencies without borrowing. The monthly support isn't just a financial benefit, it's a source of dignity and independence," says V. Malar, a domestic worker in Tiruchi.

A recent study on the scheme, 'A Right to Care, A Right to Welfare: A Study of the Kalaiginar Mahalir Urimai Thittam' – done by a team of researchers who are part of the Laws of Social Re-



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V. MALAR, domestic worker in Tiruchi

production project, Dickson Poon School of Law, King's College London – showed that 49% of the women spend the money on household items. The researchers were led by Prabha Kotiswaran, professor of law and social justice, Dickson Poon School of Law.

Pachayee, 60, of Pudur village in Erode, is a worker under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). She says the aid enables her to buy essentials for which she earlier had to rely on her husband. She adds that along with the government's free bus travel scheme, the monthly assistance has allowed her to save a small portion of her earnings, for the first time.

'A safety net'

A. Pushpa, a domestic worker from Chennai, calls the aid a safety net. "By the 15th of every month, our salary would run out. We would be worried about how to pay for essential items like gas cylinder, which now costs almost ₹900. But, with this money, we are now able to manage the affairs with some ease," she says.

A. Durga Devi, a single mother from Madurai, and A. Mariammal, 47, a farmworker from Thappathi village in Ettayapuram taluk of Thoothukudi, saved the money for their children's education. Ms. Mariammal did not have a regular income for years until the sum under Kalaiginar Mahalir Urimai Thogai started reaching her bank account a few years ago. "I saved the amount for months, and with some additional money, I paid my son's college fees."

Ms. Mariammal notes that the amount has given women the hope that they can borrow from others in times of emergencies and repay the loans.

A common problem

The ability to repay debts is a common thread in the lives of women *The Hindu* spoke to across the Cauvery delta districts. "I have taken out five loans from different microfinance companies," says Indira G., an agricultural worker of the Parasannallur panchayat in Mayiladuthurai. "For one of the loans, I pay ₹50 daily to an agent who comes to my home, for another, I pay ₹500 weekly, and for the rest, I pay ₹1,600 monthly. Agricultural work is available for only three months a year. For the rest of the time, we sit at home and the debts keep mounting."

K. Manimala, 60, of Pallapatti in the Salem Corporation, says the money helped her travel in autorickshaws in times of emergencies. "It [₹1,000] may be nothing for the middle class or the rich. But, for women like me, it means independence. Earlier, if I wanted to give money to

A senior official of the Tamil Nadu government says that through the camps under the Ungaludan Stalin scheme, the State is addressing the issues of women who haven't got the benefit. By mid-September, these problems would be resolved.

my grandchildren when they visited me, I had to ask my husband for it. Now, I am able to give them money."

M. Eshwari, 38, of Tiruchi started a snacks shop with the money she received under the scheme. "Earlier, we used to depend entirely on my husband's daily wages, which were uncertain. But, after receiving the ₹1,000, I saved a little every month. Eventually, I bought a gas stove, some utensils, and ingredients. It may seem insignificant, but for me, it's a new beginning. I feel proud to earn on my own and contribute to my family."

Hiccups

Many say that they have applied for the aid up to three times, but the money still hasn't reached them. "There has been no SMS regarding the rejection of our applications. Just a message that I have registered [myself]. Nobody is telling me what went wrong," points out A. Deepa, a domestic worker from Chennai. Some receive the money infrequently. "I applied when the scheme was announced. I did not get it for two months and then I got it for the next three months. It's unpredictable..." says B. Radhika, another domestic worker, who earns ₹6,000 a month.

Professor Kotiswaran says Tamil Nadu is one of the few States that makes a mention of unpaid domestic work in its notification. "It put the recognition on the table. However, there is a need for the scheme to go beyond recognising and reducing unpaid work too. Right now, caregivers are being punished."

'Due recognition needed'

Experts stress that through awareness programmes, educational instructions, or public advertisements, Tamil Nadu could educate the masses on its importance. "Tamil Nadu is in a vanguard position. Care work needs to be recognised, in all its forms, whether they are paid or unpaid. Whether it is done by Accredited Social Health Activists or Anganwadi workers or paid domestic workers, care work needs its due recognition in all policies and not just honorariums," she adds. The report shows that given an option, women overwhelmingly prefer paid work. But

it's a double-edged sword, experts point out. "Even if we do reduce unpaid work and have decent work opportunities, employers are reluctant to hire women as they are looked up to execute their care responsibilities, taking care of sick parents and children, and they are most likely to end up taking time off work," says Professor Kotiswaran.

'Essential need'

Akshi Chawla, an independent researcher and writer, underscores the need to stop looking at care as something that only women should provide and look at it for what it is: an essential human need. "All human beings need care at some stage in their lives, whether it is in childhood or old age, or in times of ill-health or injury or disability. Instead of expecting women to shoulder all the care work, we need to design comprehensive policies and infrastructure that can help redistribute the care work, besides ensuring that all those who need care are able to access it easily. The state should ensure wider availability of safe and good quality care facilities [including crèches and elder-care facilities] that can be accessed by everyone who needs it," she says.

A senior official in Tamil Nadu's Special Implementation Programme Department says, "We want the scheme to help people as much as possible and alleviate poverty. However, we will look at the broader idea of care work. Through the camps under the Ungaludan Stalin scheme, we are addressing the issues of women who haven't got the benefit. By mid-September, these problems would be resolved."

'Men must step in'

Noting that any kind of cash transfer scheme will benefit women, Kalpana Karunakaran, a professor of the Indian Institute of Technology-Madras, says, "It comes as a relief for women in the lowest of caste-class stratification. We must remember that the original concern was to monetise and make visible women's unpaid care work. So Kalaiginar Mahalir Urimai Thogai must not remain a poverty alleviation scheme. The public messaging on the scheme needs to make household work visible. Men need to be involved in the discussions as stakeholders. Why can't influential men in power participate in media campaigns with the message that doing household work is everyone's responsibility and not just women's?"

(With inputs from Sibi Sreevathson T.C. in Coimbatore; S.P. Saravanan in Erode; M. Sabari in Salem; C. Palanivel Rajan in Madurai; Shankari Nivethitha B. in Kanniyakumari; and M. Nacchinarkkianyan and Ancy Donal Madonna in Tiruchi.)

Crediting care work: a T.N. story देखभाल कार्य का श्रेय: एक तमिलनाडु कहानी

While the disparity in payment for male and female workers remains as stark as ever, the **Tamil Nadu government's Kalaiginar Mahalir Urimai Thogai scheme** recognises the unpaid labour, giving many women dignity, self-respect, and financial independence. **Meghna M.** does a SWOT analysis to see what works and what needs to be done better.

जब पुरुष और महिला श्रमिकों के भुगतान में असमानता पहले की तरह ही बनी हुई है, तब तमिलनाडु सरकार की कलैजर महिलर उरिमाई थोगई योजना बिना वेतन के किए गए श्रम को मान्यता देती है, जिससे कई महिलाओं को गरिमा, आत्मसम्मान और वित्तीय स्वतंत्रता मिलती है। मेघना एम. ने यह देखने के लिए एक SWOT विश्लेषण किया कि क्या काम करता है और क्या बेहतर करने की ज़रूरत है।

- For S. Maheswari, 45, receiving ₹1,000 a month under the scheme means being able to afford her diabetes medicines. "It's very difficult to run a family of four with just my monthly



earning of ₹10,000. I have to ensure the education of two children, look after my disabled husband, and do the household chores. My health takes a back seat,” says the resident of Mahabalipuram, who runs a tea stall.

एस. महेश्वरी, 45 के लिए, योजना के तहत हर महीने ₹1,000 प्राप्त करना उनकी डायबिटीज़ की दवाएं खरीदने का साधन है। “सिर्फ मेरी ₹10,000 की मासिक कमाई से चार लोगों के परिवार को चलाना बहुत कठिन है। मुझे दो बच्चों की पढ़ाई सुनिश्चित करनी होती है, अपने विकलांग पति की देखभाल करनी होती है, और घरेलू काम भी करने होते हैं। मेरी स्वास्थ्य पीछे रह जाती है,” कहती हैं महाबलीपुरम निवासी, जो एक चाय की दुकान चलाती हैं।

- The medicines cost about ₹1,500. She started taking the pills only after the scheme was introduced because she finally had enough money to spend on necessities. दवाओं की कीमत लगभग ₹1,500 है। उन्होंने गोलियां लेना तभी शुरू किया जब यह योजना शुरू हुई, क्योंकि तब उनके पास आखिरकार आवश्यक चीजों पर खर्च करने के लिए पर्याप्त पैसा था।
- Introduced in 2023, the scheme is aimed at recognising women for doing the domestic work in their household that has historically fallen on the women’s shoulders. The government gives ₹1,000 a month to women heads of families earning less than ₹2.5 lakh a year. 2023 में शुरू की गई यह योजना महिलाओं द्वारा अपने घरों में किए जाने वाले घरेलू काम को मान्यता देने पर केंद्रित है, जो ऐतिहासिक रूप से महिलाओं के कंधों पर पड़ा है। सरकार सालाना ₹2.5 लाख से कम कमाई करने वाले परिवारों की महिला मुखियाओं को हर महीने ₹1,000 देती है।
- With the scheme, Tamil Nadu became the first State in the country to recognise women’s unpaid domestic and care work to society and compensate them for it. Since then, many other States have followed suit. Among them are Karnataka, Maharashtra, and Jharkhand. इस योजना के साथ, तमिलनाडु देश का पहला राज्य बन गया जिसने महिलाओं के बिना वेतन वाले घरेलू और देखभाल कार्य को समाज के लिए मान्यता दी और उन्हें इसके लिए मुआवजा दिया। तब से कई अन्य राज्यों ने भी इसका अनुसरण किया। उनमें से हैं कर्नाटक, महाराष्ट्र और झारखंड।
- About 81.5% women take part in unpaid domestic work, compared with 27% men, in India, according to the Time Use Survey 2024 released in February. In a day, women spent, on an average, 289 minutes on unpaid domestic services for household members, while men spent 88 minutes. Women also spent 137 minutes a day caring for their household members, compared with 75 minutes for men. फरवरी में जारी टाइम यूज़ सर्वे 2024 के अनुसार, भारत में लगभग 81.5% महिलाएं बिना वेतन वाले घरेलू काम में भाग लेती हैं, जबकि पुरुषों की संख्या केवल 27% है। एक दिन में, महिलाएं औसतन 289 मिनट परिवार के सदस्यों के लिए बिना वेतन वाले घरेलू काम में बिताती हैं, जबकि पुरुष केवल 88 मिनट खर्च करते हैं। महिलाएं प्रतिदिन 137 मिनट अपने परिवार के सदस्यों की देखभाल में भी बिताती हैं, जबकि पुरुष 75 मिनट खर्च करते हैं।
- As the scheme nears its second anniversary, women across the State say that the modest sum has not only helped them buy household items but has also given them financial independence and enabled them to save for education, get increased access to healthcare, and start businesses. The scheme benefits more than 1.14 crore people. जैसे-जैसे योजना अपनी दूसरी वर्षगांठ के करीब आ रही है, राज्य भर की महिलाएं कहती हैं कि इस मामूली राशि ने न केवल उन्हें घरेलू सामान खरीदने में मदद की है बल्कि उन्हें वित्तीय स्वतंत्रता भी दी है और शिक्षा के लिए बचत करने, स्वास्थ्य सेवाओं तक अधिक पहुंच प्राप्त करने और व्यवसाय शुरू करने में सक्षम बनाया है। यह योजना 1.14 करोड़ से अधिक लोगों को लाभ पहुंचाती है।
- However, it is not without shortcomings: many women report that they have been left out of the scheme or have received benefits only sporadically in the last two years. हालांकि, यह योजना कमियों से मुक्त नहीं है: कई महिलाएं रिपोर्ट करती हैं कि उन्हें योजना से बाहर रखा गया है या पिछले दो वर्षों में उन्हें लाभ केवल अनियमित रूप से मिला है।
- “This ₹1,000 might seem to be a very small amount, but it gives me the confidence that I can handle emergencies without borrowing. The monthly support isn’t just a financial benefit, it’s a source of dignity and independence,” says V. Malar, a domestic worker in Tiruchi. “यह ₹1,000 बहुत छोटी राशि लग सकती है, लेकिन यह मुझे आत्मविश्वास देती है कि मैं आपात स्थितियों को बिना कर्ज लिए संभाल सकती हूं। यह मासिक सहायता केवल वित्तीय लाभ नहीं है, यह गरिमा और स्वतंत्रता का स्रोत है,” कहती हैं वी. मलार, तिरुची की एक घरेलू कामगार।

TOPICS COVERED (GS Paper II: Polity, Governance, And International Relations)



1. What's the issue with the map of Africa?

अफ्रीका के नक्शे से जुड़ी समस्या क्या है?

2. Institutional voice

संस्थागत स्वर

What's the issue with the map of Africa?

Why does the African Union want the Mercator map replaced? Is the continent depicted as smaller than it is? How did this come about? Has this affected the perception about Africa? What are the alternatives to correct the distortions? What lies ahead?

SS II: Africa

Vasudevan Mukunth

The story so far:

The African Union (AU) has endorsed the 'Correct the Map' campaign to replace the Mercator map projection with alternatives such as the Equal Earth map. At the heart of this demand is the charge that the Mercator projection, still widely used in schools, media, and online platforms, systematically distorts the sizes of landmasses, shrinking Africa while inflating Europe, North America, and Greenland. By backing the call, the AU has expressed hope that a fairer projection will restore geographical accuracy and correct what it characterises as centuries of symbolic marginalisation.

Why is the Mercator map under fire?

The Mercator projection was designed in 1569 by Flemish cartographer Gerardus Mercator, who was trying to solve a navigation problem. On a globe, a ship sailing in a constant compass direction, called the rhumb line, curves when drawn on most map types. This made it awkward for sailors to translate a bearing into a usable course they could plot on a chart.

Mercator's projection stretched the north-south scale so that all rhumb lines appeared as straight lines. Sailors could now draw a straight line across the map at a chosen compass angle and follow that heading consistently at sea. Thus, together with Edward Wright's 1599 mathematical tables, the Mercator projection is believed to have catalysed European exploration and colonial expansion. To achieve this convenience, Mercator distorted scale: landmasses close to the poles appeared larger while those near the equator appeared smaller than in reality.

As a result, Africa, which covers 30 million sq. km, often appears on Mercator maps roughly as large as Greenland, which is 14x smaller. Europe also looks comparable in size to Africa although the continent is a third as large. Similarly, Canada, Russia, and northern Europe appear bloated while tropical regions like Africa, South America, and India are diminished.

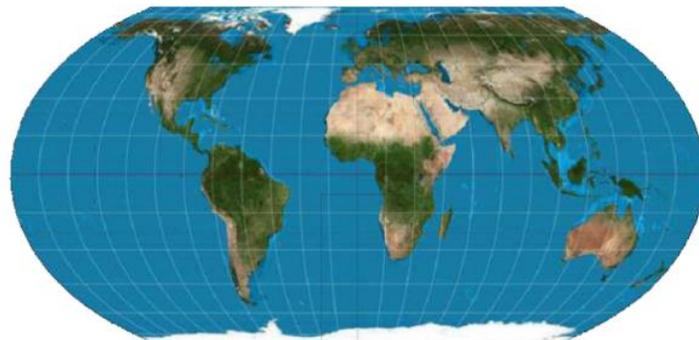
Over time, wall maps in offices, atlases, and on digital platforms defaulted to Mercator's rectangular format because it was familiar and convenient. It was further reinforced by textbooks of the 20th century.

However, critics have argued that such distortions subtly condition how people perceive relative importance. A continent depicted as smaller seems less powerful and even less worthy of attention.

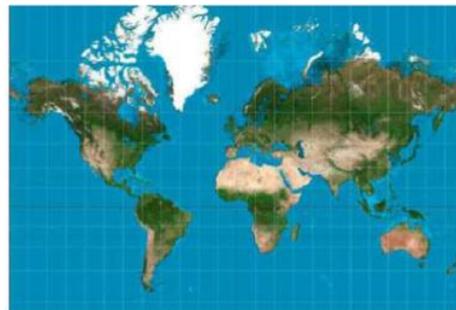
Why are maps distorted?

There is no perfect way to flatten the surface of a sphere onto a rectangle, rendering every map a compromise. Mathematicians and cartographers tasked with projecting a globe onto a plane need to distort one or more of area, shape, distance or direction. Experts have said the choice of which property to preserve and which to

'The Mercator map falsely portrays Africa as marginal'



Different perspective: The Equal Earth projection preserves the relative sizes of continents and countries, ensuring Africa appears far larger than Europe or Greenland, as it is in reality. However, landmasses also appear curved or stretched. STREBE (CC BY-SA)



Call for change: The Mercator map projection. STREBE (CC BY-SA)

surrender is a technical as well as political act.

The Mercator projection is a conformal map, which means it preserves local shapes and angles. But to achieve this, Mercator stretched landmasses near the poles, inflating their apparent size and diminishing those of equatorial regions like Africa and South America. In contrast, the Equal Earth projection preserves the relative sizes of continents and countries, ensuring that Africa appears far larger than Europe or Greenland, as it is in reality. However, landmasses also appear curved or stretched. The orthographic projection makes a different trade-off. It portrays the earth as it would look from space, as if viewed from a great distance. While this choice makes it visually intuitive, this projection is limited by the fact that it shows only one hemisphere at a time and areas near the edges appear compressed.

How does the distortion affect Africa?

Experts have said for many years now that the Mercator projection has reinforced Africa's marginalisation in the global imagination. By making the continent look small, the map suggested, consciously or not, that Africa was less consequential. This perception seeped into textbooks, policymaking, and popular culture.

As Rabah Arezki, a former World Bank economist, has said, the "standard projection was a political tool" that aided colonial

domination, making Africa look "small and conquerable then" and "irrelevant now". Likewise, the AU's deputy chairperson Selma Malika Haddadi has described the Mercator map as falsely portraying Africa as "marginal".

Thus, the AU as well as advocacy groups like Africa No Filter and Speak Up Africa have articulated a move away from the Mercator projection as a way to reclaim dignity.

What happens next?

The leading alternative to the Mercator projection is the Equal Earth projection, created in 2018 by Tom Patterson (U.S. National Park Service), Bojan Savrič (then with American GIS company Esri), and Bernhard Jenny (Monash University, Australia). It preserves relative areas sacrificing shape, that is, continents appear stretched or curved.

Another option is the Gall-Peters projection repopularised in the 1970s. It also preserves area but stretches continents vertically, making them appear elongated. Just as Mercator wanted to help sailors, as political scientist Arthur Klinghoffer wrote in his 2006 book, *The Power of Projections*, "Peters was trying to challenge basic assumptions inherent in the Mercator projection with the aim of influencing social and political attitudes. His elongated images were shocking, and made people examine their cartographical frame of reference."

In 1979, a 21-year-old Australian named Stuart McArthur published the "Universal Corrective Map of the World" that turned the world map 180° and showed Australia at the top. He was reportedly sick of being teased as being from "Down Under".

The AU's endorsement is the most significant institutional backing yet for the 'Correct the Map' campaign. Campaigners have also petitioned the UN Committee of Experts on Global Geospatial Information Management to adopt Equal Earth. The World Bank has already said it is phasing out the Mercator map in favour of Equal Earth. National Geographic and NASA's Goddard Institute for Space Studies have also been using it. Google Maps introduced a 3D globe option in 2018, although its mobile app still defaults to Mercator.

This isn't expected to be easy, however, as the Mercator projection is entrenched in classrooms, news graphics, and even some AU-affiliated websites. Displacing it altogether will entail revising textbooks, redesigning curricula, updating digital interfaces, and overcoming institutional inertia.



What's the issue with the map of Africa? अफ्रीका के नक्शे में क्या समस्या है?

- The **African Union (AU)** has endorsed the '**Correct the Map**' campaign to replace the **Mercator map projection** with alternatives such as the **Equal Earth map**.
अफ्रीकी संघ (AU) ने '**Correct the Map**' अभियान का समर्थन किया है ताकि **Mercator मानचित्र प्रक्षेपण** को **Equal Earth map** जैसे विकल्पों से बदला जा सके।
- At the heart of this demand is the charge that the **Mercator projection**, still widely used in **schools, media, and online platforms**, systematically **distorts the sizes of landmasses, shrinking Africa while inflating Europe, North America, and Greenland**.
इस मांग का मुख्य कारण यह है कि **Mercator प्रक्षेपण**, जो अब भी **स्कूलों, मीडिया और ऑनलाइन प्लेटफॉर्म** पर व्यापक रूप से उपयोग किया जाता है, भूमि क्षेत्रों के आकार को व्यवस्थित रूप से विकृत करता है, **अफ्रीका** को छोटा और **यूरोप, उत्तरी अमेरिका और ग्रीनलैंड** को बड़ा दिखाता है।
- By backing the call, the **AU** has expressed hope that a fairer projection will restore **geographical accuracy** and correct what it characterises as centuries of **symbolic marginalisation**.
इस मांग का समर्थन करके **AU** ने आशा व्यक्त की है कि एक अधिक न्यायपूर्ण प्रक्षेपण **भौगोलिक सटीकता** को बहाल करेगा और सदियों की **प्रतीकात्मक उपेक्षा** को सुधारेगा।

Why is the Mercator map under fire?

Mercator मानचित्र आलोचना के घेरे में क्यों है?

- The **Mercator projection** was designed in **1569** by **Flemish cartographer Gerardus Mercator**, who was trying to solve a **navigation problem**.
Mercator प्रक्षेपण को **1569** में **फ्लेमिश मानचित्रकार गेराडस मर्केटर** ने बनाया था, जो एक **नौवहन समस्या** को हल करने की कोशिश कर रहे थे।
- **On a globe**, a ship sailing in a constant compass direction, called the **rhumb line**, curves when drawn on most map types. This made it awkward for sailors to translate a bearing into a usable course.
ग्लोब पर, एक जहाज जो एक स्थिर कम्पास दिशा में चलता है, जिसे **rhumb line** कहा जाता है, अधिकांश मानचित्र प्रकारों पर खींचे जाने पर मुड़ जाती है। इससे नाविकों के लिए दिशा को एक उपयोगी मार्ग में बदलना कठिन हो गया।



- **Mercator's projection stretched the north-south scale so that all rhumb lines appeared as straight lines**, helping sailors follow a consistent heading.
Mercator प्रक्षेपण ने उत्तर-दक्षिण पैमाने को खींचा ताकि सभी rhumb lines सीधी रेखाओं के रूप में दिखाई दें, जिससे नाविक लगातार दिशा का पालन कर सकें।
- With **Edward Wright's 1599 mathematical tables**, the **Mercator projection is believed to have catalysed European exploration and colonial expansion**.
एडवर्ड राइट की 1599 की गणितीय सारणियों के साथ, Mercator प्रक्षेपण को यूरोपीय खोज और औपनिवेशिक विस्तार को बढ़ावा देने वाला माना जाता है।
- To achieve this convenience, **Mercator distorted scale: landmasses close to the poles appeared larger while those near the equator appeared smaller**.
इस सुविधा को प्राप्त करने के लिए, Mercator ने पैमाने को विकृत किया: ध्रुवों के पास भूमि क्षेत्र बड़े और भूमध्य रेखा के पास छोटे दिखाई दिए।
- As a result, **Africa (30 million sq. km) often appears roughly as large as Greenland, which is 14x smaller**.
परिणामस्वरूप, अफ्रीका (30 मिलियन वर्ग किमी) अक्सर ग्रीनलैंड जितना बड़ा दिखाई देता है, जबकि यह वास्तव में 14 गुना छोटा है।
- **Europe also looks comparable in size to Africa, although it is only one-third as large**.
यूरोप भी आकार में अफ्रीका जितना दिखाई देता है, जबकि वास्तव में यह केवल एक-तिहाई बड़ा है।
- Similarly, **Canada, Russia, and northern Europe appear bloated, while tropical regions like Africa, South America, and India are diminished**.
इसी प्रकार, कनाडा, रूस और उत्तरी यूरोप बड़े दिखते हैं, जबकि अफ्रीका, दक्षिण अमेरिका और भारत जैसे उष्णकटिबंधीय क्षेत्र छोटे दिखते हैं।
- Over time, wall maps in **offices, atlases, and digital platforms defaulted to Mercator's rectangular format** because it was familiar and convenient.
समय के साथ, दफ्तरों, एटलस और डिजिटल प्लेटफॉर्मों पर Mercator का आयताकार प्रारूप डिफॉल्ट बन गया क्योंकि यह परिचित और सुविधाजनक था।
- It was further reinforced by **20th century textbooks**.
इसे और मजबूत किया गया 20वीं सदी की पाठ्यपुस्तकों द्वारा।
- Critics argue that **such distortions subtly condition how people perceive relative importance**. A continent depicted as smaller seems less powerful and less worthy of attention.



आलोचकों का कहना है कि ऐसी विकृतियां धीरे-धीरे लोगों के सापेक्ष महत्व की धारणा को प्रभावित करती हैं। कोई महाद्वीप जो छोटा दिखाया जाता है, वह कम शक्तिशाली और कम ध्यान देने योग्य लगता है।

Why are maps distorted?

मानचित्र विकृत क्यों होते हैं?

- There is **no perfect way** to flatten the surface of a **sphere onto a rectangle**, rendering every map a **compromise**.
गोले की सतह को आयत पर समतल करने का कोई पूर्ण तरीका नहीं है, जिससे हर मानचित्र एक समझौता बन जाता है।
- **Mathematicians and cartographers must distort one or more of area, shape, distance, or direction.**
गणितज्ञों और मानचित्रकारों को क्षेत्रफल, आकार, दूरी या दिशा में से किसी एक या अधिक को विकृत करना पड़ता है।
- Experts say the choice of what to preserve and what to surrender is a **technical as well as political act**.
विशेषज्ञ कहते हैं कि क्या बनाए रखना है और क्या छोड़ना है, यह एक तकनीकी और राजनीतिक कार्य है।
- The **Mercator projection is a conformal map**, meaning it preserves **local shapes and angles**. But to achieve this, it stretched landmasses near the **poles**, inflating their size and diminishing **equatorial regions**.
Mercator प्रक्षेपण एक समानरूप मानचित्र है, जिसका अर्थ है कि यह स्थानीय आकार और कोण को संरक्षित करता है। लेकिन इसे प्राप्त करने के लिए, इसने ध्रुवों के पास के भूमि क्षेत्रों को खींच दिया, जिससे उनका आकार बड़ा और भूमध्यरेखीय क्षेत्रों का छोटा दिखने लगा।
- **In contrast, the Equal Earth projection preserves relative sizes of continents and countries, ensuring that Africa appears larger than Europe or Greenland. However, landmasses appear curved or stretched.**
इसके विपरीत, **Equal Earth प्रक्षेपण महाद्वीपों और देशों के सापेक्ष आकारों को बनाए रखता है**, जिससे अफ्रीका यूरोप या ग्रीनलैंड से बड़ा दिखाई देता है। हालांकि, भूमि क्षेत्र मुड़े या खिंचे हुए दिखाई देते हैं।
- The **orthographic projection** portrays the Earth as it would look **from space**, visually intuitive but limited to **one hemisphere** at a time, with edges appearing **compressed**.
ऑर्थोग्राफिक प्रक्षेपण पृथ्वी को वैसा दिखाता है जैसा वह अंतरिक्ष से दिखाई देती है, जो दृष्टिगत रूप



से सहज है लेकिन एक समय में केवल एक गोलार्ध दिखाता है और किनारे संपीडित दिखाई देते हैं।

How does the distortion affect Africa?

विकृति अफ्रीका को कैसे प्रभावित करती है?

- Experts have said for many years now that the **Mercator projection** has reinforced Africa's marginalisation in the global imagination.
विशेषज्ञ कई वर्षों से कहते आ रहे हैं कि **मर्केटर प्रोजेक्शन** ने वैश्विक कल्पना में अफ्रीका के हाशियाकरण को मजबूत किया है।
- By making the continent look **small**, the map suggested, consciously or not, that Africa was less consequential.
महाद्वीप को **छोटा** दिखाकर नक्शे ने, चाहे जानबूझकर या अनजाने में, यह सुझाव दिया कि अफ्रीका कम महत्वपूर्ण है।
- This perception seeped into **textbooks, policymaking, and popular culture**.
यह धारणा **पाठ्यपुस्तकों, नीतिनिर्माण और लोकप्रिय संस्कृति** में घुस गई।
- As **Rabah Arezki**, a former World Bank economist, has said, the “**standard projection was a political tool**” that aided **colonial domination**, making Africa look “**small and conquerable then**” and “**irrelevant now**”.
जैसा कि **रबाह अरेज़की**, विश्व बैंक के पूर्व अर्थशास्त्री, ने कहा है, “मानक प्रोजेक्शन एक **राजनीतिक उपकरण** था” जिसने **औपनिवेशिक प्रभुत्व** में मदद की, अफ्रीका को “तब छोटा और जीतने योग्य” और “अब अप्रासंगिक” दिखाया।
- Likewise, the **AU's deputy chairperson Selma Malika Haddadi** has described the Mercator map as falsely portraying Africa as “marginal”.
इसी तरह, **AU की डिप्टी चेयरपर्सन सेल्मा मलिका हद्दादी** ने मर्केटर नक्शे को अफ्रीका को “हाशिए पर” झूठा चित्रित करने वाला बताया है।
- Thus, the **AU** as well as advocacy groups like **Africa No Filter** and **Speak Up Africa** have articulated a move away from the Mercator projection as a way to **reclaim dignity**.
इसलिए, **AU और अफ्रीका नो फ़िल्टर** तथा **स्पीक अप अफ्रीका** जैसे एडवोकेसी समूहों ने मर्केटर प्रोजेक्शन से दूर जाने को **गरिमा वापस पाने** का एक तरीका बताया है।

What happens next?

आगे क्या होगा?



- The leading alternative to the Mercator projection is the **Equal Earth projection**, created in **2018** by **Tom Patterson** (U.S. National Park Service), **Bojan Šavrič** (then with American GIS company Esri), and **Bernhard Jenny** (Monash University, Australia).

मर्केटर प्रोजेक्शन का प्रमुख विकल्प **इक्वल अर्थ प्रोजेक्शन** है, जिसे **2018** में **टॉम पैटरसन** (यू.एस. नेशनल पार्क सर्विस), **बोजन साव्रिच** (उस समय अमेरिकी जीआईएस कंपनी Esri) और **बर्नहार्ड जेनी** (मोनाश यूनिवर्सिटी, ऑस्ट्रेलिया) ने बनाया था।

- It preserves **relative areas** sacrificing shape, that is, continents appear stretched or curved.

यह **सापेक्ष क्षेत्रों** को संरक्षित रखता है लेकिन आकार का बलिदान करता है, यानी महाद्वीप फैले या मुड़े हुए दिखाई देते हैं।

- **Another option is the Gall-Peters projection** repopularised in the **1970s**. It also **preserves area but stretches continents vertically, making them appear elongated**.

एक अन्य विकल्प **गॉल-पीटर्स प्रोजेक्शन** है जिसे **1970 के दशक** में फिर से लोकप्रिय बनाया गया। यह भी क्षेत्र को संरक्षित रखता है लेकिन महाद्वीपों को ऊर्ध्वाधर रूप से खींचता है, जिससे वे लंबे दिखाई देते हैं।

- Just as Mercator wanted to help sailors, as **Arthur Klinghoffer** wrote in his **2006 book The Power of Projections**, “Peters was trying to challenge basic assumptions inherent in the Mercator projection with the aim of influencing social and political attitudes. His elongated images were shocking, and made people examine their cartographical frame of reference.”

जैसे मर्केटर नाविकों की मदद करना चाहता था, वैसे ही **आर्थर क्लिंगहोफ़र** ने अपनी **2006 की किताब द पावर ऑफ प्रोजेक्शन्स** में लिखा, “पीटर्स मर्केटर प्रोजेक्शन में निहित बुनियादी मान्यताओं को चुनौती देना चाहता था ताकि सामाजिक और राजनीतिक दृष्टिकोण को प्रभावित किया जा सके। उसकी लंबी की हुई छवियाँ चौंकाने वाली थीं और लोगों को अपने मानचित्रणीय संदर्भ ढाँचे की जाँच करने पर मजबूर करती थीं।”

- In **1979**, a **21-year-old Australian Stuart McArthur** published the “**Universal Corrective Map of the World**” that turned the world map **180°** and showed **Australia at the top**. He was reportedly sick of being teased as being from “Down Under”.

1979 में, एक **21 वर्षीय ऑस्ट्रेलियाई स्टुअर्ट मैकआर्थर** ने “**यूनिवर्सल करेक्टिव मैप ऑफ द वर्ल्ड**” प्रकाशित किया जिसने विश्व मानचित्र को **180° घुमा दिया और ऑस्ट्रेलिया को ऊपर दिखाया**। कहा जाता है कि वह “डाउन अंडर” से होने के कारण चिढ़ाए जाने से परेशान थे।

- The **AU’s endorsement** is the most significant institutional backing yet for the ‘**Correct the Map**’ campaign.

AU का समर्थन अब तक ‘**करेक्ट द मैप**’ अभियान के लिए सबसे महत्वपूर्ण संस्थागत समर्थन है।



- Campaigners have also petitioned the **UN Committee of Experts on Global Geospatial Information Management** to adopt **Equal Earth**.
अभियानकर्ताओं ने वैश्विक भू-स्थानिक सूचना प्रबंधन पर UN विशेषज्ञ समिति से भी इक्वल अर्थ को अपनाने की अपील की है।
- The **World Bank** has already said it is phasing out the Mercator map in favour of Equal Earth.
विश्व बैंक पहले ही कह चुका है कि वह मर्केटर नक्शे को चरणबद्ध तरीके से हटाकर इक्वल अर्थ को अपना रहा है।
- **National Geographic** and **NASA's Goddard Institute for Space Studies** have also been using it.
नेशनल जियोग्राफिक और नासा का गोडार्ड इंस्टीट्यूट फॉर स्पेस स्टडीज भी इसे उपयोग कर रहे हैं।
- **Google Maps** introduced a **3D globe option** in **2018**, although its mobile app still defaults to Mercator.
गूगल मैप्स ने 2018 में एक 3D ग्लोब विकल्प शुरू किया, हालांकि इसका मोबाइल ऐप अभी भी डिफॉल्ट रूप से मर्केटर का उपयोग करता है।
- This isn't expected to be easy, however, as the Mercator projection is **entrenched in classrooms, news graphics, and even some AU-affiliated websites**.
हालांकि यह आसान नहीं होगा, क्योंकि मर्केटर प्रोजेक्शन कक्षाओं, समाचार ग्राफिक्स और यहाँ तक कि कुछ AU-संबद्ध वेबसाइटों में भी गहराई से जड़ा हुआ है।
- Displacing it altogether will entail **revising textbooks, redesigning curricula, updating digital interfaces, and overcoming institutional inertia**.
इसे पूरी तरह से हटाने के लिए पाठ्यपुस्तकों को संशोधित करना, पाठ्यक्रमों को फिर से डिजाइन करना, डिजिटल इंटरफेस को अपडेट करना और संस्थागत जड़ता को दूर करना शामिल होगा।



Institutional voice

Jerome Powell

The U.S. Federal Reserve Chairman, who has come under constant attacks from President Trump, stands firm in protecting the autonomy of the central bank

GS II: India-US Relations

ILLUSTRATIONS: SREEJITH R. KUMAR

Kunal Shankar



At his acceptance speech as the Chairman of the U.S. Federal Reserve Board at the White House Rose Garden on November 2, 2017, Jerome Hayden Powell finished by saying: "I am committed to making decisions with objectivity and based on the best available evidence, in the long-standing tradition of monetary policy independence." He said this fully cognisant of the friction that lay ahead between the Treasury and the American Central Bank, as has often been the case since the Federal Reserve system's creation through an Act of Congress in 1913. But he would not have expected to be publicly berated as a "knucklehead"; or as an "enemy worse than Xi", by the very man, President Donald Trump, who nominated him for the Chair's position.

Mr. Powell is a registered Republican. But he was appointed to the seven-member Board of Governors of the Fed by a Democratic President – Barack Obama in 2012 – and will serve on the Board till his term ends on January 31, 2028.

An undergraduate in politics from Princeton and law from Georgetown University, Mr. Powell had a wealthy upbringing in

the posh Washington suburb of Chevy Chase. His father was a lawyer and mother a mathematician who worked part-time at the Republican National Committee. Conventionally, Fed Chairs have been re-nominated several times by Presidents cutting across party lines, to mark continuity, non-partisanship, and stability – all factors favoured by markets and enterprises.

Not since the Treasury-Fed Accord of 1951 has there been a more frontal attack on the independence of the U.S. Central Bank in the vitriolic manner pursued by President Trump both during his first and current term.

Trouble began weeks after Mr. Powell took office on February 5, 2018. He continued with incremental interest rate hikes through the year, pursued by Mr. Powell's predecessor Janet Yellen. She had begun revising rates in December 2015 for the first time since the 2008 Global

Financial Crisis, when rates were reduced to near zero for the first time in 50 years. But Mr. Powell pivoted in 2019 to "insurance cuts" amid trade war uncertainty, and financial markets rallied strongly.

Call for resignation

Mr. Trump broke with convention by publicly commenting on the Central Bank's monetary policy stance by stating that he was "not thrilled" with the rate hikes beginning in March 2018. In the months to come, criticism quickly turned into jeering, peaking with Mr. Trump calling for Mr. Powell's resignation in December 2018.

In contrast, Mr. Powell has shown restraint, with a rare interview to CBS's *60 Minutes* in June 2019, where he responded to the President's calls for his resignation by saying "the law is clear that I have a four-year term. And I fully intend to serve it."

Among his most notable policy interventions would

be Mr. Powell's post pandemic response when the Fed printed \$2.9 trillion, expanding its balance sheet from \$4.7 trillion in March 2020 to more than \$7 trillion in May and reduced interest rates to near zero between March 3-15, 2020.

However, Mr. Powell was slow to respond in reigning in the post-pandemic inflationary spike – a phenomenon he wagered would be "transitory". He later admitted it to be a miscalculation. The Fed under Mr. Powell once again pivoted from near zero interest rates for more than a year, steadily raising them beginning March 2022 to get it to 5.5% by July 2023.

During his last Jackson Hole speech on Friday, where central bank leaders gathered from across the world for their foremost annual global summit, Mr. Powell received a standing ovation. Not so much for his policy interventions, but for standing firm and safeguarding the independence of the most consequential pillar of the world's monetary system.

Mr. Powell mentioned "downside risks" to unemployment, and "upside risks" to inflation, indicating that a near certain rate cut cycle would begin in September. This would most certainly be music for Mr. Trump's ears.

Institutional voice संस्थागत स्वर

The U.S. Federal Reserve Chairman, who has come under constant attacks from President Trump, stands firm in protecting the autonomy of the central bank



अमेरिकी फेडरल रिज़र्व के अध्यक्ष, जो राष्ट्रपति ट्रंप के लगातार हमलों के शिकार हुए हैं, केंद्रीय बैंक की स्वायत्तता की रक्षा में दृढ़ खड़े हैं

- At his acceptance speech as the Chairman of the U.S. Federal Reserve Board at the White House Rose Garden on **November 2, 2017**, Jerome Hayden Powell finished by saying: **“I am committed to making decisions with objectivity and based on the best available evidence, in the long-standing tradition of monetary policy independence.”**
व्हाइट हाउस रोज़ गार्डन में **2 नवंबर, 2017** को अमेरिकी फेडरल रिज़र्व बोर्ड के अध्यक्ष के रूप में अपने स्वीकृति भाषण में जेरोम हेडन पॉवेल ने कहा: “मैं निष्पक्षता और सर्वोत्तम उपलब्ध सबूतों के आधार पर निर्णय लेने के लिए प्रतिबद्ध हूँ, मौद्रिक नीति की स्वतंत्रता की दीर्घकालिक परंपरा में।”
- He said this fully cognisant of the friction that lay ahead between the Treasury and the American Central Bank, as has often been the case since the Federal Reserve system's creation through an Act of Congress in **1913**.
उन्होंने यह पूरी तरह जानते हुए कहा कि ट्रेज़री और अमेरिकी केंद्रीय बैंक के बीच टकराव आगे होगा, जैसा कि अक्सर **1913** में कांग्रेस के अधिनियम के माध्यम से फेडरल रिज़र्व सिस्टम की स्थापना के बाद से होता आया है।
- But he would not have expected to be publicly berated as a “knucklehead”; or as an “enemy worse than Xi”, by the very man, **President Donald Trump**, who nominated him for the Chair's position.
लेकिन उन्होंने यह उम्मीद नहीं की थी कि उन्हें सार्वजनिक रूप से “मूर्ख” या “शी से भी बुरा दुश्मन” कहा जाएगा, उसी व्यक्ति **राष्ट्रपति डोनाल्ड ट्रंप** द्वारा, जिन्होंने उन्हें अध्यक्ष पद के लिए नामित किया था।
- Mr. Powell is a registered **Republican**. But he was appointed to the seven-member Board of Governors of the Fed by a **Democratic President — Barack Obama in 2012 —** and will serve on the Board till his term ends on **January 31, 2028**.
श्री पॉवेल एक पंजीकृत **रिपब्लिकन** हैं। लेकिन उन्हें फेड के सात-सदस्यीय गवर्नर्स बोर्ड में **डेमोक्रेटिक राष्ट्रपति — बराक ओबामा द्वारा 2012 में —** नियुक्त किया गया था और वे बोर्ड में तब तक सेवा देंगे जब तक उनका कार्यकाल **31 जनवरी, 2028** को समाप्त नहीं हो जाता।
- An undergraduate in politics from **Princeton** and law from **Georgetown University**, Mr. Powell had a wealthy upbringing in the posh Washington suburb of **Chevy Chase**.
प्रिंसटन से राजनीति और **जॉर्जटाउन यूनिवर्सिटी** से कानून में स्नातक श्री पॉवेल का पालन-पोषण वॉशिंगटन के उच्च वर्गीय उपनगर **चेवी चेस** में संपन्न परिवार में हुआ।
- His father was a **lawyer** and mother a **mathematician** who worked part-time at the **Republican National Committee**.
उनके पिता **वकील** थे और उनकी माँ एक **गणितज्ञ** थीं जो **रिपब्लिकन नेशनल कमेटी** में अंशकालिक काम करती थीं।
- Conventionally, Fed Chairs have been renominated several times by Presidents cutting across party lines, to mark continuity, non-partisanship, and stability — all factors favoured by markets and enterprises.
परंपरागत रूप से, फेड अध्यक्षों को कई बार राष्ट्रपति द्वारा पुनर्नियुक्त किया गया है, चाहे पार्टी कोई भी हो, ताकि निरंतरता, गैर-पक्षपात और स्थिरता बनी रहे — ये सभी कारक बाजारों और उद्यमों द्वारा पसंद किए जाते हैं।
- Not since the **Treasury-Fed Accord of 1951** has there been a more frontal attack on the independence of the U.S. Central Bank in the vitriolic manner pursued by President Trump both during his first and current term.
1951 के ट्रेज़री-फेड समझौते के बाद से अमेरिकी केंद्रीय बैंक की स्वतंत्रता पर इतनी तीव्र हमला नहीं हुआ है, जैसा कि राष्ट्रपति ट्रंप ने अपने पहले और मौजूदा कार्यकाल के दौरान किया।
- Trouble began weeks after Mr. Powell took office on **February 5, 2018**. He continued with incremental **interest rate hikes** through the year, pursued by Mr. Powells' predecessor **Janet Yellen**.
मुसीबत तब शुरू हुई जब श्री पॉवेल ने **5 फरवरी, 2018** को पदभार संभाला। उन्होंने पूरे वर्ष धीरे-धीरे **ब्याज दरों में वृद्धि** जारी रखी, जो उनके पूर्ववर्ती **जैनेट येलन** द्वारा शुरू की गई थी।
- She had begun revising rates in **December 2015** for the first time since the **2008 Global Financial Crisis**, when rates were reduced to near zero for the first time in 50 years.
उन्होंने **दिसंबर 2015** में दरों की समीक्षा शुरू की थी, **2008 की वैश्विक वित्तीय संकट** के बाद पहली बार, जब दरों को 50 वर्षों में पहली बार लगभग शून्य कर दिया गया था।



- But Mr. Powell pivoted in **2019** to “insurance cuts” amid **trade war** uncertainty, and financial markets rallied strongly.
लेकिन श्री पॉवेल ने **2019** में **व्यापार युद्ध** की अनिश्चितता के बीच “बीमा कटौती” की ओर रुख किया और वित्तीय बाजारों में जबरदस्त उछाल आया।
- **Call for resignation**
इस्तीफे की मांग
- Mr. Trump broke with convention by publicly commenting on the Central Bank’s monetary policy stance by stating that he was “not thrilled” with the rate hikes beginning in **March 2018**.
श्री ट्रंप ने परंपरा तोड़ते हुए केंद्रीय बैंक की मौद्रिक नीति पर सार्वजनिक रूप से टिप्पणी की और कहा कि वह **मार्च 2018** से शुरू हुई दरों में वृद्धि से “खुश नहीं” हैं।
- In the months to come, criticism quickly turned into jeering, peaking with Mr. Trump calling for Mr. Powell’s **resignation in December 2018**.
आने वाले महीनों में, आलोचना जल्दी ही उपहास में बदल गई, और **दिसंबर 2018** में श्री ट्रंप ने श्री पॉवेल के **इस्तीफे** की मांग करते हुए इसे चरम पर पहुँचा दिया।
- In contrast, Mr. Powell has shown restraint, with a rare interview to **CBS’s 60 Minutes in June 2019**, where he responded to the President’s calls for his resignation by saying “the law is clear that I have a four-year term. And I fully intend to serve it.”
इसके विपरीत, श्री पॉवेल ने संयम दिखाया, और **जून 2019** में **सीबीएस के 60 मिनट** को दिए गए एक दुर्लभ साक्षात्कार में, उन्होंने राष्ट्रपति की इस्तीफे की मांग पर जवाब देते हुए कहा: “कानून स्पष्ट है कि मेरा चार साल का कार्यकाल है। और मैं इसे पूरी तरह से पूरा करने का इरादा रखता हूँ।”
- Among his most notable policy interventions would be Mr. Powell’s post **pandemic response** when the Fed printed **\$2.9 trillion**, expanding its balance sheet from **\$4.7 trillion in March 2020** to more than **\$7 trillion in May** and reduced interest rates to near zero between **March 3-15, 2020**.
उनके सबसे उल्लेखनीय नीति हस्तक्षेपों में से एक श्री पॉवेल की **महामारी के बाद की प्रतिक्रिया** थी, जब फेड ने **2.9 ट्रिलियन डॉलर** छापे, अपनी बैलेंस शीट को **मार्च 2020** में **4.7 ट्रिलियन डॉलर** से बढ़ाकर **मई में 7 ट्रिलियन डॉलर** से अधिक कर दिया और **3-15 मार्च, 2020** के बीच ब्याज दरों को लगभग शून्य कर दिया।
- However, Mr. Powell was slow to respond in reigning in the post-pandemic **inflationary spike** — a phenomenon he wagered would be “transitory”. He later admitted it to be a miscalculation.
हालांकि, श्री पॉवेल महामारी के बाद की **मुद्रास्फीति वृद्धि** को नियंत्रित करने में धीमे थे — एक घटना जिसे उन्होंने “अस्थायी” माना था। बाद में उन्होंने इसे एक गलत अनुमान स्वीकार किया।
- The Fed under Mr. Powell once again pivoted from near zero interest rates for more than a year, steadily raising them beginning **March 2022** to get it to **5.5% by July 2023**.
श्री पॉवेल के नेतृत्व में फेड ने फिर से लगभग एक वर्ष तक शून्य ब्याज दरों से रुख बदला और **मार्च 2022** से उन्हें धीरे-धीरे बढ़ाना शुरू किया और **जुलाई 2023** तक **5.5%** तक पहुँचाया।
- During his last **Jackson Hole speech on Friday**, where central bank leaders gathered from across the world for their foremost annual global summit, Mr. Powell received a standing ovation.
अपने अंतिम **जैक्सन होल भाषण** में **शुक्रवार** को, जहाँ दुनिया भर के केंद्रीय बैंक नेताओं ने अपनी प्रमुख वार्षिक वैश्विक शिखर बैठक के लिए इकट्ठा हुए थे, श्री पॉवेल को खड़े होकर तालियों से सम्मानित किया गया।
- Not so much for his policy interventions, but for standing firm and safeguarding the independence of the most consequential pillar of the world’s monetary system.
यह इतना उनके नीति हस्तक्षेपों के लिए नहीं था, बल्कि दुनिया की मौद्रिक प्रणाली के सबसे महत्वपूर्ण स्तंभ की स्वतंत्रता की रक्षा में दृढ़ खड़े होने के लिए था।
- Mr. Powell mentioned “downside risks” to unemployment, and “upside risks” to inflation, indicating that a near certain **rate cut cycle** would begin in **September**.
श्री पॉवेल ने बेरोजगारी के लिए “नकारात्मक जोखिम” और मुद्रास्फीति के लिए “सकारात्मक जोखिम” का उल्लेख किया, यह संकेत देते हुए कि लगभग निश्चित रूप से **सितंबर** में एक **दर कटौती चक्र** शुरू होगा।
- This would most certainly be music for Mr. Trump’s ears.
यह निश्चित रूप से श्री ट्रंप के कानों के लिए संगीत होगा।

TOPICS COVERED (GS Paper III: Polity, Governance, And International Relations)



1. **Clocks calling time on Navic; ISRO now building indigenous devices**
नाविक पर समय की गिनती कर रही घड़ियाँ; इसरो अब बना रहा स्वदेशी उपकरण
2. **Uses of wastewater surveillance**
अपशिष्ट जल निगरानी के उपयोग
3. **How is the GST structure being simplified?**
जीएसटी संरचना को कैसे सरल बनाया जा रहा है?
4. **Fuel cell can use hydrogen from ammonia**
ईंधन सेल अमोनिया से हाइड्रोजन का उपयोग कर सकता है
5. **Can NFTs enhance research on tissue samples?**
क्या NFT ऊतक नमूनों पर शोध को बढ़ा सकते हैं?
6. **Reshaping during healing in plants**
उपचार के दौरान पौधों में पुनः आकार बनना
7. **Warm colours**
गर्म रंग
8. **Blazing a digital trail**
डिजिटल रास्ते पर अग्रसर



Clocks calling time on Navic; ISRO now building indigenous devices

GS III: S&T

Jacob Koshy
NEW DELHI

Officials at the Indian Space Research Organisation (ISRO) said here on Saturday that they were looking to launch at least three satellites before 2026-end to replenish the defunct satellites that are part of the "Indian GPS", or the Navic (Navigation with Indian Constellation) system. However, a key element impeding the launch seems to be the development of indigenous clocks.

These high-precision clocks – five for every satellite – are what provides accurate timing (and hence location) services to users on the ground. The Navic satellites provide more accurate location services to the military and slightly less accurate for civilian purposes.

Nine satellites of the Indian Regional Navigation Satellite System (IRNSS), informally called Navic, have been launched since 2013. Only eight reached their intended orbit. The last satellite (IRNSS-1I) of this constellation was launched in 2018. The constellation is akin to the Rus-



The NVS-02, launched in January, did not reach the desired orbit and the mission remained incomplete. ISRO

sian GLONASS, the Chinese Beidou, the American GPS, and European Galileo providing location services. However, Navic is expected to do so only within a radius of 1,500 km in India. It is viewed more as a fallback system if India is denied access to these foreign constellations during future global conflicts.

Last month, the ISRO revealed via a Right to Information request that five of the Navic satellites were completely defunct with

all three of their clocks in each satellite not working. In one of the three with functioning atomic clocks, two of the three devices have failed.

Only two satellites of the constellation, therefore, have functional atomic clocks. The atomic clocks in this constellation were imported by the ISRO from the firm SpectraTime.

For the next series of satellites to replace the impaired and ageing fleet of IRNSS satellites, the ISRO

has decided to install indigenously developed rubidium clocks. Two of the three satellites now being used have passed, or are close to, their rated shelf life of 10 years though it's possible for these systems to function beyond.

"Each satellite will have five clocks though we are still in the processing of developing them," Nilesh Desai, Director, Space Applications Centre, told *The Hindu* on the sidelines of a conclave in Delhi to commemorate National Space Day on Saturday.

Another official familiar with the ISRO said that while based on an indigenous design, there were key components that needed to be imported and this was contributing to procurement challenges and delays in commissioning.

So far, to replace its decrepit fleet of IRNSS satellites, the ISRO has launched NVS-01 in May 2023 and NVS-02 in January 2025. Only NVS-01 has successfully reached its designated orbit and working as intended, with NVS-02 failing to reach the specific orbit required to function as a navigational satellite.

Clocks calling time on Navic; ISRO now building indigenous devices

नाविक पर समय की गिनती कर रही घड़ियाँ; इसरो अब बना रहा स्वदेशी उपकरण

Officials at the Indian Space Research Organisation (ISRO) said here on Saturday that they were looking to launch at least three satellites before 2026-end to replenish the defunct satellites that are part of the "Indian GPS", or the Navic (Navigation with Indian

Constellation) system.

भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के अधिकारियों ने यहां शनिवार को कहा कि वे "भारतीय जीपीएस" या नाविक (नेविगेशन विद इंडियन कांस्टीलेशन) प्रणाली का हिस्सा रहे निष्क्रिय उपग्रहों की पूर्ति के लिए कम से कम 2026 के अंत से पहले तीन उपग्रह प्रक्षेपित करने की योजना बना रहे हैं।

- However, a key element impeding the launch seems to be the development of **indigenous clocks**. हालांकि, प्रक्षेपण में बाधा डालने वाला एक मुख्य तत्व **स्वदेशी घड़ियों** का विकास प्रतीत होता है।
- **These high-precision clocks — five for every satellite — are what provides accurate timing (and hence location) services to users on the ground.** ये **उच्च-सटीकता वाली घड़ियाँ — प्रत्येक उपग्रह के लिए पाँच** — ही जमीन पर उपयोगकर्ताओं को सटीक समय (और इस प्रकार स्थान) सेवाएँ प्रदान करती हैं।
- The **Navic satellites** provide more accurate location services to the **military** and are slightly less accurate for **civilian purposes**. **नाविक उपग्रह सैन्य** को अधिक सटीक स्थान सेवाएँ और **नागरिक उद्देश्यों** के लिए थोड़ी कम सटीक सेवाएँ प्रदान करते हैं।
- **Nine satellites of the Indian Regional Navigation Satellite System (IRNSS), informally called Navic, have been launched since 2013.** Only **eight** reached their intended orbit. **भारतीय क्षेत्रीय नेविगेशन उपग्रह प्रणाली (आईआरएनएसएस) के नौ उपग्रह**, जिसे अनौपचारिक रूप से **नाविक** कहा जाता है, **2013** से प्रक्षेपित किए गए हैं। केवल **आठ** ही अपने निर्धारित कक्ष में पहुँचे।



- The last satellite (**IRNSS-1I**) of this constellation was launched in **2018**.
इस तारामंडल का अंतिम उपग्रह (**आईआरएनएसएस-1I**) **2018** में प्रक्षेपित किया गया था।
- The constellation is akin to the **Russian GLONASS**, the **Chinese Beidou**, the **American GPS**, and **European Galileo** providing location services.
यह तारामंडल स्थान सेवाएँ प्रदान करने वाले **रूसी ग्लोनास**, **चीनी बेइडौ**, **अमेरिकी जीपीएस** और **यूरोपीय गैलिलियो** के समान है।
- However, **Navic is expected to do so only within a radius of 1,500 km in India**. It is viewed more as a fallback system if India is denied access to these foreign constellations during future global conflicts.
हालांकि, **नाविक** से केवल **भारत में 1,500 किमी** के दायरे में सेवाएँ प्रदान करने की अपेक्षा की जाती है। इसे भविष्य के वैश्विक संघर्षों के दौरान भारत को इन विदेशी तारामंडलों तक पहुँच से वंचित कर दिए जाने पर एक बैकअप प्रणाली के रूप में देखा जाता है।
- Last month, the **ISRO revealed via a Right to Information request that five of the Navic satellites were completely defunct with all three of their clocks in each satellite not working**.
पिछले महीने, **इसरो** ने एक **सूचना का अधिकार अनुरोध** के माध्यम से बताया कि **नाविक के पाँच उपग्रह** पूरी तरह से निष्क्रिय हैं और प्रत्येक उपग्रह में लगी तीनों घड़ियाँ काम नहीं कर रही हैं।
- In one of the three with functioning **atomic clocks**, two of the three devices have failed.
तीनों में से एक उपग्रह में कार्यरत **परमाणु घड़ियों** में से दो उपकरण विफल हो चुके हैं।
- Only **two satellites** of the constellation, therefore, have functional **atomic clocks**.
इस प्रकार, तारामंडल के केवल **दो उपग्रहों** में कार्यरत **परमाणु घड़ियाँ** हैं।
- The **atomic clocks** in this constellation were imported by ISRO from the firm **SpectraTime**.
इस तारामंडल की **परमाणु घड़ियाँ इसरो** द्वारा **स्पेक्ट्राटाइम** कंपनी से आयात की गई थीं।
- For the next series of satellites to replace the impaired and ageing fleet of **IRNSS satellites**, the **ISRO** has decided to install **indigenously developed rubidium clocks**.
आईआरएनएसएस उपग्रहों के क्षतिग्रस्त और वृद्ध बेड़े को बदलने के लिए अगली श्रृंखला के उपग्रहों में **इसरो** ने **स्वदेशी रूप से विकसित रूबिडियम घड़ियाँ** स्थापित करने का निर्णय लिया है।
- **Two of the three satellites** now being used have passed, or are close to, their rated shelf life of **10 years** though it's possible for these systems to function beyond.
अब उपयोग किए जा रहे **तीन उपग्रहों में से दो** अपनी निर्धारित **10 वर्षों** की शेल्फ लाइफ पार कर चुके हैं या उसके करीब हैं, हालांकि इनके इस अवधि से आगे भी काम करने की संभावना है।
- "Each satellite will have **five clocks** though we are still in the process of developing them," **Nilesh Desai, Director, Space Applications Centre**, told *The Hindu* on the sidelines of a conclave in **Delhi** to commemorate **National Space Day on Saturday**.
"प्रत्येक उपग्रह में **पाँच घड़ियाँ** होंगी, हालांकि हम अभी भी उनके विकास की प्रक्रिया में हैं," ऐसा **नीलेश देसाई, निदेशक, अंतरिक्ष अनुप्रयोग केंद्र** ने **शनिवार** को **दिल्ली** में **राष्ट्रीय अंतरिक्ष दिवस** मनाने के लिए आयोजित एक सम्मेलन के दौरान *द हिंदू* को बताया।
- Another official familiar with the **ISRO** said that while based on an **indigenous design**, there were key components that needed to be imported and this was contributing to procurement challenges and delays in commissioning.
इसरो से परिचित एक अन्य अधिकारी ने कहा कि हालांकि यह एक **स्वदेशी डिजाइन** पर आधारित है, लेकिन इसमें कुछ प्रमुख पुर्जे आयात करने की आवश्यकता है और यही खरीद से जुड़ी चुनौतियों और कमीशनिंग में देरी का कारण बन रहा है।
- So far, to replace its decrepit fleet of **IRNSS satellites**, the **ISRO** has launched **NVS-01 in May 2023** and **NVS-02 in January 2025**.
अब तक, अपने जर्जर **आईआरएनएसएस उपग्रहों** के बेड़े को बदलने के लिए, **इसरो** ने **मई 2023 में एनवीएस-01** और **जनवरी 2025 में एनवीएस-02** प्रक्षेपित किया है।
- Only **NVS-01** has successfully reached its designated orbit and worked as intended, with **NVS-02** failing to reach the specific orbit required to function as a navigational satellite.
केवल **एनवीएस-01** ही सफलतापूर्वक अपने निर्धारित कक्ष में पहुँचा है और इच्छानुसार कार्य कर रहा है, जबकि **एनवीएस-02** उस विशेष कक्षा में पहुँचने में विफल रहा है जो एक नेविगेशनल उपग्रह के रूप में कार्य करने के लिए आवश्यक है।



What are the uses of wastewater surveillance?

What are the viruses under watch now?

How many cities will be covered? What

is the process?

GS III: Defence

Bindu Shajan Perappadan

The story so far:

The Indian Council of Medical Research (ICMR) will initiate wastewater surveillance for 10 viruses across 50 cities over the next six months. Currently, five cities are being monitored. The move is aimed at identifying any increase in virus growth trend at the earliest, said ICMR head Rajiv Bahl.

What is the plan?

“The next six months will see the scaling up of surveillance across India which will enable us to pick up any rise in virus load in the community. Currently, the COVID-19 virus and polio virus are under surveillance,” explained Dr. Bahl. He added that wastewater surveillance will now be used to monitor more commonly reported symptoms caused by several pathogens, such as fever, diarrhoea, acute encephalitis syndrome (inflammation of the brain), and respiratory distress. The ICMR is involved in establishing environmental surveillance for viruses, including the Avian Influenza Virus (AIV) by monitoring surface water and wastewater, particularly in areas with outbreaks, to establish an early warning system.

Post-COVID-19, wastewater-based epidemiology has emerged as an effective tool for the early detection of disease outbreaks

India also has a robust surveillance system for Influenza-Like Illness (ILI) and Severe Acute Respiratory Illness (SARI) through ICMR and the Integrated Disease

Surveillance Programme (IDSP). Wastewater and Environmental Surveillance (WES) use samples from sewage, or other environmental waters impacted by human wastewater.

Why is wastewater surveillance vital?

The ICMR has noted that like all countries across the globe, India too is experiencing a significant increase in the emergence and re-emergence of pathogens, including viral, bacterial, and zoonotic diseases. Factors contributing to this pathogen load include population growth, rapid urbanisation, environmental changes, and increased human-animal interaction.

Recently, following the COVID-19 pandemic, Wastewater-Based Epidemiology (WBE) has emerged as an effective tool for the early detection of disease outbreaks. According to experts, WBE can be used as a predictive instrument, capable of providing near-real-time, community-level pathogen surveillance and anticipating and mitigating future pandemics even before the first clinical symptoms are detected. “This approach enables cost-effective, non-invasive, and population-wide monitoring of infectious diseases’ emergence, evolution, and decline. By identifying pathogens in human waste (e.g., viruses and bacteria), WBE delivers real-time insights into infection trends, encompassing data from asymptomatic and pre-symptomatic populations, enabling timely interventions from public health authorities,” according to an article titled ‘Integrated environmental surveillance: the role of wastewater, air, and surface microbiomes in global health security’.

It added that among the key advantages are its capacity to encompass large populations, pinpoint transmission hotspots, and facilitate resource allocation for containment efforts.

How is it done?

According to the Centers for Disease Control and Prevention, U.S., people with certain infections (such as COVID-19), can shed pieces of the virus or bacteria when they use the bathroom, shower, wash hands, or launder clothing, even if they don’t have symptoms. These pieces of virus or bacteria travel from the toilet, sink, shower, or other drain through the sewage system.

So, before wastewater is treated, wastewater operators take samples to send to the laboratory. Laboratories test the wastewater sample to detect and report on the different types of infections that are circulating in a community. This information is available in as little as five to seven days after waste enters the sewer. Public health officials use wastewater data to better understand disease trends in communities and make decisions, such as providing guidance on how to prevent infections or increasing testing or vaccination options.

Where else can the information be used?

Wastewater surveillance is a useful method to collect information and tackle diseases as well as land-based sources of pollution. In addition, it also provides useful data to maintain ecosystem services and protect freshwater and marine ecosystems. “This trend is encouraging for the future of health systems and sound environmental management but there is a need for expanding this positive trend further and enhancing the good practices and significant efforts to monitor and assess water quality,” according to the United Nations Environment Programme. The World Health Organization is also working on capacity development for wastewater and environmental surveillance.



Uses of wastewater surveillance

अपशिष्ट जल निगरानी के उपयोग

- The Indian Council of Medical Research (ICMR) will initiate **wastewater surveillance** for **10 viruses across 50 cities** over the next **six months**. Currently, **five cities** are being monitored. The move is aimed at identifying any increase in virus growth trend at the earliest, said ICMR head **Rajiv Bahl**.
भारतीय चिकित्सा अनुसंधान परिषद (ICMR) अगले **छह महीनों** में **50 शहरों** में **10 वायरस** के लिए **अपशिष्ट जल निगरानी** शुरू करेगी। वर्तमान में **पांच शहरों** की निगरानी की जा रही है। यह कदम वायरस वृद्धि प्रवृत्ति में किसी भी वृद्धि की शीघ्र पहचान करने के लिए है, ऐसा ICMR प्रमुख **राजीव बहल** ने कहा।

What is the plan?

योजना क्या है?

- “The next **six months** will see the scaling up of surveillance across India which will enable us to pick up any rise in virus load in the community. Currently, the **COVID-19 virus** and **polio virus** are under surveillance,” explained Dr. Bahl.
“अगले **छह महीनों** में पूरे भारत में निगरानी का विस्तार होगा जिससे हमें समुदाय में वायरस लोड में किसी भी वृद्धि का पता लगाने में मदद मिलेगी। वर्तमान में **कोविड-19 वायरस** और **पोलियो वायरस** की निगरानी की जा रही है,” डॉ. बहल ने बताया।
- He added that **wastewater surveillance** will now be used to monitor more commonly reported symptoms caused by several pathogens, such as **fever, diarrhoea, acute encephalitis syndrome (inflammation of the brain), and respiratory distress**.
उन्होंने जोड़ा कि अब **अपशिष्ट जल निगरानी** का उपयोग कई रोगजनकों से होने वाले सामान्य लक्षणों जैसे **बुखार, दस्त, तीव्र एन्सेफलाइटिस सिंड्रोम (मस्तिष्क की सूजन) और श्वसन कष्ट** की निगरानी के लिए किया जाएगा।
- The **ICMR** is involved in establishing environmental surveillance for viruses, including the **Avian Influenza Virus (AIV)** by monitoring surface water and wastewater, particularly in areas with outbreaks, to establish an **early warning system**.
ICMR वायरस के लिए पर्यावरणीय निगरानी स्थापित करने में शामिल है, जिसमें **एवियन इन्फ्लुएंजा वायरस (AIV)** भी शामिल है, जो सतही जल और अपशिष्ट जल की निगरानी के माध्यम से विशेष रूप से प्रकोप वाले क्षेत्रों में **प्रारंभिक चेतावनी प्रणाली** स्थापित करने के लिए है।
- India also has a robust surveillance system for **Influenza-Like Illness (ILI)** and **Severe Acute Respiratory Illness (SARI)** through **ICMR** and the **Integrated Disease Surveillance Programme (IDSP)**.
भारत के पास **इन्फ्लुएंजा जैसे रोग (ILI)** और **गंभीर तीव्र श्वसन रोग (SARI)** के लिए **ICMR** और **एकीकृत रोग निगरानी कार्यक्रम (IDSP)** के माध्यम से एक मजबूत निगरानी प्रणाली भी है।



- **Wastewater and Environmental Surveillance (WES)** use samples from sewage, or other environmental waters impacted by human wastewater.

अपशिष्ट जल और पर्यावरणीय निगरानी (WES) मानव अपशिष्ट जल से प्रभावित सीवेज या अन्य पर्यावरणीय जल से नमूनों का उपयोग करती है।

Why is wastewater surveillance vital?

अपशिष्ट जल निगरानी क्यों महत्वपूर्ण है?

- The **ICMR** has noted that like all countries across the globe, India too is experiencing a significant increase in the emergence and re-emergence of pathogens, including viral, bacterial, and **zoonotic diseases**.

ICMR ने उल्लेख किया है कि दुनिया भर के सभी देशों की तरह भारत भी रोगजनकों की उद्भव और पुनः-उद्भव में उल्लेखनीय वृद्धि का अनुभव कर रहा है, जिसमें वायरल, बैक्टीरियल और पशुजन्य रोग शामिल हैं।

- Factors contributing to this **pathogen load** include **population growth, rapid urbanisation, environmental changes, and increased human-animal interaction**.

इस रोगजनक भार में योगदान देने वाले कारकों में जनसंख्या वृद्धि, तीव्र शहरीकरण, पर्यावरणीय परिवर्तन और मानव-पशु संपर्क में वृद्धि शामिल हैं।

- Recently, following the **COVID-19 pandemic, Wastewater-Based Epidemiology (WBE)** has emerged as an effective tool for the **early detection of disease outbreaks**.

हाल ही में, कोविड-19 महामारी के बाद, अपशिष्ट जल-आधारित महामारी विज्ञान (WBE) रोग प्रकोपों का प्रारंभिक पता लगाने का एक प्रभावी उपकरण बनकर उभरा है।

- According to experts, **WBE** can be used as a **predictive instrument**, capable of providing **near-real-time, community-level pathogen surveillance** and anticipating and mitigating **future pandemics** even before the **first clinical symptoms** are detected.

विशेषज्ञों के अनुसार, **WBE** को एक पूर्वानुमान उपकरण के रूप में उपयोग किया जा सकता है, जो लगभग वास्तविक समय, सामुदायिक स्तर की रोगजनक निगरानी प्रदान करने और पहले नैदानिक लक्षणों के पता चलने से पहले भी भविष्य की महामारियों का पूर्वानुमान लगाने और उन्हें कम करने में सक्षम है।

- “This approach enables **cost-effective, non-invasive, and population-wide monitoring** of infectious diseases’ **emergence, evolution, and decline**. By identifying pathogens in **human waste (e.g., viruses and bacteria)**, **WBE delivers real-time insights** into infection trends, encompassing data from **asymptomatic and pre-symptomatic populations**, enabling timely interventions from public health



authorities.”

“यह दृष्टिकोण संक्रामक रोगों के उद्भव, विकास और कमी की लागत-प्रभावी, गैर-आक्रामक और जनसंख्या-व्यापी निगरानी को सक्षम बनाता है। मानव अपशिष्ट (जैसे वायरस और बैक्टीरिया) में रोगजनकों की पहचान करके, WBE संक्रमण प्रवृत्तियों पर वास्तविक समय की अंतर्दृष्टि प्रदान करता है, जिसमें लक्षणरहित और पूर्व-लक्षण वाले जनसंख्या से डेटा शामिल है, जिससे सार्वजनिक स्वास्थ्य प्राधिकरणों द्वारा समय पर हस्तक्षेप संभव हो पाता है।”

- Among the key advantages are its capacity to **encompass large populations, pinpoint transmission hotspots, and facilitate resource allocation** for containment efforts.

प्रमुख लाभों में इसकी क्षमता बड़ी आबादी को कवर करने, संचरण हॉटस्पॉट की पहचान करने और नियंत्रण प्रयासों के लिए संसाधन आवंटन को आसान बनाने की है।

How is it done?

यह कैसे किया जाता है?

- According to the **Centers for Disease Control and Prevention (CDC), U.S.**, people with certain infections (such as **COVID-19**), can shed pieces of the virus or bacteria when they use the **bathroom, shower, wash hands, or launder clothing**, even if they don't have symptoms.

अमेरिका के रोग नियंत्रण और रोकथाम केंद्र (CDC) के अनुसार, कुछ संक्रमणों (जैसे कोविड-19) से ग्रसित लोग, जब वे शौचालय, स्नान, हाथ धोना या कपड़े धोना करते हैं, तो वायरस या बैक्टीरिया के टुकड़े छोड़ सकते हैं, भले ही उनमें लक्षण न हों।

- These pieces of virus or bacteria travel from the **toilet, sink, shower, or other drain through the sewage system.**

वायरस या बैक्टीरिया के ये टुकड़े शौचालय, सिंक, शॉवर या अन्य नालियों से होकर सीवेज प्रणाली में चले जाते हैं।

- So, before wastewater is treated, **wastewater operators** take samples to send to the **laboratory.**

इसलिए, अपशिष्ट जल के उपचार से पहले, **अपशिष्ट जल संचालक** नमूने लेकर उन्हें प्रयोगशाला भेजते हैं।

- Laboratories test the **wastewater sample** to detect and report on the different types of infections that are circulating in a community.

प्रयोगशालाएँ **अपशिष्ट जल नमूनों** की जाँच करती हैं ताकि समुदाय में फैल रहे विभिन्न प्रकार के संक्रमणों का पता लगाया जा सके और उन पर रिपोर्ट की जा सके।



- This information is available in as little as **five to seven days** after waste enters the sewer.
यह जानकारी अपशिष्ट के सीवर में प्रवेश करने के बाद केवल पाँच से सात दिनों में उपलब्ध हो जाती है।
- Public health officials use **wastewater data** to better understand **disease trends** in communities and make decisions, such as providing **guidance on prevention, increasing testing, or vaccination options**.
सार्वजनिक स्वास्थ्य अधिकारी अपशिष्ट जल डेटा का उपयोग समुदायों में रोग प्रवृत्तियों को बेहतर ढंग से समझने और निर्णय लेने के लिए करते हैं, जैसे संक्रमण की रोकथाम पर मार्गदर्शन, परीक्षण बढ़ाना या टीकाकरण विकल्प।

Where else can the information be used?

और कहाँ इस्तेमाल की जा सकती है यह जानकारी?

- **Wastewater surveillance is a useful method to collect information and tackle diseases as well as land-based sources of pollution.**
अपशिष्ट जल निगरानी जानकारी एकत्र करने और रोगों के साथ-साथ भूमि-आधारित प्रदूषण स्रोतों से निपटने का एक उपयोगी तरीका है।
- In addition, it also provides useful data to maintain **ecosystem services** and protect **freshwater and marine ecosystems**.
इसके अलावा, यह पारिस्थितिकी तंत्र सेवाओं को बनाए रखने और स्वच्छ जल और समुद्री पारिस्थितिक तंत्रों की रक्षा के लिए उपयोगी डेटा प्रदान करता है।
- “This trend is encouraging for the future of **health systems** and **environmental management** but there is a need for expanding this positive trend further and enhancing the good practices and significant efforts to monitor and assess **water quality**,” according to the **United Nations Environment Programme**.
“यह प्रवृत्ति स्वास्थ्य प्रणालियों और पर्यावरण प्रबंधन के भविष्य के लिए उत्साहजनक है लेकिन इस सकारात्मक प्रवृत्ति को और आगे बढ़ाने और जल गुणवत्ता की निगरानी और आकलन के लिए अच्छी प्रथाओं और महत्वपूर्ण प्रयासों को बढ़ाने की आवश्यकता है,” संयुक्त राष्ट्र पर्यावरण कार्यक्रम के अनुसार।
- The **World Health Organization (WHO)** is also working on **capacity development for wastewater and environmental surveillance**.
विश्व स्वास्थ्य संगठन (WHO) भी अपशिष्ट जल और पर्यावरणीय निगरानी के लिए क्षमता विकास पर काम कर रहा है।



How is the GST structure being simplified? जीएसटी संरचना को कैसे सरल बनाया जा रहा है?

- As per the proposal, **99% of the items currently in the 12% slab would move to 5%.**
प्रस्ताव के अनुसार, वर्तमान में 12% स्लैब में आने वाली 99% वस्तुएँ 5% स्लैब में स्थानांतरित हो जाएँगी।
- What are the two preferred rate slabs suggested by the government?
सरकार द्वारा सुझाए गए दो पसंदीदा दर स्लैब कौन से हैं?
- How will consumers benefit?
उपभोक्ताओं को कैसे लाभ होगा?
- Will this rationalisation lead to a dent in revenue earnings for the **Union government and States**?
क्या यह तर्कसंगतीकरण केंद्र सरकार और राज्यों की राजस्व आय में कमी लाएगा?
- How will the government make up the loss from **Goods and Services Tax**?
सरकार वस्तु एवं सेवा कर (GST) से होने वाले नुकसान की भरपाई कैसे करेगी?

Group of Ministers (GoM) on GST Rate Rationalisation

जीएसटी दर तर्कसंगतीकरण पर मंत्रियों का समूह (GoM)

- The **Group of Ministers (GoM)** appointed by the **Goods and Services Tax (GST) Council** to look into the rationalisation of rates in GST says it has accepted the **Union government's proposals** on how to go about the process.
वस्तु एवं सेवा कर (GST) परिषद द्वारा जीएसटी में दरों के तर्कसंगतीकरण की जांच के लिए नियुक्त मंत्रियों के समूह (GoM) ने कहा कि उसने प्रक्रिया को आगे बढ़ाने के लिए केंद्र सरकार के प्रस्तावों को स्वीकार कर लिया है।
- The **GST Council** said it will hold its next meeting on **September 3-4** and discuss the proposals.
जीएसटी परिषद ने कहा कि वह अपनी अगली बैठक 3-4 सितंबर को करेगी और प्रस्तावों पर चर्चा करेगी।
- The **Union government** had suggested rate changes that would not only simplify the **GST structure**, but would also go a long way in reducing the **average effective tax rate**.
केंद्र सरकार ने दरों में बदलाव का सुझाव दिया था, जो न केवल जीएसटी संरचना को सरल बनाएगा बल्कि औसत प्रभावी कर दर को कम करने में भी मदद करेगा।

What did the Union government propose on rates?

केंद्र सरकार ने दरों पर क्या प्रस्ताव रखा?



- In his **Independence Day speech**, Prime Minister Narendra Modi announced a number of reforms, among which was a “**Deepavali gift**” of next-generation reforms to GST.
अपने स्वतंत्रता दिवस भाषण में, प्रधानमंत्री नरेंद्र मोदी ने कई सुधारों की घोषणा की, जिनमें जीएसटी के लिए अगली पीढ़ी के सुधारों का एक “दीवाली उपहार” शामिल था।
- The government proposed **reducing the number of slabs** in GST, and moving most items to **lower rates**.
सरकार ने जीएसटी में स्लैब की संख्या घटाने और अधिकांश वस्तुओं को निचली दरों में स्थानांतरित करने का प्रस्ताव रखा।
- **Currently, GST has seven different rates: 0.25%, 3%, 5%, 12%, 18%, 28%, and a compensation cess.**
वर्तमान में, जीएसटी में सात अलग-अलग दरें हैं: 0.25%, 3%, 5%, 12%, 18%, 28%, और एक मुआवजा उपकर।
- **The Union government proposed to reduce these to four: <1%, 5%, 18%, and 40%.**
केंद्र सरकार ने इन्हें घटाकर चार करने का प्रस्ताव रखा: <1%, 5%, 18%, और 40%।
- As per the proposal:
प्रस्ताव के अनुसार:
 - **99% of the items** in the **12% slab** would move to **5%**.
12% स्लैब की 99% वस्तुएं 5% में चली जाएंगी।
 - **90% of the items** in the **28% slab** would move to **18%**.
28% स्लैब की 90% वस्तुएं 18% में चली जाएंगी।
 - **Remaining items in 28% slab** — mainly **sin goods** like **tobacco, cigarettes, online gaming** — would move to **40%**.
28% स्लैब की बची हुई वस्तुएं — मुख्य रूप से पाप वस्तुएं जैसे तंबाकू, सिगरेट, ऑनलाइन गेमिंग — 40% में चली जाएंगी।
- The main thrust of the change is to ensure that the **vast majority of items** fall in just **two slabs: 5% and 18%**.
परिवर्तन का मुख्य उद्देश्य यह सुनिश्चित करना है कि अधिकांश वस्तुएं केवल दो स्लैब: 5% और 18% में हों।



Why did the Centre have to propose this?

केंद्र को यह प्रस्ताव क्यों रखना पड़ा?

- The **GST Council** has long been aware of the need to **rationalise rates** and had set up a **GoM in September 2021**.
जीएसटी परिषद लंबे समय से दर तर्कसंगतीकरण की आवश्यकता से अवगत थी और उसने सितंबर 2021 में एक GoM का गठन किया था।
- However, the **GoM** was composed entirely of **State representatives**, so the Centre had to submit a proposal to put its ideas across.
हालांकि, GoM पूरी तरह से राज्यों के प्रतिनिधियों से बना था, इसलिए केंद्र को अपने विचार सामने रखने के लिए प्रस्ताव देना पड़ा।
- The **GoM** has accepted this proposal and recommended it to the **GST Council**.
GoM ने इस प्रस्ताव को स्वीकार कर लिया है और इसे जीएसटी परिषद को सिफारिश की है।

What does this mean for the common consumer?

साधारण उपभोक्ता के लिए इसका क्या मतलब है?

- According to the **State Bank of India's economic research wing**, if accepted, the **average tax rate** under GST is expected to fall to **9.5% by 2026-27**, from **14.4% in May 2017** and **11.6% in September 2019**.
भारतीय स्टेट बैंक के आर्थिक अनुसंधान प्रकोष्ठ के अनुसार, यदि इसे स्वीकार किया जाता है, तो जीएसटी के तहत औसत कर दर 2026-27 तक 9.5% तक गिरने की उम्मीद है, जो मई 2017 में 14.4% और सितंबर 2019 में 11.6% थी।
- The government said it wants to **reduce tax on common-use items** like **soap, toothpaste, toiletries**, bringing them down from **18% to 5%**.
सरकार ने कहा कि वह सामान्य उपयोग की वस्तुओं जैसे साबुन, टूथपेस्ट, टॉयलेटरीज़ पर कर को घटाकर 18% से 5% करना चाहती है।
- Common food items like **sugar, tea, coffee, edible oil, spices**, along with **lifesaving drugs** and **apparel <₹1,000** will remain in the **5% bracket**.
सामान्य खाद्य वस्तुएं जैसे चीनी, चाय, कॉफी, खाद्य तेल, मसाले, साथ ही जीवनरक्षक दवाएं और ₹1,000 से कम के वस्त्र 5% वर्ग में रहेंगे।
- **Non-luxury cars, ACs, fridges** — currently taxed at **28% + cess** — are expected to move to **18%**.
गैर-लक्जरी कारें, एसी, फ्रिज — जो वर्तमान में 28% + उपकर पर कर लगाए जाते हैं — को 18% में लाने की उम्मीद है।



What are the revenue implications?

राजस्व पर इसके क्या प्रभाव होंगे?

- According to economists, the **hit to GST revenues** could range between **₹1.1 lakh crore and ₹1.8 lakh crore**, half borne by the **Centre** and half by the **States**.
अर्थशास्त्रियों के अनुसार, **जीएसटी राजस्व पर प्रभाव ₹1.1 लाख करोड़ से ₹1.8 लाख करोड़** के बीच हो सकता है, जिसका आधा **केंद्र** और आधा **राज्यों** द्वारा वहन किया जाएगा।
- To put this in context, the **RBI** transferred a record **₹2.69 lakh crore dividend** to the government for **2024-25**.
संदर्भ में देखने पर, **भारतीय रिज़र्व बैंक (RBI)** ने **2024-25** के लिए सरकार को रिकॉर्ड **₹2.69 लाख करोड़** लाभांश स्थानांतरित किया।
- Even without such a large dividend, the **Union government** can comfortably absorb the revenue hit from the GST rate cuts.
इतना बड़ा लाभांश न मिलने पर भी, **केंद्र सरकार** जीएसटी दर कटौती से हुए राजस्व नुकसान को आसानी से वहन कर सकती है।

SNAPSHOTS



Fuel cell can use hydrogen from ammonia

Scientists have found a way to make ammonia-powered solid oxide fuel cells more reliable and efficient. They combined a fuel cell with a plasma reactor that broke up ammonia into hydrogen and nitrogen before it reached the cell, thus increasing power by 60% at 800°C. The plasma process was found to work quickly at room temperature and could recycle waste heat. The findings suggest a practical way to use ammonia, which is easier to store than hydrogen, as a clean fuel.

The **States**, however, are more concerned. **Kerala Finance Minister K.N. Balagopal**, a GoM member, suggested to the **GST Council** that there should be a **mechanism to compensate States** if they incur losses.

हालांकि, **राज्य** अधिक चिंतित हैं। **केरल के वित्त मंत्री के.एन.**

बालगोपाल, जो GoM के सदस्य हैं, ने **जीएसटी परिषद** को सुझाव दिया कि यदि राज्यों को नुकसान होता है, तो उन्हें **मुआवजा देने की व्यवस्था** होनी चाहिए।

Fuel cell can use hydrogen from ammonia

ईंधन सेल अमोनिया से हाइड्रोजन का उपयोग कर सकता है

Scientists have found a way to make ammonia-powered solid oxide fuel cells more reliable and efficient.

वैज्ञानिकों ने अमोनिया-संचालित ठोस ऑक्साइड ईंधन कोशिकाओं को अधिक विश्वसनीय और कुशल बनाने का तरीका खोजा है।

- They combined a **fuel cell** with a **plasma reactor** that broke up **ammonia** into **hydrogen and nitrogen** before it reached



the cell, thus increasing power by **60% at 800°C**.

उन्होंने एक ईंधन सेल को प्लाज्मा रिएक्टर के साथ जोड़ा जिसने अमोनिया को कोशिका तक पहुँचने से पहले हाइड्रोजन और नाइट्रोजन में तोड़ दिया, इस प्रकार **800°C पर 60%** तक शक्ति बढ़ा दी।

- The **plasma process** was found to work quickly at **room temperature** and could recycle **waste heat**.

यह पाया गया कि प्लाज्मा प्रक्रिया कक्ष तापमान पर तेजी से काम करती है और अपशिष्ट ऊष्मा को पुनः उपयोग कर सकती है।

- The findings suggest a practical way to use **ammonia**, which is easier to store than **hydrogen**, as a **clean fuel**.

निष्कर्ष से संकेत मिलता है कि अमोनिया को एक स्वच्छ ईंधन के रूप में उपयोग करने का व्यावहारिक तरीका है, जिसे हाइड्रोजन की तुलना में संग्रहीत करना आसान है।

Fuel Cell

- Fuel cells are **electrochemical devices** that convert the **chemical energy of a fuel directly into electricity**, heat, and water, without combustion.
- Unlike batteries, they require a **continuous supply of fuel (like hydrogen)** and an **oxidant (like oxygen from air)** to keep producing power.

Basic Working Principle

- A fuel cell consists of an **anode, cathode, and electrolyte**.
- **At the anode:** Hydrogen molecules split into **protons (H⁺)** and **electrons (e⁻)**.
- **Electrolyte:** Allows only protons to pass through, blocking electrons.
- **At the cathode:** Oxygen combines with protons and electrons to form **water (H₂O)**.
- **Overall reaction:**



GS III: S&T

Can NFTs enhance research on tissue samples?

Human tissue samples have long been treated as wellsprings that research centres and companies can profit from, but without meaningfully involving the people who provided them. Now, scientists have proposed a 'decentralised biobank' that uses blockchain technology and nonfungible tokens (NFTs). Each NFT could serve as a secure digital record linking a donor to their specimen's use, supporting transparency, higher participation and actually speed up research.

Can NFTs enhance research on tissue samples?

क्या NFT ऊतक नमूनों पर शोध को बढ़ा सकते हैं?

Human tissue samples have long been treated as wellsprings that research centres and companies can profit from, but without meaningfully involving the people who provided them.

मानव ऊतक नमूनों को लंबे समय से ऐसे स्रोतों के रूप में माना गया है जिनसे शोध केंद्र और कंपनियाँ लाभ कमा सकती हैं, लेकिन उन्हें प्रदान करने वाले लोगों को सार्थक रूप से शामिल किए बिना।

- Now, scientists have proposed a 'decentralised biobank' that uses **blockchain technology** and **nonfungible tokens (NFTs)**.

अब, वैज्ञानिकों ने 'विकेन्द्रीकृत बायोबैंक' का प्रस्ताव रखा है जो ब्लॉकचेन तकनीक और नॉन-फंजिबल टोकन (NFTs) का उपयोग करती है।



- Each **NFT** could serve as a secure digital record linking a **donor** to their specimen's use, supporting **transparency**, higher participation and actually speed up research.
प्रत्येक **NFT** एक सुरक्षित डिजिटल रिकॉर्ड के रूप में कार्य कर सकता है जो एक **दाता** को उसके नमूने के उपयोग से जोड़ता है, जिससे **पारदर्शिता**, अधिक भागीदारी को समर्थन मिलेगा और वास्तव में शोध को तेज़ किया जा सकेगा।

Decentralised Biobank

- A **biobank** is a repository that collects, stores, and manages biological samples (blood, DNA, tissues) for research and medical purposes.
- A **decentralised biobank** is a **distributed, digital-first system** where data and biological sample information are stored and shared across multiple nodes (instead of a single central authority).

Key Features

- **Data Ownership:** Individuals retain more control over their genetic/medical data.
- **Privacy:** Secure sharing through advanced encryption and blockchain-based systems.
- **Collaboration:** Facilitates global research without a single monopoly over data.
- **Resilience:** Data not lost if one server fails (since stored across multiple nodes).

Example

- The “**DeBio Network**” (Indonesia) uses blockchain to create decentralised genetic testing and biobank services.
- In India, discussions around **National Digital Health Mission (NDHM)** and **biobank frameworks** include ensuring data sovereignty and privacy.

Blockchain Technology

- **Blockchain** is a **distributed ledger technology (DLT)** where records (blocks) are linked chronologically and securely using cryptography.
- Each participant (node) holds a copy of the ledger. Once a record is added, it cannot be altered easily, ensuring **transparency, security, and immutability**.

Key Concepts

- **Blocks:** Contain data, timestamp, and cryptographic hash of the previous block.
- **Decentralisation:** No single central authority—consensus mechanisms (like Proof of Work or Proof of Stake) validate transactions.
- **Transparency + Trust:** All participants can verify transactions.
- **Applications:**
 - Cryptocurrencies (Bitcoin, Ethereum).



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- Supply chain management.
- e-Governance (land records, identity).
- Healthcare (secure patient records).

Non-Fungible Tokens (NFTs)

- NFTs are unique **digital assets** stored on a blockchain that represent ownership of a specific item (artwork, music, video, virtual real estate, collectibles).
- Unlike cryptocurrencies (fungible, interchangeable), NFTs are **non-fungible (unique and non-interchangeable)**.

Key Features

- **Uniqueness:** Each NFT has distinct metadata.
- **Indivisibility:** Cannot be broken into smaller units like Bitcoin.
- **Smart Contracts:** Ensure authenticity, ownership transfer, and royalties for creators.

Examples

- **Art & Collectibles:** Beeple's digital artwork "Everydays: The First 5000 Days" sold as an NFT for **\$69 million** (2021).
- **Sports & Entertainment:** Cricket/football teams issuing NFT-based digital collectibles.
- **Education/Science:** NFTs proposed to track authorship of research data and genetic information.



Reshaping during healing in plants

GS III: S&T



SPEAKING OF SCIENCE

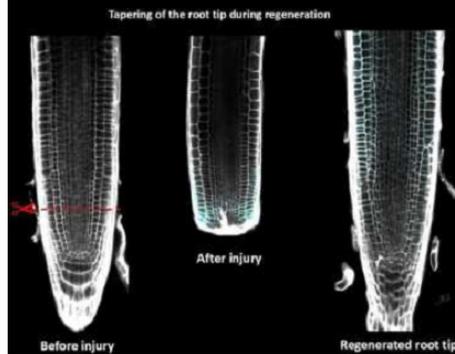
D. Balasubramanian

When we cut our fingernails every so often, using a nail clipper, they grow back. Made of the protein keratin, nails offer us protection from damage. When an infant's fingertip is amputated, but only the part beyond the last joint, it grows back to its original shape. A 2013 study by Takeo et al. (*Nature*, 499, 228-232, 2013) found that there are stem cells, which are cells that can develop into different cell types, in the nail bed that don't only continuously differentiate into cells that go on to form the hard, keratinised nail plate, they also send signals that orchestrate digit regeneration. These cells

activate the Wnt signaling pathway, a process that attracts the nerves needed for regeneration.

The lizard is an unwanted guest in our homes. We often try to kill, but often succeed in only hitting its tail. The fugitive soon regenerates its tail, just like the injured fingertip mentioned above. The molecular biology of the process was summarised by Hutchins et al. in 2014 (*PLoS ONE* 9(8): e105004). More than 300 genes are involved in the response process, and developmental and wound-response pathways are activated to heal the wound and put the tail back.

Now, recent research is shedding light on the critical role of physical cues in developmental plant biology. A study published recently in *Current Biology* (vol. 35, issue 16, P3851-3868.E7) by Mabel Maria



Experiments described in this study used root tip regeneration in *Arabidopsis thaliana* of the mustard family. SPECIAL ARRANGEMENT

Mathew and Kalika Prasad at IISER Pune highlights an understudied but critical factor in development and regeneration: cell geometry.

The researchers investigated how the root tip organ with a tapered shape reclaimed its shape when amputated. They disco-

vered that the existing cells changed their geometry to guide the alignment of rows of new regenerating cells along an inclined path. These inclined rows of cells finally rebuild the tapered shape of the root. In technical terms, this process is called morphogenesis, the biological pro-

cess that causes an organism to develop its shape and structure. It involves the coordinated growth, division, differentiation, and organisation of cells to form tissues, organs, and even a complete organism.

Experiments described in this study used root tip regeneration in *Arabidopsis thaliana* of the mustard family as an experimental system to demonstrate how changes in cell geometry contribute to and facilitate morphogenesis.

Using advanced microscopy and experimental tools, the team observed that normal cubelike root cells changed their size and shape into rhomboid shapes, where the altered cells divided diagonally, producing triangular prism-like cells. The diagonal divisions redirected the growth of neighbouring cells along a slanted path, collectively recreating the

lost tapered tip.

Mathematical and physical analysis done by the group and their collaborators revealed that the actual force behind these changes is internal mechanical tension – a kind of hidden stress guiding cells to change shape and divide strategically.

Thus, while stem cells and genetic pathways have long been central to understanding morphogenesis, this study highlights an equally important but often overlooked aspect: how cells adapt their shape under stress. It shows that cell size and geometry can play a decisive role in guiding morphogenesis during tissue regeneration. These principles may even hold true across other biological systems, pointing to a more universal role for cell physical cues, in particular, cell geometry in shaping life.

Reshaping during healing in plants

उपचार के दौरान पौधों में पुनः आकार बनना

When we cut our fingernails every so often, using a nail clipper, they grow back.

जब हम समय-समय पर नेल क्लीपर का उपयोग करके अपने नाखून काटते हैं, तो वे फिर से बढ़ जाते हैं।

Made of the protein keratin, nails offer us protection from damage.

केराटिन प्रोटीन से बने नाखून हमें क्षति से सुरक्षा प्रदान करते हैं।

- When an infant's fingertip is amputated, but only the part beyond the last joint, it grows back to its original shape.
जब किसी शिशु की उंगली का सिरा काट दिया जाता है, लेकिन केवल अंतिम जोड़ से आगे का हिस्सा, तो यह अपनी मूल आकृति में वापस बढ़ जाता है।
- A 2013 study by Takeo et al. (*Nature*, 499, 228-232, 2013) found that there are **stem cells**, which are cells that can develop into different cell types, in the nail bed that don't only continuously differentiate into cells that go on to form the hard, keratinised nail plate, they also send signals that orchestrate digit regeneration.
टेकियो और अन्य (नेचर, 499, 228-232, 2013) के एक 2013 अध्ययन में पाया गया कि नाखून की तह में **स्टेम कोशिकाएँ** होती हैं, जो विभिन्न प्रकार की कोशिकाओं में विकसित हो सकती हैं, और ये न केवल लगातार विभेदित होकर कठोर, केराटिनयुक्त नाखून प्लेट का निर्माण करती हैं, बल्कि ये संकेत भी भेजती हैं जो उंगली के पुनर्जनन का संचालन करते हैं।
- These cells activate the **Wnt signaling pathway**, a process that attracts the nerves needed for regeneration.



ये कोशिकाएँ **Wnt सिग्नलिंग मार्ग** को सक्रिय करती हैं, जो पुनर्जनन के लिए आवश्यक नसों को आकर्षित करता है।

- The lizard is an unwanted guest in our homes.
छिपकली हमारे घरों में एक अवांछित मेहमान है।
- We often try to kill, but often succeed in only hitting its tail.
हम अक्सर उसे मारने की कोशिश करते हैं, लेकिन अक्सर केवल उसकी पूँछ पर ही चोट कर पाते हैं।
- The fugitive soon regenerates its tail, just like the injured fingertip mentioned above.
वह भागने वाली छिपकली जल्द ही अपनी पूँछ को पुनर्जीवित कर लेती है, जैसे ऊपर उल्लेखित घायल उंगली का सिरा।
- The molecular biology of the process was summarised by **Hutchins et al. in 2014 (PLoS ONE 9(8): e105004)**.
इस प्रक्रिया की आणविक जीवविज्ञान को **हचिन्स और अन्य ने 2014 (पीएलओएस वन 9(8): e105004)** में संक्षेपित किया।
- More than **300 genes** are involved in the response process, and developmental and wound-response pathways are activated to heal the wound and put the tail back.
इस प्रतिक्रिया प्रक्रिया में **300 से अधिक जीन** शामिल होते हैं, और घाव को भरने और पूँछ को पुनः उत्पन्न करने के लिए विकासात्मक और घाव-प्रतिक्रिया मार्ग सक्रिय हो जाते हैं।
- Now, recent research is shedding light on the critical role of physical cues in developmental plant biology.
अब, हालिया शोध विकासात्मक पौधों की जीवविज्ञान में भौतिक संकेतों की महत्वपूर्ण भूमिका पर प्रकाश डाल रहा है।
- A study published recently in **Current Biology (vol. 35, issue 16, P3851-3868.E7)** by **Mabel Maria Mathew and Kalika Prasad** at **IISER Pune** highlights an understudied but critical factor in development and regeneration: **cell geometry**.
आईआईएसईआर पुणे की मेबल मारिया मैथू और कलिका प्रसाद द्वारा हाल ही में प्रकाशित **करंट बायोलॉजी (वॉल्यूम 35, अंक 16, P3851-3868.E7)** में एक अध्ययन विकास और पुनर्जनन में एक कम अध्ययन किए गए लेकिन महत्वपूर्ण कारक: **कोशिका ज्यामिति** को उजागर करता है।
- The researchers investigated how the root tip organ with a tapered shape reclaimed its shape when amputated.
शोधकर्ताओं ने जांच की कि कैसे शंकाकार आकार वाले जड़ सिरे ने कट जाने पर अपना आकार पुनः प्राप्त किया।
- They discovered that the existing cells changed their geometry to guide the alignment of rows of new regenerating cells along an inclined path.
उन्होंने पाया कि मौजूदा कोशिकाओं ने अपनी ज्यामिति बदल ली ताकि नई पुनर्जनन कोशिकाओं की पंक्तियों को एक ढलान वाले मार्ग पर संरेखित किया जा सके।
- These inclined rows of cells finally rebuild the tapered shape of the root.
ये ढलान वाली कोशिकाओं की पंक्तियाँ अंततः जड़ के शंकाकार आकार का पुनर्निर्माण करती हैं।
- In technical terms, this process is called **morphogenesis**, the biological process that causes an organism to develop its shape and structure.
तकनीकी शब्दों में, इस प्रक्रिया को **मॉर्फोजेनेसिस** कहा जाता है, जो एक जीव को उसका आकार और संरचना विकसित करने वाली जैविक प्रक्रिया है।
- It involves the coordinated growth, division, differentiation, and organisation of cells to form tissues, organs, and even a complete organism.
इसमें ऊतक, अंग, और यहाँ तक कि एक संपूर्ण जीव बनाने के लिए कोशिकाओं की समन्वित वृद्धि, विभाजन, विभेदन और संगठन शामिल होता है।
- Experiments described in this study used root tip regeneration in **Arabidopsis thaliana** of the mustard family as an experimental system to demonstrate how changes in cell geometry contribute to and facilitate morphogenesis.
इस अध्ययन में वर्णित प्रयोगों में **सरसों परिवार के एराबिडॉप्सिस थालियाना** में जड़ सिरे के पुनर्जनन का उपयोग एक प्रायोगिक प्रणाली के रूप में किया गया ताकि यह प्रदर्शित किया जा सके कि कोशिका ज्यामिति में बदलाव कैसे मॉर्फोजेनेसिस में योगदान देते हैं और उसे सुविधाजनक बनाते हैं।
- Using advanced microscopy and experimental tools, the team observed that normal cubelike root cells changed their size and shape into **rhomboid shapes**, where the altered cells divided diagonally, producing **triangular prism-like cells**.
उन्नत सूक्ष्मदर्शी और प्रायोगिक उपकरणों का उपयोग करते हुए, टीम ने देखा कि सामान्य घनाकार जड़



कोशिकाएँ अपने आकार और आकृति को बदलकर **समचतुर्भुज आकार** में परिवर्तित हो गईं, जहाँ परिवर्तित कोशिकाएँ तिरछे विभाजित होकर **त्रिकोणीय प्रिज्म जैसी कोशिकाएँ** उत्पन्न करती हैं।

- The diagonal divisions redirected the growth of neighbouring cells along a slanted path, collectively recreating the lost tapered tip.
तिरछे विभाजन ने पड़ोसी कोशिकाओं की वृद्धि को एक ढलान वाले मार्ग की ओर मोड़ दिया, जिससे सामूहिक रूप से खोया हुआ शंकाकार सिरा फिर से बन गया।
- Mathematical and physical analysis done by the group and their collaborators revealed that the actual force behind these changes is **internal mechanical tension** — a kind of hidden stress guiding cells to change shape and divide strategically.
समूह और उनके सहयोगियों द्वारा किए गए गणितीय और भौतिक विश्लेषण से पता चला कि इन परिवर्तनों के पीछे वास्तविक बल **आंतरिक यांत्रिक तनाव** है — एक प्रकार का छिपा हुआ दबाव जो कोशिकाओं को आकार बदलने और रणनीतिक रूप से विभाजित करने का मार्गदर्शन करता है।
- Thus, while **stem cells** and **genetic pathways** have long been central to understanding morphogenesis, this study highlights an equally important but often overlooked aspect: how cells adapt their shape under stress.
इस प्रकार, जबकि **स्टेम कोशिकाएँ** और **आनुवंशिक मार्ग** लंबे समय से मॉर्फोजेनेसिस को समझने के लिए केंद्रीय रहे हैं, यह अध्ययन एक समान रूप से महत्वपूर्ण लेकिन अक्सर अनदेखे पहलू पर प्रकाश डालता है: कैसे कोशिकाएँ तनाव के तहत अपने आकार को अनुकूलित करती हैं।
- It shows that **cell size** and **geometry** can play a decisive role in guiding morphogenesis during tissue regeneration.
यह दिखाता है कि **कोशिका का आकार** और **ज्यामिति** ऊतक पुनर्जनन के दौरान मॉर्फोजेनेसिस को मार्गदर्शन देने में निर्णायक भूमिका निभा सकते हैं।
- These principles may even hold true across other biological systems, pointing to a more universal role for **cell physical cues**, in particular, **cell geometry** in shaping life.
ये सिद्धांत अन्य जैविक प्रणालियों में भी सही हो सकते हैं, जो जीवन को आकार देने में विशेष रूप से **कोशिका ज्यामिति** और सामान्य रूप से **कोशिका भौतिक संकेतों** की अधिक सार्वभौमिक भूमिका की ओर संकेत करते हैं।



Warm colours

How do scientists determine the temperature of planets or stars?

GS III: S&T

Astronomical temperatures are usually estimated from spectroscopic measurements. The spectroscope was invented in 1859 by two German scientists, Robert Bunsen and Gustav Kirchhoff. It was first used to analyse the elements in a substance heated to incandescence. Each element gave off characteristic wavelengths of visible light. Bunsen used the device to identify two elements, caesium and rubidium. It was later found that the presence of

certain elements in distant heavenly bodies, and their corresponding temperatures, could be analysed by the same colour yardstick, and by spectral lines, the patterns created by emission and absorption spectra of the elements in stars and other heavenly bodies. Over the years, scientists refined their classification of stars. Astronomers today take the entire electromagnetic spectrum, including X-rays and infrared radiation, into account, not just visible light.
First published in April 2008

Readers may send their questions / answers to questioncorner@thehindu.co.in

elements, **caesium** and **rubidium**.

बन्सेन ने इस उपकरण का उपयोग दो तत्वों, **सीज़ियम** और **रुबिडियम**, की पहचान करने के लिए किया।

- It was later found that the presence of certain elements in distant heavenly bodies, and their corresponding temperatures, could be analysed by the same colour yardstick, and by spectral lines, the patterns created by emission and absorption spectra of the elements in stars and other heavenly bodies.

बाद में पाया गया कि दूरस्थ **खगोलीय पिंडों** में कुछ तत्वों की उपस्थिति और उनके तापमान को उसी रंग मानक और **स्पेक्ट्रल लाइनों** द्वारा विश्लेषित किया जा सकता है, जो तारों और अन्य **खगोलीय पिंडों** में तत्वों के उत्सर्जन और अवशोषण स्पेक्ट्रा द्वारा बनाए गए पैटर्न होते हैं।

- Over the years, scientists refined their classification of stars. वर्षों के दौरान, वैज्ञानिकों ने तारों के अपने वर्गीकरण को परिष्कृत किया।
- Astronomers today take the entire **electromagnetic spectrum**, including **X-rays** and **infrared radiation**, into account, not just visible light.

आज के **खगोलविद** पूरे **विद्युतचुंबकीय स्पेक्ट्रम** को ध्यान में रखते हैं, जिसमें **एक्स-रे** और **इन्फ्रारेड विकिरण** शामिल हैं, न कि केवल **दृश्यमान प्रकाश**।

- First published in **April 2008**
पहली बार **अप्रैल 2008** में प्रकाशित।

Warm colours गर्म रंग

Astronomical temperatures are usually estimated from spectroscopic measurements.

खगोलीय तापमान आमतौर पर स्पेक्ट्रोस्कोपिक मापों से अनुमानित किए जाते हैं।

- The spectroscope was invented in **1859** by two German scientists, **Robert Bunsen** and **Gustav Kirchhoff**.

स्पेक्ट्रोस्कोप का आविष्कार **1859** में दो जर्मन वैज्ञानिकों **रॉबर्ट बन्सेन** और **गुस्ताव किर्खहॉफ़** ने किया था।

- It was first used to analyse the elements in a substance heated to incandescence.

इसे पहली बार उस **पदार्थ के तत्वों** का विश्लेषण करने के लिए इस्तेमाल किया गया जिसे **दीप्तमान** तक गरम किया गया था।

- Each element gave off characteristic wavelengths of visible light.

प्रत्येक तत्व ने दृश्यमान **प्रकाश की विशेष तरंगदैर्घ्य** उत्सर्जित की।

- Bunsen used the device to identify two

Spectroscope

- A **spectroscope** is an **optical instrument** used to split light into its constituent wavelengths (spectrum) and to study their properties.
- It is based on the principle of **dispersion of light** (by prism or diffraction grating).
- It is widely used in **physics, chemistry, astronomy, and material science**.



Basic Working Principle

- When a beam of light passes through a **prism** or **diffraction grating**, it is split into different wavelengths.
- The spectroscope uses this principle to allow the observer to see the **spectrum of light sources**.
- Each element emits or absorbs light at **characteristic wavelengths** (spectral lines).

Components of a Spectroscope

- **Slit:** Allows a narrow beam of light to enter the instrument.
- **Collimating Lens:** Makes the light beam parallel.
- **Prism or Diffraction Grating:** Disperses light into its component wavelengths.
- **Telescope/Eye-piece:** Used to observe the spectrum.
- **Scale (optional):** For measuring angle or wavelength.

Types of Spectroscopes

- **Prism Spectroscope:** Uses glass prism for dispersion.
- **Grating Spectroscope:** Uses diffraction grating for high precision.
- **UV-Visible Spectroscope (modern instrument):** Measures light absorption/transmission in UV-Visible range.
- **Infrared and Mass Spectroscopes (advanced):** Used in molecular studies

Govt. to rope in **Interpol, CERT-In** to enforce new gaming ban

GS III: Gaming Act

S Ronendra Singh
NEW DELHI

The Centre has made it clear that compliance with the newly enacted Promotion and Regulation of On-line Gaming Act, 2025, will be enforced strictly, with measures extending beyond India's borders.

The government said it would not hesitate to invoke international process-

es, including roping in Interpol, to bring offshore operators of money-gaming platforms under its jurisdiction and shut down their services.

"There is a process of Interpol (International Criminal Police Organisation), and there is a process through which they can be brought under jurisdiction," S. Krishnan, Secretary, Ministry of Electron-

ics and Information Technology (MeitY), told *businessline* on the sidelines of an event.

Mr. Krishnan underlined that enforcement would also rely on India's technical and cyber-security infrastructure. The Indian Computer Emergency Response Team (CERT-In), which functions under MeitY, will be tasked with blocking or disabling apps

that continue to offer banned money-gaming services in India. "Like any other technical issue, CERT-In can step in and play its role to shut down those apps under the IT Act," he said.

The government also dismissed the idea that circumvention via Virtual Private Networks (VPNs) would render the ban ineffective. "Even with VPNs,

we will find a way to control them... it's a technology issue, and we have to address it," Mr. Krishnan added.

The compliance-heavy approach follows what the Centre described as the repeated failure of self-regulation in the gaming industry. According to the government, industry stakeholders themselves admitted that self-regulatory

bodies were inadequate and lacked credibility. This led to the decision to institute a legal ban on all real-money games, while carving out space for e-sports and social gaming.

The Act prohibits all forms of money-based gaming but simultaneously promotes e-sports and on-line social games.

(The writer is with *The Hindu businessline*)

Govt. to rope in Interpol, CERT-In to enforce new gaming ban



सरकार नए गेमिंग प्रतिबंध को लागू करने के लिए इंटरपोल, CERT-In को जोड़ेगी

The Centre has made it clear that compliance with the newly enacted Promotion and Regulation of Online Gaming Act, 2025, will be enforced strictly, with measures extending beyond India's borders.

केंद्र ने स्पष्ट कर दिया है कि नए लागू किए गए ऑनलाइन गेमिंग अधिनियम, 2025 का पालन सख्ती से लागू किया जाएगा, जिसमें उपाय भारत की सीमाओं से परे तक बढ़ाए जाएंगे।

- The government said it would not hesitate to invoke international processes, including roping in **Interpol**, to bring offshore operators of money-gaming platforms under its jurisdiction and shut down their services.
सरकार ने कहा कि वह अंतरराष्ट्रीय प्रक्रियाओं को लागू करने में हिचकिचाएगी नहीं, जिसमें इंटरपोल को शामिल करना भी होगा, ताकि मनी-गेमिंग प्लेटफार्मों के ऑफशोर ऑपरेटर्स को अपने अधिकार क्षेत्र में लाकर उनकी सेवाएं बंद की जा सकें।
- "There is a process of **Interpol (International Criminal Police Organisation)**, and there is a process through which they can be brought under jurisdiction," **S. Krishnan**, Secretary, **Ministry of Electronics and Information Technology (MeitY)**, told Businessline on the sidelines of an event.
"इंटरपोल (अंतरराष्ट्रीय आपराधिक पुलिस संगठन) की एक प्रक्रिया है, और एक प्रक्रिया है जिसके माध्यम से उन्हें अधिकार क्षेत्र में लाया जा सकता है," एस. कृष्णन, सचिव, इलेक्ट्रॉनिक्स और सूचना प्रौद्योगिकी मंत्रालय (MeitY) ने एक कार्यक्रम के दौरान बिज़नेसलाइन को बताया।
- Mr. Krishnan underlined that enforcement would also rely on India's technical and cyber-security infrastructure. The **Indian Computer Emergency Response Team (CERT-In)**, which functions under **MeitY**, will be tasked with blocking or disabling apps that continue to offer banned money-gaming services in India.
श्री कृष्णन ने जोर देकर कहा कि प्रवर्तन भारत की तकनीकी और साइबर-सुरक्षा अवसंरचना पर भी निर्भर करेगा। भारतीय कंप्यूटर इमरजेंसी रिस्पॉन्स टीम (CERT-In), जो MeitY के अधीन काम करती है, को उन ऐप्स को ब्लॉक या निष्क्रिय करने का कार्य सौंपा जाएगा जो भारत में प्रतिबंधित मनी-गेमिंग सेवाएं प्रदान करते रहते हैं।
- "Like any other technical issue, **CERT-In** can step in and play its role to shut down those apps under the **IT Act**," he said.
"जैसे किसी अन्य तकनीकी मुद्दे में, **CERT-In** कदम उठा सकती है और उन ऐप्स को बंद करने में अपनी भूमिका निभा सकती है जो आईटी अधिनियम के तहत आते हैं," उन्होंने कहा।
- The government also dismissed the idea that circumvention via **Virtual Private Networks (VPNs)** would render the ban ineffective. "Even with **VPNs**, we will find a way to control them... it's a **technology issue**, and we have to address it," Mr. Krishnan added.
सरकार ने इस विचार को भी खारिज कर दिया कि वर्चुअल प्राइवेट नेटवर्क (VPNs) के जरिए प्रतिबंध को अप्रभावी बनाया जा सकता है। "यहां तक कि **VPNs** के साथ भी, हम उन्हें नियंत्रित करने का तरीका ढूंढ लेंगे... यह एक प्रौद्योगिकी मुद्दा है, और हमें इसका समाधान करना होगा," श्री कृष्णन ने जोड़ा।
- The compliance-heavy approach follows what the **Centre** described as the repeated failure of **self-regulation** in the **gaming industry**. According to the government, industry stakeholders themselves admitted that **self-regulatory bodies** were inadequate and lacked credibility.
यह अनुपालन-आधारित दृष्टिकोण उस चीज़ का अनुसरण करता है जिसे केंद्र ने गेमिंग उद्योग में स्व-नियमन की बार-बार विफलता के रूप में वर्णित किया। सरकार के अनुसार, उद्योग के हितधारकों ने स्वयं स्वीकार किया कि स्व-नियामक निकाय अपर्याप्त थे और उनमें विश्वसनीयता की कमी थी।
- This led to the decision to institute a legal ban on all **real-money games**, while carving out space for **e-sports** and **social gaming**.
इससे सभी वास्तविक-धन खेलों पर कानूनी प्रतिबंध लगाने का निर्णय लिया गया, जबकि ई-स्पोर्ट्स और सामाजिक गेमिंग के लिए स्थान बनाया गया।
- The **Act** prohibits all forms of **money-based gaming** but simultaneously promotes **e-sports** and **online social games**.



यह अधिनियम सभी प्रकार के मनी-आधारित गेमिंग को प्रतिबंधित करता है लेकिन साथ ही ई-स्पोर्ट्स और ऑनलाइन सामाजिक खेलों को बढ़ावा देता है।

Interpol (International Criminal Police Organization)

- **Full Name:** International Criminal Police Organization (commonly called **Interpol**).
- **Founded:** 1923 in Vienna, Austria (as International Criminal Police Commission).
- **Current HQ:** Lyon, France (since 1946).
- **Members:** 196 countries (as of 2024). India is a member since 1949.
- **Nature:** An intergovernmental police cooperation body, not a supranational law enforcement agency.

Key Functions

- Facilitates **international police cooperation** against crimes like terrorism, human trafficking, cybercrime, drug smuggling, and financial crimes.
- Issues **Notices** to alert or request cooperation from member states:
 - **Red Notice:** To locate and provisionally arrest a person pending extradition.
 - **Blue Notice:** To collect information about a person's identity or activities.
 - **Yellow Notice:** For missing persons (esp. children).
 - **Green, Black, Purple, Orange, Special Notices** for different threats.
 - Provides a **secure global police communication network (I-24/7)**.
 - Operates **databases** on stolen passports, fingerprints, DNA profiles, etc.

Recent Updates (India context)

- In 2022, India hosted the **90th Interpol General Assembly** in New Delhi.
- CBI is the **National Central Bureau (NCB) of India**, which coordinates with Interpol.
- Interpol issued **Red Notices** against several fugitives wanted in India (e.g., economic offenders like Nirav Modi, Mehul Choksi).

CERT-In (Indian Computer Emergency Response Team)

- **Full Name:** Computer Emergency Response Team – India (**CERT-In**).
- **Established:** 2004 by the Ministry of Electronics and Information Technology (**MeitY**).
- **Headquarters:** New Delhi.
- **Legal Backing:** Section 70B of the Information Technology Act, 2000.
- **Nature:** National nodal agency for cybersecurity incident response.

Key Functions

- Collects, analyzes, and responds to **cybersecurity incidents** in India.
- Issues **advisories, guidelines, and alerts** on cyber threats (like phishing, ransomware,



malware).

- Coordinates **incident response** across government, private sector, and academia.
- Empaneled **IT security auditors** to certify government/critical infrastructure systems.
- Works with global bodies like **FIRST, APCERT, and Interpol's** cybercrime division.

Blazing a digital trail

After its much-acclaimed 100% literacy campaign, Kerala has crossed yet another milestone by achieving total digital literacy. **S.R. Praveen** meets some of the new digitally literate citizens and people who led the campaign



Using her smartphone. S.R. PRAVEEN

With practised ease, Sarasu's finger glides over the smartphone screen from one video to the next, as she lists out the things she learned to do with the phone. For a while, the septuagenarian worker of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) even had a YouTube channel featuring her folk songs, which accidentally got deleted when her phone developed a technical snag.

Standing in front of her modest house in the deep interiors of Pullampara panchayat in Thiruvananthapuram, she speaks of the joy of video-calling her grandchildren and taking photographs. In another ward in the same panchayat, S. Boban, a veteran farmer, has just prepared the ground for black pepper cultivation using PVC pipes, a novel method he learned from YouTube. His only complaint is that now he gets to see too many videos on black pepper cultivation on his timeline, due to the algorithms.

Both of them until recently belonged to the vast number of "digitally illiterate" citizens, sometimes left behind in a world moving along unfamiliar trajectories. But now they are part of the 21.87 lakh people across Kerala who have completed the State government's Digi Kerala digital literacy programme, making Kerala the first State to achieve total digital literacy. Chief Minister Pinarayi Vijayan made the official declaration on Thursday (August 21).

Grassroots-level movement

In a grassroots-level movement akin to the landmark total literacy campaign of the late 1980s, the State utilised its strong local self-government mechanism to the hilt to bridge the digital divide.

The story begins in 2021 at Pullampara, a hilly rural region located approximately 25 km from Thiruvananthapuram, the State capital. A group of government officials native to Pullampara began noticing long queues regularly in front of one of the few banks in the panchayat. Many of them were MGNREGS

I used to think of smartphones as some kind of luxury. Now, it is helping me in farming, in paying bills from home, and in video-calling my daughter who is abroad.

S. BOBAN, farmer

labourers who had travelled long distances just to check their account balance.

Sajina Sathar, then a district women's welfare officer and an assistant director in the Local Self-Government department at present, says that the travails of those who kept aside their daily work for something as simple as an account balance check kindled a thought about teaching them to use the basic digital technology required in daily life. This was born the project 'Digi Pullampara', the precursor to Digi Kerala.

The plans to impart digital literacy to all residents of the panchayat began in August 2021 under a five-member core team led by panchayat president P.V. Rajesh. The team had Sajina, MGNREGS district engineer Dinesh Pappan, and S. Santh, a trainee of the Kerala Administrative Service, and a technical education department employee Shammad Pullampara as its members. A survey was soon carried out across all wards to identify those who are digitally illiterate. Out of 3,917 people thus identified, training was provided to 3,300 as the rest were bedridden.

Extra effort to rope in senior citizens

"We trained our volunteers on ways to convince senior citizens who were reluctant to adopt digital technology and smartphones about the benefits and possibilities of adopting the new technology. We convinced them that they could video-call their grandchildren, watch an episode of a television serial they might have missed, the wide variety of helpful videos available on YouTube to learn new skills, and the benefits of Internet searching," says Sajina.

The core team designed 15 activities in three modules for training, ranging from basic smartphone usage to navigating social media applica-

tions to bill payments and accessing government services. AIJ Abdul Kalam Technological University vetted the modules that were used to train in the panchayat as well as across the State, says Sajina.

While the National Digital Literacy Mission's guidelines for digital literacy require training to be imparted only for those up to 60 years of age, the Digi Pullampara and later the Digi Kerala programme included people of all ages, even those above the age of 100. Instead of the focus on computer literacy at the national level, the programmes at the panchayat and State levels were tweaked to make people proficient in using smartphones.

Students from the National Service Scheme (NSS) units of five engineering colleges in the region and a higher secondary school aided in the training programme, along with Kudumbashree volunteers, SC/ST promoters, and library council members. The training was carried out in three ways — in places like MGNREGS worksites and Kudumbashree neighbourhood groups where people come together in considerable numbers, through volunteers visiting households, and through the younger generation in households with senior citizens.

"For years, I have used a basic mobile phone, as my idea of a phone was that it was meant for calling only. I used to think of smartphones as some kind of luxury. But these kids told me how knowing this would be helpful in the future. Now, it is helping me in farming, in paying bills from home, and in video-calling my daughter who is abroad," says Boban.

Karumakara Panicker learned the basics of using a smartphone at the age of 99, along with his son, Rajan, then 69. Now at 103, his failing eyesight prevents him from using it on his own, but he joins his son in listening to the news and songs on the phone. Sarasu, on completion of her classes, bought a smartphone using savings from her MGNREGS wages.

Mobile network coverage an issue

S.R. Aswathi, vice president of Pullampara panchayat, talks about one of the biggest challenges for the project, with six wards out of the 15 in the panchayat not having mobile network coverage. After failed meetings with telecom service providers who were reluctant to expand further into the rural hinterlands, an intervention from John Brittas, MP, led to the installation of mobile towers in the area, she says.

The programme did not end with the training. An evaluation of each trainee was conducted by another set of volunteers, in which they had to complete at least six of the 15 tasks to pass. Those who failed were retrained. As many as 86.8% of the participants successfully cleared the evaluation in Pullampara. Chief Minister Pinarayi Vijayan declared Pullampara as Kerala's first fully digitally literate panchayat in September 2022

and also announced a plan to expand the project State-wide.

The core team from Pullampara trained a set of master trainers at the Kerala Institute of Local Administration, who in turn trained 2.57 lakh volunteers who fanned out across the State for surveying and training. As many as 1.51 crore people from 83.45 lakh houses across the State were surveyed, from which 21.88 lakh people were identified as digitally illiterate and training was provided.

The Economics and Statistics department also carried out a third-party evaluation. For local bodies in which over 10% of the candidates failed re-training and evaluation were conducted. A total of 21.87 lakh people, comprising 99% of the participants, passed the evaluation, according to those involved in the project.

One of the criticisms of the project is that the State-wide survey did not cover all houses. Officials argue that local-level Kudumbashree workers who accompanied the volunteers for the survey helped them avoid the houses in which the residents were already digitally savvy.

M.A. Abdullah Maulavi Rasevi, 104, from Asamannor panchayat in Ernakulam district is one of the oldest among the newly digitally literate. "I can now video-chat with my grandson who is working in Sharjah. As a Koran scholar, I use Google to clear some of my doubts regarding the scriptures, while YouTube is a good source of news," says Rasevi, who along with Sarasu has become the face of the digital literacy campaign.

Out of those who passed the evaluation, 7.77 lakh people are between the ages of 60 and 75, 1.35 lakh between the ages of 76 and 90, and 15,221 above the age of 90. Over 13 lakh women, eight lakh men and 1,644 transgender persons completed the programme successfully, claim the authorities.

Internet as a basic right

On November 7, 2019 the then Left Democratic Front government in Kerala announced that Internet connection would be a basic right in the State, becoming the first State in the country to do so.

In 2022, the government commissioned the first phase of the Kerala Fibre Optic Network (KFON) project aimed at ensuring universal Internet access and narrowing the digital divide. With an aim to provide Internet free of cost to 20 lakh below the poverty line (BPL) families, the project has till now reached over 14,000 BPL families, in addition to 74,203 commercial home connections, according to KFON sources.

In 2024, the government also launched K-Smart, an ambitious project to make available all services of local self-government bodies digitally over a uniform platform. This includes marriage registration over videoconferencing and self-certification for building permits for smaller constructions. According to its proponents, the Digi Kerala project, which is aimed at equipping everyone with knowledge of handling basic digital tools, fits right into this structured plan to bridge the digital divide and enable people to access government services without queuing up in front of offices.

"This is the beginning of our efforts to bridge the digital divide. But we are not stopping at this. As part of Digi Kerala 2.0, we will train everyone to access government services, provide awareness classes on cyber fraud, and equip them to identify and reject fake news, thus enabling them to lead a responsible and safe digital citizenship," says Minister for Local Self-Government M.B. Rajesh.

Kerala is once again setting benchmarks for others to follow.

Blazing a digital trail डिजिटल रास्ते पर अग्रसर

- After its much-acclaimed 100% literacy campaign, Kerala has crossed yet another milestone by achieving total digital literacy. **S.R. Praveen** meets some of the new digitally



Teel-savvy: 103-year-old Karumakara Panicker and his son, Rajan, watching a song on YouTube at their home in Pullampara panchayat in Thiruvananthapuram. S.R. PRAVEEN



literate citizens and people who led the campaign

अपनी बहुचर्चित 100% साक्षरता अभियान के बाद, केरल ने पूर्ण डिजिटल साक्षरता हासिल कर एक और मील का पत्थर पार कर लिया है। एस.आर. प्रवीण ने कुछ नए डिजिटल रूप से साक्षर नागरिकों और इस अभियान का नेतृत्व करने वाले लोगों से मुलाकात की

- With practised ease, **Sarasu's finger glides** over the smartphone screen from one video to the next, as she lists out the things she learned to do with the phone.
- अभ्यास से, **सरसु की उंगली** स्मार्टफोन स्क्रीन पर एक वीडियो से दूसरे वीडियो तक फिसलती है, जैसे ही वह उन चीजों की सूची बनाती हैं जो उन्होंने फोन से करना सीखा।
- For a while, the septuagenarian worker of the **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** even had a YouTube channel featuring her folk songs, which accidentally got deleted when her phone developed a technical snag.
- कुछ समय के लिए, **महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार गारंटी योजना (MGNREGS)** की यह सत्तर वर्षीय महिला श्रमिक के पास अपने लोक गीतों वाला एक यूट्यूब चैनल भी था, जो फोन में तकनीकी खराबी आने पर गलती से डिलीट हो गया।
- Standing in front of her modest house in the deep interiors of **Pullampara panchayat** in **Thiruvananthapuram**, she speaks of the joy of video-calling her grandchild and taking photographs.
- **तिरुवनंतपुरम** के **पुल्लमपारा पंचायत** के अंदरूनी इलाके में अपने साधारण घर के सामने खड़ी होकर वह अपने पोते से वीडियो कॉल करने और तस्वीरें लेने की खुशी के बारे में बात करती हैं।
- In another ward in the same panchayat, **S. Boban**, a veteran farmer, has just prepared the ground for **black pepper cultivation** using PVC pipes, a novel method he learned from YouTube.
- उसी पंचायत के एक अन्य वार्ड में, अनुभवी किसान **एस. बोबन** ने **काली मिर्च की खेती** के लिए पीवीसी पाइपों का उपयोग करके जमीन तैयार की है, जो उन्होंने यूट्यूब से सीखा एक नया तरीका है।
- His only complaint is that now he gets to see too many videos on black pepper cultivation on his timeline, due to the **algorithms**.
- उनकी केवल एक शिकायत यह है कि अब उन्हें **एल्गोरिद्म** की वजह से अपनी टाइमलाइन पर काली मिर्च की खेती से जुड़े बहुत अधिक वीडियो देखने को मिलते हैं।
- Both of them until recently belonged to the vast number of **“digitally illiterate”** citizens, sometimes left behind in a world moving along unfamiliar trajectories.
 - हाल तक दोनों ही बड़ी संख्या में मौजूद **“डिजिटल रूप से अशिक्षित”** नागरिकों में शामिल थे, जो कभी-कभी अनजान राहों पर आगे बढ़ती दुनिया में पीछे छूट जाते थे।
- But now they are part of the **21.87 lakh people** across Kerala who have completed the State government's **Digi Kerala digital literacy programme**, making Kerala the first State to achieve total digital literacy.
 - लेकिन अब वे **21.87 लाख लोगों** का हिस्सा हैं, जिन्होंने राज्य सरकार के **डिजी केरल डिजिटल साक्षरता कार्यक्रम** को पूरा किया है, जिससे केरल **पूर्ण डिजिटल साक्षरता** हासिल करने वाला पहला राज्य बन गया।
- **Chief Minister Pinarayi Vijayan** made the official declaration on **Thursday (August 21)**.
- **मुख्यमंत्री पिनाराई विजयन** ने **गुरुवार (21 अगस्त)** को आधिकारिक घोषणा की।



Grassroots-level movement

जमीनी स्तर का आंदोलन

- In a grassroots-level movement akin to the landmark **total literacy campaign** of the late 1980s, the State utilised its strong **local self-government mechanism** to the hilt to bridge the **digital divide**.
1980 के दशक के अंत के ऐतिहासिक **पूर्ण साक्षरता अभियान** के समान एक जमीनी आंदोलन में, राज्य ने **स्थानीय स्वशासन तंत्र** का पूरा उपयोग करके **डिजिटल खाई** को पाटने का काम किया।
- The story begins in 2021 at **Pullampara**, a hilly rural region located approximately 25 km from **Thiruvananthapuram**, the State capital.
कहानी की शुरुआत 2021 में **पुल्लमपारा** से होती है, जो राज्य की राजधानी **तिरुवनंतपुरम** से लगभग 25 किमी दूर स्थित एक पहाड़ी ग्रामीण क्षेत्र है।
- A group of government officials native to Pullampara began noticing long queues regularly in front of one of the few banks in the panchayat.
पुल्लमपारा के मूल निवासी सरकारी अधिकारियों के एक समूह ने पंचायत के कुछ बैंकों में से एक के सामने नियमित रूप से लंबी कतारें देखनी शुरू कीं।
- Many of them were **MGNREGS labourers** who had travelled long distances just to check their **account balance**.
उनमें से कई **मनरेगा मजदूर** थे जो केवल अपना **खाता शेष** जांचने के लिए लंबी दूरी तय करके आते थे।

PATRIOTICIAS