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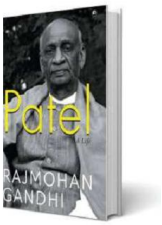
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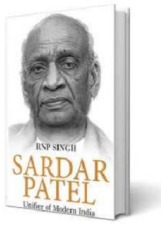
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BIBLIOGRAPHY



Students offer prayers to a portrait of Sardar Vallabhbhai Patel. PTI







Sardar Patel and the many facets of his political legacy

From playing a major role in integrating princely states into the Indian Union to advocating Hindu-Muslim coexistence, Sardar Vallabhbhai Patel's legacy is more complex than his popular Iron Man image suggests

GS I: History

Ziya Us Salam

Sardar Vallabhbhai Patel, whose 151st birth anniversary falls on October 31, 2026, was many things to many people. For some, he was the robust foil to Jawaharlal Nehru's gentleness and urbane eloquence. For others, he was a son of the soil who deserved to be Prime Minister but sacrificed his ambition for the larger good of the nation. For some, he was a "unifier" who played a major role in integrating 500 princely states into the Indian Union, making a cohesive modern India possible. For others, he was a right-wing proponent in a centrist party.

Still highly relevant

The answers are no longer blowing in the wind. They come in fits and starts, in nuggets and specks, in Rajmohan Gandhi's *Patel, A Life*, a reprint of the book originally published by Navajivan in 1991. In the preface to the new edition, published by Aleph, Gandhi writes, "We are in another age now...Patel, who had been dead for more than 40 years when this book first appeared, has now been gone for seventy-five years. He is still highly relevant. However, our times are radically different from what they were when Vallabhbhai Patel...lived in his history-making times. At times today, politicians, journalists, and makers of videos and films drag the characters of Patel – and Gandhi and Nehru – into our current controversies."

What Gandhi leaves unsaid is the political appropriation of Patel by the ruling dispensation, which shares an ideological affinity with the Rashtriya Swayamsevak Sangh (RSS) – ironically, the organisation Patel banned following the assassination of Mahatma Gandhi.

Gandhi's text is illuminating and his research throws much new light on the first Home Minister of India. While giving plenty of space to tracing the rise of Patel from a middle-class background in Gujarat, Gandhi also examines the making of his Iron Man image. Biographer R.N.P. Singh, for instance, compares Patel to Bismarck in *Sardar Patel: Unifier of Modern India*. Gandhi, however, essentially portrays Patel as a great humanist.

Countering the communal discourse

As he writes of the calamitous days of Partition, "No human heart could react with equal anguish to every cruelty of 1947 – neither Patel's nor Jawaharlal's nor Azad's. Vallabhbhai's was a Hindu heart. He was, unquestionably, roused more by reports of fifty Hindu or Sikh deaths than by another fifty Muslim deaths. But his hand was just. Patel agonized over Hindu and Sikh suffering but punished Hindu and Sikh offenders."

Early in the book, at the end of the preface to the new edition, Gandhi counters the communal discourse often associated with Patel, writing, "What should we make of continual attempts today to misuse or exploit Patel for political purposes? It is hurtful to encounter bids to use the Sardar to promote a politics of Hindu supremacy and Muslim subordination."

Relationship with Gandhi

Patel was a hero not merely because he had an independent view of India's age-old pluralism, or that he used his powers of persuasion and intimidation to make the princely states fall in line. He was a hero because he put the word of the Father of the Nation ahead of all else; even ahead of his own desire to lead the newly independent nation. As Gandhi writes, "Vallabhbhai could have retired in a blaze of glory and escaped the need to concede Nehru's primacy. Yet at their last meeting the Mahatma had enjoined him to stay at Nehru's side, and the national interest too seemed to ask for it. The Constitution was being framed. Mergers of states were incomplete. India needed to see Patel and Nehru together....Rejecting the temptation to quit and grumble, Vallabhbhai chose to remain in second place and work."

The doughty fighter that Patel was, he followed Gandhi's advice out of respect for him. As he said in Benares in November 1948, "I was Gandhi's obedient soldier. I followed him because our convictions tallied."

Unsurprisingly, when Gandhi fell to Nathuram Godse's bullets, Patel not only termed it "an everlasting blot", but also moaned that "we can never forget or forgive ourselves that it was one of our own misguided young men who did it." Here, by "one of us", he probably meant the RSS, an organisation whose discipline greatly impressed Patel. Yet he banned the RSS following the Mahatma's assassination and lifted the ban when the organisation agreed to respect the tricolour as the national flag ahead of the Bhagwa dhwaj, the saffron flag, and devote itself to cultural activities.

The idea of shared living

As today, there were votaries of a Hindu Rashtra back then, too. Patel would have none of it, dismissing the idea as "that mad idea", as Gandhi recounts in the book. This is also repeatedly referred to in P.N. Chopra's 15-volume series on Patel. Called *The Collected Works of Sardar Vallabhbhai Patel*, published by Konark, the series is like an encyclopedia on the life and times of the Sardar.

While giving ample space to his views on capitalism, and why it was needed to generate wealth in a poverty-stricken nation, the series also talks of what shared living meant to Patel. In volume 15, Chopra says, "Sardar Patel exhorted Hindus and Muslims to live together. In a speech at Hyderabad, he asked the Hindus to forget the past and the Muslims not to harbour any bitterness towards their brethren....Whatever happens in Pakistan has its reactions here and it is this action and reaction which had to be checked....Let us live as decent men – either Christians, Hindus, Muslims, Sikhs or Parsees. No religion prospers which is based on intolerance."

This plurality was dear to his heart. As he expressed in a speech, barely 18 months after Independence, "The first requisite for building a strong, free India is unity and peace." In the speech, which finds space in a Penguin publication titled *Selected Speeches and Writings of Vallabhbhai Patel*, he goes on to state, "For unity we must forget differences of caste or creed and remember that we are all Indians; and all equal." In the same speech, Patel criticised the RSS for demanding a Hindu Rajya. "There are as many Muslims in this country as in the part that has been partitioned away. We are not going to drive them away. It would be an evil day if we started that game...," he said.

Incidentally, he was also critical of the "Hinduism is in danger" mantra of the RSS. As Chopra's book says, "They do not realise that Hinduism is in danger because Hindus have not followed Hinduism. They take wrong means....It is equally dangerous to form a party or to lay down a programme on a religious basis. The days of religious bigotry are gone. Now that the country has got freedom, for anybody to say that any religion is in danger is a very dangerous precedent to set up."

With his clarity of thought and width of vision, Patel, as Singh writes, "left his mark not only on the map of India but also on the minds of her people".

02N11. Sardar Patel and the many facets of his political legacy
सरदार पटेल और उनकी राजनीतिक विरासत के अनेक पहलू

- Sardar Vallabhbhai Patel, whose **151st birth anniversary falls on October 31, 2026**, was many things to many people.
सरदार वल्लभभाई पटेल, जिनकी 151वीं जयंती 31 अक्टूबर, 2026 को होगी, अलग-अलग लोगों के लिए अलग-अलग अर्थ रखते थे।
- For some, he was the robust foil to Jawaharlal Nehru's gentleness and urbane eloquence.
कुछ लोगों के लिए वे जवाहरलाल नेहरू की सौम्यता और शिष्ट वक्तृत्व के सशक्त प्रतिपक्ष थे।
- For others, he was a son of the soil who deserved to be Prime Minister but sacrificed his ambition for the larger good of the nation.
दूसरों के लिए वे धरती से जुड़े ऐसे नेता थे जो प्रधानमंत्री बनने के योग्य थे, लेकिन उन्होंने राष्ट्र के व्यापक हित के लिए अपनी महत्वाकांक्षा त्याग दी।
- For some, he was a "unifier" who played a major role in integrating 500 princely states into the Indian Union, making a cohesive modern India possible.
कुछ लोगों के लिए वे ऐसे "एकीकरणकर्ता" थे जिन्होंने 500 रियासतों को भारतीय संघ में मिलाने में बड़ी भूमिका निभाई और एक सुसंगठित आधुनिक भारत को संभव बनाया।
- For others, he was a right-wing proponent in a centrist party.
दूसरों के लिए वे एक मध्यमार्गी दल में दक्षिणपंथी विचारों के समर्थक थे।

Still highly relevant
आज भी अत्यंत प्रासंगिक

- The answers are no longer blowing in the wind.
इन सवालों के जवाब अब हवा में तैरते नहीं रह गए हैं।
- They come in fits and starts, in nuggets and specks, in **Rajmohan Gandhi's Patel, A Life**, a reprint of the book originally published by Navajivan in 1991.

वे टुकड़ों और झलकियों के रूप में राजमोहन गांधी की *पटेल, ए लाइफ* में मिलते हैं—यह पुस्तक 1991 में नवजीवन द्वारा प्रकाशित मूल संस्करण का पुनर्मुद्रण है।

- In the preface to the new edition, published by Aleph, Gandhi writes, "We are in another age now...Patel, who had been dead for more than 40 years when this book first appeared, has now been gone for seventy-five years.
  एलेफ द्वारा प्रकाशित नए संस्करण की प्रस्तावना में गांधी लिखते हैं, "अब हम एक दूसरे युग में हैं...जब यह पुस्तक पहली बार प्रकाशित हुई थी, तब पटेल को दिवंगत हुए 40 वर्ष से अधिक हो चुके थे; अब उन्हें गए 75 वर्ष हो चुके हैं।
- He is still highly relevant.
  वे आज भी अत्यंत प्रासंगिक हैं।
- However, our times are radically different from what they were when Vallabhbhai Patel...lived in his history-making times.
  हालाँकि, हमारा समय उस दौर से बिल्कुल अलग है जिसमें वल्लभभाई पटेल...ने इतिहास रचने वाला अपना जीवन बिताया था।
- At times today, politicians, journalists, and makers of videos and films drag the characters of Patel — and Gandhi and Nehru — into our current controversies."
  आज कभी-कभी राजनेता, पत्रकार और वीडियो तथा फ़िल्म बनाने वाले पटेल—और गांधी तथा नेहरू—के चरित्रों को हमारे मौजूदा विवादों में घसीट लाते हैं।"
- What Gandhi leaves unsaid is the political appropriation of Patel by the ruling dispensation, which shares an ideological affinity with the Rashtriya Swayamsevak Sangh (RSS) — ironically, the organisation Patel banned following the assassination of Mahatma Gandhi.
  गांधी जिस बात को अनकहा छोड़ देते हैं, वह है सत्तारूढ़ व्यवस्था द्वारा पटेल का राजनीतिक appropriation—उनका अपने हित में इस्तेमाल। इस व्यवस्था की वैचारिक निकटता राष्ट्रीय स्वयंसेवक संघ (आरएसएस) से है। विडंबना यह है कि महात्मा गांधी की हत्या के बाद पटेल ने इसी संगठन पर प्रतिबंध लगाया था।
- Gandhi's text is illuminating and his research throws much new light on the first Home Minister of India.
  गांधी की पुस्तक अंतर्दृष्टि देती है और उनका शोध भारत के पहले गृह मंत्री पर कई नए पहलू उजागर करता है।
- While giving plenty of space to tracing the rise of Patel from a middle-class background in Gujarat, Gandhi also examines the making of his Iron Man image.
  गुजरात के मध्यवर्गीय परिवेश से पटेल के उभार का विस्तार से वर्णन करते हुए गांधी उनकी **लौह पुरुष की छवि** के बनने की प्रक्रिया की भी पड़ताल करते हैं।
- Biographer R.N.P. Singh, for instance, compares Patel to Bismarck in *Sardar Patel: Unifier of Modern India*.
  उदाहरण के लिए, जीवनीकार आर.एन.पी. सिंह अपनी पुस्तक *सरदार पटेल: यूनिफायर ऑफ मॉडर्न इंडिया* में पटेल की तुलना बिस्मार्क से करते हैं।
- Gandhi, however, essentially portrays Patel as a great humanist.
  लेकिन गांधी मूलतः पटेल को एक महान मानवतावादी के रूप में प्रस्तुत करते हैं।

Countering the communal discourse
सांप्रदायिक विमर्श का प्रतिवाद

- As he writes of the calamitous days of Partition, "No human heart could react with equal anguish to every cruelty of 1947 — neither Patel's nor Jawaharlal's nor Azad's.
  विभाजन के विनाशकारी दिनों के बारे में वे लिखते हैं, "1947 के हर अत्याचार पर कोई भी मानवीय हृदय समान पीड़ा से प्रतिक्रिया नहीं दे सकता था—न पटेल का, न जवाहरलाल का और न ही आज़ाद का।
- Vallabhbhai's was a Hindu heart.
  वल्लभभाई का हृदय हिंदू था।
- He was, unquestionably, roused more by reports of fifty Hindu or Sikh deaths than by another fifty Muslim deaths.

निस्संदेह, पचास हिंदुओं या सिखों की मौत की खबर उन्हें पचास मुसलमानों की मौत की खबर से अधिक विचलित करती थी।

- But his hand was just.
  लेकिन उनका न्याय निष्पक्ष था।
- Patel agonized over Hindu and Sikh suffering but punished Hindu and Sikh offenders."
  पटेल हिंदुओं और सिखों की पीड़ा से व्यथित होते थे, लेकिन हिंदू और सिख अपराधियों को दंडित भी करते थे।"
- Early in the book, at the end of the preface to the new edition, Gandhi counters the communal discourse often associated with Patel, writing, "What should we make of continual attempts today to misuse or exploit Patel for political purposes?
  पुस्तक के आरंभ में, नए संस्करण की प्रस्तावना के अंत में, गांधी पटेल से अक्सर जोड़े जाने वाले सांप्रदायिक विमर्श का प्रतिवाद करते हुए लिखते हैं, "आज पटेल का राजनीतिक उद्देश्यों के लिए दुरुपयोग करने या उन्हें अपने हित में इस्तेमाल करने के लगातार हो रहे प्रयासों को हम किस रूप में देखें?
- It is hurtful to encounter bids to use the Sardar to promote a politics of Hindu supremacy and Muslim subordination."
  सरदार का इस्तेमाल हिंदू वर्चस्व और मुस्लिम अधीनता की राजनीति को बढ़ावा देने के लिए किए जाने के प्रयासों को देखना पीड़ादायक है।"

Relationship with Gandhi
गांधी के साथ संबंध

- Patel was a hero not merely because he had an independent view of India's age-old pluralism, or that he used his powers of persuasion and intimidation to make the princely states fall in line.
  पटेल केवल इसलिए नायक नहीं थे कि भारत की सदियों पुरानी बहुलता के बारे में उनका स्वतंत्र दृष्टिकोण था, या उन्होंने रियासतों को साथ लाने के लिए अपनी समझाने और दबाव डालने की क्षमता का इस्तेमाल किया।
- He was a hero because he put the word of the Father of the Nation ahead of all else; even ahead of his own desire to lead the newly independent nation.
  वे इसलिए नायक थे क्योंकि उन्होंने राष्ट्रपिता के वचन को हर चीज़ से ऊपर रखा—यहाँ तक कि नवस्वतंत्र राष्ट्र का नेतृत्व करने की अपनी इच्छा से भी ऊपर।
- As Gandhi writes, "Vallabhbhai could have retired in a blaze of glory and escaped the need to concede Nehru's primacy.
  जैसा कि गांधी लिखते हैं, "वल्लभभाई गौरव के शिखर पर राजनीति से संन्यास ले सकते थे और नेहरू की प्रधानता स्वीकार करने की आवश्यकता से बच सकते थे।
- Yet at their last meeting the Mahatma had enjoined him to stay at Nehru's side, and the national interest too seemed to ask for it.
  लेकिन उनकी आखिरी मुलाकात में महात्मा ने उन्हें नेहरू के साथ बने रहने का निर्देश दिया था, और राष्ट्रीय हित भी यही माँगता प्रतीत होता था।
- The Constitution was being framed.
  संविधान का निर्माण हो रहा था।
- Mergers of states were incomplete.
  रियासतों का विलय अधूरा था।
- India needed to see Patel and Nehru together....Rejecting the temptation to quit and grumble, Vallabhbhai chose to remain in second place and work."
  भारत को पटेल और नेहरू को साथ देखना ज़रूरी था...पद छोड़कर शिकायत करने के प्रलोभन को ठुकराते हुए वल्लभभाई ने दूसरे स्थान पर रहकर काम करना चुना।"
- The doughty fighter that Patel was, he followed Gandhi's advice out of respect for him.
  पटेल दृढ़ और साहसी योद्धा थे, फिर भी गांधी के प्रति सम्मान के कारण उन्होंने उनकी सलाह मानी।

- As he said in Benares in November 1948, "I was Gandhi's obedient soldier.
  जैसा कि उन्होंने नवंबर 1948 में बनारस में कहा था, "मैं गांधी का आज्ञाकारी सिपाही था।
- I followed him because our convictions tallied."
  मैं उनके साथ चला क्योंकि हमारे विश्वास एक-दूसरे से मेल खाते थे।"
- Unsurprisingly, when Gandhi fell to Nathuram Godse's bullets, Patel not only termed it "an everlasting blot", but also moaned that "we can never forget or forgive ourselves that it was one of our own misguided young men who did it."
  इसलिए इसमें आश्चर्य नहीं कि जब नाथूराम गोडसे की गोलियों से गांधी की मृत्यु हुई, तो पटेल ने इसे "एक अमिट कलंक" कहा और यह भी दुख जताया कि "हम अपने-आपको इस बात के लिए कभी माफ़ नहीं कर सकते और न ही इसे भूल सकते हैं कि यह कृत्य हमारे ही एक भटके हुए युवक ने किया था।"
- Here, by "one of us", he probably meant the RSS, an organisation whose discipline greatly impressed Patel.
  यहाँ "हममें से एक" कहकर उनका आशय शायद आरएसएस से था—एक ऐसा संगठन जिसकी अनुशासनप्रियता ने पटेल को बहुत प्रभावित किया था।
- Yet he banned the RSS following the Mahatma's assassination and lifted the ban when the organisation agreed to respect the tricolour as the national flag ahead of the Bhagwa dhwaj, the saffron flag, and devote itself to cultural activities.
  फिर भी, महात्मा की हत्या के बाद उन्होंने आरएसएस पर प्रतिबंध लगा दिया था। यह प्रतिबंध तब हटाया गया जब संगठन ने भगवा ध्वज से ऊपर तिरंगे को राष्ट्रीय ध्वज के रूप में सम्मान देने और स्वयं को सांस्कृतिक गतिविधियों तक सीमित रखने पर सहमति जताई।

The idea of shared living
साथ मिलकर रहने का विचार

- As today, there were votaries of a Hindu Rashtra back then, too.
  आज की तरह उस समय भी हिंदू राष्ट्र के समर्थक थे।
- Patel would have none of it, dismissing the idea as "that mad idea", as Gandhi recounts in the book.
  गांधी पुस्तक में बताते हैं कि पटेल ने इस विचार को सिरे से खारिज करते हुए "वह पागलपन भरा विचार" कहा था।
- This is also repeatedly referred to in P.N. Chopra's 15-volume series on Patel.
  पटेल पर पी.एन. चोपड़ा की 15 खंडों वाली श्रृंखला में भी इसका बार-बार उल्लेख मिलता है।
- Called *The Collected Works of Sardar Vallabhbhai Patel*, published by Konark, the series is like an encyclopedia on the life and times of the Sardar.
  कोणार्क द्वारा प्रकाशित इस श्रृंखला का नाम *द कलेक्टेड वर्क्स ऑफ सरदार वल्लभभाई पटेल* है और यह सरदार के जीवन तथा समय पर एक विश्वकोश जैसी है।
- While giving ample space to his views on capitalism, and why it was needed to generate wealth in a poverty-stricken nation, the series also talks of what shared living meant to Patel.
  पूँजीवाद पर उनके विचारों और निर्धनता से जूझ रहे देश में संपदा पैदा करने के लिए इसकी आवश्यकता पर पर्याप्त चर्चा करने के साथ-साथ, यह श्रृंखला यह भी बताती है कि पटेल के लिए साथ मिलकर रहने का क्या अर्थ था।
- In volume 15, Chopra says, "Sardar Patel exhorted Hindus and Muslims to live together.
  खंड 15 में चोपड़ा कहते हैं, "सरदार पटेल ने हिंदुओं और मुसलमानों से साथ रहने का आग्रह किया।
- In a speech at Hyderabad, he asked the Hindus to forget the past and the Muslims not to harbour any bitterness towards their brethren....Whatever happens in Pakistan has its reactions here and it is this action and reaction which had to be checked....Let us live as decent men — either Christians, Hindus, Muslims, Sikhs or Parsees.
  हैदराबाद में एक भाषण के दौरान उन्होंने हिंदुओं से अतीत को भुलाने और मुसलमानों से अपने भाइयों के प्रति कोई कटुता न रखने को कहा...पाकिस्तान में जो कुछ होता है, उसकी प्रतिक्रिया यहाँ भी होती है; इसी कार्रवाई

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और प्रतिक्रिया पर रोक लगानी होगी...आइए, हम सभ्य इंसानों की तरह रहें—चाहे हम ईसाई हों, हिंदू, मुसलमान, सिख या पारसी।

- No religion prospers which is based on intolerance."
  असहिष्णुता पर आधारित कोई भी धर्म फल-फूल नहीं सकता।"
- This plurality was dear to his heart.
  यह बहुलता उनके हृदय के बहुत करीब थी।
- As he expressed in a speech, barely 18 months after Independence, "The first requisite for building a strong, free India is unity and peace."
  आजादी के मुश्किल से 18 महीने बाद दिए गए एक भाषण में उन्होंने कहा था, "एक सशक्त और स्वतंत्र भारत के निर्माण की पहली आवश्यकता एकता और शांति है।"
- In the speech, which finds space in a Penguin publication titled *Selected Speeches and Writings of Vallabhbhai Patel*, he goes on to state, "For unity we must forget differences of caste or creed and remember that we are all Indians; and all equal."
  पेंगुइन द्वारा प्रकाशित *सेलेक्टेड स्पीचेज़ एंड राइटिंग्स ऑफ वल्लभभाई पटेल* में शामिल इस भाषण में वे आगे कहते हैं, "एकता के लिए हमें जाति या पंथ के भेद भुलाने होंगे और याद रखना होगा कि हम सभी भारतीय हैं और समान हैं।"
- In the same speech, Patel criticised the RSS for demanding a Hindu Rajya.
  इसी भाषण में पटेल ने हिंदू राज्य की माँग करने के लिए आरएसएस की आलोचना की।
- "There are as many Muslims in this country as in the part that has been partitioned away.
  उन्होंने कहा, "इस देश में उतने ही मुसलमान हैं जितने उस हिस्से में हैं जो विभाजन के बाद अलग हो गया।
- We are not going to drive them away.
  हम उन्हें देश से बाहर नहीं निकालने वाले हैं।
- It would be an evil day if we started that game...," he said.
  अगर हमने यह खेल शुरू किया तो वह बहुत बुरा दिन होगा...," उन्होंने कहा।
- Incidentally, he was also critical of the "Hinduism is in danger" mantra of the RSS.
  संयोग से, वे आरएसएस के "हिंदू धर्म खतरे में है" वाले नारे के भी आलोचक थे।
- As Chopra's book says, "They do not realise that Hinduism is in danger because Hindus have not followed Hinduism.
  जैसा कि चोपड़ा की पुस्तक में कहा गया है, "वे यह नहीं समझते कि हिंदू धर्म इसलिए खतरे में है क्योंकि हिंदुओं ने हिंदू धर्म का पालन नहीं किया है।
- They take wrong means....It is equally dangerous to form a party or to lay down a programme on a religious basis.
  वे गलत तरीके अपनाते हैं...धार्मिक आधार पर कोई दल बनाना या कार्यक्रम तय करना भी उतना ही खतरनाक है।
- The days of religious bigotry are gone.
  धार्मिक कट्टरता का समय अब बीत चुका है।
- Now that the country has got freedom, for anybody to say that any religion is in danger is a very dangerous precedent to set up."
  अब जब देश स्वतंत्र हो चुका है, तब किसी का यह कहना कि कोई धर्म खतरे में है, एक अत्यंत खतरनाक परंपरा की शुरुआत होगी।"
- With his clarity of thought and width of vision, Patel, as Singh writes, "left his mark not only on the map of India but also on the minds of her people".
  सिंह लिखते हैं कि अपनी विचारों की स्पष्टता और व्यापक दृष्टि के कारण पटेल ने "केवल भारत के नक्शे पर ही नहीं, बल्कि उसके लोगों के मन पर भी अपनी छाप छोड़ी।"

Sardar Vallabhbhai Patel

Role in the Freedom Struggle

Date/Year	Event	Patel's role and significance
31 October 1875	**Birth at Nadiad, Gujarat.**	His birth anniversary is observed as **National Unity Day—Rashtriya Ekta Diwas**.
1917	**Entry into municipal politics.**	He entered Ahmedabad's municipal administration and increasingly associated himself with Gandhi's public activities.
1918	**Kheda Satyagraha, Gujarat.**	Working with Gandhi, he organised cultivators demanding suspension of land revenue after crop failure. It established his reputation as a disciplined mass organiser.
1920–1922	**Non-Cooperation Movement.**	He gave up his legal practice and mobilised support for the boycott of colonial institutions, promotion of khadi and national education.
1923	**Nagpur Flag Satyagraha.**	He helped lead resistance to restrictions on carrying the national flag and negotiated a successful settlement.
1923–1924	**Borsad Satyagraha, Gujarat.**	He organised opposition to a punitive police tax imposed on residents accused of supporting criminals. The levy was withdrawn.
1924–1928	**President of Ahmedabad Municipality.**	His work in sanitation, public services and municipal administration strengthened his administrative experience.
1928	**Bardoli Satyagraha, Gujarat.**	He led peasants against an increased land-revenue assessment. His successful leadership earned him the title **"Sardar," meaning leader**.
7 March 1930	**Arrest at Ras village.**	Arrested while mobilising support for the Salt Satyagraha, he was imprisoned before Gandhi began the **Dandi March on 12 March 1930**.
March 1931	**Karachi Session of the Indian National Congress.**	As Congress President, he presided over the session that endorsed the **Gandhi–Irwin Pact** and adopted resolutions on **Fundamental Rights and the National Economic Programme**.
1932–1933	**Imprisonment with Gandhi.**	He was detained with Gandhi in Yeravda Jail during the renewed Civil Disobedience Movement.
9 August 1942	**Arrest during the Quit India Movement.**	Following the resolution of **8 August**, he was arrested with other Congress leaders and detained at **Ahmednagar Fort**.
2 September 1946	**Joined the Interim Government.**	He took responsibility for **Home and Information and Broadcasting**, preparing him for the challenges of independence and Partition.

PATRIOTIC IAS

These events show his progression from **peasant mobilisation and local administration to national political leadership**.

Integration of Princely States

Date/Period	Event	Importance for integration
June–July 1947	**Creation of the States Department.**	The decision to establish it was taken on **25 June**; Patel assumed charge in early July. **V. P. Menon**, its Secretary, became his key administrative collaborator.
July–August 1947	**Negotiations with princely rulers.**	Patel and Menon secured accessions through persuasion, political assurances and negotiations. The initial **Instrument of Accession** generally covered **defence, external affairs and communications**.
15 August 1947	**Independent India's first Deputy Prime Minister and Home Minister.**	Patel also headed the States portfolio and directed the political consolidation of the Union.
26 October 1947	**Jammu and Kashmir's Instrument of Accession.**	Maharaja Hari Singh signed accession to India; it was accepted on **27 October**. This formed part of the wider integration process, involving several national leaders and institutions.
9 November 1947	**India took over Junagadh's administration.**	This followed the Nawab's departure and a request from the state's administration.
15 February 1948	**Inauguration of the Saurashtra Union.**	Patel inaugurated the union bringing together numerous Kathiawar princely states into a more viable administrative unit.
20 February 1948	**Junagadh plebiscite.**	An overwhelming majority voted in favour of joining India.
15 July 1948	**Inauguration of PEPSU.**	Patel inaugurated the **Patiala and East Punjab States Union**, consolidating eight princely states.
13–17 September 1948	**Operation Polo in Hyderabad.**	Indian military action ended the Nizam's resistance. His forces surrendered on **17 September**, enabling Hyderabad's integration into India.
1948–1950	**Administrative and constitutional consolidation.**	Accession was followed by merger agreements, unions of states and incorporation into India's constitutional structure.

Patel's achievement was a **collective nation-building exercise**, supported particularly by **V. P. Menon**, alongside Nehru, Mountbatten, state leaders and popular movements.

Other Important Dates

Date	Event and significance

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Date	Event and significance
21 April 1947	Patel addressed civil-service probationers in Delhi, emphasising impartiality and public service. This association is commemorated through **Civil Services Day**.
15 December 1950	He died in **Bombay, now Mumbai**.

Mexico comes alive for the annual Day of the Dead festival

GS I: History
Associated Press
MEXICO CITY

Bright orange marigolds, glowing candles and faces painted like the elegant skeletons known as catrinas fill the streets of Mexico every year during the country's Day of the Dead celebrations.

Festivities begin in October and lead up to November 1 and 2, when the souls of deceased loved ones are believed to temporarily return to earth to reunite with their families.

No one knows when the first observance took place, but it is rooted in agriculture-related beliefs from Mexico's pre-Hispanic era. Catholic traditions were incorporated into the celebration after the Spanish conquest in 1521.

Today, celebrations are marked by massive parades running along Mexico City's main avenue. Streets, businesses and markets are cloaked in orange Mexican marigold flowers, or cempasuchil, believed to light the path of the dead back to earth with their bright colours. Traditional pan de muerto, or bread of the dead, lines the display cases of bakeries.

On the night of November 1, families gather at cemeteries across the country to reconnect with their dead just as their ancestors have done for centuries.

But as the tradition and the Mexican capital have increasingly gained an international spotlight, and States like Oaxaca and Michoacan have seen an influx of tourists, some regions have experienced tensions around overtourism.

In Mexico City, many locals are sceptical of an annual parade featuring floats decorated with catrinas. The procession was created for the 2015 James Bond film *Spectre* and later incorporated into the city's celebrations, though it was not previously part of the tradition.

02N11. Mexico comes alive for the annual Day of the Dead festival

मेक्सिको का वार्षिक 'मृतकों का दिवस' उत्सव देश में नई जान भर देता है

- Bright orange marigolds, glowing candles and faces painted like the elegant skeletons known as catrinas fill the streets of Mexico every year during the country's **Day of the Dead** celebrations.

हर साल देश के **मृतकों के दिवस** समारोहों के दौरान, चमकीले नारंगी गेंदे के फूलों, जगमगाती मोमबत्तियों और कैटरीना नामक सुरुचिपूर्ण कंकालों जैसे रंगे चेहरों से मेक्सिको की सड़कें भर जाती हैं।

- Festivities begin in October and lead up to November 1 and 2, when the souls of deceased loved ones are believed to temporarily return to earth to reunite with their families.

उत्सव अक्टूबर में शुरू होते हैं और 1 तथा 2 नवंबर तक चलते हैं। माना जाता है कि इन दिनों दिवंगत प्रियजनों की आत्माएँ अपने परिवारों से फिर मिलने के लिए कुछ समय के लिए धरती पर लौटती हैं।

- No one knows when the first observance took place, but it is rooted in agriculture-related beliefs from Mexico's pre-Hispanic era.

यह उत्सव पहली बार कब मनाया गया, यह किसी को नहीं पता; लेकिन इसकी जड़ें मेक्सिको के स्पेनी विजय-पूर्व काल की कृषि-संबंधी मान्यताओं में हैं।

- Catholic traditions were incorporated into the celebration after the Spanish conquest in 1521.

1521 में स्पेनी विजय के बाद इस उत्सव में कैथोलिक परंपराएँ भी शामिल हो गईं।

- Today, celebrations are marked by massive parades running along Mexico City's main avenue.

आज इस उत्सव के दौरान मेक्सिको सिटी के मुख्य मार्ग पर विशाल परेड निकाली जाती हैं।

- Streets, businesses and markets are cloaked in orange Mexican marigold flowers, or cempasúchil, believed to light the path of the dead back to earth with their bright colours.
  सड़कों, दुकानों और बाज़ारों को नारंगी मेक्सिकी गेंदे के फूलों—जिन्हें सेम्पासुचिल कहते हैं—से सजाया जाता है। माना जाता है कि उनके चमकीले रंग मृतकों की धरती पर वापसी का रास्ता रोशन करते हैं।
- Traditional pan de muerto, or bread of the dead, lines the display cases of bakeries.
  बेकरी की प्रदर्शन अलमारियों में पारंपरिक पान दे मुएर्तो, यानी मृतकों की रोटी, सजी रहती है।
- On the night of November 1, families gather at cemeteries across the country to reconnect with their dead just as their ancestors have done for centuries.

1 नवंबर की रात, देश भर के कब्रिस्तानों में परिवार अपने दिवंगत प्रियजनों से फिर जुड़ने के लिए इकट्ठा होते हैं—ठीक वैसे ही, जैसे उनके पूर्वज सदियों से करते आए हैं।

- But as the tradition and the Mexican capital have increasingly gained an international spotlight, and States like Oaxaca and Michoacan have seen an influx of tourists, some regions have experienced tensions around overtourism.
  लेकिन इस परंपरा और मेक्सिको की राजधानी पर अंतरराष्ट्रीय ध्यान बढ़ने के साथ-साथ, और ओआहाका तथा मिचोआकान जैसे राज्यों में पर्यटकों की आमद बढ़ने से, कुछ क्षेत्रों में **अतिपर्यटन** को लेकर तनाव पैदा हुआ है।
- In Mexico City, many locals are sceptical of an annual parade featuring floats decorated with catrinas.
  मेक्सिको सिटी में कई स्थानीय लोग कैटरीना से सजी झाँकियों वाली वार्षिक परेड को लेकर संशय में हैं।
- The procession was created for the 2015 James Bond film *Spectre* and later incorporated into the city's celebrations, though it was not previously part of the tradition.
  यह जुलूस 2015 की जेम्स बॉन्ड फ़िल्म *स्पेक्टर* के लिए बनाया गया था और बाद में इसे शहर के उत्सवों में शामिल कर लिया गया, हालाँकि पहले यह परंपरा का हिस्सा नहीं था।

GS Paper 1: Society	02 November 2026
TOPICS COVERED	
02N11	Citizenship for 2.5 lakh Matuas under CAA by Dec. 31: Bengal CM 31 दिसंबर तक सीएए के तहत 2.5 लाख मतुआओं को नागरिकता: बंगाल के मुख्यमंत्री

Citizenship for 2.5 lakh Matuas under CAA by Dec. 31: Bengal CM

The Hindu Bureau

KO GS I: Society

West Bengal Chief Minister Suvendu Adhikari on Sunday said the State government has set a target of granting citizenship certificates to 2.5 lakh Matuas in the State under the Citizenship Amendment Act (CAA) by December 31.

Mr. Adhikari, who visited the religious headquarters of Matuas at Thakurnagar, said only 25,000 people have received citizenship under CAA so far.



CM Suvendu Adhikari

The BJP had promised citizenship to Matuas under the CAA during the Assembly poll. The party went on to win a majority of seats in Matua-dominated constituencies in North 24 Parganas and Nadia districts. The community, comprising Hindu Namasudras, has roots in Bangladesh. The CM said the State government will take the initiative to expedite applications and include the names of those who receive citizenship in the voter list in January.

Community's support

Mr. Adhikari added that West Bengal would have turned into Bangladesh had the BJP not come to power. He thanked the Matuas for their support.

02N11. Citizenship for 2.5 lakh Matuas under CAA by Dec. 31: Bengal CM
31 दिसंबर तक सीएए के तहत 2.5 लाख मतुआओं को नागरिकता: बंगाल के मुख्यमंत्री

- West Bengal Chief Minister Suvendu Adhikari on Sunday said the State government has set a target of granting **citizenship certificates** to 2.5 lakh Matuas in the State under the **Citizenship Amendment Act (CAA)** by December 31.
  पश्चिम बंगाल के मुख्यमंत्री सुवेंदु अधिकारी ने रविवार को कहा कि राज्य सरकार ने 31 दिसंबर तक राज्य के

2.5 लाख मतुआओं को **नागरिकता प्रमाणपत्र** देने का लक्ष्य तय किया है। यह नागरिकता **नागरिकता संशोधन अधिनियम (सीएए)** के तहत दी जाएगी।

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GS Paper 1: Geography	02 November 2026
TOPICS COVERED	
02N11	Andhra braces for second cyclone within a week; five districts placed on red alert एक सप्ताह के भीतर दूसरे चक्रवात के लिए आंध्र तैयार; पाँच ज़िलों में रेड अलर्ट
02N11	Why even a strong El Niño does not guarantee a poor Indian monsoon तेज़ एल नीनो भी भारत में कमज़ोर मानसून की गारंटी क्यों नहीं देता
02N11	Houthi media say Saudi strikes target Yemen's Hodeidah port हूती मीडिया के अनुसार सऊदी हमलों ने यमन के होदेइदाह बंदरगाह को निशाना बनाया

Andhra braces for second cyclone within a week; five districts placed on red alert

GS I: Geography

Nellore Sravani
VIJAYAWADA



Calm before the storm: The cyclone is likely to bring heavy rain to Tamil Nadu and Odisha as well. B. VELANKANNI RAJ

Barely a week after being battered by "very severe" Cyclone Arnab, Andhra Pradesh is bracing for Cyclone Murasu, expected to make landfall on Tuesday, with five districts put on red alert.

The weather system over the Bay of Bengal intensified into a cyclonic storm and was centred at around 350 km east of Chennai on Sunday night.

The storm, which is likely to bring heavy rainfall to several Tamil Nadu districts as well, is expected to move west-northwestward and intensify into a severe cyclonic storm by Monday morning.

Between Monday night and early hours of Tuesday, it is likely to cross into Andhra Pradesh with wind speeds gusting up to 120 km per hour between Nellore and Narsapur.

Andhra Pradesh Chief Minister N. Chandrababu Naidu, who cancelled his visit to Delhi, held a review meeting on Sunday and directed officials to step up preparedness to tackle the possible impact of the storm. Odisha, which experienced multiple landslides during Cyclone Arnab, is also bracing for the impact of Murasu, with authorities saying southern districts were likely to receive heavy rainfall.

Cyclone Murasu comes at a time when Andhra Pradesh is just beginning to recover from the impact of Cyclone Arnab, a storm that killed five people and submerged crops in more than 3.5 lakh hectares of land. It also damaged about 2,425 km of roads and brought down some 15,000 electric poles. The State government puts its losses at ₹4,600 crore, and officials now have little time to prepare for the next storm.

As many as 1,688 medical teams and 116 relief camps have been prepared in Andhra Pradesh districts likely to be affected by the latest cyclone, the Chief Minister's office said in a post on X.

Red alert

While it was the northern part of Andhra Pradesh that bore the brunt last week, this time, the central and southern coastal parts of the State are likely to be affected, according to the Andhra Pradesh State Disaster Management Authority.

The IMD has put five districts in the State – SPSR Nellore, Prakasam, Guntur, Bapatla, and Krishna – on red alert for November 2.

In Tamil Nadu, for the 24-hour period from 8.30 a.m. on Monday, heavy to very heavy rain is likely at isolated places over Chennai and Tiruvallur districts. Heavy rain is also likely at isolated places over Chengalpattu, Kancheepuram, Ranipet, Vellore and Nilgiris districts.

In Odisha, the State government has identified 150 landslide-prone locations in Gajapati district alone. During Cyclone Arnab, five people were killed in separate landslides in the State.

Addressing a press conference, Special Relief Commissioner Rajesh Prabhakar Patil warned that the situation could worsen as the ground was already saturated and heavy rain was forecast in southern Odisha. "We have directed district collectors to evacuate people from vulnerable areas," he said.

(With inputs from Deepa Ramakrishnan in Chennai and Satyasundar Barik in Bhubaneswar)

02N11. Andhra braces for second cyclone within a week; five districts placed on red alert

एक सप्ताह के भीतर दूसरे चक्रवात के लिए आंध्र तैयार; पाँच ज़िलों में रेड अलर्ट

- Barely a week after being battered by "very severe" **Cyclone Arnab**, Andhra Pradesh is bracing for **Cyclone Murasu**, expected to make landfall on Tuesday, with five districts put on red alert.
"अत्यंत गंभीर" चक्रवात अर्नब की मार झेलने के बमुश्किल एक सप्ताह बाद, आंध्र प्रदेश चक्रवात मुरासु का सामना करने की तैयारी कर रहा है। इसके मंगलवार को तट से टकराने की आशंका है और पाँच ज़िलों में रेड अलर्ट जारी किया गया है।
- The weather system over the Bay of Bengal intensified into a cyclonic storm and was centred at around 350 km east of Chennai on Sunday night.
बंगाल की खाड़ी के ऊपर बना मौसम तंत्र तेज़ होकर चक्रवाती

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तूफ़ान में बदल गया और रविवार रात चेन्नई से लगभग 350 किलोमीटर पूर्व में केंद्रित था।

- The storm, which is likely to bring heavy rainfall to several Tamil Nadu districts as well, is expected to move west-northwestward and intensify into a severe cyclonic storm by Monday morning.
  इस तूफ़ान से तमिलनाडु के कई ज़िलों में भी भारी बारिश होने की आशंका है। इसके पश्चिम-उत्तर-पश्चिम की ओर बढ़ने और सोमवार सुबह तक गंभीर चक्रवाती तूफ़ान में तेज़ होने की संभावना है।
- Between Monday night and early hours of Tuesday, it is likely to cross into Andhra Pradesh with wind speeds gusting up to 120 km per hour between Nellore and Narsapur.
  सोमवार रात से मंगलवार तड़के के बीच इसके नेल्लोर और नरसापुर के बीच आंध्र प्रदेश के तट को पार करने की संभावना है; इस दौरान हवा की गति के झोंके 120 किलोमीटर प्रति घंटे तक पहुँच सकते हैं।

Why even a strong El Niño does not guarantee a poor Indian monsoon

Seven Indian monsoons since 1950 have run into a moderate or strong El Niño; of these, in five years, including 2026, monsoon rainfall levels were at least 10% lower than the long-term average; the IMD refers to this level as 'deficient'; the 2023 season was something of an exception with 'below average' rainfall; however, 1997 had 'average' rainfall

GS II: Geography

In the summer of 1997, one of the strongest El Niños of the 20th century took shape in the Pacific Ocean. The India Meteorological Department (IMD) predicted a monsoon rainfall deficit of 8% below the average, as was expected in El Niño years. However, by the end of September that year, rainfall levels were nearly normal.

This year, a "ferocious" El Niño is taking shape, and is expected to peak only in December. The 2026 southwest monsoon ended nearly 13% below the long-term average of 87 cm. East and Northeast India had their driest season since records began in 1901.

So what happened differently in 1997?

El Niño and the monsoon

Near the Earth's equator, steady winds blow across the Pacific Ocean from east to west. These winds drive warm surface water into Indonesia. The water then warms the air over it, and the warm air rises, creating rain clouds.

These winds diminish every 2-7 years. The warm water flows back east to South America, with the rain clouds trailing behind. Scientists call this phenomenon the El Niño Southern Oscillation.

This upsurge of warmer air from the Pacific eventually has to descend somewhere – and one portion sinks over India. As the air subsides, it becomes warmer and drier, and rain clouds struggle to form in it, which can weaken monsoon rains.

Records maintained by the U.S. National Oceanic and Atmospheric Administration show that seven Indian monsoons since 1950 have run into a moderate or strong El Niño. Of these, in five years, including 2026, monsoon rainfall levels were at least 10% lower than the long-term average. The IMD refers to this level as "deficient". The 2023 season was something of an exception with 'below average' rainfall.

Nonetheless, only 1997 had average rainfall.

During the monsoons, the 1997 and the 2015 El Niño were about equally strong. Sea surface temperatures in the equatorial Pacific were 1.64 degree Celsius above normal in 1997 and 1.59 degree Celsius in 2015, according to NOAA's Oceanic Niño Index. This year the figure was 1.98 degree Celsius.

Nevertheless, India received normal rainfall in 1997 but around 13% less than the normal in 2015. This is partly because of another ocean.

Indian Ocean Dipole

Like the Southern Oscillation, there is a see-saw in the Indian Ocean as well called the Indian Ocean Dipole (IOD). One end of the IOD is in the west, near Africa, and the other is in the east, near Indonesia. In specific years, the western extremity becomes warmer than usual and the eastern extremity cooler. This is known as the positive phase and is beneficial to India. The air over the warmer western waters rises more strongly, draws moist winds, and the monsoon carries more of that moisture over India. In most years, there is no tendency towards either end and the IOD is said to be neutral.

The IOD tends to tip around June and is most pronounced September-to-November, which means its impact tends to be later in the monsoon. And it tends to go into the positive phase when an El Niño occurs.

The see-saw shifted in India's favour in 1997 and offset the El Niño. In 2015, however, it barely moved. One 2024 study by researchers from India and the U.S., including IIT-Delhi, IIT-Kharagpur, NIT-Rourkela found why: a change in the belt of winds that encircles Antarctica sent westerly winds across the southern Indian Ocean, which kept the see-saw from tipping.

The IOD was again favourable in 2023. According to IMD, India received 36% less rain than normal in August 2023, the driest August since 1901.

The Department partly blamed the Madden-Julian Oscillation, a wave of clouds and rain that passes around the tropics every 30 to 60 days, which resided over Africa and the Americas during the month. The see-saw tipped in India's favour in late August and early September and extended itself into the seas off Indonesia, where it favours rains over the subcontinent.

Where an El Niño's warmest water sits also affects India's rain, according to a 2006 study in *Science*. If that water is in the middle of the Pacific Ocean, the sinking air is more likely to settle on India, which increases the odds of less rain. In 1997, the warmest waters were located further east around South America.

A study published this July in *Nature Communications* suggested that the see-saw is not the only explanation for 1997.

It also indicated other factors that occurred in July and August, notably an unusual high-pressure system high above the Iranian plateau in West Asia and additional moisture coming in from the Arabian Sea. The study also said that 1983 and 1997 were two years that made El Niño's influence on the monsoon appear less powerful than it was in reality.

Farmers and food prices

Seasons like 1997 are easier to explain in hindsight than in advance. Since 1997, IMD has changed its approach, and now updates its April forecast at the end of May. Also, since 2021, it has combined the forecasts of several global climate models into one. In both 2023 and 2026, both El Niño years, the season's rainfall levels fell within the error margin of IMD's forecast. In 2023 it forecast 96% of the long-term average, give or take 5 points, and the season ended at 94.7%. For 2026 it forecast 92%, give or take 5 points, and the season ended at 87.4%.

That said, this year was not spared complications or surprises. The IMD predicted the monsoon to be 'below normal' in April but it turned out to be 'deficient'. Only one of its four regional forecasts, for the south peninsula, came true.

Forecasters also disagreed about the IOD's see-saw. In April, IMD said "the latest climate models" showed the IOD turning positive towards the end of the monsoon season, and in early September the WMO still expected a positive IOD between September and November. The IMD's own model predicted the IOD would remain neutral from late May. Its records show it was neutral throughout the season.

The monsoon brings about three-quarters of India's yearly rain. About 40% of the country's farmland has no irrigation and depends on it, per the agriculture ministry's latest figures. Farmers plan their sowing around the forecast and officials use it to manage food stocks and water releases from dams. The onset of a weak monsoon thus reduces farmers' incomes and leads to higher food prices. IMD's May forecast also warned of "pressure on drinking water resources" nationwide.

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Scorched Earth: A farmer staring at a patch ofi dry agricultural land in Shivamogga, Karnataka. S.K. DINESH

THE GIST

The Indian Ocean Dipole helped off set El Niño's impact in 1997, but had little eff ect in 2015, with one 2024 study linking this to wind changes around Antarctica that prevented the dipole from strengthening

IMD has improved its monsoon forecasting since 1997 by updating its April forecast in late May and, since 2021, using a combination of multiple global climate models

Despite El Niño conditions in 2023 and 2026, seasonal rainfall remained within the forecast error margin, highlighting gains in forecast accuracy

02N11. Why even a strong El Niño does not guarantee a poor Indian monsoon तेज़ एल नीनो भी भारत में कमज़ोर मानसून की गारंटी क्यों नहीं देता

- This year, a "ferocious" El Niño is taking shape, and is expected to peak only in December.
  इस वर्ष एक "प्रचंड" एल नीनो विकसित हो रहा है और इसके दिसंबर में चरम पर पहुँचने की ही संभावना है।

- The 2026 southwest monsoon ended nearly 13% below the long-term average of 87 cm.
  2026 का दक्षिण-पश्चिम मानसून 87 सेंटीमीटर के दीर्घकालीन औसत से लगभग 13% कम वर्षा के साथ समाप्त हुआ।
- East and Northeast India had their driest season since records began in 1901.
  पूर्वी और पूर्वोत्तर भारत में 1901 में रिकॉर्ड शुरू होने के बाद से सबसे कम वर्षा वाला मौसम रहा।
- So what happened differently in 1997?
  तो 1997 में अलग क्या हुआ था?

El Niño and the monsoon
एल नीनो और मानसून

- Near the Earth's equator, steady winds blow across the Pacific Ocean from east to west.
  पृथ्वी की भूमध्य रेखा के पास, स्थिर हवाएँ प्रशांत महासागर के ऊपर पूर्व से पश्चिम की ओर बहती हैं।
- These winds drive warm surface water into Indonesia.
  ये हवाएँ सतह के गर्म पानी को इंडोनेशिया की ओर धकेलती हैं।
- The water then warms the air over it, and the warm air rises, creating rain clouds.
  इसके बाद पानी अपने ऊपर की हवा को गर्म करता है; गर्म हवा ऊपर उठती है और वर्षा के बादल बनाती है।
- These winds diminish every 2-7 years.
  हर 2-7 वर्ष में ये हवाएँ कमज़ोर पड़ जाती हैं।
- The warm water flows back east to South America, with the rain clouds trailing behind.
  गर्म पानी पूर्व की ओर दक्षिण अमेरिका लौटने लगता है और वर्षा के बादल उसके पीछे-पीछे चलते हैं।
- Scientists call this phenomenon the **El Niño Southern Oscillation**.
  वैज्ञानिक इस घटना को **एल नीनो-दक्षिणी दोलन** कहते हैं।
- This upsurge of warmer air from the Pacific eventually has to descend somewhere — and one portion sinks over India.
  प्रशांत महासागर से उठी गर्म हवा को अंततः कहीं-न-कहीं नीचे उतरना होता है—और उसका एक हिस्सा भारत के ऊपर नीचे उतरता है।
- As the air subsides, it becomes warmer and drier, and rain clouds struggle to form in it, which can weaken monsoon rains.
  हवा के नीचे उतरने पर वह और गर्म तथा शुष्क हो जाती है; उसमें वर्षा के बादल मुश्किल से बनते हैं, जिससे मानसूनी बारिश कमज़ोर हो सकती है।
- Sea surface temperatures in the equatorial Pacific were 1.64 degree Celsius above normal in 1997 and 1.59 degree Celsius in 2015, according to NOAA's Oceanic Niño Index.
  NOAA के महासागरीय नीनो सूचकांक के अनुसार, भूमध्यरेखीय प्रशांत महासागर की सतह का तापमान 1997 में सामान्य से 1.64 डिग्री सेल्सियस और 2015 में 1.59 डिग्री सेल्सियस अधिक था।
- This year the figure was 1.98 degree Celsius.
  इस वर्ष यह आँकड़ा 1.98 डिग्री सेल्सियस था।
- Nevertheless, India received normal rainfall in 1997 but around 13% less than the normal in 2015.
  इसके बावजूद, भारत में 1997 में सामान्य वर्षा हुई, जबकि 2015 में वर्षा सामान्य से लगभग 13% कम रही।

Indian Ocean Dipole
हिंद महासागर द्विध्रुव

- Like the Southern Oscillation, there is a see-saw in the Indian Ocean as well called the **Indian Ocean Dipole (IOD)**.
  दक्षिणी दोलन की तरह, हिंद महासागर में भी एक उतार-चढ़ाव वाली व्यवस्था है, जिसे **हिंद महासागर द्विध्रुव (IOD)** कहते हैं।

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- One end of the IOD is in the west, near Africa, and the other is in the east, near Indonesia.
  IOD का एक सिरा पश्चिम में अफ्रीका के पास और दूसरा पूर्व में इंडोनेशिया के पास है।
- In specific years, the **western extremity becomes warmer** than usual and the eastern extremity cooler.
  कुछ वर्षों में पश्चिमी छोर सामान्य से अधिक गर्म और पूर्वी छोर अधिक ठंडा हो जाता है।
- This is known as the positive phase and is beneficial to India.
  इसे **धनात्मक चरण** कहा जाता है और यह भारत के लिए लाभकारी होता है।
- The air over the warmer western waters rises more strongly, draws moist winds, and the monsoon carries more of that moisture over India.
  पश्चिम के गर्म पानी के ऊपर की हवा अधिक तेज़ी से ऊपर उठती है, नम हवाओं को अपनी ओर खींचती है और मानसून उस नमी का अधिक हिस्सा भारत तक लाता है।
- In most years, there is no tendency towards either end, and the IOD is said to be neutral.
  अधिकांश वर्षों में किसी भी छोर की ओर झुकाव नहीं होता और IOD को तटस्थ कहा जाता है।
- The IOD tends to tip around June and is most pronounced September-to-November, which means its impact tends to be later in the monsoon.
  IOD का झुकाव आम तौर पर जून के आसपास बदलता है और सितंबर से नवंबर के बीच सबसे स्पष्ट होता है; इसलिए मानसून पर इसका प्रभाव बाद के चरण में पड़ता है।
- And it tends to go into the positive phase when an El Niño occurs.
  एल नीनो की स्थिति में यह अक्सर धनात्मक चरण में चला जाता है।
- The see-saw shifted in India's favour in 1997 and offset the El Niño.
  1997 में यह उतार-चढ़ाव भारत के पक्ष में हुआ और उसने एल नीनो के प्रभाव को कम कर दिया।
- In 2015, however, it barely moved.
  हालाँकि, 2015 में इसमें लगभग कोई बदलाव नहीं हुआ।
- One 2024 study by researchers from India and the U.S., including IIT-Delhi, IIT-Kharagpur, NIT-Rourkela found why: a change in the belt of winds that encircles Antarctica sent westerly winds across the southern Indian Ocean, which kept the see-saw from tipping.
  IIT-दिल्ली, IIT-खड़गपुर और NIT-राउरकेला सहित भारत और अमेरिका के शोधकर्ताओं के 2024 के एक अध्ययन ने इसका कारण बताया: अंटार्कटिका को घेरने वाली पवन-पट्टी में बदलाव से दक्षिणी हिंद महासागर के ऊपर पश्चिमी हवाएँ चलीं, जिसने इस उतार-चढ़ाव को झुकने से रोक दिया।
- The Department partly blamed the **Madden-Julian Oscillation**, a wave of clouds and rain that passes around the tropics every 30 to 60 days, which resided over Africa and the Americas during the month.
  विभाग ने इसके लिए आंशिक रूप से मैडेन-जूलियन दोलन को ज़िम्मेदार माना—यह बादलों और वर्षा की एक लहर है, जो हर 30 से 60 दिनों में उष्णकटिबंधीय क्षेत्रों के आसपास गुजरती है और उस महीने अफ्रीका तथा अमेरिका के ऊपर मौजूद थी।
- If that water is in the middle of the Pacific Ocean, the sinking air is more likely to settle on India, which increases the odds of less rain.
  यदि वह पानी प्रशांत महासागर के मध्य में हो, तो नीचे उतरती हवा के भारत के ऊपर ठहरने की संभावना अधिक होती है, जिससे कम वर्षा की आशंका बढ़ती है।
- In 1997, the warmest waters were located further east around South America.
  1997 में सबसे गर्म पानी दक्षिण अमेरिका के आसपास, और अधिक पूर्व में स्थित था।
- It also indicated other factors that occurred in July and August, notably an unusual high-pressure system high above the Iranian plateau in West Asia and additional moisture coming in from the Arabian Sea.
  अध्ययन ने जुलाई और अगस्त में मौजूद अन्य कारकों की ओर भी संकेत किया, विशेष रूप से पश्चिम एशिया में ईरानी पठार के ऊपर बना असामान्य उच्च-दाब तंत्र और अरब सागर से आई अतिरिक्त नमी।
- In April, IMD said "the latest climate models" showed the IOD turning positive towards the end of the monsoon season, and in early September the WMO still expected a positive IOD between September and November.

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अप्रैल में IMD ने कहा था कि "नवीनतम जलवायु मॉडल" मानसून के अंत में IOD के धनात्मक होने का संकेत देते हैं; सितंबर की शुरुआत में भी विश्व मौसम विज्ञान संगठन (WMO) को सितंबर से नवंबर के बीच IOD के धनात्मक रहने की उम्मीद थी।

- The monsoon brings about three-quarters of India's yearly rain.
  भारत की सालाना वर्षा का लगभग तीन-चौथाई हिस्सा मानसून से मिलता है।
- About 40% of the country's farmland has no irrigation and depends on it, per the agriculture ministry's latest figures.
  कृषि मंत्रालय के नवीनतम आँकड़ों के अनुसार, देश की लगभग 40% कृषि भूमि में सिंचाई की सुविधा नहीं है और वह मानसून पर निर्भर है।

Houthi media say Saudi strikes target Yemen's Hodeidah port



AFP

GS I: Geography

Houthi media said on Sunday that Saudi air strikes targeted Hodeidah, a strategic port under Houthi control, as the group battles a Saudi-led coalition supporting the internationally recognised government. "The Saudi enemy has launched two air strikes on Ras Issa port," *Al-Masirah TV* said. AFP

02N11. Houthi media say Saudi strikes target Yemen's Hodeidah port

हूती मीडिया के अनुसार सऊदी हमलों ने यमन के होदेइदाह बंदरगाह को निशाना बनाया

- Houthi media said on Sunday that **Saudi air strikes** targeted **Hodeidah**, a strategic port under **Houthi control**, as the group battles a **Saudi-led coalition** supporting the internationally recognised government.

हूती मीडिया ने रविवार को कहा कि **सऊदी हवाई हमलों** ने **हूती नियंत्रण** वाले रणनीतिक बंदरगाह **होदेइदाह** को निशाना बनाया, जबकि यह समूह अंतरराष्ट्रीय स्तर पर मान्यता प्राप्त सरकार का समर्थन करने वाले **सऊदी नेतृत्व वाले गठबंधन** से लड़ रहा है।

GS Paper II: Polity	02 November 2026
TOPICS COVERED	
02N11	Opposition flays BJP a day after Independent MLCs 'join' ruling party in Bihar बिहार में निर्दलीय एमएलसी के सत्तारूढ़ दल में 'शामिल' होने के एक दिन बाद विपक्ष ने भाजपा की आलोचना की

Opposition flays BJP day after Independent MLCs 'join' ruling party in Bihar

Tejashwi seeks disqualification of Bansidhar Brajwasi, Rahul Raj; row comes a day after BJP issued statement welcoming the two to the party; hour later, it said the MLCs had 'extended support' to it

GS II: Polity

Amit Bhelari
PATNA

A day after two recently elected Independent Members of the Bihar Legislative Council – Bansidhar Brajwasi and Rahul Raj – "joined" the ruling Bharatiya Janata Party (BJP), the Opposition on Sunday demanded that both be disqualified under the anti-defection law.

In the results declared last week, Mr. Brajwasi defeated Janata Dal (United)'s Abhishek Jha from Tirhut Graduates' seat while Rahul Raj defeated JD(U)'s Anand Pushkar from Saran Teachers' seat.

Around 8 p.m. on Saturday, the BJP issued a release welcoming the two legislators to the party.

Subsequently, in a media interaction, Mr. Brajwasi said, "I have joined the BJP after Chief Minister Samrat Choudharyji gave me an assurance that teachers' concerns would be resolved if we work together." However, nearly an hour later, the BJP issued another press note stating, "Newly elected Legislative Council members Bansidhar Brajwasi and Rahul Raj have extended their support" to it.



RJD MP Manoj Kumar Jha said the party will urge the Acting Chairman of the Legislative Council to take action against the two MLCs. ANI

Soon after, the Tirhut Graduates' MLC put out a video on Facebook, where he said, "I have not joined BJP. I have just offered support. I don't know why people are making a hue and cry about it." There was no comment from Mr. Raj.

On Sunday, Leader of the Opposition in the Assembly and Rashtriya Janata Dal (RJD) working president Tejashwi Yadav accused the MLCs of violating the anti-defection law and hit out at the BJP for "making a mockery of the Constitution".

RJD MP Manoj Kumar Jha said under the Constitution's Tenth Schedule, those elected as Independents are liable to be disqualified upon joining any party. He added that the RJD will meet Acting Chairman of the Legislative Council Ram Bachan Rai over the issue. "If he fails to take an immediate and impartial decision, we'll raise the matter before the court of law, as well as the court of people," Mr. Jha said.

Cong. takes potshots

The Congress took potshots at the BJP, accusing it of "backstabbing its coalition partner JD(U)". "The BJP has been calling the INDIA bloc a divided house. But how it conspired to ensure the defeat of its own ally is now for all to see," said Congress spokesperson Asit Nath Tiwari.

Prashant Kishor-led Jan Suraaj Party, which also bagged a seat in the MLC polls, termed the episode a "cruel and vulgar joke".

Of the eight seats that went to the polls, ruling National Democratic Alliance partners BJP and JD (U) contested four each. While the BJP won two, the JD(U) bagged one. Two seats were won by the RJD.

02N11. Opposition flays BJP a day after Independent MLCs 'join' ruling party in Bihar

बिहार में निर्दलीय एमएलसी के सत्तारूढ़ दल में 'शामिल' होने के एक दिन बाद विपक्ष ने भाजपा की आलोचना की

- A day after two recently elected Independent Members of the Bihar Legislative Council — Bansidhar Brajwasi and Rahul Raj — "joined" the ruling Bharatiya Janata Party (BJP), the Opposition on Sunday demanded that both be disqualified under the **anti-defection law**.
बिहार विधान परिषद के हाल ही में चुने गए दो निर्दलीय सदस्यों—बंसीधर ब्रजवासी और राहुल राज—के सत्तारूढ़ भारतीय जनता पार्टी (भाजपा) में "शामिल" होने के एक दिन बाद, रविवार को विपक्ष ने माँग की कि **दल-बदल विरोधी कानून** के तहत दोनों को अयोग्य ठहराया जाए।

GS Paper II: International Relations	02 November 2026
TOPICS COVERED	
02N11	Bhutan builds 108 stupas in 9 hours, dedicates Chorten No. 76 to Modi

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	भूटान ने 9 घंटे में 108 स्तूप बनाए, चोर्टेन नंबर 76 मोदी को समर्पित किया

Bhutan builds 108 stupas in 9 hours, dedicates Chorten no. 76 to Modi

R[redacted] GS II: IR
GELEPHU (BHUTAN)

Bhutan King Jigme Khesar Namgyel Wangchuk on Sunday dedicated one of the 108 Buddhist stupas erected in a nine-hour construction feat to Prime Minister Narendra Modi as a mark of appreciation for India's support for the country's ambitious Gelephu Mindfulness City (GMC) project.

About 40,000 trained volunteers built the 108 Jangchub Chortens in what could be a potentially record-breaking royal initiative to lay the spiritual foundation of the planned city.

Spiritual City

About 240 km south-southeast of Bhutan's capital, Thimphu, Gelephu borders Assam's Chirang district. King Wangchuk envisions the city as a spirituality-driven global economic hub.



Bhutan dedicated Chorten no. 76 to Prime Minister Narendra Modi for India's support to the Gelephu project. RAHUL KARMAKAR

The King, other members of the royal family, top officials and foreign dignitaries faced Chorten Number 79 from the ceremonial ground as thousands of people around chanted a six-syllable Tibetan Buddhist mantra a billion times while the volunteers completed the mission between 3 a.m. and noon.

About two hours later, the focus shifted to Chorten Number 76, which the King dedicated to Mr. Modi "as an enduring symbol" of his "profound appreciation" for the latter's "unwavering commitment and India's steadfast support for the realisation" of GMC. Bhutanese officials said the number was chosen because Mr. Modi turned 76 more than a month ago.

Parliamentary Affairs Minister Kiren Rijiju, who represented India for 'Project 108', thanked the King. "This remarkable milestone is an enduring symbol of the deep spiritual and civilisational bonds between our two nations," he said, congratulating Bhutan on the achievement.

Collective spirit

Each 15 metres tall and 108 metres apart, the Jangchub Chortens, or Buddhist stupas, stand in a single meandering file along the Mau Chhu River, Gelephu's lifeline.

Addressing the people after the completion of Project 108, King Wangchuk said: "People from every walk of life and every generation came together to make this possible," stressing the Bhutanese collective spirit and ability to achieve "anything impossible".

02N11. Bhutan builds 108 stupas in 9 hours, dedicates Chorten No. 76 to Modi
भूटान ने 9 घंटे में 108 स्तूप बनाए, चोर्टेन नंबर 76 मोदी को समर्पित किया

- Bhutan King Jigme Khesar Namgyel Wangchuck on Sunday dedicated one of the 108 Buddhist stupas erected in a nine-hour construction feat to Prime Minister Narendra Modi as a mark of appreciation for India's support for the country's ambitious Gelephu Mindfulness City (GMC) project.
  भूटान के राजा जिग्मे खेसर नामग्येल वांगचुक ने रविवार को नौ घंटे में बनाए गए 108 बौद्ध स्तूपों में से एक स्तूप प्रधानमंत्री नरेंद्र मोदी को समर्पित किया। यह देश की महत्त्वाकांक्षी गेलेफू माइंडफुलनेस सिटी (जीएमसी) परियोजना के लिए भारत के समर्थन के प्रति आभार का प्रतीक है।

- About 240 km south-southeast of Bhutan's capital, Thimphu, Gelephu borders Assam's Chirang district.
  भूटान की राजधानी थिम्पू से लगभग 240 किलोमीटर दक्षिण-दक्षिण-पूर्व में स्थित गेलेफू की सीमा असम के चिरांग ज़िले से लगती है।

- King Wangchuk envisions the city as a spirituality-driven global economic hub.
  राजा वांगचुक इस शहर को आध्यात्मिकता से प्रेरित वैश्विक आर्थिक केंद्र के रूप में विकसित करने की परिकल्पना करते हैं।
- The King, other members of the royal family, top officials and foreign dignitaries faced Chorten Number 79 from the ceremonial ground as thousands of people around chanted a six-syllable Tibetan Buddhist mantra a billion times while the volunteers completed the mission between 3 a.m. and noon.
  स्वयंसेवकों ने सुबह 3 बजे से दोपहर के बीच यह काम पूरा किया। इस दौरान हज़ारों लोगों ने एक छह-अक्षरीय तिब्बती बौद्ध मंत्र का एक अरब बार जाप किया। राजा, शाही परिवार के अन्य सदस्य, वरिष्ठ अधिकारी और विदेशी गणमान्य व्यक्ति समारोह स्थल से चोर्टेन नंबर 79 की ओर मुख करके खड़े रहे।
- About two hours later, the focus shifted to Chorten Number 76, which the King dedicated to Mr. Modi "as an enduring symbol" of his "profound appreciation" for the latter's "unwavering commitment and India's steadfast support for the realisation" of GMC.
  करीब दो घंटे बाद ध्यान चोर्टेन नंबर 76 पर गया, जिसे राजा ने श्री मोदी को समर्पित किया। उन्होंने इसे जीएमसी को साकार करने के लिए श्री मोदी की "अटूट प्रतिबद्धता और भारत के दृढ़ समर्थन" के प्रति अपनी "गहरी कृतज्ञता" का "स्थायी प्रतीक" बताया।
- Bhutanese officials said the number was chosen because Mr. Modi turned 76 more than a month ago.
  भूटानी अधिकारियों ने बताया कि यह संख्या इसलिए चुनी गई क्योंकि श्री मोदी एक महीने से कुछ अधिक समय पहले 76 वर्ष के हुए थे।
- Parliamentary Affairs Minister Kiren Rijiju, who represented India for 'Project 108', thanked the King.
  'प्रोजेक्ट 108' में भारत का प्रतिनिधित्व करने वाले संसदीय कार्य मंत्री किरेन रिजिजू ने राजा का धन्यवाद किया।
- "This remarkable milestone is an enduring symbol of the deep spiritual and civilisational bonds between our two nations," he said, congratulating Bhutan on the achievement.
  भूटान को इस उपलब्धि पर बधाई देते हुए उन्होंने कहा, "यह उल्लेखनीय उपलब्धि हमारे दोनों देशों के बीच गहरे आध्यात्मिक और सभ्यतागत संबंधों का स्थायी प्रतीक है।"

Collective spirit
सामूहिक भावना

- Each 15 metres tall and 108 metres apart, the Jangchub Chortens, or Buddhist stupas, stand in a single meandering file along the Mau Chhu River, Gelephu's lifeline.
  प्रत्येक 15 मीटर ऊँचा और एक-दूसरे से 108 मीटर की दूरी पर बना जांगचुब चोर्टेन—यानी बौद्ध स्तूप—गेलेफू की जीवनरेखा माउ छू नदी के किनारे एक घुमावदार कतार में खड़ा है।
- Addressing the people after the completion of Project 108, King Wangchuk said: "People from every walk of life and every generation came together to make this possible," stressing the Bhutanese collective spirit and ability to achieve "anything impossible".
  प्रोजेक्ट 108 के पूरा होने के बाद लोगों को संबोधित करते हुए राजा वांगचुक ने कहा, "हर क्षेत्र और हर पीढ़ी के लोग इसे संभव बनाने के लिए एकजुट हुए।" उन्होंने भूटान की सामूहिक भावना और "असंभव लगने वाली किसी भी चीज़" को हासिल करने की क्षमता पर ज़ोर दिया।

GS Paper III: Economy	02 November 2026
TOPICS COVERED	
02N11	Slow recovery धीमी बहाली

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02N11	Even as unemployment falls, lack of 'decent work' in India बेरोज़गारी घटने के बावजूद, भारत में 'सम्मानजनक काम' की कमी
02N11	An energy revolution in the making साकार होती ऊर्जा क्रांति
02N11	What does the Binance hack mean for investors? Binance हैक का निवेशकों के लिए क्या मतलब है?
02N11	Sivakasi: sparkling opportunities ahead शिवकाशी: आगे चमकते अवसर

Slow recovery

GS III: Economy

ISRO needs more human and material resources to fulfil its mandate

With the successful launch of the GSLV-F18 mission and the NVS-03 satellite's healthy status, the Indian Space Research Organisation (ISRO) is on course to heave a sigh of relief. Its last 18 months have been constrained by the consequences of two launch failures involving PSLV rockets, which share some of their design aspects with GSLV, to the extent that the F18 mission was only the second successful launch of 2026. If the NVS-03 satellite is successfully manoeuvred into its final intended orbital slot and commissioned, ISRO will also have pulled off a rescue mission for the 'Navigation with Indian Constellation' (NavIC) programme, which has been at least one functional satellite short for the last six months and thus unable to meet its primary purpose of providing standalone positioning services over the Indian subcontinent. The three second-generation NVS satellites thus far are distinguished by having at least one indigenously made atomic clock onboard, in line with the recommendations of the Parliamentary Standing Committee (PSC) on Science and Technology and India's investments in quantum timekeeping, and away from the imported clocks onboard the first-generation IRNSS satellites.

The PSC had also flagged procurement bottlenecks across ISRO's programmes, including difficulties with obtaining specialised components and ensuring vendor readiness on the timelines that NavIC needs. The ISRO Space Applications Centre's 'request for proposals' in 2025 also specified a large lead time of nearly two years between a contract's start and the first two flight models. The Electronics Component Manufacturing Scheme and the programme to modernise the Semiconductor Laboratory can be tweaked to serve these needs, with the Electronics Ministry also setting aside dedicated funds for developing specialised components and their qualification tests in a five- to seven-year programme. In tandem, the government must allocate around ₹17,000 crore in the 2027-28 Union Budget for the Department of Space, against ₹13,705.6 crore in 2026-27, with the hike focusing on manufacturing launch vehicles, replacing satellites, and recruitment. Besides, NavIC also requires a dedicated operator, so that ISRO can be left to focus on its core mandate, and India needs a national space law addressing private participation in this enterprise, and liability. Two successful orbital missions in five-sixths of a year is unbecoming of a national space programme with imminent plans of human spaceflight, a space station, and reusable launch vehicle capabilities. Without significant measures, ISRO will lurch from one mission to the next as and when its inadequate workforce is able to make do with its inadequate allocation.

02N11. Slow recovery
धीमी बहाली

- With the successful launch of the **GSLV F18 mission** and the NVS-03 satellite's healthy status, the Indian Space Research Organisation (ISRO) is on course to heave a sigh of relief.

GSLV F18 मिशन के सफल प्रक्षेपण और NVS-03 उपग्रह की अच्छी स्थिति के साथ, भारतीय अंतरिक्ष अनुसंधान संगठन (ISRO) राहत की साँस लेने की राह पर है।

- Its last 18 months have been constrained by the consequences of two launch failures involving PSLV rockets, which share some of their design aspects with GSLV, to the extent that the F18 mission was only the second successful launch of 2026.

पिछले 18 महीनों में ISRO को PSLV रॉकेटों से जुड़े दो प्रक्षेपण-विफलताओं के परिणामों का सामना करना पड़ा है; इन रॉकेटों के डिज़ाइन के कुछ पहलू GSLV से मिलते-जुलते हैं। इसके चलते F18 मिशन 2026 का केवल दूसरा सफल प्रक्षेपण रहा।

- If the NVS-03 satellite is successfully manoeuvred into its final intended orbital slot and commissioned, ISRO will also have pulled off a rescue mission for the **'Navigation with Indian Constellation' (NavIC) programme**, which has been at least one functional satellite short for the last six months and thus unable to meet its primary purpose of providing standalone positioning services over the Indian subcontinent.

यदि NVS-03 उपग्रह को सफलतापूर्वक उसकी निर्धारित अंतिम कक्षा में पहुँचाकर चालू कर दिया जाता है, तो ISRO **'नेविगेशन विद इंडियन कॉन्स्टेलेशन' (NavIC) कार्यक्रम** को भी संकट से उबार लेगा। पिछले छह महीनों से इस कार्यक्रम में कम-से-कम एक कार्यशील उपग्रह की कमी रही है, जिसके कारण वह भारतीय उपमहाद्वीप में स्वतंत्र स्थिति-निर्धारण सेवाएँ देने का अपना मुख्य उद्देश्य पूरा नहीं कर सका है।

- The three second-generation NVS satellites thus far are distinguished by having at least one indigenously made atomic clock onboard, in line with the recommendations of the Parliamentary Standing Committee (PSC) on Science and Technology and India's investments in quantum timekeeping, and away from the imported clocks onboard the first-generation IRNSS satellites.

अब तक के तीन दूसरी पीढ़ी के NVS उपग्रहों की विशेषता यह है कि उनमें कम-से-कम एक स्वदेशी परमाणु घड़ी लगी है। यह विज्ञान और प्रौद्योगिकी संबंधी संसदीय स्थायी समिति (PSC) की सिफ़ारिशों और क्वांटम समय-निर्धारण में भारत के निवेश के अनुरूप है तथा पहली पीढ़ी के IRNSS उपग्रहों में लगी आयातित घड़ियों से अलग है।

- The PSC had also flagged **procurement bottlenecks** across ISRO's programmes, including difficulties with obtaining specialised components and ensuring vendor readiness on the

timelines that NavIC needs.
PSC ने ISRO के कार्यक्रमों में **खरीद संबंधी बाधाओं** की ओर भी ध्यान दिलाया था, जिनमें विशेष घटक जुटाने और NavIC की समय-सीमा के अनुसार आपूर्तिकर्ताओं की तैयारी सुनिश्चित करने में आने वाली कठिनाइयाँ शामिल हैं।

- The ISRO Space Applications Centre's 'request for proposals' in 2025 also specified a large lead time of nearly two years between a contract's start and the first two flight models.
ISRO के अंतरिक्ष अनुप्रयोग केंद्र ने 2025 में प्रस्तावों के लिए जारी अनुरोध में यह भी बताया था कि अनुबंध शुरू होने और पहले दो उड़ान मॉडलों के तैयार होने के बीच लगभग दो वर्ष का लंबा समय लगेगा।
- The **Electronics Component Manufacturing Scheme** and the programme to modernise the Semiconductor Laboratory can be tweaked to serve these needs, with the Electronics Ministry also setting aside dedicated funds for developing specialised components and their qualification tests in a five- to seven-year programme.
इन ज़रूरतों को पूरा करने के लिए **इलेक्ट्रॉनिक्स घटक विनिर्माण योजना** और सेमीकंडक्टर प्रयोगशाला के आधुनिकीकरण कार्यक्रम में संशोधन किया जा सकता है। इलेक्ट्रॉनिक्स मंत्रालय पाँच से सात वर्ष के कार्यक्रम के तहत विशेष घटकों के विकास और उनके अर्हता-परीक्षणों के लिए अलग से धन भी निर्धारित कर सकता है।
- In tandem, the government must allocate around ₹17,000 crore in the 2027-28 Union Budget for the Department of Space, against ₹13,705.6 crore in 2026-27, with the hike focusing on manufacturing launch vehicles, replacing satellites, and recruitment.
इसके साथ ही, सरकार को केंद्रीय बजट 2027-28 में अंतरिक्ष विभाग के लिए लगभग ₹17,000 करोड़ आवंटित करने चाहिए, जबकि 2026-27 में ₹13,705.6 करोड़ आवंटित किए गए थे। इस बढ़ोतरी का ध्यान प्रक्षेपण वाहनों के निर्माण, उपग्रहों को बदलने और भर्ती पर होना चाहिए।
- Besides, NavIC also requires a dedicated operator, so that ISRO can be left to focus on its core mandate, and India needs a national space law addressing private participation in this enterprise, and liability.
इसके अलावा, NavIC को एक समर्पित संचालक की आवश्यकता है, ताकि ISRO अपने मूल दायित्व पर ध्यान दे सके। भारत को ऐसा राष्ट्रीय अंतरिक्ष कानून भी चाहिए जो इस क्षेत्र में निजी भागीदारी और दायित्व के प्रश्नों का समाधान करे।
- Two successful orbital missions in five-sixths of a year is unbecoming of a national space programme with imminent plans of human spaceflight, a space station, and reusable launch vehicle capabilities.
एक वर्ष के पाँच-छठे हिस्से में केवल दो सफल कक्षीय मिशन ऐसे राष्ट्रीय अंतरिक्ष कार्यक्रम के अनुरूप नहीं हैं जिसकी निकट भविष्य में मानव अंतरिक्ष उड़ान, अंतरिक्ष स्टेशन और पुनः उपयोग योग्य प्रक्षेपण वाहन क्षमताओं की योजनाएँ हैं।
- Without significant measures, ISRO will lurch from one mission to the next as and when its inadequate workforce is able to make do with its inadequate allocation.
महत्त्वपूर्ण कदम न उठाए गए, तो ISRO एक मिशन से दूसरे मिशन तक लड़खड़ाता रहेगा—जब भी उसका अपर्याप्त कार्यबल अपने अपर्याप्त बजट से काम चलाने में सक्षम होगा।

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Even as unemployment falls, lack of 'decent work' in India

GS III: Economy

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India's unemployment rate fell from 6.1% in 2017-18 to 3.2% in 2023-24. At the same time, female workforce participation increased for the first time in decades as has been widely reported in government documents. In light of these positive developments, it is the right time to ask what kind of jobs have been generated in India recently, and what working conditions accompany them.

This is important because employment alone does not inherently ensure dignity, security, or a stable livelihood. A worker engaged in garment sewing without a formal contract, a gig worker without insurance coverage, or a construction labourer without paid leave may technically be considered employed, but they remain outside the promise of decent work. The International Labour Organization (ILO) defines 'decent work' as employment that offers equitable income, workplace rights, social security and dignity. This principle is integrated into Sustainable Development Goal 8 (SDG-8), which advocates "decent work for all". Measured this way, India's labour market persistently exhibits high levels of informality, insecure employment, and increasing inequalities.

Measuring decent work

Using two rounds of the Periodic Labour Force Survey (PLFS), 2017-18 and 2023-24, the quality of employment in India has been analysed. By constructing a multidimensional Decent Work Index (DWI) based on three subdimensions – employment status, employment opportunity, and social security – across five major industries (agriculture, manufacturing, construction, wholesale and retail, and transport), it was observed that India has made progress in improving work conditions over time. The overall DWI increased from 0.247 in 2017-18 to 0.302 in 2023-24. While this indicates some improvement in job quality, the overall level remains alarmingly low. More importantly, progress has been uneven across sectors, regions, gender and caste groups.

Manufacturing in the secondary sector and transport in the tertiary sector showed the highest improvement in decent work conditions during this period. The manufacturing sector's DWI increased from 0.324 to 0.411 due to a gradual rise in formalisation and digitalisation. The transport sector also experienced significant progress (from 0.285 to 0.35), largely due to the expansion of urban logistics and app-based platform work. However, these improvements also reveal an important concern. Even in sectors where employment conditions have improved, access to social security remains limited. A large number of workers still do not have written contracts, paid leave, provident fund benefits or insurance coverage. Though employment opportunities are increasing, labour protections and job security are not improving at the same pace. Agriculture, which continues to employ the largest share of India's workforce, remains the lowest-quality employment generating sector. The agricultural sector's DWI marginally increased from 0.211 to 0.267 during the study period; most agricultural workers continue to be self-employed or unpaid family workers without stable income or labour protections. The issue is not merely low productivity; rather it is the rise of informal jobs. Construction and retail sectors tell a similar story. Workers remain dependent on casual employment, subcontracting chains and insecure labour arrangements. Welfare schemes exist on paper but implementation gaps continue to exclude millions of workers.

Nearly 90% of India's workforce remains informally employed, a share that has risen since 2019, according to the India Employment Report 2024 (ILO-IHD). It has expanded into supply chains, app-based work in the gig and platform economy, logistics, home-based production, and in even organised industries through contractualisation and outsourcing.

The challenge becomes even more serious when viewed in the context of social inequality. The analysis by the authors shows that decent work outcomes improve significantly with education, formal enterprise employment and skill training. However, informalisation of jobs reduces decent work creation in India over time. Especially concerning is the growing intersection of caste and gender disadvantage: women from Scheduled Tribes and Other Backward Classes experienced a decline in decent-work outcomes between 2017-18 and 2023-24, even as outcomes for men improved. The labour market penalty for being both female and socially marginalised has intensified after the COVID-19 pandemic. This shows that inequality in India's labour market is not just economic, it is also structurally rooted in caste and gender hierarchies.

Regional disparities further expose the uneven nature of labour market progress. States such as Goa, Keralam, Tamil Nadu, and Haryana perform substantially better in terms of decent-work creation; in contrast, Bihar, Jharkhand, and Uttar Pradesh continue to lag behind.

The findings point to a serious policy concern: while India has been able to create more jobs, it is still struggling to ensure that these jobs provide decent working conditions and security.

Poor-quality employment generation has consequences for economic growth. Workers without social security spend less, save less and remain vulnerable to economic shocks

Poor-quality employment generation has consequences for economic growth. Workers without social security spend less, save less and remain vulnerable to economic shocks. Moreover, informality depresses productivity, weakens tax capacity, and increases inequality. India cannot measure labour market success only through reduction in unemployment rates and income growth. A country aspiring to become Viksit Bharat by 2047 cannot rely indefinitely on insecure, low-paid and unprotected labour. Economic growth without decent work can create a workforce that may have jobs, but still lives with insecurity, instability and a lack of protection. India has to shift from a 'job-counting approach' to a 'job-quality approach'.

The way forward

The findings point toward where policy should focus. First, social protection must extend to all workers – gig and platform workers, self-employed, farmers, and informal workers – through systems that are portable and accessible regardless of employment status. Platforms such as e-Shram are a good start, but registering alone does not guarantee protection; workers need real protection, not just a database entry.

Second, formalisation policies should focus on labour conditions, not just business registration. Enterprises receiving tax incentives or subsidies should be linked to mandatory worker protections such as written contracts, paid leave, and social security contributions.

Third, labour policies need to be more intersectional. Given that women from marginalised caste groups are the group whose outcomes worsened rather than improved, targeted measures – childcare facilities, safe transportation, skill training and safeguards against workplace discrimination – should not be an afterthought. Finally, labour reforms should be designed around the needs of workers first, rather than being framed primarily as a means of easing the cost of doing business.

The four Labour Codes were introduced in 2025 with the promise of simplifying labour regulation and expanding protections. However, implementation remains partial and inconsistent. Critics argue that while compliance has been eased for businesses, worker protections may have diminished with rising contractualisation.

The real test of development is not whether workers have some kind of work; it is whether that work provides dignity and security. Until then, India's employment success story will remain incomplete – no nation can call itself developed while its workforce remains insecure.

02N11. Even as unemployment falls, lack of 'decent work' in India
बेरोज़गारी घटने के बावजूद, भारत में 'सम्मानजनक काम' की कमी

- India's unemployment rate fell from 6.1% in 2017-18 to 3.2% in 2023-24.
  भारत में बेरोज़गारी दर 2017-18 के 6.1% से घटकर 2023-24 में 3.2% हो गई।
- At the same time, female workforce participation increased for the first time in decades as has been widely reported in government documents.
  इसी अवधि में, सरकारी दस्तावेज़ों में व्यापक रूप से बताई गई जानकारी के अनुसार, दशकों में पहली बार महिला कार्यबल भागीदारी बढ़ी।
- In light of these positive developments, it is the right time to ask what kind of jobs have been generated in India recently, and what working conditions accompany them.
  इन सकारात्मक बदलावों को देखते हुए यह पूछने का उचित समय है कि हाल के वर्षों में भारत में किस तरह की नौकरियाँ पैदा हुई हैं और उनके साथ कैसी कार्य-स्थितियाँ जुड़ी हैं।
- This is important because employment alone does not inherently ensure dignity, security, or a stable livelihood.
  यह महत्त्वपूर्ण है, क्योंकि केवल रोज़गार से अपने-आप गरिमा, सुरक्षा या स्थिर आजीविका सुनिश्चित नहीं होती।
- A worker engaged in garment sewing without a formal contract, a gig worker without insurance coverage, or a construction labourer without paid leave may technically be

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considered employed, but they remain outside the promise of **decent work**.
औपचारिक अनुबंध के बिना कपड़े सिलने वाला कामगार, बीमा सुरक्षा से वंचित गिग कामगार या सवेतन अवकाश के बिना निर्माण मज़दूर तकनीकी रूप से रोज़गार में माना जा सकता है, लेकिन वह **सम्मानजनक काम** के वादे से बाहर रहता है।

- The International Labour Organization (ILO) defines 'decent work' as employment that offers equitable income, workplace rights, social security and dignity.
अंतरराष्ट्रीय श्रम संगठन (ILO) 'सम्मानजनक काम' को ऐसे रोज़गार के रूप में परिभाषित करता है जो न्यायसंगत आय, कार्यस्थल पर अधिकार, सामाजिक सुरक्षा और गरिमा प्रदान करे।
- This principle is integrated into Sustainable Development Goal 8 (SDG-8), which advocates "decent work for all".
यह सिद्धांत सतत विकास लक्ष्य 8 (SDG-8) में शामिल है, जो "सभी के लिए सम्मानजनक काम" की पैरवी करता है।
- Measured this way, India's labour market persistently exhibits high levels of informality, insecure employment, and increasing inequalities.
इस कसौटी पर देखें तो भारत के श्रम बाज़ार में अनौपचारिकता, असुरक्षित रोज़गार और बढ़ती असमानताएँ लगातार उच्च स्तर पर बनी हुई हैं।

Measuring decent work
सम्मानजनक काम का आकलन

- Using two rounds of the Periodic Labour Force Survey (PLFS), 2017-18 and 2023-24, the quality of employment in India has been analysed.
आवधिक श्रम बल सर्वेक्षण (PLFS) के दो दौरों—2017-18 और 2023-24—के आँकड़ों का उपयोग करके भारत में रोज़गार की गुणवत्ता का विश्लेषण किया गया है।
- By constructing a multidimensional **Decent Work Index (DWI)** based on three subdimensions — employment status, employment opportunity, and social security — across five major industries (agriculture, manufacturing, construction, wholesale and retail, and transport), it was observed that India has made progress in improving work conditions over time.
पाँच प्रमुख उद्योगों—कृषि, विनिर्माण, निर्माण, थोक और खुदरा व्यापार तथा परिवहन—में रोज़गार की स्थिति, रोज़गार के अवसर और सामाजिक सुरक्षा जैसे तीन उप-आयामों पर आधारित बहुआयामी **सम्मानजनक काम सूचकांक (DWI)** तैयार करके पाया गया कि भारत ने समय के साथ कार्य-स्थितियों में सुधार किया है।
- The overall DWI increased from 0.247 in 2017-18 to 0.302 in 2023-24.
कुल DWI 2017-18 के 0.247 से बढ़कर 2023-24 में 0.302 हो गया।
- While this indicates some improvement in job quality, the overall level remains alarmingly low.
हालाँकि यह रोज़गार की गुणवत्ता में कुछ सुधार का संकेत है, फिर भी इसका समग्र स्तर चिंताजनक रूप से कम है।
- More importantly, progress has been uneven across sectors, regions, gender and caste groups.
इससे भी महत्त्वपूर्ण बात यह है कि क्षेत्रों, भौगोलिक इलाकों, लिंग और जाति-समूहों के बीच प्रगति असमान रही है।
- Manufacturing in the secondary sector and transport in the tertiary sector showed the highest improvement in decent work conditions during this period.
इस अवधि में द्वितीयक क्षेत्र के विनिर्माण और तृतीयक क्षेत्र के परिवहन में सम्मानजनक काम की परिस्थितियों में सबसे अधिक सुधार देखा गया।
- The manufacturing sector's DWI increased from 0.324 to 0.411 due to a gradual rise in formalisation and digitalisation.

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औपचारिकीकरण और डिजिटलीकरण में क्रमिक वृद्धि के कारण विनिर्माण क्षेत्र का DWI 0.324 से बढ़कर 0.411 हो गया।

- The transport sector also experienced significant progress (from 0.285 to 0.35), largely due to the expansion of urban logistics and app-based platform work.
  शहरी लॉजिस्टिक्स और ऐप-आधारित प्लेटफ़ॉर्म काम के विस्तार के कारण परिवहन क्षेत्र में भी उल्लेखनीय प्रगति हुई और उसका DWI 0.285 से बढ़कर 0.35 हो गया।
- However, these improvements also reveal an important concern.
  हालाँकि, ये सुधार एक महत्त्वपूर्ण चिंता भी उजागर करते हैं।
- Even in sectors where employment conditions have improved, access to **social security** remains limited.
  जिन क्षेत्रों में रोज़गार की परिस्थितियाँ बेहतर हुई हैं, वहाँ भी **सामाजिक सुरक्षा** तक पहुँच सीमित बनी हुई है।
- A large number of workers still do not have written contracts, paid leave, provident fund benefits or insurance coverage.
  कई कामगारों के पास अब भी लिखित अनुबंध, सवेतन अवकाश, भविष्य निधि के लाभ या बीमा सुरक्षा नहीं है।
- Though employment opportunities are increasing, labour protections and job security are not improving at the same pace.
  रोज़गार के अवसर बढ़ रहे हैं, लेकिन श्रम सुरक्षा और नौकरी की स्थिरता में उसी गति से सुधार नहीं हो रहा है।
- Agriculture, which continues to employ the largest share of India's workforce, remains the lowest-quality employment generating sector.
  भारत के कार्यबल के सबसे बड़े हिस्से को रोज़गार देने वाला कृषि क्षेत्र अब भी सबसे कम गुणवत्ता वाला रोज़गार पैदा करने वाला क्षेत्र है।
- The agricultural sector's DWI marginally increased from 0.211 to 0.267 during the study period; most agricultural workers continue to be self-employed or unpaid family workers without stable income or labour protections.
  अध्ययन अवधि में कृषि क्षेत्र का DWI मामूली रूप से 0.211 से बढ़कर 0.267 हुआ; अधिकांश कृषि कामगार अब भी स्थिर आय या श्रम सुरक्षा के बिना स्व-रोज़गार में लगे हैं या परिवार के अवैतनिक कामगार हैं।
- The issue is not merely low productivity; rather it is the rise of informal jobs.
  समस्या केवल कम उत्पादकता की नहीं है; बल्कि **अनौपचारिक रोज़गार** बढ़ने की है।
- Construction and retail sectors tell a similar story.
  निर्माण और खुदरा क्षेत्र की स्थिति भी ऐसी ही है।
- Workers remain dependent on casual employment, subcontracting chains and insecure labour arrangements.
  कामगार आकस्मिक रोज़गार, उप-ठेकेदारी शृंखलाओं और असुरक्षित श्रम व्यवस्थाओं पर निर्भर बने हुए हैं।
- Welfare schemes exist on paper but implementation gaps continue to exclude millions of workers.
  कल्याणकारी योजनाएँ कागज़ों पर मौजूद हैं, लेकिन क्रियान्वयन की कमियों के कारण लाखों कामगार अब भी उनके लाभ से वंचित हैं।
- Nearly 90% of India's workforce remains informally employed, a share that has risen since 2019, according to the India Employment Report 2024 (ILO–IHD).
  भारत रोज़गार रिपोर्ट 2024 (ILO–IHD) के अनुसार, भारत के लगभग 90% कार्यबल को अनौपचारिक रोज़गार मिला हुआ है और 2019 के बाद यह हिस्सा बढ़ा है।
- It has expanded into supply chains, app-based work in the gig and platform economy, logistics, home-based production, and in even organised industries through contractualisation and outsourcing.
  यह आपूर्ति शृंखलाओं, गिग और प्लेटफ़ॉर्म अर्थव्यवस्था के ऐप-आधारित काम, लॉजिस्टिक्स, घर से किए जाने वाले उत्पादन और यहाँ तक कि संगठित उद्योगों में भी संविदाकरण तथा आउटसोर्सिंग के ज़रिए फैल गया है।
- The challenge becomes even more serious when viewed in the context of **social inequality**.
  सामाजिक असमानता के संदर्भ में देखें तो यह चुनौती और भी गंभीर हो जाती है।

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- The analysis by the authors shows that decent work outcomes improve significantly with education, formal enterprise employment and skill training.
  लेखकों के विश्लेषण से पता चलता है कि शिक्षा, औपचारिक उद्यमों में रोज़गार और कौशल प्रशिक्षण से सम्मानजनक काम के परिणामों में उल्लेखनीय सुधार होता है।
- However, informalisation of jobs reduces decent work creation in India over time.
  हालाँकि, रोज़गार का अनौपचारिकीकरण समय के साथ भारत में सम्मानजनक काम के सृजन को कम करता है।
- Especially concerning is the growing intersection of caste and gender disadvantage: women from Scheduled Tribes and Other Backward Classes experienced a decline in decent-work outcomes between 2017-18 and 2023-24, even as outcomes for men improved.
  जाति और लिंग-आधारित वंचना का बढ़ता मेल विशेष रूप से चिंताजनक है: अनुसूचित जनजातियों और अन्य पिछड़ा वर्ग की महिलाओं के लिए 2017-18 से 2023-24 के बीच सम्मानजनक काम के परिणाम बिगड़े, जबकि पुरुषों के लिए इनमें सुधार हुआ।
- The labour market penalty for being both female and socially marginalised has intensified after the COVID-19 pandemic.
  COVID-19 महामारी के बाद, महिला होने और सामाजिक रूप से हाशिए पर होने की **श्रम-बाज़ार संबंधी दोहरी हानि** और बढ़ गई है।
- This shows that inequality in India's labour market is not just economic, it is also structurally rooted in caste and gender hierarchies.
  इससे पता चलता है कि भारत के श्रम बाज़ार में असमानता केवल आर्थिक नहीं है, बल्कि जाति और लैंगिक पदानुक्रमों में भी संरचनात्मक रूप से जड़ें जमाए हुए है।
- Regional disparities further expose the uneven nature of labour market progress.
  क्षेत्रीय असमानताएँ श्रम बाज़ार की प्रगति के असमान स्वरूप को और उजागर करती हैं।
- States such as Goa, Keralam, Tamil Nadu, and Haryana perform substantially better in terms of decent-work creation; in contrast, Bihar, Jharkhand, and Uttar Pradesh continue to lag behind.
  सम्मानजनक रोज़गार सृजन के मामले में गोवा, केरलम, तमिलनाडु और हरियाणा जैसे राज्य काफ़ी बेहतर प्रदर्शन करते हैं; इसके विपरीत, बिहार, झारखंड और उत्तर प्रदेश अब भी पीछे हैं।
- The findings point to a serious policy concern: while India has been able to create more jobs, it is still struggling to ensure that these jobs provide decent working conditions and security.
  निष्कर्ष एक गंभीर नीतिगत चिंता की ओर संकेत करते हैं: भारत अधिक नौकरियाँ पैदा करने में तो सफल रहा है, लेकिन यह सुनिश्चित करने में अब भी संघर्ष कर रहा है कि इन नौकरियों में **सम्मानजनक कार्य-स्थितियाँ और सुरक्षा** मिले।
- Poor-quality employment generation has consequences for economic growth.
  कम गुणवत्ता वाले रोज़गार का सृजन आर्थिक विकास को प्रभावित करता है।
- Workers without social security spend less, save less and remain vulnerable to economic shocks.
  सामाजिक सुरक्षा से वंचित कामगार कम खर्च करते हैं, कम बचत करते हैं और आर्थिक झटकों के प्रति असुरक्षित रहते हैं।
- Moreover, informality depresses productivity, weakens tax capacity, and increases inequality.
  इसके अलावा, अनौपचारिकता उत्पादकता घटाती है, कर जुटाने की क्षमता कमज़ोर करती है और असमानता बढ़ाती है।
- India cannot measure labour market success only through reduction in unemployment rates and income growth.
  भारत श्रम बाज़ार की सफलता को केवल बेरोज़गारी दर में कमी और आय वृद्धि से नहीं माप सकता।
- A country aspiring to become Viksit Bharat by 2047 cannot rely indefinitely on insecure, low-paid and unprotected labour.

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2047 तक विकसित भारत बनने की आकांक्षा रखने वाला देश असुरक्षित, कम वेतन वाले और संरक्षण-विहीन श्रम पर अनिश्चित काल तक निर्भर नहीं रह सकता।

- Economic growth without **decent work** can create a workforce that may have jobs, but still lives with insecurity, instability and a lack of protection.
  सम्मानजनक काम के बिना आर्थिक विकास ऐसा कार्यबल पैदा कर सकता है जिसके पास नौकरी तो हो, लेकिन वह असुरक्षा, अस्थिरता और संरक्षण के अभाव में जीता हो।
- India has to shift from a 'job-counting approach' to a 'job-quality approach'.
  भारत को 'नौकरियों की गिनती' वाले दृष्टिकोण से 'रोज़गार की गुणवत्ता' वाले दृष्टिकोण की ओर बढ़ना होगा।

The way forward
आगे की राह

- The findings point toward where policy should focus.
  निष्कर्ष बताते हैं कि नीति का ध्यान किन क्षेत्रों पर होना चाहिए।
- First, **social protection** must extend to all workers — gig and platform workers, self-employed, farmers, and informal workers — through systems that are portable and accessible regardless of employment status.
  पहला, **सामाजिक सुरक्षा** सभी कामगारों—गिग और प्लेटफ़ॉर्म कामगारों, स्व-रोज़गार करने वालों, किसानों और अनौपचारिक कामगारों—तक ऐसी व्यवस्थाओं के माध्यम से पहुँचनी चाहिए जो रोज़गार की स्थिति से स्वतंत्र रूप से हस्तांतरणीय और सुलभ हों।
- Platforms such as e-Shram are a good start, but registering alone does not guarantee protection; workers need real protection, not just a database entry.
  e-Shram जैसे मंच अच्छी शुरुआत हैं, लेकिन केवल पंजीकरण से सुरक्षा की गारंटी नहीं मिलती; कामगारों को वास्तविक संरक्षण चाहिए, सिर्फ़ डेटाबेस में दर्ज नाम नहीं।
- Second, formalisation policies should focus on labour conditions, not just business registration.
  दूसरा, औपचारिकीकरण की नीतियों का ध्यान केवल व्यवसाय पंजीकरण पर नहीं, बल्कि श्रम की परिस्थितियों पर होना चाहिए।
- Enterprises receiving tax incentives or subsidies should be linked to mandatory worker protections such as written contracts, paid leave, and social security contributions.
  कर प्रोत्साहन या सब्सिडी पाने वाले उद्यमों के लिए लिखित अनुबंध, सवेतन अवकाश और सामाजिक सुरक्षा अंशदान जैसे कामगार संरक्षण अनिवार्य होने चाहिए।
- Third, labour policies need to be more intersectional.
  तीसरा, श्रम नीतियों को विभिन्न प्रकार की वंचनाओं के परस्पर प्रभावों को ध्यान में रखना चाहिए।
- Given that women from marginalised caste groups are the group whose outcomes worsened rather than improved, targeted measures — childcare facilities, safe transportation, skill training and safeguards against workplace discrimination — should not be an afterthought.
  चूँकि हाशिए पर रखे गए जाति-समूहों की महिलाओं के परिणाम सुधरने के बजाय बिगड़े हैं, इसलिए लक्षित उपाय—बच्चों की देखभाल की सुविधाएँ, सुरक्षित परिवहन, कौशल प्रशिक्षण और कार्यस्थल पर भेदभाव से सुरक्षा—बाद में सोचने वाली बातें नहीं होनी चाहिए।
- Finally, labour reforms should be designed around the needs of workers first, rather than being framed primarily as a means of easing the cost of doing business.
  अंततः, श्रम सुधारों को पहले कामगारों की ज़रूरतों के आधार पर तैयार किया जाना चाहिए, न कि मुख्यतः कारोबार की लागत घटाने के साधन के रूप में।
- The four Labour Codes were introduced in 2025 with the promise of simplifying labour regulation and expanding protections.
  श्रम नियमों को सरल बनाने और संरक्षण का दायरा बढ़ाने के वादे के साथ चार श्रम संहिताएँ 2025 में लागू की गईं।

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- However, implementation remains partial and inconsistent.
  हालाँकि, उनका क्रियान्वयन अब भी आंशिक और असंगत है।
- Critics argue that while compliance has been eased for businesses, worker protections may have diminished with rising contractualisation.
  आलोचकों का तर्क है कि व्यवसायों के लिए अनुपालन आसान हुआ है, लेकिन बढ़ते संविदाकरण के साथ कामगारों का संरक्षण कमज़ोर हुआ हो सकता है।
- The real test of development is not whether workers have some kind of work; it is whether that work provides dignity and security.
  विकास की असली कसौटी यह नहीं है कि कामगारों के पास किसी तरह का काम है या नहीं; कसौटी यह है कि वह काम उन्हें गरिमा और सुरक्षा देता है या नहीं।
- Until then, India's employment success story will remain incomplete — no nation can call itself developed while its workforce remains insecure.
  जब तक ऐसा नहीं होता, भारत की रोज़गार-सफलता की कहानी अधूरी रहेगी—कोई भी देश स्वयं को विकसित नहीं कह सकता, यदि उसका कार्यबल असुरक्षित बना रहे।

An energy revolution in the making

GS III: Economy



Pralhad Joshi
is Union Minister for New and Renewable Energy, Government of India & President of ISA Assembly

More than 21 lakh of the 65 lakh homes with PM Surya Ghar rooftop solar have received a zero electricity bill. Life for young Indians, once marked by monthly bills and regular power cuts, has seen a sea change. Now, they ask how an inverter works, what a battery costs, and whether AI can run decentralised solar. Such questions are creating engineers, entrepreneurs, skilled technicians, and informed citizens. India is raising its first generation of power producers and innovators, and I believe they will shape our energy economy for Viksit Bharat by 2047.

This rests on a decade of initiatives led by Hon'ble Prime Minister Shri Narendra Modi. In the last 12 years, India has achieved both speed and scale, with installed solar capacity up by around 6007%, from 2.8 GW in 2014 to 171 GW today. Solar power that cost around ₹8 a unit in 2014-15 now sells for as low as ₹2.15, thanks to an ecosystem, including PM-KUSUM scheme, built on the vision to achieve 500 GW of installed power capacity from non-fossil fuel sources by 2030. India stands as the only G20 country to have met its 2030 target of 50% non-fossil capacity five years early. This first chapter has proved that solar works for Indian households.

Now, the second will take agri-photovoltaics to farmers under PM-KUSUM 2.0, pair storage with solar, prioritise State-level green corridors, deepen rooftop solar penetration, and digitise our networks for more renewables. Our 500 GW commitment needs $220 billion investment - $150 billion domestic and $70 billion as FDI. Capital, manufacturing, storage, and people will decide how well we do it, along with Global South partners.

Solar power that cost close to ₹10 a unit in 2014 now sells for as low as ₹2.15, thanks to an ecosystem built on the vision to achieve 500 GW of installed power capacity from non-fossil fuel sources by 2030

Capital comes first. The first milestone of one lakh PM Surya Ghar solar installations took months; now, we achieve the number every six days. Under PM-KUSUM, our 'annadata' has become our 'urjadata' too, with over 30 lakh standalone solar pumps installed. The private sector will lead the build-out, with our States as partners, by building parks such as Khavda, the world's largest hybrid renewable energy park. Next, rooftops and pumps must become a bankable asset class with a clear pipeline for Indian and foreign pension funds and institutional investors.

Manufacturing is next. The PLI scheme brought high-efficiency module-making home. The capacity of solar module now exceeds 225 GW and around 45 GW of cells. Investment must now go into cells, wafers, and polysilicon. The National Green Hydrogen Mission is building an electrolyser industry for 5 million tonnes a year by 2030.

Storage comes third. The Central Electricity Authority sees a need for 236 GWh of batteries by 2031-32, and the Cabinet-approved third phase of the Green Energy Corridor will support 50 GWh with ₹50,000 crore and new transmission.

The last but most important is people. Rooftop solar creates significantly more jobs than ground-mounted projects. It requires local teams for surveying, designing, installing, connecting and servicing the systems – taking green jobs beyond major cities to places closer home for lakhs of youth. It also employs a high share of women. Our 500 GW target and the Green Hydrogen Mission could also support lakhs of full-time-equivalent jobs by 2030.

Under India's 2023 G20 Presidency, the African Union joined the G20 permanently, and leaders agreed to work towards tripling renewables capacity by 2030. This September, as BRICS Chair, we saw the New Delhi Declaration adopted unanimously, backing a BRICS Solar PV Cooperation Roadmap and principles for smart grids and storage.

The International Solar Alliance, launched by India and France in Paris in 2015, turns that agenda into delivery. The first 1,000 GW of global solar power took 25 years; the next came in two. With 130 signatory and member countries, ISA is helping build skills through a Global Capability Centre, an AI-driven ISA Academy, and centres of excellence in 17 countries, with capital from the $200-million Africa Solar Facility, managed with Africa50.

The Bharat Renewable Energy Summit & Expo 2026 at Bharat Mandapam on November 2-5, to be inaugurated by the Hon'ble Prime Minister, will host, for the first time, the Ninth ISA Assembly and the Fourth International Conference on Green Hydrogen together. With the participating countries and institutions, we will discuss what solar can do for them and how they can achieve reliable power, energy security without imported fuel, and food security through solar irrigation, all in the spirit of Vasudhaiva Kutumbakam.

our energy economy for **Viksit Bharat by 2047**.

02N11. An energy revolution in the making
साकार होती ऊर्जा क्रांति

- More than 21 lakh of the 65 lakh homes with **PM Surya Ghar rooftop solar** have received a **zero electricity bill**.
  पीएम सूर्य घर रूफटॉप सोलर वाले 65 लाख घरों में से 21 लाख से अधिक को **शून्य बिजली बिल** मिला है।
- Life for young Indians, once marked by monthly bills and regular power cuts, has seen a sea change.
  युवा भारतीयों का जीवन, जो कभी हर महीने के बिजली बिलों और नियमित बिजली कटौती से घिरा रहता था, अब पूरी तरह बदल गया है।
- Now, they ask how an inverter works, what a battery costs, and whether **AI** can run decentralised solar.
  अब वे पूछते हैं कि इन्वर्टर कैसे काम करता है, बैटरी की कीमत कितनी है और क्या **एआई** विकेंद्रीकृत सौर ऊर्जा व्यवस्था चला सकता है।
- Such questions are creating engineers, entrepreneurs, skilled technicians, and informed citizens.
  ऐसे सवाल इंजीनियर, उद्यमी, कुशल तकनीशियन और जागरूक नागरिक तैयार कर रहे हैं।
- India is raising its **first generation of power producers and innovators**, and I believe they will shape

भारत **बिजली उत्पादकों और नवोन्मेषकों की अपनी पहली पीढ़ी** तैयार कर रहा है, और मेरा मानना है कि वे **2047 तक विकसित भारत** की ऊर्जा अर्थव्यवस्था को आकार देंगे।

- This rests on a decade of initiatives led by Hon'ble Prime Minister Shri Narendra Modi.
  यह माननीय प्रधानमंत्री श्री नरेंद्र मोदी के नेतृत्व में शुरू की गई पहलों के एक दशक पर आधारित है।
- In the last 12 years, India has achieved both speed and scale, with **installed solar capacity** up by around 6007%, from 2.8 GW in 2014 to 171 GW today.
  पिछले 12 वर्षों में भारत ने गति और व्यापकता—दोनों हासिल की हैं; **स्थापित सौर क्षमता** लगभग 6007% बढ़कर 2014 के 2.8 गीगावाट से आज 171 गीगावाट हो गई है।
- Solar power that cost around ₹8 a unit in 2014-15 now sells for as low as ₹2.15, thanks to an ecosystem, including **PM-KUSUM**, built on the vision to achieve 500 GW of installed power capacity from **non-fossil fuel sources** by 2030.
  2014-15 में जिस सौर बिजली की कीमत लगभग ₹8 प्रति यूनिट थी, वह अब घटकर ₹2.15 तक पहुँच गई है; इसका श्रेय उस पारिस्थितिकी तंत्र को जाता है जिसमें **पीएम-कुसुम** भी शामिल है और जो 2030 तक **गैर-जीवाश्म ईंधन स्रोतों** से 500 गीगावाट स्थापित बिजली क्षमता हासिल करने की परिकल्पना पर आधारित है।
- India stands as the only G20 country to have met its 2030 target of 50% non-fossil capacity five years early.
  भारत जी20 का एकमात्र ऐसा देश है जिसने 2030 के लिए निर्धारित 50% गैर-जीवाश्म क्षमता का लक्ष्य पाँच वर्ष पहले ही हासिल कर लिया है।
- This first chapter has proved that solar works for Indian households.
  इस पहले चरण ने साबित किया है कि भारतीय घरों के लिए सौर ऊर्जा कारगर है।
- Now, the second will take **agri-photovoltaics** to farmers under **PM-KUSUM 2.0**, pair **storage with solar**, prioritise State-level **green corridors**, deepen rooftop solar penetration, and digitise our networks for more renewables.
  अब दूसरे चरण में **पीएम-कुसुम 2.0** के तहत किसानों तक **कृषि-फोटोवोल्टिक्स** पहुँचाया जाएगा, **सौर ऊर्जा के साथ भंडारण** को जोड़ा जाएगा, राज्य-स्तरीय **हरित गलियारों** को प्राथमिकता दी जाएगी, रूफटॉप सोलर का विस्तार होगा और नवीकरणीय ऊर्जा की हिस्सेदारी बढ़ाने के लिए हमारे नेटवर्क का डिजिटलीकरण किया जाएगा।
- Our 500 GW commitment needs $220 billion investment — $150 billion domestic and $70 billion as **FDI**.
  500 गीगावाट की हमारी प्रतिबद्धता के लिए 220 अरब डॉलर के निवेश की ज़रूरत है—150 अरब डॉलर घरेलू निवेश और 70 अरब डॉलर **प्रत्यक्ष विदेशी निवेश (FDI)** के रूप में।
- Capital, manufacturing, storage, and people will decide how well we do it, along with Global South partners.
  वैश्विक दक्षिण के साझेदारों के साथ मिलकर हम इसमें कितने सफल होंगे, यह पूँजी, विनिर्माण, भंडारण और लोगों पर निर्भर करेगा।
- **Capital comes first.**
  सबसे पहले पूँजी।
- The first milestone of one lakh PM Surya Ghar solar installations took months; now, we achieve the number every six days.
  पीएम सूर्य घर के तहत एक लाख सौर प्रतिष्ठानों का पहला पड़ाव हासिल करने में महीनों लगे थे; अब हम हर छह दिन में यह संख्या हासिल कर लेते हैं।
- Under **PM-KUSUM**, our 'annadata' has become our 'urjadata' too, with over 30 lakh standalone solar pumps installed.
  पीएम-कुसुम के तहत 30 लाख से अधिक स्वतंत्र सौर पंप लगाए जा चुके हैं और हमारे 'अन्नदाता' अब 'ऊर्जादाता' भी बन गए हैं।
- The private sector will lead the build-out, with our States as partners, by building parks such as Khavda, the world's largest **hybrid renewable energy park**.

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निजी क्षेत्र इस विस्तार का नेतृत्व करेगा और राज्य साझेदार बनेंगे; इसके तहत खावड़ा जैसे पार्क बनाए जाएँगे, जो दुनिया का सबसे बड़ा **हाइब्रिड नवीकरणीय ऊर्जा पार्क** है।

- Next, rooftops and pumps must become a **bankable asset class** with a clear pipeline for Indian and foreign pension funds and institutional investors.
  अगला कदम यह होना चाहिए कि रूफटॉप सोलर और पंप **निवेश योग्य परिसंपत्ति वर्ग** बनें और भारतीय तथा विदेशी पेंशन फंडों एवं संस्थागत निवेशकों के लिए परियोजनाओं की स्पष्ट सूची उपलब्ध हो।
- **Manufacturing is next.**
  अगला कदम विनिर्माण का है।
- The **PLI scheme** brought **high-efficiency module-making** home.
  पीएलआई योजना ने **उच्च-दक्षता वाले मॉड्यूलों का विनिर्माण** भारत में संभव बनाया।
- The capacity of solar module now exceeds 225 GW and around 45 GW of cells.
  अब सौर मॉड्यूलों की विनिर्माण क्षमता 225 गीगावाट से अधिक और सौर सेल की क्षमता लगभग 45 गीगावाट है।
- Investment must now go into cells, wafers, and polysilicon.
  अब निवेश सेल, वेफर और पॉलीसिलिकॉन के उत्पादन में जाना चाहिए।
- The **National Green Hydrogen Mission** is building an **electrolyser industry** for 5 million tonnes a year by 2030.
  राष्ट्रीय हरित हाइड्रोजन मिशन 2030 तक सालाना 5 मिलियन टन उत्पादन के लक्ष्य के अनुरूप **इलेक्ट्रोलाइज़र उद्योग** तैयार कर रहा है।
- **Storage comes third.**
  तीसरे स्थान पर भंडारण है।
- The Central Electricity Authority sees a need for 236 GWh of **batteries** by 2031-32, and the Cabinet-approved third phase of the **Green Energy Corridor** will support 50 GWh with ₹50,000 crore and new transmission.
  केंद्रीय विद्युत प्राधिकरण के अनुसार 2031-32 तक 236 गीगावाट-घंटे की **बैटरियों** की आवश्यकता होगी, और **हरित ऊर्जा गलियारे** का मंत्रिमंडल से स्वीकृत तीसरा चरण ₹50,000 करोड़ और नए पारेषण तंत्र के साथ 50 गीगावाट-घंटे की क्षमता को समर्थन देगा।
- **The last but most important is people.**
  अंतिम, लेकिन सबसे महत्वपूर्ण पहलू लोग हैं।
- **Rooftop solar** creates significantly more jobs than ground-mounted projects.
  रूफटॉप सोलर से ज़मीन पर लगाए जाने वाले संयंत्रों की तुलना में कहीं अधिक रोज़गार पैदा होते हैं।
- It requires local teams for surveying, designing, installing, connecting and servicing the systems — taking **green jobs** beyond major cities to places closer home for lakhs of youth.
  इन प्रणालियों के सर्वेक्षण, डिज़ाइन, स्थापना, कनेक्शन और रखरखाव के लिए स्थानीय टीमों की ज़रूरत होती है—इससे **हरित रोज़गार** बड़े शहरों से बाहर, लाखों युवाओं के घरों के पास तक पहुँचते हैं।
- It also employs a high share of women.
  इस क्षेत्र में महिलाओं की हिस्सेदारी भी अधिक है।
- Our 500 GW target and the **Green Hydrogen Mission** could also support lakhs of **full-time-equivalent jobs** by 2030.
  हमारा 500 गीगावाट का लक्ष्य और **हरित हाइड्रोजन मिशन** 2030 तक लाखों **पूर्णकालिक समकक्ष रोज़गारों** को भी समर्थन दे सकते हैं।
- Under India's 2023 **G20 Presidency**, the African Union joined the G20 permanently, and leaders agreed to work towards tripling renewables capacity by 2030.
  भारत की 2023 की **जी20 अध्यक्षता** के दौरान अफ्रीकी संघ स्थायी रूप से जी20 में शामिल हुआ और नेताओं ने 2030 तक नवीकरणीय ऊर्जा क्षमता को तीन गुना करने की दिशा में काम करने पर सहमति जताई।
- This September, as **BRICS Chair**, we saw the **New Delhi Declaration** adopted unanimously, backing a **BRICS Solar PV Cooperation Roadmap** and principles for **smart grids and storage**.

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इस सितंबर में **ब्रिक्स अध्यक्ष** के रूप में हमने **नई दिल्ली घोषणा** को सर्वसम्मति से अपनाते देखा, जिसमें **ब्रिक्स सौर पीवी सहयोग रोडमैप** तथा **स्मार्ट ग्रिड और भंडारण** के सिद्धांतों का समर्थन किया गया।

- The **International Solar Alliance**, launched by India and France in Paris in 2015, turns that agenda into delivery.
  भारत और फ्रांस द्वारा 2015 में पेरिस में शुरू किया गया **अंतरराष्ट्रीय सौर गठबंधन** इस एजेंडे को अमल में लाने का काम करता है।
- The first 1,000 GW of global solar power took 25 years; the next came in two.
  वैश्विक सौर ऊर्जा के पहले 1,000 गीगावाट तक पहुँचने में 25 वर्ष लगे; अगले 1,000 गीगावाट केवल दो वर्षों में जुड़ गए।
- With 130 signatory and member countries, **ISA** is helping build skills through a **Global Capability Centre**, an **AI-driven ISA Academy**, and centres of excellence in 17 countries, with capital from the $200-million **Africa Solar Facility**, managed with Africa50.
  130 हस्ताक्षरकर्ता और सदस्य देशों वाला **अंतरराष्ट्रीय सौर गठबंधन (ISA)** एक **वैश्विक क्षमता केंद्र**, **एआई-संचालित ISA अकादमी** और 17 देशों में उत्कृष्टता केंद्रों के माध्यम से कौशल विकसित करने में मदद कर रहा है; इसके लिए पूँजी 200 मिलियन डॉलर की **अफ्रीका सोलर फैसिलिटी** से मिल रही है, जिसका प्रबंधन Africa50 के साथ किया जाता है।
- The **Bharat Renewable Energy Summit & Expo 2026** at Bharat Mandapam on November 2-5, to be inaugurated by the Hon'ble Prime Minister, will host, for the first time, the **Ninth ISA Assembly** and the **Fourth International Conference on Green Hydrogen** together.
  माननीय प्रधानमंत्री द्वारा 2 से 5 नवंबर तक भारत मंडपम में उद्घाटित किए जाने वाले **भारत नवीकरणीय ऊर्जा शिखर सम्मेलन एवं एक्सपो 2026** में पहली बार **आईएसए की नौवीं सभा** और **हरित हाइड्रोजन पर चौथा अंतरराष्ट्रीय सम्मेलन** एक साथ आयोजित होंगे।
- With the participating countries and institutions, we will discuss what solar can do for them and how they can achieve **reliable power**, **energy security without imported fuel**, and **food security through solar irrigation**, all in the spirit of **Vasudhaiva Kutumbakam**.
  भाग लेने वाले देशों और संस्थानों के साथ हम चर्चा करेंगे कि सौर ऊर्जा उनके लिए क्या कर सकती है और वे **विश्वसनीय बिजली**, **आयातित ईंधन के बिना ऊर्जा सुरक्षा** तथा **सौर सिंचाई के माध्यम से खाद्य सुरक्षा** कैसे हासिल कर सकते हैं—यह सब **वसुधैव कुटुम्बकम्** की भावना के अनुरूप होगा।

PATRIOTIC IAS

What does the Binance hack mean for investors?

Who was responsible for the Binance hack, and what do investigators know about the attackers?

GS III: Economy

Sahana Venugopal

The story so far:

One of the world's top cryptocurrency exchange platforms, Binance, was hit by a cyberattack on October 29 that led to the loss of assets valued at over $6 billion.

How did the Binance hack take place?

On October 30, after independent crypto trackers posted warnings, Binance announced that it was aware of reports of a "potential security issue," but assured users that their funds were safe.

Binance then moved to pause deposits and withdrawals, promising they would resume after the security checks were complete – ideally within 48 hours. Deposits were later enabled again.

Hours later, Binance shared that the "security incident" led to estimated losses totalling around $6.3 billion. Adding that it worked with industry partners and other blockchain companies in order to freeze the stolen assets, Binance announced that around $3 billion had been frozen on-chain. Stablecoin companies Circle and Tether, which issue a more stable cryptocurrency pegged to the value of the U.S. dollar, said they froze assets linked to the hack.

Tether's CEO reported that Tether froze more than 1.567 billion USDT, while Circle's CEO announced that the company had frozen more than 800 million USDC. However, these statements have alienated some customers who believe in a 100% decentralised crypto system, where corporate leaders do not get involved in recovering other companies' lost funds.

Some crypto advocates, though, classified this as proof of the industry coming together to mitigate cybercrimes.

According to Binance's initial investigation, the hack "may involve a compromised DevOps engineer's laptop," through which the attacker was able to access a service container and submit unauthorised withdrawal transactions.

Binance co-CEO Richard Teng defended the company's security protocols on social media. Mr. Teng stressed that the hack was a complex one, and that the attacker did not use a sole engineer's permissions or exploit a "one-click" action. Binance later disclosed "additional points of breach."

Binance said it found no evidence of any wallet private keys being leaked, and committed to sharing a detailed technical post-mortem once the facts were verified.

Binance committed to covering the stolen funds through its Secure Asset Fund for Users (SAFU) and the corporate treasury. While $5 billion of the funds were already held in the exact token assets that were impacted, per the company, it is buying the remaining amount in token assets through market channels and OTC channels.

Who is behind the Binance hack?

The Binance hackers and their motives have not yet been confirmed. However, multiple crypto hackers have the backing of hostile states, with North Korean hackers often targeting crypto exchanges as a way to get around economic sanctions. The 2024 multi-million-dollar WazirX exchange hack, for example, was attributed to the North Korean Lazarus Group. Binance did not initially name a perpetrator or accuse any individuals. However, blockchain analytics platform Chainalysis said it observed funds, which were stolen by North Korea in another exploit, commingling with funds stolen from Binance. "We have a high degree of confidence that DPRK is responsible for the $6.4 billion hack of Binance," posted Chainalysis on X, attributing the attack to the TraderTraitor cybercrime group which has links to the Lazarus Group.

However, according to Chainalysis, the pattern of laundering the stolen assets suggested that the attackers were using automation to cover their tracks and loop funds through repeated addresses.

What does this mean for the sector?

Crypto hacks generally trigger widespread panic and anger; many traders know they are investing in a largely unregulated market and have few legal protections during a crisis. This time, social media users reacted with anger over learning that a compromised employee laptop was part of the security lapse. The Binance hack rattled the crypto markets, with the Bitcoin, Ethereum's Ether, and Binance-linked BNB cryptocurrencies seeing noticeable but not drastic price drops.

While Binance promised to weather the storm, it has already faced legal heat across jurisdictions. Take the U.S. Treasury, which in 2023 announced historic settlements with the exchange over its failure to stop and report suspicious transactions with terrorists, ransomware attackers, money launderers, criminals, and users in Iran, North Korea, Syria, and the Crimea region of Ukraine.

Now, the fact that the world's largest crypto exchange was exploited for billions of dollars will undoubtedly complicate Binance's already contentious operations.

02N11. What does the Binance hack mean for investors?
Binance हैक का निवेशकों के लिए क्या मतलब है?

- **One of the world's top cryptocurrency exchange platforms, Binance**, was hit by a cyberattack on October 29 that led to the loss of assets valued at over $6 billion.
  दुनिया के प्रमुख क्रिप्टोकरेंसी एक्सचेंज प्लेटफॉर्मों में से एक, Binance, पर 29 अक्टूबर को साइबर हमला हुआ, जिसमें 6 अरब डॉलर से अधिक मूल्य की परिसंपत्तियाँ खो गईं।

How did the Binance hack take place?
Binance हैक कैसे हुआ?

- On October 30, after independent crypto trackers posted warnings, Binance announced that it was aware of reports of a "potential security issue," but assured users that their funds were safe.
  30 अक्टूबर को, स्वतंत्र क्रिप्टो ट्रैकर्स द्वारा चेतावनियाँ जारी किए जाने के बाद Binance ने बताया कि उसे "संभावित सुरक्षा समस्या" की खबरों की जानकारी है, लेकिन उसने उपयोगकर्ताओं को आश्वस्त किया कि उनकी धनराशि सुरक्षित है।
- Binance then moved to pause deposits and withdrawals, promising they would resume after the security checks were complete — ideally within 48 hours.
  इसके बाद Binance ने जमा और निकासी रोक दी और कहा कि सुरक्षा जाँच पूरी होने के बाद—आदर्श रूप से 48 घंटे के भीतर—ये सेवाएँ फिर शुरू कर दी जाएँगी।
- Deposits were later enabled again.
  बाद में जमा की सुविधा फिर शुरू कर दी गई।
- Hours later, Binance shared that the "security incident" led to estimated losses totalling around $6.3 billion.
  कुछ घंटे बाद Binance ने बताया कि "सुरक्षा घटना" से लगभग 6.3 अरब डॉलर का अनुमानित नुकसान हुआ।
- Adding that it worked with industry partners and other blockchain companies in order to freeze the stolen assets, Binance announced that around $3 billion had been frozen on-chain.
  यह बताते हुए कि चोरी की गई परिसंपत्तियों को फ्रीज़ करने के लिए उसने उद्योग के साझेदारों और अन्य ब्लॉकचेन कंपनियों के साथ काम किया, Binance ने घोषणा की कि लगभग 3 अरब डॉलर की परिसंपत्तियाँ **ब्लॉकचेन पर फ्रीज़** कर दी गई थीं।
- Stablecoin companies Circle and Tether, which issue a more stable cryptocurrency pegged to the value of the U.S. dollar, said they froze assets linked to the hack.
  स्थिरमुद्रा जारी करने वाली कंपनियों Circle और Tether ने कहा कि उन्होंने हैक से जुड़ी परिसंपत्तियों को फ्रीज़

कर दिया। स्थिरमुद्रा एक ऐसी क्रिप्टोकरेंसी है जिसका मूल्य अमेरिकी डॉलर के मूल्य से जोड़ा जाता है और जो अपेक्षाकृत अधिक स्थिर रहती है।

- Tether's CEO reported that Tether froze more than 1.567 billion USDT, while Circle's CEO announced that the company had frozen more than 800 million USDC.
  Tether के मुख्य कार्यकारी अधिकारी ने बताया कि कंपनी ने 1.567 अरब USDT से अधिक राशि फ्रीज़ की, जबकि Circle के मुख्य कार्यकारी अधिकारी ने घोषणा की कि कंपनी ने 800 मिलियन USDC से अधिक राशि फ्रीज़ की।
- However, these statements have alienated some customers who believe in a 100% decentralised crypto system, where corporate leaders do not get involved in recovering other companies' lost funds.
  हालाँकि, इन बयानों से कुछ ग्राहक नाराज़ हुए हैं, जो पूरी तरह **विकेंद्रीकृत क्रिप्टो प्रणाली** में विश्वास करते हैं—ऐसी प्रणाली में कंपनियों के प्रमुख दूसरी कंपनियों की खोई हुई धनराशि वापस पाने के काम में दखल नहीं देते।
- Some crypto advocates, though, classified this as proof of the industry coming together to mitigate cybercrimes.
  हालाँकि, कुछ क्रिप्टो समर्थकों ने इसे साइबर अपराधों को कम करने के लिए उद्योग के एकजुट होने का प्रमाण माना।
- According to Binance's initial investigation, the hack "may involve a compromised DevOps engineer's laptop," through which the attacker was able to access a service container and submit unauthorised withdrawal transactions.
  Binance की प्रारंभिक जाँच के अनुसार, हैक में "संभवतः DevOps इंजीनियर का एक ऐसा लैपटॉप शामिल था जिसकी सुरक्षा से समझौता किया गया था"; इसके ज़रिए हमलावर एक सर्विस कंटेनर तक पहुँच सका और अनधिकृत निकासी लेनदेन भेज पाया।
- Binance co-CEO Richard Teng defended the company's security protocols on social media.
  Binance के सह-मुख्य कार्यकारी अधिकारी रिचर्ड टेंग ने सोशल मीडिया पर कंपनी के सुरक्षा प्रोटोकॉल का बचाव किया।
- Mr. Teng stressed that the hack was a complex one, and that the attacker did not use a sole engineer's permissions or exploit a "one-click" action.
  श्री टेंग ने ज़ोर देकर कहा कि यह एक जटिल हैक था और हमलावर ने किसी एक इंजीनियर के अधिकारों का इस्तेमाल नहीं किया था, न ही "एक-क्लिक" वाली किसी कार्रवाई का दुरुपयोग किया था।
- Binance later disclosed "additional points of breach."
  बाद में Binance ने "सुरक्षा में सेंध के अतिरिक्त बिंदुओं" का खुलासा किया।
- Binance said it found no evidence of any wallet private keys being leaked, and committed to sharing a detailed technical post-mortem once the facts were verified.
  Binance ने कहा कि उसे वॉलेट की निजी कुंजियों के लीक होने का कोई प्रमाण नहीं मिला और उसने तथ्य सत्यापित होने के बाद विस्तृत तकनीकी समीक्षा साझा करने का वादा किया।
- Binance committed to covering the stolen funds through its **Secure Asset Fund for Users (SAFU)** and the corporate treasury.
  Binance ने अपने **यूज़र्स के लिए सुरक्षित परिसंपत्ति कोष (SAFU)** और कंपनी के खज़ाने से चोरी हुई धनराशि की भरपाई करने का वादा किया।
- While $5 billion of the funds were already held in the exact token assets that were impacted, per the company, it is buying the remaining amount in token assets through market channels and OTC channels.
  कंपनी के अनुसार, प्रभावित टोकनों में से 5 अरब डॉलर पहले से ही उसके पास थे; शेष राशि के टोकन वह बाज़ार और ओवर-द-काउंटर (OTC) माध्यमों से खरीद रही है।

Who is behind the Binance hack?
Binance हैक के पीछे कौन है?

- The Binance hackers and their motives have not yet been confirmed.
  Binance हैक करने वालों और उनके उद्देश्यों की अभी पुष्टि नहीं हुई है।
- However, multiple crypto hackers have the backing of hostile states, with North Korean hackers often targeting crypto exchanges as a way to get around economic sanctions.
  हालाँकि, कई क्रिप्टो हैकरों को शत्रुतापूर्ण देशों का समर्थन प्राप्त है; उत्तर कोरियाई हैकर अक्सर आर्थिक प्रतिबंधों से बचने के लिए क्रिप्टो एक्सचेंजों को निशाना बनाते हैं।
- The 2024 multi-million-dollar WazirX exchange hack, for example, was attributed to the North Korean Lazarus Group.
  उदाहरण के लिए, 2024 में WazirX एक्सचेंज से हुई कई मिलियन डॉलर की चोरी का आरोप उत्तर कोरिया के Lazarus Group पर लगाया गया था।
- Binance did not initially name a perpetrator or accuse any individuals.
  शुरुआत में Binance ने किसी हमलावर का नाम नहीं बताया और न ही किसी व्यक्ति पर आरोप लगाया।
- However, blockchain analytics platform Chainalysis said it observed funds, which were stolen by North Korea in another exploit, commingling with funds stolen from Binance.
  हालाँकि, ब्लॉकचेन विश्लेषण मंच Chainalysis ने कहा कि उसने देखा कि उत्तर कोरिया द्वारा एक अन्य साइबर हमले में चुराई गई धनराशि, Binance से चुराई गई धनराशि के साथ मिल रही थी।
- "We have a high degree of confidence that DPRK is responsible for the $6.4 billion hack of Binance," posted Chainalysis on X, attributing the attack to the TraderTraitor cybercrime group which has links to the Lazarus Group.
  Chainalysis ने X पर लिखा, "हमें इस बात का बहुत अधिक भरोसा है कि Binance से 6.4 अरब डॉलर की चोरी के लिए डीपीआरके ज़िम्मेदार है।" उसने इस हमले का आरोप TraderTraitor साइबर अपराध समूह पर लगाया, जिसके Lazarus Group से संबंध हैं।
- However, according to Chainalysis, the pattern of laundering the stolen assets suggested that the attackers were using automation to cover their tracks and loop funds through repeated addresses.
  हालाँकि, Chainalysis के अनुसार, चोरी की गई परिसंपत्तियों को छिपाकर वैध दिखाने के तरीके से संकेत मिलता था कि हमलावर अपने निशान मिटाने और धनराशि को बार-बार अलग-अलग पतों से घुमाने के लिए स्वचालित प्रणालियों का उपयोग कर रहे थे।

What does this mean for the sector?
इसका क्रिप्टो क्षेत्र के लिए क्या मतलब है?

- Crypto hacks generally trigger widespread panic and anger; many traders know they are investing in a largely unregulated market and have few legal protections during a crisis.
  क्रिप्टो हैक से आम तौर पर व्यापक घबराहट और नाराज़गी पैदा होती है; कई कारोबारियों को पता है कि वे बड़े पैमाने पर **अनियमित बाज़ार** में निवेश कर रहे हैं और संकट के समय उन्हें बहुत कम कानूनी संरक्षण मिलता है।
- This time, social media users reacted with anger over learning that a compromised employee laptop was part of the security lapse.
  इस बार, यह जानकर सोशल मीडिया उपयोगकर्ताओं ने नाराज़गी जताई कि सुरक्षा में चूक के पीछे एक कर्मचारी का ऐसा लैपटॉप था जिसकी सुरक्षा से समझौता किया गया था।
- The Binance hack rattled the crypto markets, with the Bitcoin, Ethereum's Ether, and Binance-linked BNB cryptocurrencies seeing noticeable but not drastic price drops.
  Binance हैक से क्रिप्टो बाज़ार हिल गया; Bitcoin, Ethereum की Ether और Binance से जुड़ी BNB क्रिप्टोकरेंसी की कीमतों में उल्लेखनीय, लेकिन बहुत बड़ी नहीं, गिरावट आई।
- While Binance promised to weather the storm, it has already faced legal heat across jurisdictions.

जहाँ Binance ने संकट से उबरने का वादा किया है, वहीं उसे विभिन्न न्यायक्षेत्रों में पहले से ही कानूनी दबाव का सामना करना पड़ा है।

- Take the U.S. Treasury, which in 2023 announced historic settlements with the exchange over its failure to stop and report suspicious transactions with terrorists, ransomware attackers, money launderers, criminals, and users in Iran, North Korea, Syria, and the Crimea region of Ukraine.
उदाहरण के लिए, 2023 में अमेरिकी वित्त विभाग ने इस एक्सचेंज के साथ ऐतिहासिक समझौतों की घोषणा की थी। वजह यह थी कि वह आतंकवादियों, रैनसमवेयर हमलावरों, धनशोधन करने वालों, अपराधियों तथा ईरान, उत्तर कोरिया, सीरिया और यूक्रेन के क्रीमिया क्षेत्र के उपयोगकर्ताओं से जुड़े संदिग्ध लेनदेन रोकने और उनकी सूचना देने में विफल रहा था।
- Now, the fact that the world's largest crypto exchange was exploited for billions of dollars will undoubtedly complicate Binance's already contentious operations.
अब, दुनिया के सबसे बड़े क्रिप्टो एक्सचेंज से अरबों डॉलर की चोरी होने का तथ्य निश्चित रूप से Binance के पहले से ही विवादों में घिरे कामकाज को और जटिल बना देगा।

Sivakasi: sparkling opportunities ahead

In Sivakasi, the fireworks manufacturing hub of India in southern Tamil Nadu, Deepavali is the busiest season of the year. As the sale of crackers picks up slowly, **Sangeetha Kandavel** travels to the dusty town to see how it has benefited from the industry that has sustained it and allowed it to grow

GS III: Economy

Every few seconds, a car or a large vehicle bearing a number plate from another State rolls down Thiruthangal Road in Virudhunagar district. On either side, a riot of colourful posters screams out offers – 'new fancy crackers', 'peacock crackers', '30 shot for ₹259', '90% off', '50% off', 'buy one, get one free'. Inside cramped shops (along both sides of the road) adorned with product posters, salespersons are busy wooing customers entering town. Here, the countdown to the festival of lights is not only about celebration, but also the biggest business opportunity for the region.

With relaxations allowing the manufacture of next-generation joined green crackers, this small town, nicknamed *Kutty Japan* (mini-Japan), a title given by India's first Prime Minister Jawaharlal Nehru, is witnessing a healthy demand this year. The Supreme Court passed an order on September 30 this year, conditionally permitting cracker units to make next-generation joined green crackers.

However, consumers may have to pay more, with cracker prices rising by 10%-20%, depending on the brand. Manufacturers attribute the increase to higher raw material cost, partly driven by the impact of the war in Iran and the consequent crippling of sea trade.

Aluminium, which earlier cost ₹400 a kg, now sells for over ₹550 a kg, excluding taxes. Similarly, the price of potassium nitrate, another raw material, has increased from ₹80 to ₹120 a kg. The prices of many other chemicals and raw materials have also shot up.

"The fireworks industry has the potential to grow four-fold from its current size. And we are able to fulfil only 70% of the orders we receive. We are now getting several enquiries from other countries, and there is demand for exports," says Ganesan Panjurajan, president, Tamil Nadu Fireworks and Amorces Manufacturers' Association (TANFAMA).

"Growth has been phenomenal and the demand in the market is good," said a second-generation entrepreneur, Balaji T.K., who is also the managing partner of Sree Balaji Fireworks Industries.

Workforce and automation

One of the biggest challenges facing Sivakasi's fireworks industry is a shrinking workforce. As the younger generation moves out of the town in search of high-paying jobs and career opportunities, manufacturers are struggling to attract workers.

"From a young, even juvenile workforce in the fireworks industry, the average age of workers in the town and neighbouring regions has become around 50 years," says P.C.A. Asaithambi, who heads Lord Fireworks, which commenced business in 1952.

Low wages are a key deterrent, with workers saying they earn only ₹12,000 to ₹15,000 a month. The industry is increasingly relying on migrant workers. But manufacturers are cautious about allowing them into production areas, fearing that they could learn the trade and take the skills back to their home States. They are engaged only in the packaging, loading, and unloading functions.

The industry is also facing growing competition from States such as West Bengal, Uttar Pradesh, and Maharashtra operating their own fireworks units.

> The industry can grow four-fold from its current size. And we are able to fulfil only 70% of the orders. We are getting enquiries from other countries
>
> **GANESAN PANJURAJAN,** president, Tamil Nadu Fireworks and Amorces Manufacturers' Association

The fireworks industry has also been discussing mechanisation for the past two decades, but has made little progress. While a handful of large manufacturers are investing in technology to modernise production, many smaller units remain reluctant to make the transition, arguing that employing labour is cheaper than investing in machinery. "We have obtained approval to mechanise certain processes, including chorsa-cracker manufacturing, pellet making, and sparkler dipping. About 25% of our processes have been mechanised," says Mr. Ganesan.

Future of fireworks

The fireworks industry is now exploring opportunities in defence manufacturing, though the diversification is not entirely new. A handful of companies in Sivakasi have ventured into this sector, with others looking to follow suit.

"We are evaluating opportunities to supply products to defence organisations. We are exploring eight product categories, including marine distress flares (for emergency signalling at sea), handheld signal flares (for visual communication and emergency identification), anti-bird airfield pyrotechnic devices (for bird dispersal at airfields), and training and simulation pyrotechnics (for military training exercises)," Mr. Ganesan says.

Tamil Nadu Industries Minister S. Keerthana, who also represents the Sivakasi Assembly constituency, has been talking about bringing in a dedicated policy framework for the industry. She has also proposed a 'Sivakasi Pyrotechnics Common Facility Centre' (SPCFC) to modernise the sector and strengthen its global competitiveness.

"This is for facilitating the firecracker industries to improve their products, safety, traceability, and research and development, among others, and also to move up to the next ladder of value chain, such as exports and supplying to the defence and space sectors," the Minister said.

"Sivakasi's opportunity in the space sector is not to manufacture rockets, rocket motors, propellant grains, or launch vehicles. It is to become India's qualified supplier base for energetic devices and pyrotechnic subsystems used in launch, spaceport and range operations – the igniters, initiators, separation devices, flight-termination ordnance, signalling and range-safety pyrotechnics, and energetic activation components that every launch campaign consumes but no fireworks cluster has yet been organised to supply at qualified standards," she explained.

"People should know that the crackers that light up the skies are made by the women in Sivakasi. We want to bring in policy changes and create a digital ecosystem, as manufacturers still have to apply for licences offline. There are several aspects that we need to discuss with the Centre, and we are in talks with them," she says.

Economy of fireworks hub

Over the past decade, Sivakasi's fireworks entrepreneurs have quietly reinvented themselves. For many, fireworks, once the mainstay of their businesses, are now just one among several ventures. Families that started their journey in the industry more than 50 years ago have diversified into education, packaging, printing, energy, FMCG, and mining.

Some have expanded beyond Sivakasi into neighbouring districts, establishing information technology companies and startups. The town's business story is no longer just about crackers; it is about entrepreneurs learning to move beyond them.

A professor at Mepco Schlenk Engineering College, Sivakasi, who has been tracking business houses in the district, says the third and fourth generations of business families are increasingly moving abroad for higher education and career opportunities, with many showing little interest in taking over the fireworks businesses.

When the fireworks industry took root a century ago, entrepreneurs bought land in Sivakasi for just a few hundred rupees. Today, those investments have multiplied in value, with land prices soaring to several crores of rupees per acre. The case in Virudhunagar is also similar. "A few business houses here are also foraying into the real estate sector now," says a real estate agent at Sivakasi.

Consumer spending and purchasing power in Sivakasi have also been rising. The town today hosts showrooms of leading automobile brands, including electric vehicle manufacturers, while branded retail stores and lifestyle outlets are steadily expanding their presence, reflecting changing consumption patterns and growing aspirations.

While a handful of large manufacturers are investing in technology to modernise production, many smaller units are reluctant to make the transition, arguing that employing labour is cheaper than investing in machinery

Uneven development

But Sivakasi's story of prosperity and expanding businesses has another side. In the villages surrounding the town, families dependent on small cottage industries and smaller fireworks units continue to struggle to make ends meet. The contrast is stark: while the town's business houses diversify and consumer aspirations rise, children at some government schools still lack basic necessities such as clothes, shoes, and schoolbags. Women continue to shoulder the burden of earning for their families, working in fireworks units.

"Small fireworks units pay only ₹500 a day, and when it rains, we have no work," says Kumaran, whose wife works in a fireworks unit. "We need better jobs," he adds.

Ball park estimate

Fireworks manufacturers in Sivakasi have traditionally maintained a tight lid on their production figures, revenues, and profitability, rarely disclosing these details publicly. The annual market size details are released by TANFAMA, the industry association. These data again are a ballpark estimate.

TANFAMA members include 92 groups of companies covering 420 unit factories (each group will have multiple units). There are other bodies such as the Sivakasi Fireworks Manufacturers Association (SIFMA).

The fireworks industry is estimated to have a market size of ₹7,000 crore. Of this sum, the manufacturing segment accounts for a turnover of around ₹2,000 crore, with the value increasing as the products move through the wholesale, semi-wholesale, and retail channels, Mr. Ganesan clarifies.

For Sivakasi, the road ahead is not merely about lighting up the skies every Deepavali, but transforming itself into a modern, diversified, and globally competitive industrial hub.

The big picture

As the Supreme Court has allowed the manufacture of next-generation joined green crackers, Sivakasi and the surrounding region are witnessing a healthy demand for crackers this year

1. The domestic fireworks market reached a record ₹7,000 crore during Deepavali 2025 (₹6,000 crore baseline turnover; ₹7,000 crore peak year)
2. The domestic market is expected to sustain in the range of ₹6,000 crore–₹8,000 crore a year
3. India's wedding industry is valued at over ₹10 lakh crore a year; a growing segment (estimated 15%–20% premium) through FY2030, with growth contingent on regulatory clarity. Green cracker adoption remains the key variable
4. Approximately 1,000 Virudhunagar units have registered with NEERI for green cracker production. The certified green cracker segment is estimated to be growing at 15%–20% annually
5. Sivakasi's current export contribution is ₹180 crore–₹350 crore annually (3%-5% of output). China's Liuyang exports approximately ₹26,000 crore annually. India's fireworks export potential is conservatively estimated at ₹1,000 crore-₹2,500 crore within five years incorporates professional pyrotechnic displays. The IPL, Bollywood, and state-ceremony markets add to the demand for event pyrotechnics



Number of fireworks units: 1,160
• The number of units is increasing: In 2024, 22 new units opened, 20 in 2025, and 42 in 2026

Total workers employed in fireworks industry: 56,633 (including 33,375 women)

Number of fireworks accidents in Sivakasi from 2022 to Oct. 30, 2026: 104

Around 84 new fireworks factory licences were given from 2024 to Oct. 30, 2026

02N11. Sivakasi: sparkling opportunities ahead
शिवकाशी: आगे चमकते अवसर

- In **Sivakasi**, the fireworks manufacturing hub of India in southern Tamil Nadu, **Deepavali** is the busiest season of the year.
  दक्षिणी तमिलनाडु में स्थित भारत के आतिशबाज़ी निर्माण केंद्र **शिवकाशी** में **दीपावली** वर्ष का सबसे व्यस्त समय होता है।
- As the sale of crackers picks up slowly, **Sangeetha Kandavel** travels to the dusty town to see how it has benefited from the industry that has sustained it and allowed it to grow
  पटाखों की बिक्री धीरे-धीरे बढ़ने के बीच, **संगीता कंदावेल** इस धूलभरे नगर का दौरा करती हैं, यह देखने के लिए कि उस उद्योग से इसे कैसे लाभ हुआ है, जिसने इसकी आजीविका को बनाए रखा और इसे विकसित होने का अवसर दिया।
- Every few seconds, a car or a large vehicle bearing a number plate from another State rolls down **Thiruthangal Road in Virudhunagar district**.
  हर कुछ सेकंड में दूसरे राज्य की नंबर प्लेट वाली कोई कार या बड़ा वाहन **विरुधुनगर जिले की थिरुथंगल रोड** से गुज़रता है।
- On either side, a riot of colourful posters screams out offers — **'new fancy crackers', 'peacock crackers', '30 shot for ₹259', '90% off', '50% off', 'buy one, get one free'**.
  दोनों ओर रंग-बिरंगे पोस्टरों की भरमार ज़ोर-शोर से ऑफ़र बताती है — **'नए फैंसी पटाखे', 'मोर वाले पटाखे', '₹259 में 30 शॉट', '90% छूट', '50% छूट', 'एक खरीदें, एक मुफ़्त पाएँ'**।
- Inside cramped shops (along both sides of the road) adorned with product posters, salespersons are busy **wooing customers entering town**.
  उत्पादों के पोस्टरों से सजी तंग दुकानों के भीतर (सड़क के दोनों ओर), विक्रेता **नगर में आने वाले ग्राहकों को आकर्षित करने** में व्यस्त हैं।
- Here, the countdown to the **festival of lights** is not only about celebration, but also the **biggest business opportunity for the region**.
  यहाँ **प्रकाश पर्व** की उलटी गिनती केवल उत्सव से जुड़ी नहीं है, बल्कि यह **क्षेत्र के लिए सबसे बड़ा कारोबारी अवसर** भी है।
- With relaxations allowing the manufacture of **next-generation joined green crackers**, this small town, nicknamed **Kutty Japan (mini-Japan)**, a title given by India's first Prime Minister **Jawaharlal Nehru**, is witnessing a healthy demand this year.
  अगली पीढ़ी के जुड़े हुए हरित पटाखों के निर्माण की अनुमति देने वाली छूटों के साथ, यह छोटा नगर इस वर्ष अच्छी माँग देख रहा है, जिसे भारत के पहले प्रधानमंत्री **जवाहरलाल नेहरू** ने **कुट्टी जापान (छोटा जापान)** की उपाधि दी थी।
- The **Supreme Court** passed an order on **September 30 this year**, conditionally permitting cracker units to make **next-generation joined green crackers**.
  सर्वोच्च न्यायालय ने **इस वर्ष 30 सितंबर** को एक आदेश पारित करके पटाखा इकाइयों को **अगली पीढ़ी के जुड़े हुए हरित पटाखे** बनाने की सशर्त अनुमति दी।
- However, consumers may have to pay more, with cracker prices rising by **10%-20%**, depending on the brand.
  हालाँकि उपभोक्ताओं को अधिक भुगतान करना पड़ सकता है, क्योंकि ब्रांड के अनुसार पटाखों की कीमतें **10%-20%** बढ़ रही हैं।
- Manufacturers attribute the increase to **higher raw material cost**, partly driven by the impact of the **war in Iran** and the consequent crippling of sea trade.
  निर्माता इस वृद्धि का कारण **कच्चे माल की बढ़ी हुई लागत** बताते हैं, जो आंशिक रूप से **ईरान में युद्ध** के प्रभाव और उसके परिणामस्वरूप समुद्री व्यापार के बुरी तरह बाधित होने से बढ़ी है।

- **Aluminium**, which earlier cost **₹400 a kg**, now sells for over **₹550 a kg**, excluding taxes.
  एल्युमिनियम, जिसकी कीमत पहले **₹400 प्रति किलोग्राम** थी, अब करों को छोड़कर **₹550 प्रति किलोग्राम से अधिक** पर बिक रहा है।
- Similarly, the price of **potassium nitrate**, another raw material, has increased from **₹80 to ₹120 a kg**.
  इसी प्रकार, एक अन्य कच्चे माल **पोटैशियम नाइट्रेट** की कीमत **₹80 से बढ़कर ₹120 प्रति किलोग्राम** हो गई है।
- The prices of many other **chemicals and raw materials** have also shot up.
  कई अन्य **रसायनों और कच्चे माल** की कीमतें भी तेज़ी से बढ़ी हैं।
- "The **fireworks industry** has the potential to grow **four-fold from its current size**.
  "**आतिशबाज़ी उद्योग** में **अपने वर्तमान आकार से चार गुना बढ़ने** की क्षमता है।
- And we are able to fulfil only **70% of the orders we receive**.
  और हम **प्राप्त होने वाले ऑर्डरों में से केवल 70%** ही पूरे कर पा रहे हैं।
- We are now getting several enquiries from other countries, and there is **demand for exports**," says **Ganesan Panjurajan**, president, **Tamil Nadu Fireworks and Amorces Manufacturers' Association (TANFAMA)**.
  अब हमें दूसरे देशों से कई पूछताछ मिल रही हैं और **निर्यात की माँग** है," **तमिलनाडु फ़ायरवर्क्स एंड अमोर्स मैन्युफैक्चरर्स एसोसिएशन (टैनफामा)** के अध्यक्ष **गणेशन पंजुराजन** कहते हैं।
- "Growth has been phenomenal and the **demand in the market is good**," said a second-generation entrepreneur, **Balaji T.K.**, who is also the managing partner of **Sree Balaji Fireworks Industries**.
  "वृद्धि असाधारण रही है और **बाज़ार में माँग अच्छी है**," दूसरी पीढ़ी के उद्यमी **बालाजी टी.के.** ने कहा, जो **श्री बालाजी फ़ायरवर्क्स इंडस्ट्रीज़** के प्रबंध भागीदार भी हैं।

Workforce and automation
कार्यबल और स्वचालन

- One of the biggest challenges facing Sivakasi's fireworks industry is a **shrinking workforce**.
  शिवकाशी के आतिशबाज़ी उद्योग के सामने सबसे बड़ी चुनौतियों में से एक **कार्यबल का कम होना** है।
- As the younger generation moves out of the town in search of **high-paying jobs and career opportunities**, manufacturers are struggling to attract workers.
  युवा पीढ़ी के **अधिक वेतन वाली नौकरियों और करियर के अवसरों** की तलाश में नगर से बाहर जाने के कारण निर्माता श्रमिकों को आकर्षित करने में कठिनाई का सामना कर रहे हैं।
- "From a young, even juvenile workforce in the fireworks industry, the **average age of workers** in the town and neighbouring regions has become around **50 years**," says **P.C.A. Asaithambi**, who heads **Lord Fireworks**, which commenced business in **1952**.
  "आतिशबाज़ी उद्योग में कभी युवा और यहाँ तक कि किशोर कार्यबल हुआ करता था, लेकिन अब नगर और आसपास के क्षेत्रों में **श्रमिकों की औसत आयु** लगभग **50 वर्ष** हो गई है," **पी.सी.ए. असैथंबी** कहते हैं, जो **1952** में कारोबार शुरू करने वाली **लॉर्ड फ़ायरवर्क्स** के प्रमुख हैं।
- **Low wages** are a key deterrent, with workers saying they earn only **₹12,000 to ₹15,000 a month**.
  कम वेतन एक प्रमुख बाधा है और श्रमिकों का कहना है कि वे महीने में केवल **₹12,000 से ₹15,000** कमाते हैं।
- The industry is increasingly relying on **migrant workers**.
  उद्योग की निर्भरता **प्रवासी श्रमिकों** पर लगातार बढ़ रही है।
- But manufacturers are cautious about allowing them into **production areas**, fearing that they could learn the trade and take the skills back to their home States.
  लेकिन निर्माता उन्हें **उत्पादन क्षेत्रों** में प्रवेश देने को लेकर सतर्क हैं, क्योंकि उन्हें आशंका है कि वे यह काम सीखकर इन कौशलों को अपने गृह राज्यों में ले जा सकते हैं।
- They are engaged only in the **packaging, loading, and unloading functions**.
  उन्हें केवल **पैकेजिंग, सामान चढ़ाने और उतारने के कार्यों** में लगाया जाता है।

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- The industry is also facing growing competition from States such as **West Bengal, Uttar Pradesh, and Maharashtra** operating their own fireworks units.
  उद्योग को **पश्चिम बंगाल, उत्तर प्रदेश और महाराष्ट्र** जैसे राज्यों से भी बढ़ती प्रतिस्पर्धा का सामना करना पड़ रहा है, जहाँ अपनी आतिशबाज़ी इकाइयाँ संचालित हो रही हैं।
- The fireworks industry has also been discussing **mechanisation for the past two decades**, but has made little progress.
  आतिशबाज़ी उद्योग **पिछले दो दशकों से मशीनीकरण** पर भी चर्चा कर रहा है, लेकिन इसमें बहुत कम प्रगति हुई है।
- While a handful of large manufacturers are investing in technology to **modernise production**, many smaller units remain reluctant to make the transition, arguing that employing labour is cheaper than investing in machinery.
  जहाँ कुछ बड़े निर्माता **उत्पादन के आधुनिकीकरण** के लिए प्रौद्योगिकी में निवेश कर रहे हैं, वहीं कई छोटी इकाइयाँ यह बदलाव अपनाने से हिचकिचा रही हैं; उनका तर्क है कि मशीनों में निवेश करने की तुलना में श्रमिकों को काम पर रखना सस्ता है।
- "We have obtained approval to **mechanise certain processes**, including **chorsacracker manufacturing, pellet making, and sparkler dipping**.
  "हमें **कुछ प्रक्रियाओं के मशीनीकरण** की स्वीकृति मिल गई है, जिनमें **चोरसा पटाखों का निर्माण, छर्रे बनाना और फुलझड़ियों को मिश्रण में डुबोना** शामिल है।
- About **25% of our processes** have been mechanised," says Mr. Ganesan.
  हमारी लगभग **25% प्रक्रियाओं** का मशीनीकरण हो चुका है," श्री गणेशन कहते हैं।

Future of fireworks
आतिशबाज़ी उद्योग का भविष्य

- The fireworks industry is now exploring opportunities in **defence manufacturing**, though the diversification is not entirely new.
  आतिशबाज़ी उद्योग अब **रक्षा विनिर्माण** में अवसर तलाश रहा है, हालाँकि यह विविधीकरण पूरी तरह नया नहीं है।
- A handful of companies in Sivakasi have ventured into this sector, with others looking to follow suit.
  शिवकाशी की कुछ कंपनियाँ इस क्षेत्र में प्रवेश कर चुकी हैं और अन्य भी उनका अनुसरण करना चाहती हैं।
- "We are evaluating opportunities to **supply products to defence organisations**.
  "हम **रक्षा संगठनों को उत्पादों की आपूर्ति करने** के अवसरों का मूल्यांकन कर रहे हैं।
- We are exploring **eight product categories**, including **marine distress flares** (for emergency signalling at sea), **handheld signal flares** (for visual communication and emergency identification), **anti-bird airfield pyrotechnic devices** (for bird dispersal at airfields), and **training and simulation pyrotechnics** (for military training exercises)," Mr. Ganesan says.
  हम **आठ उत्पाद श्रेणियों** में अवसर तलाश रहे हैं, जिनमें **समुद्री संकट संकेत फ़्लेयर** (समुद्र में आपातकालीन संकेत देने के लिए), **हाथ में पकड़े जाने वाले संकेत फ़्लेयर** (दृश्य संचार और आपातकालीन पहचान के लिए), **हवाई अड्डों पर पक्षियों को भगाने वाले आतिशबाज़ीय उपकरण** (हवाई अड्डों से पक्षियों को तितर-बितर करने के लिए) तथा **प्रशिक्षण और अनुकरण संबंधी आतिशबाज़ीय उपकरण** (सैन्य प्रशिक्षण अभ्यासों के लिए) शामिल हैं," श्री गणेशन कहते हैं।
- Tamil Nadu Industries Minister **S. Keerthana**, who also represents the **Sivakasi Assembly constituency**, has been talking about bringing in a **dedicated policy framework for the industry**.
  तमिलनाडु की उद्योग मंत्री **एस. कीर्तना**, जो **शिवकाशी विधानसभा क्षेत्र** का भी प्रतिनिधित्व करती हैं, उद्योग के लिए **एक समर्पित नीतिगत ढाँचा** लाने की बात करती रही हैं।

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- She has also proposed a **'Sivakasi Pyrotechnics Common Facility Centre' (SPCFC)** to modernise the sector and strengthen its global competitiveness.
  उन्होंने इस क्षेत्र के आधुनिकीकरण और इसकी वैश्विक प्रतिस्पर्धात्मकता को मज़बूत करने के लिए **'शिवकाशी पायरोटेक्निक्स कॉमन फ़ैसिलिटी सेंटर' (एसपीसीएफसी)** का प्रस्ताव भी रखा है।
- "This is for facilitating the firecracker industries to improve their **products, safety, traceability, and research and development**, among others, and also to move up to the next ladder of
  "इसका उद्देश्य पटाखा उद्योगों को अन्य बातों के साथ-साथ अपने **उत्पादों, सुरक्षा, पता लगाने की क्षमता तथा अनुसंधान और विकास** में सुधार करने में सुविधा प्रदान करना और साथ ही अगले पायदान की ओर आगे बढ़ाना है…
- value chain, such as **exports** and supplying to the **defence and space sectors**," the Minister said.
  मंत्री ने कहा, "मूल्य श्रृंखला, जैसे **निर्यात** और **रक्षा तथा अंतरिक्ष क्षेत्रों** को आपूर्ति करना।"
- "Sivakasi's opportunity in the **space sector** is not to manufacture rockets, rocket motors, propellant grains, or launch vehicles.
  "**अंतरिक्ष क्षेत्र** में शिवकाशी के लिए अवसर रॉकेट, रॉकेट मोटर, प्रणोदक ग्रेन या प्रक्षेपण यान बनाने में नहीं है।
- It is to become India's **qualified supplier base for energetic devices and pyrotechnic subsystems** used in launch, spaceport and range operations — the igniters, initiators, separation devices, flight-termination ordnance, signalling and range-safety pyrotechnics, and energetic activation components that every launch campaign consumes but no fireworks cluster has yet been organised to supply at qualified standards," she explained.
  उन्होंने समझाया, "यह अवसर प्रक्षेपण, अंतरिक्ष प्रक्षेपण केंद्र और प्रक्षेपण परिक्षेत्र के संचालन में उपयोग होने वाले **ऊर्जावान उपकरणों और आतिशबाज़ी तकनीक आधारित उपतंत्रों के लिए भारत का योग्य आपूर्तिकर्ता आधार** बनने में है—जैसे प्रज्वालक, आरंभक, पृथक्करण उपकरण, उड़ान समाप्त करने वाली विस्फोटक प्रणालियाँ, संकेत देने और प्रक्षेपण परिक्षेत्र की सुरक्षा से संबंधित आतिशबाज़ी उपकरण तथा ऊर्जावान सक्रियण घटक, जिनका प्रत्येक प्रक्षेपण अभियान में उपयोग होता है, लेकिन निर्धारित योग्यता मानकों के अनुरूप इनकी आपूर्ति के लिए अभी तक किसी आतिशबाज़ी उद्योग समूह को संगठित नहीं किया गया है।"
- "People should know that the crackers that light up the skies are made by the **women in Sivakasi**.
  "लोगों को पता होना चाहिए कि आकाश को रोशन करने वाले पटाखे **शिवकाशी की महिलाओं** द्वारा बनाए जाते हैं।
- We want to bring in **policy changes** and create a **digital ecosystem**, as manufacturers still have to apply for licences offline.
  हम **नीतिगत बदलाव** लाना और एक **डिजिटल पारिस्थितिकी तंत्र** बनाना चाहते हैं, क्योंकि निर्माताओं को अब भी लाइसेंस के लिए ऑफलाइन आवेदन करना पड़ता है।
- There are several aspects that we need to discuss with the **Centre**, and we are in talks with them," she says.
  वह कहती हैं, "ऐसे कई पहलू हैं जिन पर हमें **केंद्र सरकार** से चर्चा करनी है, और हम उनके साथ बातचीत कर रहे हैं।"

Economy of fireworks hub
आतिशबाज़ी केंद्र की अर्थव्यवस्था

- Over the past decade, **Sivakasi's fireworks entrepreneurs** have quietly reinvented themselves.
  पिछले एक दशक में **शिवकाशी के आतिशबाज़ी उद्यमियों** ने चुपचाप अपने व्यवसायों को नया स्वरूप दिया है।
- For many, fireworks, once the mainstay of their businesses, are now just one among several ventures.

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कई उद्यमियों के लिए आतिशबाज़ी, जो कभी उनके व्यवसायों का मुख्य आधार थी, अब अनेक व्यावसायिक उपक्रमों में से केवल एक है।

- Families that started their journey in the industry more than **50 years ago** have diversified into **education, packaging, printing, energy, FMCG, and mining**.
  इस उद्योग में **50 वर्ष से भी अधिक समय पहले** अपनी यात्रा शुरू करने वाले परिवारों ने **शिक्षा, पैकेजिंग, मुद्रण, ऊर्जा, दैनिक उपयोग की उपभोक्ता वस्तुओं (FMCG) और खनन** जैसे क्षेत्रों में अपने व्यवसायों का विविधीकरण किया है।
- Some have expanded beyond Sivakasi into neighbouring districts, establishing **information technology companies and startups**.
  कुछ उद्यमियों ने शिवकाशी से आगे पड़ोसी जिलों में विस्तार करते हुए **सूचना प्रौद्योगिकी कंपनियाँ और स्टार्टअप** स्थापित किए हैं।
- The town's business story is no longer just about crackers; it is about entrepreneurs learning to move beyond them.
  इस नगर की व्यावसायिक कहानी अब केवल पटाखों तक सीमित नहीं है; यह उद्यमियों के उनसे आगे बढ़ना सीखने की कहानी है।
- A professor at **Mepco Schlenk Engineering College, Sivakasi**, who has been tracking business houses in the district, says the **third and fourth generations** of business families are increasingly moving abroad for higher education and career opportunities, with many showing little interest in taking over the fireworks businesses.
  जिले के व्यावसायिक घरानों की गतिविधियों पर नज़र रखने वाले **मेप्को श्लेंक इंजीनियरिंग कॉलेज, शिवकाशी** के एक प्रोफेसर का कहना है कि व्यावसायिक परिवारों की **तीसरी और चौथी पीढ़ियाँ** उच्च शिक्षा और करियर के अवसरों के लिए तेजी से विदेश जा रही हैं, और उनमें से कई आतिशबाज़ी व्यवसायों को सँभालने में बहुत कम रुचि दिखा रही हैं।
- When the fireworks industry took root **a century ago**, entrepreneurs bought land in Sivakasi for just a few hundred rupees.
  जब **एक शताब्दी पहले** आतिशबाज़ी उद्योग की नींव पड़ी थी, तब उद्यमियों ने शिवकाशी में केवल कुछ सौ रुपये में ज़मीन खरीदी थी।
- Today, those investments have multiplied in value, with **land prices** soaring to several crores of rupees per acre.
  आज उन निवेशों का मूल्य कई गुना बढ़ गया है और **ज़मीन की कीमतें** कई करोड़ रुपये प्रति एकड़ तक पहुँच गई हैं।
- The case in **Virudhunagar** is also similar.
  विरुधुनगर में भी स्थिति ऐसी ही है।
- "A few business houses here are also foraying into the **real estate sector** now," says a real estate agent at Sivakasi.
  शिवकाशी के एक रियल एस्टेट एजेंट का कहना है, "यहाँ के कुछ व्यावसायिक घराने अब **रियल एस्टेट क्षेत्र** में भी प्रवेश कर रहे हैं।"
- **Consumer spending and purchasing power** in Sivakasi have also been rising.
  शिवकाशी में **उपभोक्ता व्यय और क्रय शक्ति** भी बढ़ रही है।
- The town today hosts showrooms of leading automobile brands, including **electric vehicle manufacturers**, while branded retail stores and lifestyle outlets are steadily expanding their presence, reflecting changing consumption patterns and growing aspirations.
  आज इस नगर में **इलेक्ट्रिक वाहन निर्माताओं** सहित प्रमुख वाहन ब्रांडों के शोरूम मौजूद हैं, जबकि ब्रांडेड खुदरा स्टोर और जीवनशैली से संबंधित वस्तुओं के बिक्री केंद्र लगातार अपनी उपस्थिति बढ़ा रहे हैं, जो उपभोग के बदलते स्वरूप और बढ़ती आकांक्षाओं को दर्शाता है।

Uneven development
असमान विकास

- But Sivakasi's story of prosperity and expanding businesses has another side.
  लेकिन शिवकाशी की समृद्धि और फैलते व्यवसायों की कहानी का एक दूसरा पक्ष भी है।
- In the villages surrounding the town, families dependent on **small cottage industries and smaller fireworks units** continue to struggle to make ends meet.
  नगर के आसपास के गाँवों में **छोटे कुटीर उद्योगों और छोटी आतिशबाज़ी इकाइयों** पर निर्भर परिवार अब भी अपनी बुनियादी ज़रूरतें पूरी करने के लिए संघर्ष कर रहे हैं।
- The contrast is stark: while the town's business houses diversify and consumer aspirations rise, children at some government schools still lack **basic necessities such as clothes, shoes, and schoolbags**.
  यह अंतर स्पष्ट है: जहाँ नगर के व्यावसायिक घराने अपने व्यवसायों का विविधीकरण कर रहे हैं और उपभोक्ताओं की आकांक्षाएँ बढ़ रही हैं, वहीं कुछ सरकारी विद्यालयों के बच्चों के पास अब भी **कपड़े, जूते और स्कूल बैग जैसी बुनियादी आवश्यक वस्तुएँ** नहीं हैं।
- Women continue to shoulder the burden of earning for their families, working in **fireworks units**.
  महिलाएँ **आतिशबाज़ी इकाइयों** में काम करते हुए अपने परिवारों के लिए आय अर्जित करने का बोझ अब भी उठा रही हैं।
- "Small fireworks units pay only **₹500 a day**, and when it rains, we have no work," says Kumaran, whose wife works in a fireworks unit.
  कुमारन, जिनकी पत्नी एक आतिशबाज़ी इकाई में काम करती हैं, कहते हैं, "छोटी आतिशबाज़ी इकाइयाँ केवल **₹500 प्रतिदिन** देती हैं, और जब बारिश होती है, तो हमारे पास कोई काम नहीं होता।"
- "We need **better jobs**," he adds.
  वह आगे कहते हैं, "हमें **बेहतर नौकरियाँ** चाहिए।"

Ball park estimate
मोटा-मोटा अनुमान

- Fireworks manufacturers in Sivakasi have traditionally maintained a tight lid on their **production figures, revenues, and profitability**, rarely disclosing these details publicly.
  शिवकाशी के आतिशबाज़ी निर्माताओं ने परंपरागत रूप से अपने **उत्पादन के आँकड़ों, राजस्व और लाभप्रदता** को अत्यंत गोपनीय रखा है और इन विवरणों को सार्वजनिक रूप से शायद ही कभी उजागर किया है।
- The annual market size details are released by **TANFAMA**, the industry association.
  बाज़ार के वार्षिक आकार का विवरण उद्योग संघ **TANFAMA** द्वारा जारी किया जाता है।
- These data again are a **ballpark estimate**.
  ये आँकड़े भी एक **मोटा-मोटा अनुमान** ही हैं।
- **TANFAMA** members include **92 groups of companies covering 420 unit factories** (each group will have multiple units).
  TANFAMA के सदस्यों में **कंपनियों के 92 समूह शामिल हैं, जिनके अंतर्गत 420 कारखाना इकाइयाँ आती हैं** (प्रत्येक समूह की कई इकाइयाँ होती हैं)।
- There are other bodies such as the **Sivakasi Fireworks Manufacturers Association (SIFMA)**.
  शिवकाशी फायरवर्क्स मैन्युफैक्चरर्स एसोसिएशन (SIFMA) जैसे अन्य संगठन भी हैं।
- The fireworks industry is estimated to have a market size of **₹7,000 crore**.
  आतिशबाज़ी उद्योग के बाज़ार का आकार अनुमानतः **₹7,000 करोड़** है।
- Of this sum, the **manufacturing segment** accounts for a turnover of around **₹2,000 crore**, with the value increasing as the products move through the wholesale, semi-wholesale, and retail channels, Mr. Ganesan clarifies.
  श्री गणेशन स्पष्ट करते हैं कि इस राशि में **विनिर्माण क्षेत्र** का कारोबार लगभग **₹2,000 करोड़** है और उत्पादों के थोक, अर्ध-थोक तथा खुदरा माध्यमों से आगे बढ़ने के साथ उनका मूल्य बढ़ता जाता है।

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- For Sivakasi, the road ahead is not merely about lighting up the skies every Deepavali, but transforming itself into a **modern, diversified, and globally competitive industrial hub**.
शिवकाशी के लिए आगे की राह केवल प्रत्येक दीपावली पर आकाश को रोशन करने तक सीमित नहीं है, बल्कि स्वयं को एक **आधुनिक, विविधीकृत और वैश्विक स्तर पर प्रतिस्पर्धी औद्योगिक केंद्र** में बदलने की है।

GS Paper III: Environment	02 November 2026
TOPICS COVERED	
02N11	Hell chicken: a fruity dino 'नरक का मुर्गा': फल खाने वाला डायनासोर

Hell chicken: a fruity dino

GS III: Environment
Vasudevan Mukunth

Flowering plants evolved during the Cretaceous period (145-66 million years ago) and radically changed terrestrial ecosystems. Did this affect the dinosaurs as well? A new study in *Nature Communications* has answered in the affirmative, based on a small, bird-like dinosaur from the Hell Creek Formation in North America its authors found.

The species is a previously unknown member of the caenagnathids — toothless theropod dinosaurs belonging to the oviraptorosaurs.

The fossil described in the study, dubbed *Infernogallus jamesi*, had a nearly complete skull. The team estimated the animal was an adult when it died and weighed around 12 kg. 'Infernogallus' means 'hell chicken'.

CT scans and reconstructions of the jaw muscles revealed an unusual feeding apparatus. Unlike most non-avian theropods, whose jaws moved up and down, *I. jamesi* could slide its lower jaw forwards and backwards by up to 1.5 cm. Its jaw muscles also seemed to favour this motion rather than developing a strong downward bite.

As a result, the team figured that tough, fibrous vegetation or hard seeds couldn't have been an important part of the *I. jamesi* died. Instead, the researchers found the closest likeness in its jaw's motion to be among the Pesquet's parrots in New Guinea, which



The species is a previously unknown member of the caenagnathids. DANIELLE DUFAULT

strip fruit pulp from seeds and chew the soft flesh in its mouth.

Thus, they have hypothesised *I. jamesi* ate lots of fleshy fruits and other soft plant tissues.

Prior research has found that the caenagnathids originated shortly after flowering plants began producing fruits, and their more elaborate feeding adaptations broadly coincided with when the fruits became bigger and more diverse.

For feedback and suggestions
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02N11. Hell chicken: a fruity dino
'नरक का मुर्गा': फल खाने वाला डायनासोर

- Flowering plants evolved during the Cretaceous period (145-66 million years ago) and radically changed terrestrial ecosystems.
फूलदार पौधों का विकास क्रिटेशियस काल (145-66 मिलियन वर्ष पहले) में हुआ और उन्होंने स्थलीय पारिस्थितिक तंत्रों को पूरी तरह बदल दिया।
- Did this affect the dinosaurs as well?
क्या इसका असर डायनासोरों पर भी पड़ा?
- A new study in Nature Communications has answered in the affirmative, based on a small, bird-like dinosaur from the Hell Creek Formation in North America that its authors found.
नेचर कम्युनिकेशन्स में प्रकाशित एक नए अध्ययन ने इसका उत्तर हाँ में दिया है; यह निष्कर्ष उत्तरी अमेरिका के हेल क्रीक फ़ॉर्मेशन में मिले एक छोटे, पक्षी-सदृश डायनासोर पर आधारित है।
- The species is a previously unknown member of the **caenagnathids** — toothless theropod dinosaurs belonging to the **oviraptorosaurs**.
यह प्रजाति **सीनाग्नैथिड्स** की पहले अज्ञात सदस्य है—ये दाँत-विहीन थेरोपॉड डायनासोर **ओविरैप्टोरोसॉर** समूह के हैं।
- The fossil described in the study, dubbed **Infernogallus jamesi**, had a nearly complete skull.
अध्ययन में वर्णित जीवाश्म, जिसे **Infernogallus jamesi** नाम दिया गया, की खोपड़ी लगभग पूरी थी।
- The team estimated the animal was an adult when it died and weighed around 12 kg.
शोध दल ने अनुमान लगाया कि मृत्यु के समय यह जीव वयस्क था और इसका वज़न लगभग 12 किलोग्राम था।

- 'Infernogallus' means 'hell chicken'.
  'Infernogallus' का अर्थ 'नरक का मुर्गा' है।
- CT scans and reconstructions of the jaw muscles revealed an unusual feeding apparatus.
  CT स्कैन और जबड़े की मांसपेशियों के पुनर्निर्माण से एक असामान्य **भोजन-ग्रहण संरचना** का पता चला।
- Unlike most non-avian theropods, whose jaws moved up and down, I. jamesi could slide its lower jaw forwards and backwards by up to 1.5 cm.
  अधिकांश गैर-पक्षी थेरोपॉड के जबड़े ऊपर-नीचे चलते थे, जबकि I. jamesi अपना निचला जबड़ा 1.5 सेंटीमीटर तक आगे-पीछे खिसका सकता था।
- Its jaw muscles also seemed to favour this motion rather than developing a strong downward bite.
  उसके जबड़े की मांसपेशियाँ भी ज़ोरदार नीचे की ओर काटने के बजाय इस गति के अनुकूल दिखाई दीं।
- As a result, the team figured that tough, fibrous vegetation or hard seeds couldn't have been an important part of the I. jamesi diet.
  इस आधार पर शोध दल ने निष्कर्ष निकाला कि कठोर, रेशेदार वनस्पति या सख़्त बीज I. jamesi के आहार का महत्त्वपूर्ण हिस्सा नहीं रहे होंगे।
- Instead, the researchers found the closest likeness in its jaw's motion to be among the Pesquet's parrots in New Guinea, which strip fruit pulp from seeds and chew the soft flesh in its mouth.
  इसके बजाय, शोधकर्ताओं को उसके जबड़े की गति की सबसे निकट समानता न्यू गिनी के पेस्केट तोतों में मिली, जो बीजों से फल का गूदा अलग करते हैं और मुँह में उसके मुलायम गूदे को चबाते हैं।
- Thus, they have hypothesised I. jamesi ate lots of fleshy fruits and other soft plant tissues.
  इसलिए, उन्होंने परिकल्पना की है कि I. jamesi गूदेदार फल और पौधों के अन्य मुलायम हिस्से बड़ी मात्रा में खाता था।
- Prior research has found that the caenagnathids originated shortly after flowering plants began producing fruits, and their more elaborate feeding adaptations broadly coincided with when the fruits became bigger and more diverse.
  पहले के शोध से पता चला है कि फूलदार पौधों में फल आने शुरू होने के कुछ ही समय बाद सीनाग्नैथिड्स का उद्भव हुआ; उनके भोजन ग्रहण करने के अधिक विकसित अनुकूलन मोटे तौर पर उस समय सामने आए जब फल बड़े और अधिक विविध होने लगे।

PCS Special:	02 November 2026
02N11	TVK-led government observes November 1 as Tamil Nadu Day टीवीके के नेतृत्व वाली सरकार ने 1 नवंबर को तमिलनाडु दिवस मनाया
02N11	Sindhu, Lakshya make it a double delight for India सिंधु और लक्ष्य ने भारत को दिलाई दोहरी खुशी



A performer breathes out a plume of flames during an act in Chennai on Sunday to mark 'Tamil Nadu Day'. J. JOHAN SATHYADAS (REPORT ON PAGE 3)

A performer breathes out a plume of flames during an act in Chennai on Sunday to mark 'Tamil Nadu Day'.

TVK-led government observes November 1 as Tamil Nadu Day

PCS

The Hindu Bureau
CHENNAI

The Tamil Nadu government on Sunday celebrated Tamil Nadu Day, with Governor Rajendra Vishwanath Arlekar and Chief Minister C. Joseph Vijay extending their greetings.

Mr. Vijay said the State's unique features and historical greatness should be celebrated on the day it was formed on linguistic lines. In a social media message, he said the history of those who fought for the merger of Tamil-speaking areas with Tamil Nadu and protected the Tamil language would serve as a guide for Tamil unity and the protection of its rights. "Let us pledge to protect the art and culture of Tamils and make Mother Tamil proud," he said.

In Chennai, the government organised various folk and cultural events at public places to celebrate the day. Besides, several Ministers, including Minister for Tamil Development Rajmohan, participated in an official function to mark the day. Mr. Arlekar organised a function at Lok Bhavan to mark the occasion.

DMK takes exception

However, the DMK, the Principal Opposition party, took exception to the celebrations, contending that Tamil Nadu Day fell on July 18, while November 1 marked the reorganisation of States on linguistic lines and was an occasion to remember the martyrs who fought for the merger of Tamil-speaking areas with Tamil Nadu. In a statement, the DMK headquarters said November 1 was certainly a day deserving of celebration, but it could not be celebrated as Tamil Nadu Day.

"These boundary struggles were not merely about territory. They were struggles for linguistic rights, identity and the will of the people. November 1 is a historically significant day to remember with gratitude those who laid down their lives, went to prison, and dedicated their lives to these struggles. It is the day to commemorate the martyrs of the boundary movements," it said.

02N11. TVK-led government observes November 1 as Tamil Nadu Day

टीवीके के नेतृत्व वाली सरकार ने 1 नवंबर को तमिलनाडु दिवस मनाया

- The Tamil Nadu government on Sunday celebrated **Tamil Nadu Day**, with Governor Rajendra Vishwanath Arlekar and Chief Minister C. Joseph Vijay extending their greetings.

तमिलनाडु सरकार ने रविवार को **तमिलनाडु दिवस** मनाया। राज्यपाल राजेंद्र विश्वनाथ आर्लेकर और मुख्यमंत्री सी. जोसेफ विजय ने इस अवसर पर शुभकामनाएँ दीं।

- Mr. Vijay said the State's unique features and historical greatness should be celebrated on the day it was formed on linguistic lines.

श्री विजय ने कहा कि जिस दिन भाषाई आधार पर राज्य का गठन हुआ था, उसी दिन उसकी विशिष्टताओं और ऐतिहासिक गौरव का उत्सव मनाया जाना चाहिए।

- In a social media message, he said the history of those who fought for the merger of Tamil-speaking areas with Tamil Nadu and protected the Tamil language would serve as a guide for Tamil unity and the protection of its rights.

सोशल मीडिया पर अपने संदेश में उन्होंने कहा कि तमिल भाषी क्षेत्रों के तमिलनाडु में विलय और तमिल भाषा की रक्षा के लिए संघर्ष करने वालों का इतिहास तमिल एकता और उसके अधिकारों की रक्षा के लिए मार्गदर्शक बनेगा।

- "Let us pledge to protect the art and culture of Tamils and make Mother Tamil proud," he said.

उन्होंने कहा, "आइए, तमिलों की कला और संस्कृति की रक्षा करने तथा मातृ तमिल को गौरवान्वित करने का संकल्प लें।"

- In Chennai, the government organised various folk and cultural events at public places to celebrate the day.

चेन्नई में सरकार ने इस दिन के उपलक्ष्य में सार्वजनिक स्थलों पर विभिन्न लोक और सांस्कृतिक कार्यक्रम आयोजित किए।

- Besides, several Ministers, including Minister for Tamil Development Rajmohan, participated in an official function to mark the day.

इसके अलावा, तमिल विकास मंत्री राजमोहन सहित कई मंत्रियों ने इस दिवस के उपलक्ष्य में आयोजित एक आधिकारिक समारोह में भाग लिया।

- Mr. Arlekar organised a function at Lok Bhavan to mark the occasion.

श्री आर्लेकर ने इस अवसर पर लोक भवन में एक समारोह आयोजित किया।

DMK takes exception
डीएमके ने जताई आपत्ति

- However, the DMK, the Principal Opposition party, took exception to the celebrations, contending that Tamil Nadu Day fell on July 18, while November 1 marked the reorganisation of States on linguistic lines and was an occasion to remember the martyrs who fought for the merger of Tamil-speaking areas with Tamil Nadu.

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हालाँकि, मुख्य विपक्षी दल डीएमके ने इन समारोहों पर आपत्ति जताई। उसका कहना था कि तमिलनाडु दिवस 18 जुलाई को मनाया जाता है, जबकि 1 नवंबर भाषाई आधार पर राज्यों के पुनर्गठन का दिन है और तमिल भाषी क्षेत्रों के तमिलनाडु में विलय के लिए संघर्ष करने वाले शहीदों को याद करने का अवसर है।

- In a statement, the DMK headquarters said November 1 was certainly a day deserving of celebration, but it could not be celebrated as Tamil Nadu Day.
  डीएमके मुख्यालय ने एक बयान में कहा कि 1 नवंबर निस्संदेह उत्सव मनाने योग्य दिन है, लेकिन इसे तमिलनाडु दिवस के रूप में नहीं मनाया जा सकता।
- "These boundary struggles were not merely about territory.
  "सीमा को लेकर ये संघर्ष केवल भूभाग के बारे में नहीं थे।
- They were struggles for linguistic rights, identity and the will of the people.
  ये भाषाई अधिकारों, पहचान और जन-इच्छा के लिए संघर्ष थे।
- November 1 is a historically significant day to remember with gratitude those who laid down their lives, went to prison, and dedicated their lives to these struggles.
  1 नवंबर ऐतिहासिक महत्त्व का दिन है, जब हमें उन लोगों को कृतज्ञतापूर्वक याद करना चाहिए जिन्होंने इन संघर्षों में अपने प्राण दिए, जेल गए और अपना जीवन समर्पित किया।
- It is the day to commemorate the martyrs of the boundary movements," it said.
  यह सीमा आंदोलनों के शहीदों को स्मरण करने का दिन है," बयान में कहा गया।

Sindhu, Lakshya make it a double delight for India

The former adds the Hylo Open to the Japan Open triumph earlier in the year and boosts her hopes of making the World Tour Finals while the latter ends his title drought in style

PCS

BADMINTON

Press Trust of India
SAARBRUCKEN

Double Olympic medallist P.V. Sindhu and Lakshya Sen made it a double delight for India, claiming the women's and men's singles titles with straight-game victories in the finals of the Hylo Open Super 500 badminton tournament here on Sunday.

Precision and control

Former World champion Sindhu, who won the Japan Open in July and finished runner-up at the French Open last week, displayed excellent control and precision in her stroke play to register a commanding 21-12, 21-14 win over eighth seed and world No. 25 Line Hojmark Kjaersfeldt of Denmark in a final which lasted 39 minutes.

Later, Lakshya outwitted Jonatan Christie of Indonesia 21-17, 21-10.

"It was important for me to give my 100% irrespective of who the opponent was. We've played a lot of times and for me it was important that I focus on every point. It's just not about the whole game, but every point mattered to me. I took the lead from the beginning and didn't give her a chance," Sindhu said.

With the win, the World No. 8 Sindhu earned 9,200 ranking points to strengthen her bid for a place in the season-ending World Tour Finals.

"This gives me a lot of boost, a lot of confidence. I'm happy that things are going according to plan. I'm very grateful and thankful to my whole team. Everyone has worked really hard.

"I know there were days when you're absolutely low, but still your team is there to pump you up. It's been an amazing week and I think it's time to go back and celebrate now. It has been an amazing two weeks," she said.

Lakshya, who won the Australian Open and reached the finals at Hong Kong Open in 2025, came into the final with a 3-4 head-to-head record against Christie. He made a strong start and remained in control.

"It has been quite some time since I won a tournament, so it feels good. Couple of first-round losses affect you but the way I played here gave me a lot of confidence," he said.



Super Sunday: Sindhu and Lakshya rose to the occasion when it mattered most. INSTAGRAM/HYLO_OPEN

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02N11. Sindhu, Lakshya make it a double delight for India
सिंधु और लक्ष्य ने भारत को दिलाई दोहरी खुशी

- Double Olympic medallist P.V. Sindhu and Lakshya Sen made it a double delight for India, claiming the women's and men's singles titles with straight-game victories in the finals of the Hylo Open Super 500 badminton tournament here on Sunday.
  दो बार की ओलंपिक पदक विजेता पी.वी. सिंधु और लक्ष्य सेन ने भारत को दोहरी खुशी दी। उन्होंने रविवार को यहाँ हाइलो ओपन सुपर 500 बैडमिंटन टूर्नामेंट के फ़ाइनल में सीधे गेमों में जीत दर्ज कर **महिला और पुरुष एकल खिताब** अपने नाम किए।

Precision and control
सटीकता और नियंत्रण

- Former World champion Sindhu, who won the Japan Open in July and finished runner-up at the French Open last week, displayed excellent control and precision in her strokeplay to register a commanding 21-12, 21-14 win over eighth seed and world No. 25 Line Hojmark Kjaersfeldt of Denmark in a final which lasted 39 minutes.
  पूर्व विश्व चैंपियन सिंधु ने जुलाई में जापान ओपन जीता था और पिछले सप्ताह फ्रेंच ओपन में उपविजेता रही थीं। उन्होंने अपनी शॉट खेलने की शैली में बेहतरीन नियंत्रण और सटीकता दिखाते हुए डेनमार्क की आठवीं वरीयता प्राप्त और विश्व में 25वें स्थान की लाइन होयमार्क कियर्सफेल्ट को 21-12, 21-14 से हराया। फ़ाइनल 39 मिनट तक चला।
- Later, Lakshya outwitted Jonatan Christie of Indonesia 21-17, 21-10.
  इसके बाद लक्ष्य ने इंडोनेशिया के जोनाथन क्रिस्टी को 21-17, 21-10 से मात दी।
- "It was important for me to give my 100% irrespective of who the opponent was.
  सिंधु ने कहा, "मेरे लिए यह ज़रूरी था कि प्रतिद्वंद्वी कोई भी हो, मैं अपना 100% दूँ।
- We've played a lot of times and for me it was important that I focus on every point.
  हम कई बार खेल चुके हैं और मेरे लिए हर अंक पर ध्यान केंद्रित करना ज़रूरी था।
- It's just not about the whole game, but every point mattered to me.
  मेरे लिए सिर्फ़ पूरा खेल ही नहीं, बल्कि हर अंक महत्त्वपूर्ण था।
- I took the lead from the beginning and didn't give her a chance," Sindhu said.
  मैंने शुरुआत से ही बढ़त बना ली और उसे कोई मौका नहीं दिया," सिंधु ने कहा।
- With the win, the World No. 8 Sindhu earned 9,200 ranking points to strengthen her bid for a place in the season-ending World Tour Finals.
  इस जीत से विश्व में आठवें स्थान की सिंधु ने 9,200 रैंकिंग अंक अर्जित किए और सीज़न के अंत में होने वाले **विश्व टूर फ़ाइनल्स** में जगह बनाने की अपनी दावेदारी मज़बूत की।
- "This gives me a lot of boost, a lot of confidence.
  "इससे मुझे बहुत ऊर्जा और आत्मविश्वास मिला है।
- I'm happy that things are going according to plan.
  मुझे खुशी है कि चीज़ें योजना के अनुसार चल रही हैं।
- I'm very grateful and thankful to my whole team.
  मैं अपनी पूरी टीम की बहुत आभारी हूँ।
- Everyone has worked really hard.
  सबने बहुत मेहनत की है।
- "I know there were days when you're absolutely low, but still your team is there to pump you up.
  "मुझे पता है कि कुछ दिन ऐसे भी थे जब आपका मन बिल्कुल टूट जाता है, लेकिन तब भी आपकी टीम आपका हौसला बढ़ाने के लिए मौजूद रहती है।

- It's been an amazing week and I think it's time to go back and celebrate now.
  यह शानदार सप्ताह रहा है और मुझे लगता है कि अब वापस जाकर जश्न मनाने का समय है।
- It has been an amazing two weeks," she said.
  ये दो सप्ताह शानदार रहे हैं," उन्होंने कहा।
- Lakshya, who won the Australian Open and reached the finals at Hong Kong Open in 2025, came into the final with a 3-4 head-to-head record against Christie.
  2025 में ऑस्ट्रेलियन ओपन जीतने और हांगकांग ओपन के फ़ाइनल तक पहुँचने वाले लक्ष्य का क्रिस्टी के खिलाफ़ आमने-सामने के मुकाबलों का रिकॉर्ड 3-4 था।
- He made a strong start and remained in control.
  उन्होंने दमदार शुरुआत की और पूरे मुकाबले में नियंत्रण बनाए रखा।
- "It has been quite some time since I won a tournament, so it feels good.
  "किसी टूर्नामेंट में जीत हासिल किए हुए काफ़ी समय हो गया था, इसलिए यह अच्छा लग रहा है।
- Couple of first-round losses affect you but the way I played here gave me a lot of confidence," he said.
  पहले दौर में मिली लगातार दो हार का असर पड़ता है, लेकिन यहाँ जिस तरह मैंने खेला, उससे मुझे बहुत आत्मविश्वास मिला," उन्होंने कहा।

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