

APRIL

3

CRUX 10

10 News. 10 Sources. One Place



The Indian **EXPRESS** live **mint** पॉइंट

DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT,
ENVIRONMENT AND HEALTH

**Science
Reporter**



विज्ञान एवं
प्रौद्योगिकी मंत्रालय
MINISTRY OF
SCIENCE AND
TECHNOLOGY



MK Yadav Sir

Table of Contents

- 1 India's Demographic Dividend
- 2 Kallakkadal
- 3 Iron Ore
- 4 Tornadoes
- 5 India's Conflict with China
- 6 SCORES 2.0
- 7 SAARC
- 8 Daniel Kahneman
- 9 Lumpy Skin Disease
- 10 Heat Waves

India risking demographic dividend

World Bank says from 2000-2022, India's employment ratio fell by more than in other South Asian nations except Nepal. India's robust economic expansion has, however, kept the region's output growth stronger than in other emerging markets

The Hindu Bureau
LONDON

The World Bank has warned that the South Asia region including India was not making use of its demographic dividend as the pace of job creation in the region fell short of growth in the working-age population, even as it projected a strong 6.0-6.1% growth for 2024-25 for the region in its South Asia regional update, *Jobs for Resilience*, released on Tuesday.

Observing that India's employment growth was "well below" the average

Jobless growth

World Bank warns South Asia, India risk squandering the demographic dividend if pace of job creation is not improved

■ Bank projects strong 6.0-6.1% growth for 2024-25 for the region in its regional update

■ Region could have 16% higher growth if share of its working-age population with jobs was on par with other EMDEs



■ Weak employment concentrated in non-agricultural sectors, notes lender

growth in its working age population for the 2000-23 period, the multilateral lender said consequently the country's employment ratio had declined more

than in any other country in the region except Nepal up till 2022. However, preliminary data suggested a 3-percentage point rebound in 2023, which had

partially reversed the decline.

Noting that India's economy was expected to post a "robust growth" of 7.5% in FY23/24, the lender said this growth coupled with recoveries in Sri Lanka and Pakistan, was largely driving the strong numbers for the South Asian region.

Still, the region could have 16% higher output growth if the share of its working-age population that was employed was on a par with other EMDEs, stressed Franziska Ohnsorge, World Bank Chief Economist for South Asia. "South Asia is failing

right now to fully capitalise on its demographic dividend," said Ms. Ohnsorge. "This is a missed opportunity," she added.

The weak employment trends in the region were concentrated in non-agricultural sectors, the World Bank said, reflecting challenges in the institutional and economic climate, which had stifled the growth of businesses.

To encourage job growth the Bank recommended supporting the participation of women in the economy, increasing openness to trade, and improving education.

Context: The World Bank has recently warned that the South Asia region, including India, has not been effectively leveraging its demographic dividend, as the rate of job creation in the region has significantly lagged behind the growth in the working-age population.

India's Demographic Dividend

- **About:** It refers to the growth in an economy that is the result of a change in the age structure of a country's population.
- **India Surpasses China in Population:** In 2022, India overtook China as the world's most populous country, with a population of 1.417 billion, marking a significant demographic shift.
- **India's Projected Population Growth:** Projections by the United Nations estimate India's population to reach 1.46 billion by 2030, constituting approximately 17% of the global population.
- **Decline in Population Growth and Fertility:** India has experienced a decline in population growth and fertility rates since the 1970s, as evident from decreasing Total Fertility Rates (TFR).
- **Demographic Transition:** With a projected TFR drop to 1.73 by 2035, India is anticipated to undergo a demographic transition characterized by a larger working-age population and fewer children.
- **Peak of India's Demographic Dividend:** India's Economic Survey 2018-19 predicts that the demographic dividend age will peak around 2041, with approximately 59% of the population falling within the working-age bracket (20 to 59 years).

India-Demographic Data

- **Total Population:** 1.22 billion (2011 Census) (17.71% of World Population). India will be the most populous country by 2100.
 - **Rural Population:** 68.84 % (Census, 2011)
 - **Urban Population:** 31.16% (Census, 2011)
- **Working Population:** Working adults (20-64 years) will reduce from around 762 million in 2017 to around 578 million in 2100
- **Total Fertility Rate:** Reduce to 1.29 by 2100 from 2.1 in 2019
- **Immigration:** India will be the second-largest net immigration in 2100.

What is Kallakkadal, which has flooded houses in Kerala's coastal areas?

SHAJU PHILIP
THIRUVANANTHAPURAM, APRIL 2

HUNDREDS of houses have been flooded in several coastal areas of Kerala due to high sea waves, also known as swell waves, since Sunday. The worst affected regions include Alappuzha, Kollam, and Thiruvananthapuram districts. Authorities have opened relief camps for the affected local communities.

Such flooding events are called swell surge or Kallakkadal in Malayalam. Here is a look at the phenomenon, why it happens, and how it is different from a tsunami.

What is Kallakkadal?

Kallakkadal is essentially coastal flood-

ing during the pre-monsoon (April-May) season by swell waves on the southwest coast of India, according to a paper, *Teleconnection between the North Indian Ocean high swell events and meteorological conditions over the Southern Indian Ocean*, which was published in the journal *AGU* in 2016. The study was authored by P.G. Remya, S. Vishnu, B. Praveen Kumar, T. M. Balakrishnan Nair, and B. Rohan – all from the Indian National Centre for Ocean Information Services, Hyderabad.

The term Kallakkadal, used by local fishermen, is a combination of two Malayalam words, including *Kallam* and *Kadal*. "*Kallam* means thief and *Kadal* means sea. In spoken language, these words were combined and pronounced as Kallakkadal, meaning ocean that arrives as a thief," the study said.



Houses damaged due to a Kallakkadal event in Kollam on Tuesday. ANI

In 2012, the term was formally approved by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

What causes Kallakkadal?

Kallakkadal is caused by waves that are formed by an ocean swell, hence the name swell surge. Ocean swells occur not due to the local winds, but rather due to distant storms like hurricanes, or even long periods of fierce gale winds. During such storms, huge energy transfer takes place from the air into the water, leading to the formation of very high waves. Such waves can travel thousands of kilometres from the storm centre until they strike shore.

Usually, Kallakkadal is a consequence of the strong winds in the southern part of the Indian Ocean, where an ocean swell is generated, and the waves then travel north to reach the coast in two or three days.

The latest instance took place after a low atmospheric pressure system moved over the

region around March 25 from the South Atlantic Ocean – 10,000 kilometres off the Indian coast. The arrival of the pressure system resulted in strong winds, which led to the formation of swell waves of up to 11 metres in height. These waves have been hitting the Kerala coast and Lakshadweep since Sunday.

Kallakkadal occurs without precursors or any kind of local wind activity and as a result, it has been very difficult for the coastal population to get an advance warning. However, early warning systems like the Swell Surge Forecast System – launched by the Indian National Centre for Ocean Information Services (INCOIS) in 2020 – gives forecasting seven days in advance.

Why is Kallakkadal different from tsunami?

Kallakkadal came under the spotlight after the 2004 tsunami that killed more than 10,000 people. However, Kallakkadal is often mistaken to be a tsunami, which is a series of enormous waves created by an underwater disturbance usually associated with earthquakes occurring below or near the ocean.

What is the forecast?

The swell surge is likely to continue impacting Kerala and other western coast regions of the country for the next two days before they gradually weaken.

INCOIS has stated high waves will move to the Tamil Nadu coast on Tuesday night. It has alerted people in coastal areas vulnerable to sea erosion to take precautionary steps and ensure the safety of fishing vessels.

Causes of Kallakkadal

- **Origin of Waves:** Kallakkadal is caused by waves formed by an ocean swell, known as swell surge, which originate from distant storms like hurricanes or long periods of fierce gale winds.
- **Energy Transfer:** During storms, significant energy transfer occurs from the air into the water, leading to the formation of high waves that can travel thousands of kilometers from the storm center until they reach the shore.
- **Southern Indian Ocean Winds:** Typically, Kallakkadal results from strong winds in the southern part of the Indian Ocean, generating an ocean swell that travels northward to reach the coast within two or three days.
- **Absence of Local Wind Activity:** Kallakkadal often occurs without precursors or local wind activity, making it challenging for coastal populations to receive advance warnings.
- **Early Warning Systems:** Initiatives like the Swell Surge Forecast System, launched by the Indian National Centre for Ocean Information Services (INCOIS) in 2020, provide forecasts up to seven days in advance, aiding in early warning efforts for Kallakkadal.

Context: Recently, numerous coastal areas in Kerala witnessed flooding as high sea waves, commonly referred to as swell waves, inundated hundreds of homes.

Kallakkadal

- **About:** It refers to coastal flooding caused by swell waves on the southwest coast of India during the pre-monsoon season, as described in a 2016 paper published in the *AGU* journal.
- **Origin and Meaning:** The term "Kallakkadal" originates from Malayalam, combining "Kallan" meaning thief and "Kadal" meaning sea, representing the ocean's intrusive nature during flooding events.
- **Recognition:** Local fishermen coined the term "Kallakkadal" to describe this phenomenon, which was officially recognized by UNESCO in 2012.

Kallakkadal different from tsunami: Kallakkadal is often confused with a tsunami but differs fundamentally.

- A tsunami is a series of massive waves caused by underwater disturbances like earthquakes, whereas Kallakkadal is a phenomenon of swell surges impacting coastal areas.
- Kallakkadal gained attention following the devastating 2004 tsunami, which claimed over 10,000 lives. However, the two phenomena are distinct in their causes and effects.

Govt panel proposes exchange for iron ore

Reuters
feedback@livemint.com
NEW DELHI

A government-appointed panel has proposed setting up India's first iron ore exchange to determine the domestic sale price of the key steelmaking raw material, according to a document reviewed by *Reuters* and a source with direct knowledge of the matter.

After the ministry of mines pointed out that some iron ore miners tried to keep the average sale price artificially low to pay lower royalties to the government, the Centre late last year formed a panel to work out an "alternative mechanism" to determine domestic iron ore prices. "As a long-term measure to solve the issue of transparency in the returns being received, (the) ministry of mines should develop a National Iron Ore exchange, mandating the buying and selling of iron ore on the online platform," the panel said.

Details of the panel's recommendations have not been previously reported. The proposed exchange would record real-time transactions and physical delivery of iron ore, the document said. "Once the exchange is implemented, ASP (average sale price) for each state and grade can be auto-published every month, based on the weighted average of monthly sales on online platform," it said.

Context: A government-appointed panel has proposed setting up India's first iron ore exchange to determine the domestic sale price of the key steelmaking raw material.

Iron Ore

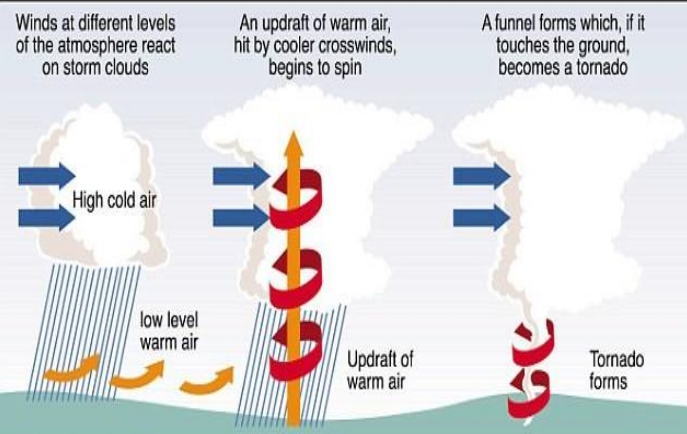
- **About:** Iron ores are rocks and minerals containing metallic iron, extracted through various processes.
- **Abundance in India:** India boasts substantial reserves of iron ore, predominantly found in volcano-sedimentary Banded Iron Formations (BIF) dating back to the Precambrian era.
- **Distribution in world:** China, Brazil, Australia, India, Russia, Ukraine, the United States, South Africa, Canada, Sweden.
- **Types:** Haematite, Magnetite, Limonite and Siderite
- **Magnetite:** Prime Grade Ore: Magnetite stands out as a superior iron ore variant, possessing an exceptionally high iron content, often reaching up to 72%.
- **Magnetic Properties:** Magnetite's remarkable magnetic properties make it particularly prized in applications within the electrical industry.
- **Significance of Hematite:** Although hematite ore slightly trails magnetite in iron content, it remains crucial in industrial usage due to its abundance.
- **Uses:** Iron ore finds its most prevalent applications in the manufacturing of steel and iron-based goods like nails, tools, and pipes.
 - it serves a crucial function in fabricating machine components for various sectors, including automotive and aerospace industries.

India's Iron Ore Mining Market

- **Global Ranking:** India ranks as the world's second-largest producer of iron ore, trailing behind Australia.
- **Production Output:** In 2023, India's iron ore mine production reached a substantial 257.6 million tonnes (Mt).
- **Projected Decline:** Forecasts indicate a negative Compound Annual Growth Rate (CAGR) of over 1% for India's iron ore production from 2024 to 2030.
- **Major Iron Ore Belts in India:** Orissa- Jharkhand belt, Durg-Bastar-Chandrapur belt, Bellary- Chitradurga-Chimaglur-Tumkur belt, and Maharashtra- Goa belt. Iron metal is the commonest of all minerals.

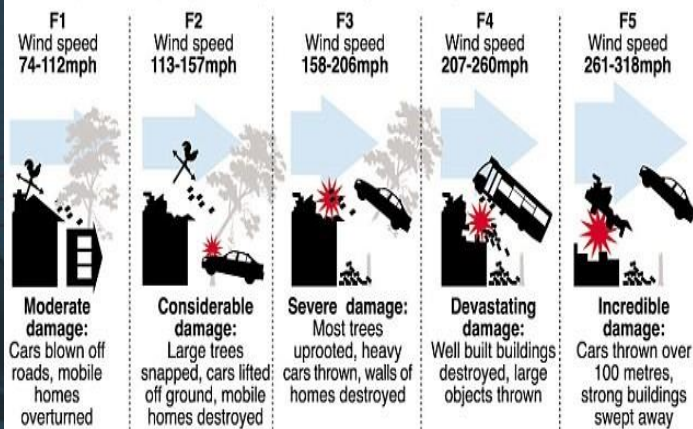
Jalpaiguri disaster: Tornadoes a symptom of warming & anomalous wind patterns

How a tornado forms



Fujita tornado damage scale

F0 wind speed 0-73mph light damage: Some damage to chimneys, branches break off trees



Press Association Graphic

Context: Recently, a deadly tornado swept through the Mainaguri area of Jalpaiguri district in West Bengal, claiming the lives of five individuals and leaving over a hundred injured within a span of 10 minutes.

Tornadoes

- **About:** A tornado is a violently rotating column of air that comes into contact with the Earth's surface as well as a cumulonimbus cloud or, on rare occasions, the cumulus cloud's base.
 - Spiraling wind descends like an elephant's trunk with immense force from violent thunderstorms, with very low pressure at the centre, causing massive havoc along the way.
- **Destructive Potential:** Tornadoes can utterly destroy well-constructed structures, uproot trees, and throw objects through the air like devastating missiles.
- **Characteristics:** Most tornadoes have wind speeds of less than 110 miles per hour (180 kilometers per hour), are about 250 feet (80 meters) across, and travel a few miles (several kilometers) before dissipating.
- **Extreme Tornadoes:** Tornadoes can reach wind speeds of more than 300 miles per hour (480 km/h), have diameters of more than two miles (3 km), and can stay on the ground for dozens of miles (more than 100 km).
- **Geographic Distribution:** Tornadoes have been recorded on all continents except Antarctica.
 - They are most common in the middle latitudes where conditions are often favorable for convective storm development.
 - The United States has the most tornadoes of any country, as well as the strongest and most violent tornadoes.
- **Favourable Condition:** Warm, humid air collides with cold, dry air. The denser cold air is pushed over the warm air, usually producing thunderstorms.
- **Impact:** Destroy buildings and trees and disrupt transportation, power, water, gas, and other services.

India rejects China's 'senseless' Arunachal act, says invented names can't alter reality

EXPRESS NEWS SERVICE
NEW DELHI, APRIL 2

INDIA TUESDAY rejected as senseless China renaming of some places in Arunachal Pradesh, and said that assigning "invented" names does not alter the reality that the state "is, has been, and will always be" an integral part of India.

India's sharp response came after the Chinese government announced names for 30 more

places in Arunachal Pradesh which it claims as the southern part of Tibet.

Ministry of External Affairs official spokesperson Randhir Jaiswal said, "China has persisted with its senseless attempts to re-name places in the Indian state of Arunachal Pradesh. We firmly reject such attempts."

"Assigning invented names will not alter the reality that Arunachal Pradesh is, has been, and will always be an integral and inalienable part of India," the

MEA spokesperson said.

Jaiswal was responding to a query during his weekly press briefing. The Chinese Ministry of Civil Affairs released the fourth list of standardised geographical names in Zangnan, the Chinese name for Arunachal Pradesh, which Beijing claims as part of south Tibet, state-run Global Times reported Sunday.

In April last year too, India had reacted sharply when Beijing released the third list of standardised names of 11 places

in Arunachal Pradesh.

The first batch of the standardised names of six places in Arunachal Pradesh was released in 2017 while the second batch of 15 places was issued in 2021.

On March 28, India said Beijing may "repeat its baseless claims" over Arunachal Pradesh as many times as it wants but that is not going to change New Delhi's position that the state "was, is and will always remain" an integral and inalienable part of the country.

External Affairs Minister S Jaishankar, during his Gujarat visit on Monday, said that "Arunachal Pradesh was, is, and will remain an Indian state".

Addressing a press conference in Surat, he had said nothing will be gained by changing the names. "If I change the name of your house, will it become mine? Arunachal Pradesh was an Indian state, is an Indian state and will remain so in the future. Nothing will be gained by changing names," Jaishankar had said.

Context: India recently rejected China's senseless renaming of certain places in Arunachal Pradesh, emphasizing that such "invented" names do not change the fact that the state has always been and will remain an integral part of India.

India's Conflict with China

- **Renaming of Disputed Areas:** China's renaming of disputed areas aims to bolster its territorial claims and potentially manipulate evidence for future disputes in international courts.
- **Persistent Border Tensions:** Despite formal talks and disengagement efforts post-Galwan deaths in 2020, rumors suggest Chinese attempts to cross borders, maintaining persistent tensions.
- **Indian Military Upgrades:** India has significantly enhanced weaponry along the LAC in Arunachal Pradesh, especially after the 2020 Ladakh standoff, and has intensified infrastructure development in forward sectors like Tawang.
- **Infrastructure Development:** Eastern Arunachal is currently undergoing substantial infrastructure development, potentially signifying strategic preparations in response to border disputes.

Why is China interested in Arunachal Pradesh?

- **Strategic Location:** Arunachal Pradesh's proximity to China enables it to be a potential launching point for Indian missiles and a strategic location for air defense systems, giving China a tactical advantage if controlled.
- **Geopolitical Claims:** Arunachal Pradesh's vast size and borders with Tibet, Bhutan, and Myanmar make it strategically significant, acting as a buffer to the northeast and providing control over key territories.
- **Tactical Entry in Tawang:** Tawang's strategic location as a gateway to northeastern India makes it a focal point for China's interest, particularly as it connects Tibet with the Brahmaputra Valley.
- **Cultural Connections:** Arunachal Pradesh shares cultural ties with Tibet, particularly through tribes like the Monpa who follow Tibetan Buddhism, strengthening China's cultural influence in the region.

SEBI unveils SCORES 2.0 to strengthen investor redressal

Context: SEBI recently launched the new version of the SEBI Complaint Redress System (SCORES 2.0).

SCORES 2.0

- **About:** It is a updated version of SCORES enhances the investor complaint resolution mechanism in the securities market.
- **Key Features of SCORES 2.0:**
 - **Reduced Timelines:** Investor complaints will be addressed within 21 calendar days from receipt.
 - **Auto-Routing of Complaints:** Complaints will be automatically directed to the relevant entity to minimize delays.
 - **Monitoring by Designated Bodies:** Entities must oversee timely resolution of investor complaints.
 - **Two-Level Review Process:** Dissatisfied investors can seek review first from designated bodies, then from SEBI.
 - **Auto-Escalation for Non-Adherence:** Complaints will escalate if entities don't meet prescribed timelines.
 - **Integration with KYC Database:** Integration with KYC Registration Agency facilitates easy investor registration on SCORES.

SCORES

- **About:** is a web-based centralized grievance redress system launched by SEBI in 2011.
- **Accessibility and Convenience:** It allows investors to lodge, track, and follow up on complaints online, providing accessibility from anywhere.
- **Intermediary and Company Engagement:** SCORES facilitates market intermediaries and listed companies to receive and address complaints online, ensuring efficient grievance redressal.
- **Types of Complaints in SCORES**
 - **Legislative Coverage:** Complaints can encompass issues under various acts and regulations including the SEBI Act, Securities Contract Regulation Act, Depositories Act, and Companies Act, 2013 provisions.
 - **Entities Covered:** SEBI handles complaints against a range of entities such as listed companies, brokers, depositories, mutual funds, portfolio managers, and other entities like KYC collective investment schemes, merchant bankers, credit rating agencies, and foreign institutional investors.

India to push SAARC countries to restart funding of SAU

Set up in 2010, South Asian University was to be financed by all eight SAARC nations

Shashank Mattoo
shashank.mattoo@livemint.com
NEW DELHI

India is embarking on a diplomatic push to get its neighbours to restart funding the cash-strapped South Asian University (SAU), which started its operations in 2010 in New Delhi, according to persons aware of the matter. First proposed in 2005 by India, SAU was expected to become a model for regional educational collaboration. The university was to be jointly funded by all the eight members of the South Asian Association for Regional Cooperation (SAARC). According to India's foreign ministry, the capital expenditure for the construction of the university's permanent campus was to be met entirely by New Delhi. The operational expenditure, however, for SAU was to be met through a model of assessed contributions from member states.

"The percentage shares of Member States to the

total budget under Phase I funding arrangement are as follows: Afghanistan - 3.83%, Bangladesh - 8.20%, Bhutan - 3.83%, India - 57.38%, Maldives - 3.83%, Nepal - 4.92%, Pakistan - 13.09%, and Sri Lanka - 4.92%," the ministry of external affairs informed the Lok Sabha in 2018. According to the university, the institution was also expected to eventually raise funds from outside donors, including financial and educational institutions.

However, political troubles, administrative chaos and a financial crunch have plagued the university. SAU functioned without a regular president for four years until academic K.K. Aggarwal was appointed to the position in December 2023. The governing board of the university also met infrequently. Political

Capital expenditure for the construction of the university's permanent campus was to be met entirely by New Delhi

tensions, particularly between India and Pakistan, are believed to have played a role in hampering the functioning of SAU. This is despite the fact that the university is expected to function independently.

"The South Asian University (SAU) operates within the framework of the South Asian Association for Regional Cooperation (SAARC) and the agreed upon formula for making contributions. Decisions regarding funding are made collectively by member countries and communicated through proper channels," the university told *Mint*.

Queries emailed to the ministry of external affairs and the diplomatic missions of several SAARC member countries in New Delhi remained unanswered till press time.

Context: India is embarking on a diplomatic push to get SAARC countries to restart funding the cash-strapped South Asian University (SAU), which started its operations in 2010 in the national capital, according to persons aware of the matter.

South Asian Association for Regional Cooperation

- **Establishment:** The South Asian Association for Regional Cooperation (SAARC) was established with the signing of the SAARC Charter in Dhaka on 8 December 1985.
- **Regional Cooperation:** The idea of regional cooperation in South Asia was first raised in November 1980, leading to the inaugural meeting of the foreign secretaries of the seven founding countries in Colombo in April 1981.
- **Membership:** Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri-Lanka.
- **Expansion of Membership:** Afghanistan joined SAARC as its newest member.
- **Headquarters:** Kathmandu, Nepal.
- **Objectives:** SAARC's objectives include promoting welfare, economic growth, collective self-reliance, mutual trust, collaboration, and cooperation with other developing countries and international organizations.
- **Principles of Cooperation:** SAARC is grounded on principles like sovereign equality, territorial integrity, non-interference, and mutual benefit, outlined in its charter.
- **Areas of Cooperation:** SAARC's areas of cooperation span diverse sectors such as human resource development, agriculture, environment, trade, social affairs, energy, education, and security.

South Asian University (SAU)

- **Origin of the University:** The SAU originated from a proposal by the Prime Minister of India during the 13th SAARC Summit in Dhaka in 2005.
- **Objective of Establishment:** To establish a Centre of Excellence in the form of a University to offer world-class facilities and faculty to students and researchers from all SAARC member countries.
- **Pooling of Resources:** Member countries agreed to pool their resources to support the creation and maintenance of the University, emphasizing collaboration and cooperation among SAARC nations.
- **Inclusive Education:** SAU aimed to provide educational opportunities for students and researchers from every country in the SAARC region, promoting inclusivity and regional cooperation.

How has Kahneman's work in psychology withstood the test of time?

Psychology, behavioural economics and science, public policy, and many other fields owe a great debt to the work of Daniel Kahneman and Amos Tversky. It couldn't be generalised to more than a few settings or contexts, but that shouldn't spell the end of their mission to rethink how people think.

Anirudh Tagar
Hanika Kapoor

In March 27, one of the pioneers of psychology and economics research, Daniel Kahneman, passed away. Kahneman was a psychologist who spent a large part of his career at Princeton University. He did some of his best known work with Amos Tversky, a mathematical psychologist who passed away in 1996.

No stranger to fame

Kahneman and Tversky made substantial contributions to the field of judgement and decision-making, which deals with how human beings make choices in different situations. They published a series of pioneering research papers in the 1980s that integrated insights from psychology and economics to better understand human behaviour at large.

Together, they form the bedrock of the contemporary field of behavioural economics, despite explicitly never having had the intention for their work to be part of economics.

Kahneman was also not a stranger to fame and attention outside of academia. His 2011 book *Thinking Fast and Slow* is among the best-selling books in psychology and business, and his partnership with Tversky was famously the subject of Michael Lewis' 2009 book *The Undoing Project*.

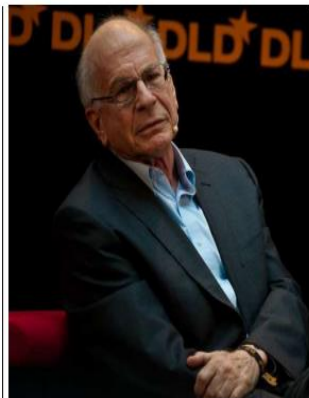
But before embarking on his unspoken mission to change the face of psychology and economics, Kahneman's work was concerned with attention and perception, which are the core cognitive faculties that often precede action, or for that matter inaction.

Attention and decision-making

His first book, *Attention and Effort* (1973), summarised the then-state-of-the-art literature on divided attention, which is the state of multi-tasking. Focused attention, i.e., what moves in and out of an individual's awareness, and selective attention. He also co-authored some other papers with Anne Treisman, a leading cognitive psychologist, and his wife on the topics of attention, memory, recall, and visual perception. Treisman passed away in 2018.

His book *Judgment Under Uncertainty* (1982) cemented the connection between Kahneman's early work in mental effort and the then-emerging area of decision-making. Their original 1974 paper, published in the general interest journal *Science*, has nearly 50,000 citations, according to Google Scholar, making it one of the most influential papers in psychology.

For example, one of the major



Kahneman and Tversky published a series of pioneering papers that integrated insights from psychology and economics to better understand human behaviour at large (BBC, 2019; CC BY-SA 3.0)

postulates of the duo's prospect theory deals with loss aversion. They hypothesised that individuals are more sensitive to loss than an equivalent amount of gain, and that, in general, losses loom larger on an individual's mind. They were able to prove this by running laboratory experiments in which they compared outcomes framed as gains and losses.

The results changed the world of decision-making, which previously held that individuals only looked at outcomes in an absolute way, not at changes in outcomes. For example, if someone found an unclaimed \$500 note on the ground versus if they suddenly realised a \$500 note was missing from their wallet, loss aversion contended that the person would experience the loss more strongly than the gain.

Limits on loss aversion

Kahneman and Tversky's experiments, however, didn't explicitly delve into the context in which loss aversion manifests in the human psyche. For example, they did not test whether loss aversion is sensitive to the stakes of a decision (e.g., a high-value stock or asset).

posthumously, Kahneman has said his half of the prize was shared with Tversky, to honour their joint work.

Measuring happiness

Kahneman also made substantial contributions to the study of happiness and well-being later. His work focused on measuring happiness using multiple methods. One, called the day reconstruction method, asked participants to think about their previous day and break it up into episodes. For each episode, a participant had to calculate the happiness they experienced as the difference between a rating of "happy" (worth +6 points) and other ratings for "tense," "depressed" or "angry" (each worth -6 points). This measure, as well as some others, drew from Kahneman's theory of hedonic psychology, which suggests that people value experiences, not just outcomes.

Such advances in measurements were important because scholars were beginning to realise they couldn't measure individual well-being in economic terms alone. An important study by Anna Alexandrova in 2005 suggested such an approach only accounted for a part of subjective well-being, not for happiness as an experience and an attitude. Kahneman's work also identified how high income could impact life satisfaction but not really happiness.

Rethinking thinking

Kahneman's legacy is multifield. Among his most influential works is the dichotomy between System 1 and System 2 thinking. The former is quick, intuitive, and nearly automatic, whereas the latter is slow, deliberative, and cautious. Psychologists have studied and verified the two processes extensively.

But then, like some of his other work, including loss aversion, experts realised Kahneman didn't have the full picture: they found System 2 may not apply across cultures, especially in non-WEST (Western, educated, industrialised, rich, and democratic) contexts.

Even so, psychology, behavioural economics, science, public policy, and many other fields owe a great debt to Kahneman's work. His work couldn't be generalised to more than a few settings or contexts, but that shouldn't spell the end of Kahneman's mission to rethink how people think. Much like other foundational work in the behavioural sciences, it has instead given us a better idea of where to begin.

(Anirudh Tagar and Hanika Kapoor are researchers at the Department of Economics and Psychology, respectively, at Monk Prayagshila.)

THE GIST

Kahneman and Tversky's work forms the bedrock of the contemporary field of behavioural economics, despite them never explicitly having had the intention for it to be part of economics.

One of the duo's major postulates dealt with loss aversion. They hypothesised that individuals are more sensitive to loss than an equivalent amount of gain, and that, in general, losses loom larger on an individual's mind.

Kahneman's theory of hedonic psychology, which suggests that people value experiences, not just outcomes, is part of his study of happiness and well-being, suggested that people value experiences, not just outcomes.

Daniel Kahneman

- **Early Life:** Kahneman, an Israeli-American psychologist, won the Nobel prize in economics in 2002 for integrating psychological insights into economic science, particularly regarding human judgment and decision-making under uncertainty.
- **Seminal Works:** Kahneman authored several influential books and papers, notably "Thinking, Fast and Slow," which elucidated human thought processes, errors, biases, and decision-making fallacies.
- **Focus on Variability:** His book "Noise" explored unwanted variability in judgments, contrasting bias and emphasizing the importance of consistency in decision-making.
- **Challenging Rationality Assumptions:** Kahneman's experiments challenged the assumption of rationality among economic agents, laying the foundation for behavioral economics as a field.
- **Unintentional Influence:** Kahneman and Tversky's seminal work unintentionally laid the foundation for contemporary behavioral economics, despite their initial intentions unrelated to economics.
- **Loss Aversion Principle:** One of their fundamental postulates centered on loss aversion, proposing that individuals tend to be more sensitive to losses than gains of an equivalent magnitude, with losses holding a greater psychological weight.
- **Hedonic Psychology:** Kahneman's theory within hedonic psychology emphasized the significance of experiences over mere outcomes in understanding happiness and overall well-being.
- **Honours:** Awarded the Nobel Prize in 2002 for his psychological insights in economics.

Context: Recently, one of the pioneers of psychology and economics research, Daniel Kahneman, passed away.

Indian scientists unravel genetic secrets behind lumpy skin disease outbreak

Context: In a breakthrough, a multi-institutional team of scientists has unveiled critical insights into evolution & origin of lumpy skin disease virus (LSDV) strains fuelling the outbreak in India.

Lumpy Skin Disease

- **About:** It is a viral disease that affects cattle. It is genetically related to the goatpox and sheeppox virus family.
- **Transmitted by:** Blood-feeding insects, such as certain species of flies and mosquitoes, or ticks.
- **Causes:** Fever, nodules on the skin and can also lead to death, especially in animals that have not previously been exposed to the virus.
- **Symptoms:** The incubation period for lumpy skin disease is between 14 days post-infection.
 - After an initial period of high fever (41°C) and swollen lymph glands, the animal may develop large, firm nodules that are up to 5 cm in diameter in the skin.
 - These can be found all over the body, but particularly on the head.
 - Guidelines for prevention of Lumpy Skin Disease:
- **Preventive Measures:** Control of animal movement, Restriction with affected animals and persons dealing with such animals, Vaccination.

Mysterious Illness Strikes Cattle in India

- In May 2022, a puzzling illness swept through cattle populations across India, causing widespread concern among farmers and veterinarians.
- **Devastating Losses:** Since the onset of the illness, approximately 1 lakh cattle have succumbed to its effects, leading to significant economic and emotional losses for farmers.
- **Identification of LSDV Outbreak:** Scientists have identified the cause of the outbreak as LSDV (Lumpy Skin Disease Virus), a highly contagious viral infection affecting cattle.
- **Comprehensive Study Reveals Insights:** A multi-institutional team, conducted a thorough study published in BMC Genomics, offering a detailed genomic analysis of LSDV variants circulating in India.
- **Enhanced Virulence and Severity:** The study sheds light on the virus's enhanced virulence and the severity of the disease it causes, providing crucial insights for combating the outbreak effectively.

1st heat wave in K'taka as India braces for summer

Jayashree Nandi

letters@hindustantimes.com

NEW DELHI: The first heat wave of the summer — the season starts April 1 across India — was recorded over parts of north interior Karnataka on Monday, presaging what the Indian weather office has forecast will be an uncomfortably hot summer in many parts of the country.

To be sure, parts of Saurashtra and Kutch, both in Gujarat, recorded a brief heat wave in March according to the India Meteorological Department (IMD), but that will still pre-summer.

The maximum temperature recorded in Bagalkote on Tuesday was 40.7°C, 3.8°C above normal; Kalaburgi 41.6°C, 2°C above normal. "It is anticipated that heat wave conditions are being recorded in isolated areas around these stations and more stations will record during the next two days," said an official from IMD Bengaluru.

"Yesterday, heat wave conditions prevailed in isolated pockets over North Interior Karnataka," IMD said in its bulletin on Tuesday.

Heat wave is considered by IMD if maximum temperature of a station reaches at least 40°C or more for plains and at least 30°C or more for hilly regions. Based on departure from normal, heat wave is declared when maximum temperature is 4.5°C to 6.4°C above normal.

India is in for a searing summer between April and June, IMD has forecast, warning of "extreme heat" and more than double the number of heatwave days than is seen usually at this time of the year.

The prediction comes as the country prepares to hold the world's largest elections with gatherings of tens of thousands expected in political rallies that have begun to build up and are expected to reach a crescendo in the peak summer weeks.

That's already evident in peninsular India. Maximum temperatures were in the range of

**MAXIMUM TEMP
RECORDED IN
BAGALKOTE ON
TUESDAY WAS
40.7°C, 3.8°C ABOVE
NORMAL; AND
41.6°C KALABURGI
DISTRICT, 2°C
ABOVE NORMAL.**

40-42°C at many places over Vidarbha, Odisha and Rayalaseema; at a few places over Madhya Maharashtra, Marathwada, Telangana, Coastal Andhra Pradesh, Yanam; and in isolated pockets over Gangetic West Bengal, Jharkhand, Chhattisgarh, north interior Karnataka and interior Tamil Nadu. The temperatures were 3-5°C above normal at a few places over Gangetic West Bengal; at isolated places over Sub-Himalayan West Bengal, Sikkim and Odisha, IMD said.

Peninsular India is also dry with a rainfall deficiency of 80% between March 1 and April 2. IMD's standard precipitation index (SPI) also shows that most districts in the peninsular region and northeast India are mildly or moderately dry for the period between February 29 and March 27.

SPI is an index for drought monitoring and reflects soil moisture levels.

HT reported on April 2 that northern part of Karnataka is reeling under the extreme heat and lack of water, the 13 districts that were declared drought-hit are given access to water in once every 10 days or even longer, officials from concerned departments said.

HT reported on March 31 that almost all major reservoirs in Telangana being on the verge of drying up, the state is witnessing acute water shortage for irrigating the standing crops during the ongoing Rabi season and also drinking water crisis in several parts of the state.

"SPI indicates soil moisture levels. But to understand if there is a water shortage other condi-

tions like catchment areas, reservoir levels should be monitored. We are seeing a rise in temperatures over peninsular and east India as forecast by IMD on April 1. We have said that above normal heat wave days are likely over south peninsula, east India and plains of northwest India in April," said KS Hosalikar, head of climate research and services, IMD.

On Sunday Kurnool recorded 42.2°C; Cuddapah 41°C; Tirupati 39.8°C; Bhubaneswar 39.4°C; Hyderabad 39.6°C; Khajuraho 37.2°C; Sagar 38.2°C; Kolkata 38.5°C; Kozhikode 37.5°C among others.

Experts attributed the higher likelihood of heatwaves and the hotter summer in general to the El Niño phenomenon, which is marked by a warming of the equatorial Pacific Ocean, which in turns leads to a cascading effect across the world.

But, encouragingly, latest forecasts indicate that strength of El Niño is likely to weaken from May-June — although it will still impact the summer. "We can expect extreme temperatures this summer mainly because of the impact of El Niño. Models are also indicating the development of La Niña conditions during the monsoon season, which may mean that we will have a good monsoon," said M Mohapatra, director general, IMD.

Interestingly, maximum temperatures have been below normal over most parts of north-west India. Experts said temperatures haven't spiked yet over the region mainly due to western disturbances.

A western disturbance is impacting the Western Himalayan region. Another fresh western disturbance is likely to affect Western Himalayan region from April 5.

Under their influence, isolated to scattered light to moderate rainfall/snowfall is likely over Western Himalayan region during next 5 days and very light rainfall over plains of northwest India during April 3 to 5.

HEAT WAVES

(Syllabus: GS Paper 3 – Env and Eco)

Context: The first heat wave of the summer-the season starts April across India-was recorded over parts of north interior Karnataka on Monday, presaging what the Indian weather office has forecast will be an uncomfortably hot summer in many parts of the country.

Heat Waves

- **Meaning:** It is a period of abnormally high temperatures, more than the normal maximum temperature that occurs during the summer season in the North-Western parts of India.
- **Seasonal Occurrence:** Heat Waves typically occur between March and June, and in some rare cases even extend till July.
- **Regional Variability:** In certain countries, it is defined in terms of the heat index based on temperature and humidity or based on extreme percentile of the temperatures.

Criteria for Declaring Heat Waves:

- **Maximum Temperature Thresholds:** Declared when the maximum temperature of a station reaches at least 40°C.
 - Declared when the maximum temperature of a station reaches at least 30°C.
- **Departure from Normal Heat Wave:** Departure from normal temperature ranges from 4.5°C to 6.40°C.
 - Departure from normal temperature is greater than 6.4°C.
- **Actual Maximum Temperature Heat Wave:** Declared when the actual maximum temperature is equal to or exceeds 450°C.
 - Declared when the actual maximum temperature is equal to or exceeds 470°C.
- **Conditions for heat wave**
 - Transportation / prevalence of hot dry air over a region
 - Absence of moisture in the upper atmosphere: As the presence of moisture restricts the temperature rise.
 - The sky should be practically cloudless
 - Large amplitude of anti-cyclonic flow over the area.

FREE



Download PDF



Login to theiashub.com



**Aaj Ka
Quality Enrichment**
(Toppers' Favourite PDF)



News-CRUX-10
(10 News. 10 Sources. One Place)



Monthly Editorials
(The Hindu & Indian Express)



Daily Quiz (Prelims)



**Government Schemes &
Ministry Wise Year End
Review**



Free Enrichment PDFs
(Tailor Made Crisp Study Material)

FREE

**India's Best Answer Writing Sessions
with**



Ritika Jindal



Simi Karan



Gaurav Budania



Mridul Shivhare

IAS OFFICERS

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



**SCAN
HERE**



9560082909



t.me/theiashub



www.theiashub.com



/mkyadav



www.theiashub.com