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MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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INDIAN EXPRESS Page 17

INDIA-AUSTRIA RELATIONS

(Syllabus: GS Paper 2 – IR)



India and Austria

The Prime Minister chose the neutral ground of Vienna to send a message to both Moscow and the West. The India-Austria relationship was born in trust and friendship, and holds great promise for the future

SHUBHAJIT ROY

NARENDRA Modi's visit to Vienna this week was the first by an Indian Prime Minister to Austria since June 1983, when Indira Gandhi travelled to the country.

The Prime Minister's decision to travel to Vienna immediately after he met President Vladimir Putin in Moscow was significant — Austria is a European country that is not a part of Nato, the US-led anti-Russia trans-Atlantic military alliance, whose 32 leaders gathered in Washington DC this week.

Message to both sides

During the visit that Modi said was being watched by the "entire world", the Prime Minister told Putin that the death of innocent children causes "pain and the heart simply explodes", that "peace talks do not succeed amid bombs, guns and bullets", and that the "solution [to any conflict] cannot be found on the battlefield".

Modi's statements conveyed India's deep concern at a suspected Russian missile attack on a children's hospital in Kyiv. The attack, carried out when the Prime Minister was in Russia, reflected a pattern — in December 2023, when External Affairs Minister S Jaishankar visited Moscow to meet Putin and his Foreign Minister Sergey Lavrov, Russia launched its biggest air attack on Ukraine since the beginning of the war in February 2022, killing at least 31 people, according to the Ukrainian military.

So, speaking in Vienna with Chancellor Karl Nehammer the day after he met Putin, the Prime Minister stressed again that "this is not a time for war", that "problems cannot be solved on the battlefield", and that the "loss of innocent lives anywhere is unacceptable".

The reiteration was India's clear message to Western capitals concerned over Modi's bilateral meeting with Russia's leader.

Country born neutral

Vienna was under Nazi occupation during World War II. After the end of the war, it was divided into four sectors by the US, the UK, France, and the Soviet Union, supervised by the Allied Commission. The Allies occupied Austria for a decade after the war ended.

In 1955, the four occupying powers signed the Austrian State Treaty with the Austrian government to establish Austria as an independent state. The Soviet Union demanded that Austria, which is located strategically between capitalist western Europe and the communist bloc in the east of the continent, maintain neutrality on the model of Switzerland, with the four powers pledging to the integrity and inviolability of Austrian territory.

The 1955 treaty, which was ratified by all countries, thus bound Austria to neutrality. The constitution of Austria prohibits entering into military alliances, and the establishment of foreign military bases on Austrian territory.

Prime Minister Narendra Modi with Austria's Chancellor Karl Nehammer in Vienna on Wednesday. PTI

Austria and Nehru

In 1952-53, the Austrians approached Jawaharlal Nehru, who was respected by both Western nations and the Soviets, for help in securing a sovereign nation.

India was among the few countries that supported Austria's appeal at the United Nations General Assembly in 1952 for an end to the Allied occupation and the restoration of its sovereignty. Karl Gruber, the Austrian Foreign Minister, noted that "The consent of such an important country [India] — whose neutrality in the East-West Conflict is beyond any doubt — was destined to be especially beneficial to Austria's cause." (Quoted in Hans Köchler, *Austria, Neutrality and Non-alignment*)

In June 1953, Gruber and Nehru attended the coronation of Elizabeth II in London and, according to media reports from the time, had a meeting the following morning. In his book *The Political Settlement After the Second World War* (1972), the British historian Sir John Wheeler-Bennett wrote that Nehru's role as a "diplomatic mediator" introduced "an entirely new factor into the Austrian treaty discussions".

Köchler, the well known Austrian philosopher, quoted from a report published in the Austrian daily *Neues Österreich* on June 21, 1953: "Prime Minister Nehru…is without a doubt the only personality in international politics whose 'good offices' can be effective in supporting Austria in her efforts towards the realization of the State Treaty."

In June 1955, about a month after Austria had gained full independence through the conclusion of the State Treaty, Nehru paid a State Visit to the country, the first by a foreign leader.

On Wednesday, Chancellor Nehammer recalled Nehru's role. With Prime Minister Modi listening, he said: "The situation was difficult, it was difficult to make progress. It was Foreign Minister Gruber who contacted Prime Minister Nehru, asking for support in the negotiations to bring them to a positive conclusion. This is what happened. India helped Austria and the negotiations came to a positive conclusion with the Austrian State Treaty."

Evolution of ties

Diplomatic relations between India and Austria were established on November 10, 1949 — this year marks its 75th anniversary.

The year after Indira's visit in 1983, Austria's Chancellor Fred Sinowatz came to India on a reciprocal visit. President K R Narayanan went to Austria on a State Visit in November 1999; Austria's President Dr Heinz Fischer came in February 2005, and President Pratibha Patil visited Austria in October 2011.

Austria's Foreign Minister, Alexander Schallenberg, has an interesting connection with India.

When he visited with a high-level business delegation in March 2022, it became known that his father, Wolfgang Schallenberg, was Austria's Ambassador to India between 1974 and 1978, and the current Foreign Minister had attended elementary school in New Delhi.

Alexander Schallenberg followed in his father's footsteps to join the Austrian foreign service and, in 2019, became the Foreign Minister of his country. He became Chancellor for three months in 2021, and had been Foreign Minister since December 2021.

So, when Schallenmerg met Jaishankar, they struck an instant rapport — both career diplomats turned Foreign Ministers, both sons of illustrious government officials (Jaishankar is the son of K Subrahmanyam, the doyen of India's strategic affairs analysts.

Why Austria matters

On Wednesday, Chancellor Nehammer and Prime Minister Modi recognised the potential to significantly upgrade the bilateral partnership to a higher level. In addition to closer political-level dialogue, the two leaders emphasised a "future-oriented bilateral, sustainable economic and technology partnership", covering a range of new initiatives and joint projects.

Austria offers tremendous opportunities for bilateral collaboration in infrastructure, renewable energy, e-commerce, fintech, enterprise tech, consumer services, and media and entertainment.

Both countries have taken balanced positions in the Russia-Ukraine war.

Even though Austria supported the EU's sanctions against Russia, on April 11, 2022, Chancellor Nehammer became the first European leader to visit President Putin to discuss the end of the war. Austria has publicly criticised Russian actions in Ukraine, but commercial ties between the two countries remain largely intact, and it continues to import gas from Russia.

During Nehru's visit in 1955, Austria's President Theodor Körner described him as a statesman who was "continuously giving new impulses to world politics by fruitful ideas", and a "tireless fighter for freedom and understanding among nations". (*India and Europe in a Changing World: Context, Confrontation, Cooperation*, ed. Rajendra K Jain, 2023).

2024 is not 1955, but New Delhi and Vienna could again navigate the choppy global waters of tension and conflict as partners with a shared goal.

Context: The Prime Minister of India visited Vienna, marking the first trip by an Indian Prime Minister to Austria since Indira Gandhi's visit in June 1983.

India-Austria Relations

- **Evolution of ties:** Diplomatic relations between India and Austria were established on November 10, 1949, this year marks its 75th anniversary.
- **Political Relation**: There have been several high-level visits between the two countries. Notable visits include those by Austrian President to India in 2005 and Indian Vice President to Austria in 2010.
- These visits have helped to reinforce political ties and bilateral cooperation.
- **Trade Relations**: Total bilateral trade for 2023 (January-December) was $2.93 billion.
    - **Main Exports to Austria**: Electronic goods, apparels, textile, footwear, rubber articles, vehicles & railways parts, electrical machinery, and mechanical appliances.
    - **Main Imports from Austria**: India's main imports from Austria include machinery, mechanical appliances, railway parts, iron, and steel.
- **Cultural Relations:** India-Austria cultural relations date back to the 16th century when Balthasar Springer traveled to India in 1505 with the Portuguese fleet.
- **Indology Tradition**: Austria's tradition of Indology began between 1825 and 1920, marked by renowned philologists and archaeologists.
    - Sanskrit teaching at Vienna University started in 1845, peaking in 1880 with the establishment of an independent chair for Indology.
    - Rabindranath Tagore visited Vienna twice, in 1921 and 1926, fostering cultural and intellectual exchange between India and Austria.
- **Scientific and Technological Cooperation**: India and Austria have cooperated on various scientific and technological projects, including collaboration in areas like renewable energy, environmental technology, and space research

DTE

July 11

WORLD POPULATION PROSPECTS 2024

(Syllabus GS Paper 1 – Social Issues)

World population day: There'll be 700 million fewer people by the end of this century than previously estimated. Here's why

Context: The world's population is projected to peak within this century, with a current probability of 80%, up from 30% a decade ago, according to the World Population Prospects 2024.

India Scenario

- **Population Growth and Momentum**: Despite crossing the replacement fertility rate, India's populationS is expected to continue growing until the mid-2060s due to momentum, suggesting that current population control policies might be counterproductive.
- **Capitalizing on Demographic Dividend:** India is set to benefit from a large working-age population until the 2050s, making investments in education, health, and infrastructure essential to maximizing this demographic advantage.
- **Challenges of Early Childbearing**: Early childbearing remains a critical issue, with a notable adolescent fertility rate and persistent child marriages, impacting the health and opportunities for young women and their children.
- **Need for Reform and Education**: To address early pregnancies and improve women's health and economic participation, reforms should focus on enhancing education and delaying marriage and childbirth.

World Population Prospects 2024

- **About:** It is the 28th edition of the UN's official population estimates and projections.
- **Released by**: United Nation
- **Coverage**: It provides population estimates from the 1950s to the present for 237 countries or areas, based on historical demographic trends.
- **Future Projections**: The 2024 revision includes population projections up to the year 2100, offering various plausible outcomes at global, regional, and national levels.

Key Findings

- **Population Projections:** The global population is set to peak at around 10.3 billion by the mid-2080s before gradually declining to 10.2 billion by 2100, marking significant demographic shifts.
- **Revised Population Forecasts**: Recent estimates suggest a 6% lower population projection for 2100 compared to a decade ago, indicating a downward revision of 700 million individuals.
- **Peak Population Distribution**: One in four people reside in countries where populations have already peaked, with significant variations across nations anticipated through 2054.
- **Factors Driving Population Dynamics**: Decreasing fertility rates, influenced by education, contraceptives, urbanization, and shifting societal norms, are pivotal in shaping global population trends.

PIB July 11

THIRTY METER TELESCOPE (TMT)

(Syllabus: GS Paper 3 – Sci and Tech)

Indian scientists develop open-source tool to generate infrared star catalogue for Thirty Meter Telescope

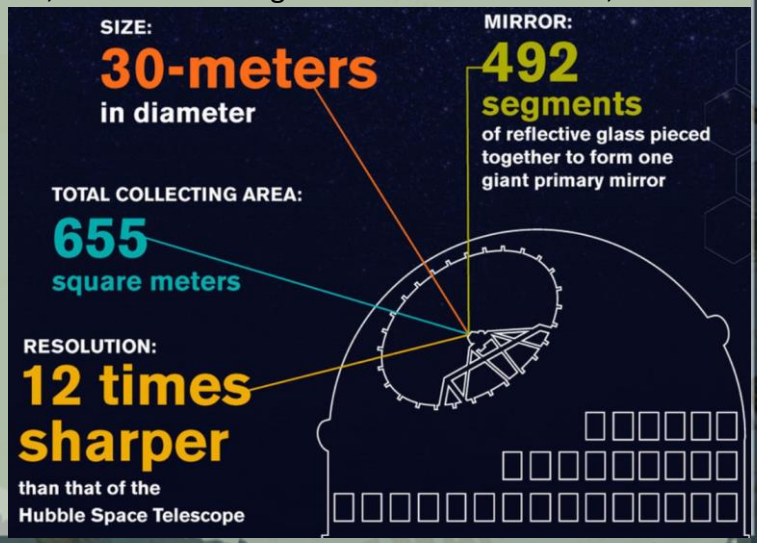
Context: Recently, Indian scientists developed an open-source tool to generate infrared star catalogue for Thirty Meter Telescope.

Thirty Meter Telescope (TMT)

- **About**: It is a groundbreaking international scientific endeavor aimed at revolutionizing our understanding of the universe.
- **Most Advanced Observatory**: It will be the world's most advanced ground-based optical, near-infrared, and mid-infrared observatory.
- **Innovative Technologies**: The TMT integrates cutting-edge innovations in precision control, segmented mirror design, and adaptive optics.
- **Segmented Mirror Design**: At its core lies a segmented mirror composed of 492 individual hexagonal segments, which together form a single light-collecting surface.
- **Key Features**
  - **Mirror Size**: The TMT's primary mirror, with a diameter of 30 meters, will be the largest in the Northern Hemisphere, surpassing other planned extremely large telescopes.
  - **Segmented Mirror**: The mirror consists of 492 hexagonal segments, each measuring 1.4 meters, working together to create a powerful light-gathering surface.
  - **Location**: Proposed to be built on Mauna Kea, an iconic site on the island of Hawai'i, chosen for its high altitude and clear skies, ideal for astronomical observations.

Discoveries

- As the TMT project progresses, it promises to enable groundbreaking discoveries in various fields of astronomy.
- **Advanced Technologies**: Its segmented mirror technology, adaptive optics, and precise control systems will facilitate unprecedented observations of distant galaxies, exoplanets, and cosmic phenomena.
- **India's Role**: India is a key partner in the TMT project, with the India TMT Center at the Indian Institute of Astrophysics (IIA) leading the national collaboration.



TIMES OF INDIA

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NATURAL CONSERVATION ZONE

(Syllabus: GS Paper 3 – Env and Eco)



Aravalis To Retain Protection From Non-Forest Activities

Don't Change NCZ In Regional Plan: PMO, Shah-Headed GoM

Dipak.Dash
@timesofindia.com

New Delhi: In good news for protection of Aravalis in the National Capital Region, the Prime Minister's Office and a group of ministers headed by home minister Amit Shah have directed the urban affairs ministry not to change the classification of Aravalis as a Natural Conservation Zone (NCZ) which provides it protection from non-forest activities.

TOI has learnt that ministry officials presented these details at a recent review meeting on the proposed Regional Plan 2041 chaired by urban affairs minister and former Haryana CM Manohar Lal Khattar.

Haryana has demanded that the term NCZ be replaced with Natural Zone (NZ) and the mention of Aravalli be done away with from the Regional Plan 2041, which has not yet been finalised. Sources said amid divergent views on the NCZ issue, the PMO and the GoM have categorically told the ministry not to make any changes in the existing provision. "The GoM held a meeting on the issue before the Lok Sabha election. There was a clear instruction not to go for any change in the NCZ provision of the existing Regional Plan 2021," said a source.

It is mandatory for states to protect areas falling under NCZ, which include environmentally sensitive areas, extension of Aravalli ridge, forest areas, rivers and tributaries, major lakes and water bodies in the NCR. Similarly, ground water recharge areas such as water bodies, ox-bow lakes and paleo-channels also come under this category.

The current norm puts severe restrictions on any non-forest activities in these areas and that too only up to 0.5% of the area.

This is not the first time when top govt functionaries have stood by no dilution in the NCZ and Aravalis. In March 2014, during the last leg of the UPA govt, the PMO had taken note of reports of how the NCR Planning Board was considering changes to the NCZ to allow more construction in the name of eco-tourism.

The PMO had directed the urban affairs ministry to "first obtain views" of the environment and forest ministry on the proposed changes and "apprise" it before taking any final view.

Since then, till Jan 2022, the environment and forest ministry had maintained that the NCZ provision should be retained as it is in the Regional Plan 2041.

TOI on July 11, 2022, had reported how 85% of the suggestions and objections on the draft Regional Plan 2041 received by the NCRPB were concerning NCZ and NZ.

YOU READ IT HERE

'Aravalis' not in new draft NCR plan, Hry wanted 'hills' gone too

WITHERING GREENS

NCR may shrink 24% as Haryana wants 5 dists out

JULY 5, 2022

Proposal To Change 'NCZ' In Draft Plan Raises Concerns

Parl Panel Asks For Reasons To Replace Term, Its Impact

DEC 19, 2023

Context: In a positive move for the Aravalis in the National Capital Region, the Prime Minister's Office and a ministerial group led by the Home Minister have instructed the Urban Affairs Ministry to maintain the Aravalis' status as a Natural Conservation Zone (NCZ).

Natural Conservation Zone (NCZ)

- **About:** It is outlined in the Delhi NCR Regional Plan 2021 and encompasses the entire Aravalli range.
- **Components**: The zone incorporates the forests, water bodies, and groundwater recharge areas of the Aravalli range.
- **Construction Restrictions**: Only 0.5 percent of the NCZ area is permitted for construction, exclusively for regional parks and sanctuaries.
- **Prohibited Uses**: Construction for commercial, residential, tourism, and real estate purposes is strictly prohibited within the NCZ.

Aravalli Range

- **Location:** North-western of India, stretching from Delhi to Gujarat through Haryana and Rajasthan
- **Historical Significance**: It stands as one of the oldest fold mountains globally, bearing witness to millions of years of Earth's history.
- **Length:** 670 km
- **Formation**: Its formation is deeply rooted in the collision of tectonic plates during the Proterozoic era, shaping the landscape we see today.
- **Highest Peak**: Guru Shikhar Peak (1722m) on Mount Abu.
- **Rivers**: Major rivers like Banas, Sahibi, and Luni originate from the Aravalli, contributing to the rich hydrology of the region and its surrounding areas.

PIB July 11

NATIONAL GOPAL RATNA AWARD 2024

(Syllabus: GS Paper 2 – Govt Policies)

National Gopal Ratna Award -2024

Context: Nominations for the National Gopal Ratna Award 2024 will begin on July 15. This prestigious award recognizes outstanding contributions in the field.

National Gopal Ratna Award 2024

- **About:** It is awarded under Rashtriya Gokul Mission (RGM).
- **Authority:** Since 2021, the Department of Animal Husbandry and Dairying under the Ministry of Fisheries, Animal Husbandry and Dairying has been conferring the National Gopal Ratna Award annually.
- **Objective**: To encourage milk-producing farmers, dairy cooperative societies/MPC/FPOs, and Artificial Insemination Technicians (AITs).
- **Award Categories for This Year**
  - Best Dairy Farmer rearing indigenous cattle/buffalo breeds
  - Best Dairy Cooperative Society (DCS)/Milk Producer Company (MPC)/Dairy Farmer Producer Organization (FPO)
  - Best Artificial Insemination Technician (AIT)
- **Special Award**: It has been incorporated this year to encourage and boost dairy development activities in North Eastern Region (NER) states.
- **Award Components**
  - **Best Dairy Farmer and Best DCS/FPO/MPCs**: Certificate of merit, a memento, and a monetary prize.
  - **Best Artificial Insemination Technician (AIT)**: Certificate of merit and a memento only; no cash prize will be provided.

Rashtriya Gokul Mission

- **Launched**: In 2014 under the National Programme for Bovine Breeding and Dairy Development (NPBBD).
- **Aim**: To conserve and develop indigenous breeds in a focused and scientific manner.
- **Two Major Components:** Research and development of high-quality semen to increase the chances of female calf births.

THE HINDU Page 10

DENGUE

(Syllabus: GS Paper 3 – Sci and Tech)



Why are dengue cases on the rise worldwide?

Are urbanisation and climate change fuelling dengue spread in the world?

Serena Josephine M.

The story so far:

Dengue cases have surged in India, with Karnataka, Kerala, and Tamil Nadu seeing significant increases. According to data published by the National Centre for Vector Borne Diseases Control, as of April 30, India recorded 19,447 cases and 16 deaths, with Kerala and Tamil Nadu leading in numbers. Karnataka, initially reporting 2,503 cases, has now recorded 7,840 cases and seven deaths as of July 10, with 293 new cases reported on that day alone.

What is the global situation of dengue?

According to the World Health Organization (WHO), as of April 30, over 7.6 million cases of dengue were reported in 2024. This included 3.4 million confirmed cases, over 16,000 severe cases and over 3,000 deaths. In an update on the global scenario on May 30, it said that 90 countries have known active dengue transmission, adding that "not all of which have been captured in formal reporting".

The WHO noted that at least five countries, including India, were grappling with the onset of monsoon season, which created suitable conditions for the breeding and survival of Aedes mosquito. Urbanisation and population movements have also played a pivotal role in the increasing burden in the region.

Dengue is endemic in more than 100 countries in the WHO regions of Africa, the Americas, the Eastern Mediterranean, South-East Asia and Western Pacific. The Americas, South-East Asia and Western Pacific regions were the most seriously affected, with Asia accounting for around 70% of the global disease burden. However, it also noted that dengue is spreading to new areas in Europe, the Eastern Mediterranean and South America.

How does dengue spread and how is it treated?

Dengue virus is transmitted to humans through the bite of infected mosquitoes, with the primary vector that transmits the disease being Aedes aegypti. While cases are mostly asymptomatic or mild, some may develop severe dengue that could include shock, severe bleeding or organ impairment. According to the National Guidelines for Clinical Management of Dengue Fever, dengue presents as an acute febrile illness lasting two to seven days, characterised by symptoms such as headache, retro-orbital pain, myalgia, arthralgia, rash, and hemorrhagic manifestations. In those without any warning signs or complications, dengue is managed through symptomatic and supportive treatment.

What are the emerging patterns in dengue?

Researchers and public health experts have been closely monitoring the emerging patterns in dengue.

According to the WHO, factors contributing to the increasing risk of dengue epidemics include the changing distribution of the Aedes aegypti vector,

Dengue

- **About**: It is a viral infection transmitted through the bite of infected Aedes species mosquitoes.
- **Found**: Tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.
- **Symptoms**: Usually begin 4–10 days after infection and last for 2–7 days. Symptoms may include: high fever, severe headache, pain behind the eyes, nausea, vomiting, swollen glands and rash.
- **Severe Symptoms:** severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums or nose, fatigue and restlessness.
- **Treatment:** There is no specific treatment for dengue.

Context: Dengue cases have surged in several parts of the country recently, with Karnataka experiencing a sharp increase in the past few days. Kerala and Tamil Nadu are also seeing a rise in cases.

Dengue Cases in Worldwide

- **Current Data:** As of April 30, 2024, India has recorded 19,447 cases of dengue and 16 deaths according to the National Centre for Vector Borne Diseases Control.
- **Global Dengue Situation:** By April 30, 2024, the World Health Organization reported over 7.6 million cases of dengue globally, including 3.4 million confirmed cases, over 16,000 severe cases, and over 3,000 deaths.
- **Active Transmission**: As of May 30, 2024, dengue transmission was active in 90 countries, with significant underreporting in many endemic regions.
- **Underestimated Burden**: The WHO highlighted that the true burden of dengue is likely underestimated due to inadequate detection and reporting in some endemic countries.
- **Factors Contributing to Dengue Spread**
  - **Monsoon and Urbanization**: The onset of monsoon season in at least five countries, including India, has created ideal conditions for Aedes mosquito breeding. Urbanization and population movements also contribute to the increased burden.
  - **Global Spread**: Dengue incidence has dramatically increased, with about half of the world's population at risk. It is prevalent in tropical and sub-tropical climates, mainly in urban and semi-urban areas.

PIB July 11

U.S.- INDIA BUSINESS COUNCIL

(Syllabus: GS Paper 2 – IR)

A delegation of U.S.-India Business Council (USIBC) led by Edward Knight, Executive Vice Chairman, called on Union Minister Dr. Jitendra Singh

Context: A U.S.-India Business Council (USIBC) delegation, led by its Executive Vice Chairman, met with the Union Minister in Delhi to discuss various collaboration opportunities.

U.S.- India Business Council (USIBC)

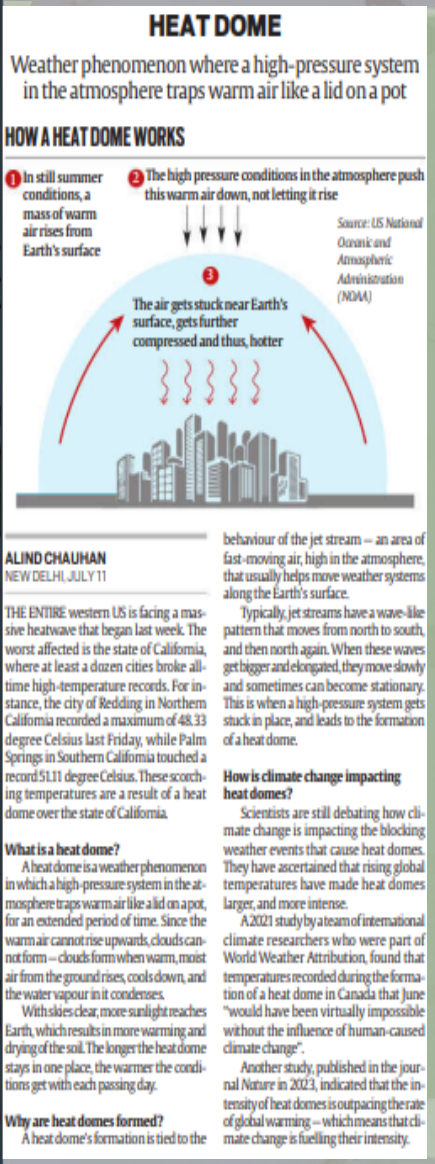
- **About**: The USIBC represents top global companies operating in the U.S. and India, facilitating connections between businesses and governments in both nations.
- **Formation**: The U.S.-India Business Council (USIBC) was established in 1975 at the request of the U.S. and Indian governments.
- **Aim**: The Council seeks to create an inclusive trade environment between India and the U.S. by representing industries, connecting businesses with governments, and fostering long-term partnerships.
- **Membership**: The USIBC comprises approximately 200 member companies, with 70% based in the United States and 30% in India.
- **Headquarters**: Washington D.C.
- **Regional Offices**: The USIBC maintains offices in Delhi, Mumbai, and Bengaluru.
- **Association**: The USIBC is affiliated with the U.S. Chamber of Commerce.

Key Points of the Meeting

- **Green Initiatives**: Focus on deploying Greenfield renewable energy, battery storage, and emerging green technologies.
- **Advanced Technologies**: Emphasis on advancements in quantum technology, artificial intelligence, critical metals, and semiconductors.
- **Anusandhan NRF**: Proposal for a research foundation in India modeled after the U.S. National Research Foundation.
- **Biotech Growth:** The biotech industry in India has grown to $140 billion, with over 4,000 companies.
- **Space Collaboration**: The NISAR mission with NASA and ISRO showcases India's capabilities in the space sector.

HEAT DOME

(Syllabus: GS Paper 1 – Geography)



HEAT DOME

Weather phenomenon where a high-pressure system in the atmosphere traps warm air like a lid on a pot

HOW A HEAT DOME WORKS

ALIND CHAUHAN
NEW DELHI, JULY 11

THE ENTIRE western US is facing a massive heatwave that began last week. The worst affected is the state of California, where at least a dozen cities broke all-time high-temperature records. For instance, the city of Redding in Northern California recorded a maximum of 48.33 degree Celsius last Friday, while Palm Springs in Southern California touched a record 51.11 degree Celsius. These scorching temperatures are a result of a heat dome over the state of California.

What is a heat dome?

A heat dome is a weather phenomenon in which a high-pressure system in the atmosphere traps warm air like a lid on a pot, for an extended period of time. Since the warm air cannot rise upwards, clouds cannot form — clouds form when warm, moist air from the ground rises, cools down, and the water vapour in it condenses.

With skies clear, more sunlight reaches Earth, which results in more warming and drying of the soil. The longer the heat dome stays in one place, the warmer the conditions get with each passing day.

Why are heat domes formed?

A heat dome's formation is tied to the behaviour of the jet stream — an area of fast-moving air, high in the atmosphere, that usually helps move weather systems along the Earth's surface.

Typically, jet streams have a wave-like pattern that moves from north to south, and then north again. When these waves get bigger and elongated, they move slowly and sometimes can become stationary. This is when a high-pressure system gets stuck in place, and leads to the formation of a heat dome.

How is climate change impacting heat domes?

Scientists are still debating how climate change is impacting the blocking weather events that cause heat domes. They have ascertained that rising global temperatures have made heat domes larger, and more intense.

A 2021 study by a team of international climate researchers who were part of World Weather Attribution, found that temperatures recorded during the formation of a heat dome in Canada that June "would have been virtually impossible without the influence of human-caused climate change".

Another study, published in the journal *Nature* in 2023, indicated that the intensity of heat domes is outpacing the rate of global warming — which means that climate change is fuelling their intensity.

Context: A sweltering heatwave has engulfed the entire western United States, with California being the hardest hit as a dozen cities break all-time high-temperature records. This scorching heat and dry conditions are due to a heat dome centered over California.

Heat Dome

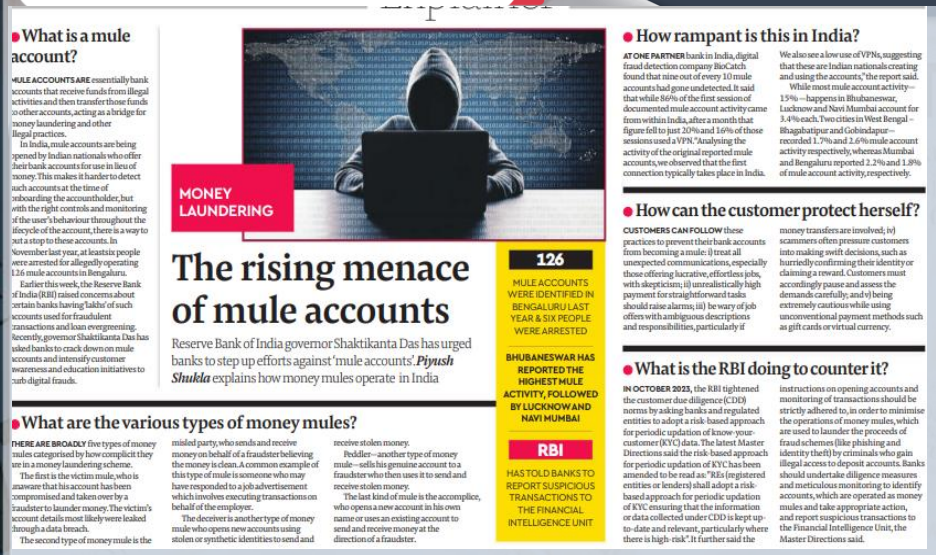
- **About**: It is a type of high-pressure system that forms over a large area in the atmosphere, and causes extremely hot and dry weather conditions.
- **Formation of Clear Skies:** As the warm air is not able to rise upward, the sky remains clear since clouds form under the opposite circumstances when rising warm air cools down and condenses.
- **Increased Sunlight Exposure**: The high-pressure system allows more sunlight to reach the earth, resulting in more warming and drying of the soil.
- **Solar Heating Effect**: The trapped air undergoes heating from the sun over time, contributing to a gradual increase in temperature.
- **Duration of Heat Domes**: While heat domes usually endure for a few days, they can persist for weeks, often resulting in hazardous heat waves.
- **Atmospheric Compression and Temperature Rise**: Under high pressure, descending air undergoes compression, intensifying both its warmth and dryness, consequently elevating temperatures.
- **Role of the Jet Stream**: A heat dome's formation is tied to the behaviour of the jet stream, an area of fast-moving air high in the atmosphere that usually helps move weather systems along the Earth's surface.

Impact of Climate Change on Heat Domes

- Scientists are still debating how climate change impacts blocking weather events that cause heat domes, but rising global temperatures have made heat domes larger and more intense.
- A 2021 study by 27 climate researchers from the World Weather Attribution found that the searing temperatures during the 2021 heat dome in Canada would have been virtually impossible without human-caused climate change.
- A study published in Nature in 2023 indicated that the intensity of heat domes is outpacing the rate of global warming, suggesting that climate change is fuelling their intensity.

MULE ACCOUNT

(Syllabus: GS Paper 3 – Economy)



Explainer

MONEY LAUNDERING

The rising menace of mule accounts

Reserve Bank of India governor Shaktikanta Das has urged banks to step up efforts against 'mule accounts'. *Piyush Shukla* explains how money mules operate in India

What is a mule account?

MULE ACCOUNTS ARE essentially bank accounts that receive funds from illegal activities and then transfer those funds to other accounts, acting as a bridge for money laundering and other illegal practices.

In India, mule accounts are being opened by Indian nationals who offer their bank accounts for use in lieu of money. This makes it harder to detect such accounts at the time of onboarding the accountholder, but with the right controls and monitoring of the user's behaviour throughout the lifecycle of the account, there is a way to put a stop to these accounts. In November last year, at least six people were arrested for allegedly operating 126 mule accounts in Bengaluru.

Earlier this week, the Reserve Bank of India (RBI) raised concerns about certain banks having 'lakhs' of such accounts used for fraudulent transactions and loan evergreening. Recently, governor Shaktikanta Das has asked banks to crack down on mule accounts and intensify customer awareness and education initiatives to curb digital frauds.

What are the various types of money mules?

THERE ARE BROADLY five types of money mules categorised by how complicit they are in a money laundering scheme.

The first is the victim mule, who is unaware that his account has been compromised and taken over by a fraudster to launder money. The victim's account details most likely were leaked through a data breach.

The second type of money mule is the misled party, who sends and receive money on behalf of a fraudster believing the money is clean. A common example of this type of mule is someone who may have responded to a job advertisement which involves executing transactions on behalf of the employer.

The deceiver is another type of money mule who opens new accounts using stolen or synthetic identities to send and receive stolen money.

Peddler—another type of money mule—sells his genuine account to a fraudster who then uses it to send and receive stolen money.

The last kind of mule is the accomplice, who opens a new account in his own name or uses an existing account to send and receive money at the direction of a fraudster.

How rampant is this in India?

AT ONE PARTNER bank in India, digital fraud detection company BioCatch found that nine out of every 10 mule accounts had gone undetected. It said that while 86% of the first sessions of documented mule account activity came from within India, after a month that figure fell to just 20% and 16% of those sessions used a VPN. "Analysing the activity of the original reported mule accounts, we observed that the first connection typically takes place in India. We also see a low use of VPNs, suggesting that these are Indian nationals creating and using the accounts," the report said.

While most mule account activity—15%—happens in Bhubaneswar, Lucknow and Navi Mumbai account for 3.4% each. Two cities in West Bengal—Bhagabatipur and Gobindapur—recorded 1.7% and 2.6% mule account activity respectively, whereas Mumbai and Bengaluru reported 2.2% and 1.8% of mule account activity, respectively.

How can the customer protect herself?

CUSTOMERS CAN FOLLOW these practices to prevent their bank accounts from becoming a mule: i) treat all unexpected communications, especially those offering lucrative, effortless jobs, with skepticism; ii) unrealistically high payment for straightforward tasks should raise alarms; iii) be wary of job offers with ambiguous descriptions and responsibilities, particularly if money transfers are involved; iv) scammers often pressure customers into making swift decisions, such as hurriedly confirming their identity or claiming a reward. Customers must accordingly pause and assess the demands carefully, and v) being extremely cautious while using unconventional payment methods such as gift cards or virtual currency.

What is the RBI doing to counter it?

IN OCTOBER 2023, the RBI tightened the customer due diligence (CDD) norms by asking banks and regulated entities to adopt a risk-based approach for periodic updation of know-your-customer (KYC) data. The latest Master Directions said the risk-based approach for periodic updation of KYC has been amended to be read as: "REs (registered entities or lenders) shall adopt a risk-based approach for periodic updation of KYC ensuring that the information or data collected under CDD is kept up-to-date and relevant, particularly where there is high-risk". It further said the instructions on opening accounts and monitoring of transactions should be strictly adhered to, in order to minimise the operations of money mules, which are used to launder the proceeds of fraud schemes (like phishing and identity theft) by criminals who gain illegal access to deposit accounts. Banks should undertake diligence measures and meticulous monitoring to identify accounts, which are operated as money mules and take appropriate action, and report suspicious transactions to the Financial Intelligence Unit, the Master Directions said.

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MULE ACCOUNTS WERE IDENTIFIED IN BENGALURU LAST YEAR & SIX PEOPLE WERE ARRESTED

BHUBANESWAR HAS REPORTED THE HIGHEST MULE ACTIVITY, FOLLOWED BY LUCKNOW AND NAVI MUMBAI

RBI

HAS TOLD BANKS TO REPORT SUSPICIOUS TRANSACTIONS TO THE FINANCIAL INTELLIGENCE UNIT

Context: Reserve Bank of India governor has urged banks to step up efforts against 'mule accounts'.

Mule Account

- **About**: These are essentially bank accounts that receive funds from illegal activities and then transfer those funds to other accounts, acting as a bridge for money laundering and other illegal practices.
- In India, mule accounts are being opened by Indian nationals who offer their bank accounts for use in lieu of money.
- **Types of Money Mules**:
  - **Victim Mule:** It is unaware that their account has been compromised and is used by a fraudster for money laundering. Their account details are typically obtained through data breaches.
  - **Misled Party**: It sends and receives money on behalf of a fraudster, believing the money is legitimate. This often happens when someone responds to a job advertisement that involves handling transactions.
  - **Deceiver:** It opens new accounts using stolen or synthetic identities to facilitate the transfer of stolen money.
  - **Peddler**: A peddler sells their genuine account to a fraudster, who then uses it for sending and receiving stolen money.
  - **Accomplice**: It opens a new account in their own name or uses an existing account to send and receive money as directed by a fraudster.

Detection of Mule Accounts in India

- **High Undetected Rate**: At a partner bank in India, BioCatch reported that nine out of ten mule accounts were undetected.
- **Initial and Subsequent Activity**: Initially, 86% of mule account activity came from within India. After a month, this figure decreased to 20%, with 16% of these sessions using a VPN.
- **Geographic Trends**: Most mule account activity 15% is concentrated in Bhubaneswar. Lucknow and Navi Mumbai each account for 3.4%, while Bhagabatipur and Gobindapur in West Bengal show 1.7% and 2.6%, respectively. Mumbai and Bengaluru report 2.2% and 1.8% of mule account activity, respectively.
- **Low VPN Usage:** The report indicates that the initial connection for reported mule accounts usually occurs in India with low VPN usage, implying these accounts are predominantly created and operated by Indian nationals.

NEWS 18 July 11

KARNATAKA GIG WORKERS BILL
(Syllabus: GS Paper 3 – Economy)

How Does Karnataka Aim To Protect Platform-Based Gig Workers? What's In The Draft Bill?

Context: Recently, the government of Karnataka has released a draft of the Karnataka Platform-based Gig Workers (Social Security and Welfare) Bill.

Karnataka Platform-based Gig Workers Bill

- **Protection Against Unfair Dismissals**: The bill introduces measures to protect workers from unjust termination, ensuring they cannot be dismissed without valid reasons.
- **Two-Tier Grievance System**: A two-tier system is established for workers to file grievances, offering a structured process to address and resolve issues.
- **Transparency in Automated Monitoring**: Increased transparency is mandated for automated monitoring and decision-making on platforms, aiming to safeguard workers' rights and fairness.
- **Rights-Based Bill**: The bill is introduced as a 'rights-based bill', focusing on enhancing and protecting the rights of workers.
- **Contractual Obligations**: Contracts between aggregators and workers must include a comprehensive list of termination grounds, ensuring clarity and fairness.
- **Valid Reason for Termination**: Aggregators must provide valid reasons in writing and give a 14-day notice before terminating a worker's contract.
- **Right to Refuse Gigs:** Workers are allowed to refuse a set number of gigs weekly without facing negative consequences, as long as they provide a reasonable cause.
- **Weekly Payments and Deductions**: Aggregators are required to make payments to workers weekly and must provide explanations for any deductions from their pay.

Gig Worker

- **Definition**: A gig worker is an individual engaged in temporary, contract, or freelance jobs within the gig economy.
- **Alternative Terms**: Gig workers are also referred to as independent contractors, freelancers, or on-call workers.

Gig Economy

- **About**: It is a labor market that relies heavily on temporary and part-time positions filled by independent contractors and freelancers rather than full-time permanent employees.
- **Benefits**: It offers adaptability for workers, businesses, and consumers by accommodating flexible work arrangements and lifestyles.

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