theIAShub

the IAS hub
Be Your Dream.

APRIL
18

CRUX 10

10 News. 10 Sources. One Place

THE HINDU
ET
BS
TOI
The Indian EXPRESS
livemint
pib
DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH
Science Reporter
विज्ञान एवं प्रौद्योगिकी मन्त्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

Table of Contents

1. India’s Heat Action Plan
2. Special Rupee Vostro Account
3. Herpes B Virus
4. Depreciation of Rupee
5. Primary Plastic Polymers
6. United Nations Population Fund
7. DTAA
8. Starlink
9. C-C Nozzle
10. Cloud Seeding

THE HINDU

Page 10

INDIA'S HEAT ACTION PLAN

(Syllabus: GS Paper 3 – Disaster Management)



On India's 'heat action plans'

How does the India Meteorological Department define heatwaves? What do heat action plans recommend? Are special interventions needed for vulnerable communities during a heatwave? What about regional variations and socio-economic differences?

EXPLAINER

India K. Murthy
Sahil Mathew

The story so far:

Come summer, we are used to seeing heat alerts from the India Meteorological Department (IMD) for various parts of India. This year, these alerts began in February itself. Parts of the northeast and western India have already reported appreciably warm temperatures (3.1-5 degrees Celsius above normal) before the start of summer. The IMD has also predicted an increase in the maximum temperature and the frequency of heatwave conditions in the forthcoming days over eastern and southern India, raising the question of India's readiness to face this hazard.

What is a heatwave?

According to the IMD, the definition of a heatwave depends on the physiography of regions. The IMD will declare a heatwave if the maximum temperature recorded at a station is 40 degrees Celsius or more in the plains, 37 degrees Celsius or more in the coast, and 30 degrees Celsius or more in the hills.

A heatwave's severity is determined by its departure from normal temperature. There is a 'normal heatwave' when the departure is by 4.5-6.4 degrees Celsius and a 'severe heatwave' if the departure is greater. Heatwave declaration could also be based on actual maximum temperature: a 'heatwave' is when this figure is greater than 45 degrees Celsius and a 'severe heatwave' when greater than 47 degrees Celsius. The IMD takes the latter two 'routes' only when at least two stations in a meteorological subdivision report such a high maximum or when at least one station has recorded a corresponding departure from the normal for at least two consecutive days.

How are we tackling heatwaves?

With the severity and frequency of heatwaves increasing across the country, governments at various levels — State, district, and city — have prepared heat action plans (HAPs). HAPs aim to increase preparedness and lower the adverse impacts of extreme heat by outlining strategies and measures to prepare for, address, and recover from heatwaves. The National Disaster Management Authority and IMD are reported to be working with 23 States to develop HAPs. There is no centralised database on HAPs, but at least 23 HAPs exist at the State and city level, with a few States, such as Odisha and Maharashtra, laying out district-level HAPs.

HAPs in India follow a general pattern. They provide a snapshot of regions' heat profile, including information on the number of past heatwave events, yearly trends in the summer maximum temperature, land surface temperature, and so on, followed by a vulnerability assessment which maps out regions that require immediate attention and a response plan. This plan presents recommendations for mitigating and addressing heatwave impacts before, during, and after a heatwave and outlines the roles and responsibilities of various line departments, such as the disaster management authority, labour department, and police.

What do the HAPs recommend?

HAPs typically suggest a combination of measures such as using forecasts and early warning systems to alert the public and relevant authorities about heatwaves, educating the public through campaigns that provide information on risks associated with heatwaves, building heat shelters and cooling centres, and providing clean drinking water to avoid dehydration.

HAPs provide directives for hospitals to be well-equipped with supplies and an adequate number of trained healthcare workers to recognise and treat a large influx of patients with heat-related illnesses. HAPs also suggest long-term measures such as adopting urban planning strategies that promote tree planting, using heat-resistant building materials to reduce urban heat island effect, and using cool roofing technologies to reduce solar absorption, thereby decreasing indoor temperatures. In addition, HAPs push for effective coordination among stakeholders, including government agencies, healthcare providers, community organisations, and emergency services.

What debilitates HAPs from addressing the problem effectively?

While HAPs are excellent guidelines that have brought into focus the problem of heatwaves and the need to address them, much work remains to make them practical to the highly variable weather conditions and the diversity of socio-economic conditions prevailing in the country.

The local context: A national threshold is what determines a heatwave today. However, heatwaves will have to be determined at disaggregated scales such as States, districts, and cities. Many cities have been reeling under extreme temperatures, although no heatwave has been declared. Aspects such as the urban heat island effect, the type of roofing, and proximity to water or green bodies are important influences on the local temperature in addition to humidity. Further, the bed local experience is an important aspect to be considered. Therefore, the scope of a heatwave needs to be expanded to accommodate humid heat and warmer nights in addition to extreme dry heat. This requires the development of a heat index that accounts for multiple factors beyond temperature. Regional variations also need to be considered, as HAPs that are tailored to specific climatic conditions, demography, and a region's infrastructure can lead to the formulation of strategies and interventions suited to the local context.

Inconsistent methods: While most HAPs have conducted vulnerability assessments during the development of the plans, the methods adopted are inconsistent. It is, therefore, time to transition to a robust, full-fledged climate risk assessment that can identify the likelihood of heatwaves in different areas and estimate the exposure of people and important assets to heatwaves while factoring in inherent vulnerabilities. Also, hotspot mapping for prioritising and formulating targeted interventions is needed, which is now possible with easy-to-access geospatial data.

Vulnerable populations: All HAPs prioritise the protection of vulnerable populations such as low-income communities, children, and the elderly. But what is missing are targeted interventions that account for the varying needs of populations based on local social and demographic factors, in addition to infrastructure elements that could exacerbate heat. Over 90% of India's economy is informal and starkly visible when we step out of our homes, be it a pushcart vendor, a chaiwala, household help, or sanitation worker. If we acknowledge heatwaves as a public health concern, targeted strategies need to be formulated by recognising various socio-economic differences.

Resource allocation: The implementation of HAPs can vary significantly depending on the priorities of local governments and the capacities available. Hence, there is a need to allocate dedicated budgets for HAPs. Further, it is of utmost importance to hold dialogues between the state, civil society organisations, and worker unions to co-plan a financial mechanism that can allow informal workers to be indoors during a heatwave while not losing their incomes.

Breaking down silos: HAPs currently are stand-alone plans with limited finance. Pooling in resources would be possible if they are integrated with broader action plans promoting urban resilience and climate adaptation. Such an integration will likely have a bearing on the overall effectiveness of HAPs and their implementation and prompt improvements in data collection and monitoring systems, which are essential to help assess the effectiveness of HAPs over time.

Finally, while HAPs mention long-term measures, they are limited to building infrastructure (especially cool roofs), with a cursory mention of green and blue spaces. For HAPs to be effective, focused planning on including nature-based solutions to address extreme heat in hotspots is a must.

India K. Murthy is a principal research scientist heading the Climate, Environment, and Sustainability Sector at the Center for Study of Science, Technology and Policy (CSTEP). Sahil Mathew is an analyst in the Climate, Environment and Sustainability Sector at CSTEP.

THE GIST

The IMD will declare a heatwave if the maximum temperature recorded at a station is 40 degrees Celsius or more in the plains, 37 degrees Celsius or more in the coast, and 30 degrees Celsius or more in the hills.

With the severity and frequency of heatwaves increasing across the country, governments at various levels — State, district, and city — have prepared heat action plans (HAPs).

While HAPs are excellent guidelines that have brought into focus the problem of heatwaves and the need to address them, much work remains to make them practical to the highly variable weather conditions.

Parched land: A local fisherman at the Chandola Lake in Ahmedabad on April 9. VIJAY SONEJI

Context: The IMD has also predicted an increase in the maximum temperature and the frequency of heatwave conditions in the forthcoming days over eastern and southern India, raising the question of India's readiness to face this hazard.

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.
- **Departure from Normal Heat Wave**: Departure from normal temperature ranges from 4.5°C to 6.40°C.
- **Actual Maximum Temperature Heat Wave**: Declared when the actual maximum temperature is equal to or exceeds 450°C.

Tackling Heatwaves

- **Increasing Preparedness:** Governments at various levels have devised Heat Action Plans (HAPs) to enhance readiness and mitigate the adverse effects of heatwaves.
- **Collaborative Efforts**: The National Disaster Management Authority and IMD are collaborating with 23 States to develop HAPs, demonstrating a coordinated approach.
- **State and City Initiatives**: While there's no centralized database, at least 23 HAPs are in place at the state and city levels, with some states, like Odisha and Maharashtra, extending plans to the district level.
- **Standardized Framework**: HAPs in India follow a standardized framework, providing insights into past heatwave occurrences, annual temperature trends, vulnerability assessments, and response plans.

SPECIAL RUPEE VOSTRO ACCOUNT
(Syllabus GS Paper 3 – Economy)

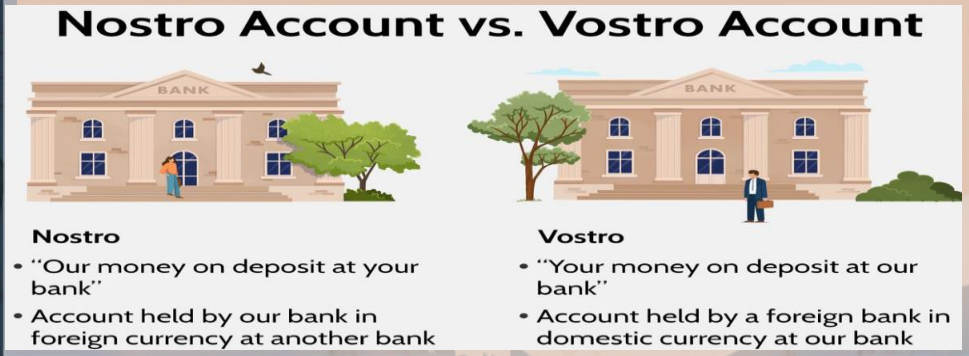
Payment mechanism for traders importing pulses from Myanmar simplified: Govt

Context: India has simplified the payment mechanism for traders importing pulses from Myanmar, requiring them to use the Rupee/Kyat direct payment system through the **Special Rupee Vostro Account (SRVA).**

Vostro Account: It is an account that domestic banks hold for foreign banks in the former's domestic currency, such as the rupee.

- **International Banking Services:** Domestic banks utilize Vostro Accounts to offer international banking services to clients with global banking needs.

Nostro accounts: A nostro account is a bank account held in another country by a domestic bank, denominated in the currency of the overseas country.



Special Rupee Vostro Account (SRVA)

- **About**: SRVA is an additional arrangement for settling international trade using Indian Rupees (INR), complementing existing systems of freely convertible currencies.
- **Freely Convertible Currency:** U.S. Dollar or Pound Sterling, are permitted for conversion by the country's regulations.
- **Aim:** To reduce reliance on hard (freely convertible) currencies for international trade settlements.
- **RBI Approval Requirement:** Unlike Rupee Vostro accounts, SRVA requires prior approval from the Reserve Bank of India (RBI) before opening.
- **Functionality of SRVA**: The SRVA framework operates through three key components: invoicing, exchange rate determination, and settlement.

Mechanism of SRVA

- **Invoicing in INR**: All exports and imports must be denominated and invoiced in Indian Rupees (INR).
- **Market-Determined Exchange Rate**: Exchange rates between partner countries' currencies are determined by the market.
- **Role of Domestic Banks**: Authorized domestic dealer banks open SRVA accounts for correspondent banks of partner countries.
- **Payment Procedures:** Domestic importers pay in INR into the correspondent bank's SRVA for goods or services.
    - Domestic exporters receive export proceeds in INR from the correspondent bank's designated account.
- **Regulatory Compliance:** All cross-border transactions are reported as per Foreign Exchange Management Act (FEMA), 1999 guidelines.

DTE

Apr 17

HERPES B VIRUS

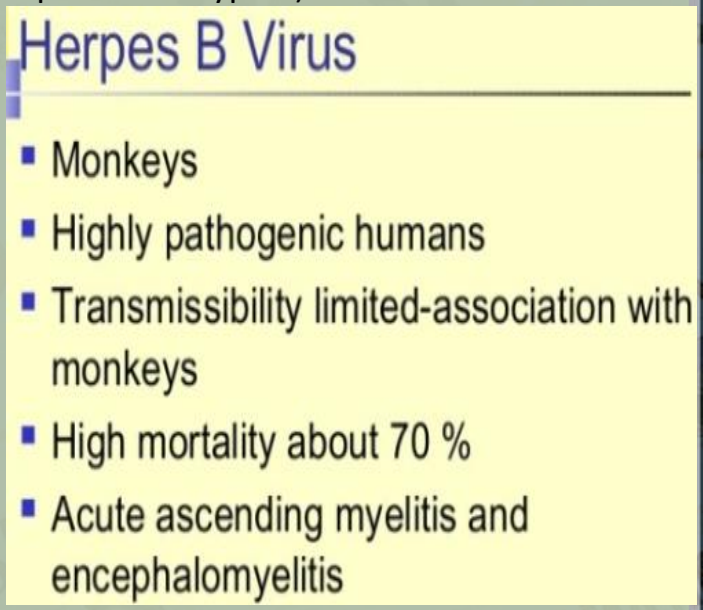
(Syllabus: GS Paper 3 – Sci and Tech)

Man who caught virus from a monkey in a critical condition B virus explained

Context: A 37-year-old man wounded by a wild monkey in Hong Kong is in intensive care suffering from infection with B virus.

Herpes B Virus

- **About**: B-virus, formerly known as Macacine herpesvirus, is a type of Simplexvirus that infects macaque monkeys.
- **Similarity to HSV-1:** B virus bears significant resemblance to HSV-1 (Herpes Simplex Virus Type 1).
- **Rare Occurrence in Humans**
  - **Historical Context:** Since its identification in 1932, B virus infections in humans have been exceptionally rare.
  - **Limited Cases:** Only 50 documented cases of B virus infections in humans have been recorded, with a notable mortality rate.
  - **Modes of Transmission**: Human infections typically occur through direct contact with infected monkeys, such as bites, scratches, or exposure to bodily fluids through breaks in the skin.
- **Symptoms:** Fever and chills, muscle ache, fatigue and headache
- **Transmission:** It can spread from infected macaque monkeys to people. Macaque monkeys commonly have this virus, and it can be found in their saliva, feces (poop), urine (pee), or brain or spinal cord tissue.
- **Prevention**: There are no vaccines that can protect you against B virus infection.



LIVEMINT

Front Page

DEPRECIATION OF RUPEE

(Syllabus: GS Paper 3 – Economy)



How the rupee plunge impacts the economy

BY SUMANT BANERJI

The rupee has fallen to a new low of 83.5 against the dollar. This has wide ramifications, making exports lucrative but imports expensive. *Mint* looks at why the domestic currency is falling, how it impacts everybody and what the RBI can do about it.

1 By how much has the rupee depreciated?

The value of the rupee fell to an all-time closing low of 83.54 against the dollar on Tuesday. It had gone even lower at 83.57 during intra-day trade but likely intervention by the Reserve Bank of India prevented a further slide. It ended with a 9 paise or 0.10% depreciation and was still one of the better performing currencies among Asian economies. The Indonesian Rupiah depreciated 2%, Taiwanese dollar 0.34%, South Korean won 0.76%, the yen 0.28%, Thai baht 0.21% and yuan 0.18%. In the mid-term however, the rupee has now depreciated by over 5% in the last 2 years (see table). This is steeper than the long-term trend.

2 What are the reasons for the fall?

Geopolitical instability has a major impact on investors which, in turn, sets in motion a chain reaction ultimately affecting the value of a currency. The Iran-Israel conflict on top of the prevailing Israel-Palestine and Russia-Ukraine wars, could potentially disrupt global supply chains, leading to an increase in the prices of commodities, fuelling inflation. This in turn diminishes the chances of an interest rate cut by the US Fed—central banks raise interest rates to curb consumer spending. Higher rates in the US encourage investors to move money from different parts of the world, including India, to the US.

3 How does it affect the Indian economy?

A weaker rupee makes imports expensive while it benefits exporters. Since India is a net importer of goods and services—it has a current account deficit of $9.2 billion in the first half of 2023-24—a fall in the rupee hits a host of products from electronics and machinery to plastics and chemicals. A more direct impact is on oil prices.

4 Can't the central bank do something?

The value of a currency is a factor of demand and supply which depends on the overall attractiveness of a country as an investment destination. The rupee's value goes up if foreign investors flock to either set up manufacturing units (FDI), invest in the markets and companies (FII) or if exports rise. If the value of the rupee drops alarmingly, the RBI can intervene by selling dollars from its foreign exchange kitty or raise interest rates to try and compete with the US Fed and provide good returns to investors.

5 Are things likely to get better?

The rupee's fall coincides with India sitting on record foreign exchange reserves of $648.56 billion. They rose by $2.98 million in the week ending 5 April and have now grown for 7 consecutive weeks. This gives the RBI significant headroom to splurge. On Tuesday it intervened to sell dollars worth an estimated $100-200 million to prevent the rupee from sliding further. It had done the same in 2022 following the Ukraine war and the US Fed raising rates. Experts expect RBI to intervene to stem a further fall.

Context: The rupee has fallen to a new low of 83.5 against the dollar.

Depreciation of Rupee

- **About:** It refers to the decline in the value of the Rupee compared to the dollar, indicating that the Rupee has decreased in worth and strength relative to the dollar.
- **Reasons for the fall:**
  - **Geopolitical Instability**: It impacts investors, triggering a chain reaction affecting currency value.
  - **Conflict Escalation**: The Iran-Israel conflict, alongside ongoing Israel-Palestine and Russia-Ukraine conflicts, threatens global supply chains.
  - **Supply Chain Disruption**: Conflict escalation could disrupt global supply chains, leading to increased commodity prices and fueling inflation.
  - **Inflationary Pressure**: Rising commodity prices contribute to inflation, diminishing the likelihood of a US Fed interest rate cut.
  - **Impact on Interest Rates**: Diminished chances of a US interest rate cut prompt investors to move funds to the US, affecting global financial flows, including those to India.

Impact of Weaker Rupee on Indian Economy

- **Imports Become Costlier**: A weaker rupee results in increased costs for importing goods and services into India.
- **Benefit for Exporters**: Exporters gain an advantage as their goods become more competitively priced in international markets.
- **Broad Range of Affected Products**: Various sectors, including electronics, machinery, plastics, and chemicals, face higher prices due to the depreciation of the rupee.
- **Direct Impact on Oil Prices**: The weakening of the rupee directly influences the cost of imported oil, affecting energy prices domestically.

DTE

Apr 17

PRIMARY PLASTIC POLYMERS

(Syllabus: GS Paper 3 – Sci and Tech)

Global plastic profiles: Here is how countries fare on primary polymers

Plastics in use in 2019, by polymer and application

Sr. no.	Polymer type	Million metric tonnes	Percentage
1	Linear low-density polyethylene (LLDPE) and low-density polyethylene (LDPE)	54	12
2	High-density polyethylene (HDPE)	56	12
3	Polypropylene (PP)	73	16
4	Polystyrene (PS)	21	5
5	Polyvinyl chloride (PVC)	51	11
6	Polyethylene terephthalate (PET)	25	5
7	Others (including applications like marine coatings, road markings and fibres)	179.5	39
	Total	459.5	

Polymers

- **About**: It is a natural or synthetic chemical compound composed of repeating strings of large, chemically-bonded molecules, or monomers.
- **Types of Polymers**: Homopolymers (consisting of one type of monomer) or copolymers (consisting of two or more monomers).
- **Constituents of Polymers**: These are made of chemically-bonded chains of molecules or monomers, which can vary from simple atoms to complex functional groups of atoms.

Context: In the context of the ongoing negotiations within the United Nations Environment Assembly (UNEA) to end plastic pollution, the term "primary plastic polymers" refers to the types of plastic resins or polymers that are commonly used in the production of plastic products.

Primary Plastic Polymers

- **About:** A solid material which contains as an essential ingredient one or more high-molecularmass polymers and which is formed (shaped) during either manufacture of the polymer or the fabrication into a finished product by heat and/or pressure.
    - Plastics have material properties ranging from hard and brittle to soft and elastic.
- **Also known as**: 'virgin plastics,' these are polymers directly manufactured from fossil- or bio-based feedstocks, forming the basis of plastic products.
- **Plastic Polymers**: These are large synthetic molecules made of smaller units called monomers, bonded together with chemicals.
    - **Composition**: Plastic materials consist of plastic polymers, chemical additives, and non-intentionally added substances (NIAS).
- **Secondary Plastics**: Also called 'recycled plastics,' these materials are formed by reshaping plastic waste, with the polymers remaining the same as those in the original material.

LIVEMINT

Page 9

UNITED NATIONS POPULATION FUND

(Syllabus: GS Paper 1 – Indian Society)

India's population touches 1.44 billion: UNFPA report

India's population is estimated to have reached about 1.44 billion, with 24% in the 0-14 age bracket, according to a report by the United Nations Population Fund, or UNFPA. The UNFPA's State of World Population 2024 report— titled *Interwoven Lives, Threads of Hope: Ending Inequalities in Sexual and Reproductive Health and Rights*—also noted that India's population is estimated to double in 77 years.

Currently, India leads globally with an estimated population of 1.44 billion, followed by China at 1,425 million, according to the report. India's population was recorded at 1,210 million during the last census, which was conducted in 2011.

The report added that 17% of India's population is within the 10-19 years age range, while the 10-24 years segment is estimated to constitute 26% of the population, and the 15-64 age group 68%. Additionally, 7% of India's population is aged 65 years and above, with men having a life expectancy of 71 years and women 74 years. PTI



India's population was recorded at 1,210 million in the last census. PTI

Context: India's population is estimated to have reached 1.44 billion, with 24 per cent in the 0-14 age bracket, according to a recent report by the UNFPA.

United Nations Population Fund

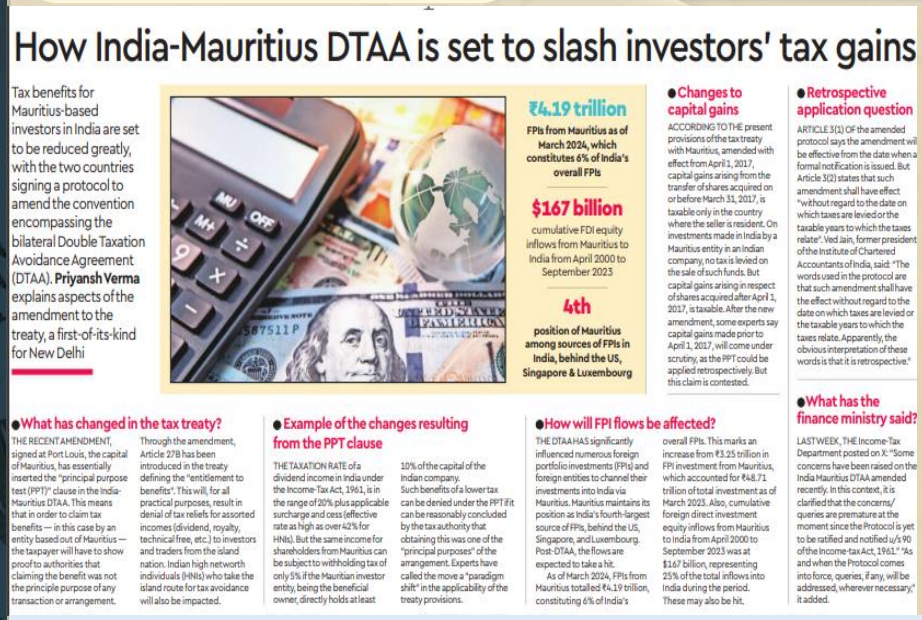
- **About:** It is an international development agency dedicated to addressing population and sexual and reproductive health issues.
- **Establishment:** 1968
  - UNFPA has been operating in India since 1974.
- **Mission**: To advocate for a world where every pregnancy is desired, every childbirth is safe, and every young person's potential is realized.
- **Renaming**: Originally known as the United Nations Fund for Population Activities (UNFPA), it was officially renamed the United Nations Population Fund in 1987, while retaining its original abbreviation.
- **Headquarters**: New York, United States.
- **Areas of Focus**: UNFPA funds assistance, research, and advocacy programs primarily in three major areas: reproductive health (including family planning and safe motherhood), population issues (in both developed and developing countries), and women's status (addressing the gender gap in education).
- **Program Implementation**: UNFPA assistance programs are initiated and carried out in response to requests from governments, ensuring alignment with national priorities and strategies.

Key Point of State of World Population - 2024 Report

- India leads globally with an estimated population of 1.44 billion, followed by China at 1.425 billion, according to the report.
- India's population was recorded at 1.21 billion during the last census, conducted in 2011.
- The report further detailed that an estimated 24 per cent of India's population is aged 0-14 while 17 per cent is within the 10-19 age range.
- The segment aged 10-24 is estimated to constitute 26 per cent, with the 15-64 age group making up 68 per cent. Additionally, 7 per cent of India's population is aged 65 years and above, with men having a life expectancy of 71 years and women 74 years.

DTAA

(Syllabus: GS Paper 3 – Economy)



How India-Mauritius DTAA is set to slash investors' tax gains

Tax benefits for Mauritius-based investors in India are set to be reduced greatly, with the two countries signing a protocol to amend the convention encompassing the bilateral Double Taxation Avoidance Agreement (DTAA). **Priyansh Verma** explains aspects of the amendment to the treaty, a first-of-its-kind for New Delhi

₹4.19 trillion
FPIs from Mauritius as of March 2024, which constitutes 6% of India's overall FPIs

$167 billion
cumulative FDI equity inflows from Mauritius to India from April 2000 to September 2023

4th
position of Mauritius among sources of FPIs in India, behind the US, Singapore & Luxembourg

Changes to capital gains

ACCORDING TO THE present provisions of the tax treaty with Mauritius, amended with effect from April 1, 2017, capital gains arising from the transfer of shares acquired on or before March 31, 2017, is taxable only in the country where the seller is resident. On investments made in India by a Mauritius entity in an Indian company, no tax is levied on the sale of such funds. But capital gains arising in respect of shares acquired after April 1, 2017, is taxable. After the new amendment, some experts say capital gains made prior to April 1, 2017, will come under scrutiny, as the PPT could be applied retrospectively. But this claim is contested.

Retrospective application question

ARTICLE 3 (1) OF the amended protocol says the amendment will be effective from the date when a formal notification is issued. But Article 3(2) states that such amendment shall have effect "without regard to the date on which taxes are levied or the taxable years to which the taxes relate". Ved Jain, former president of the Institute of Chartered Accountants of India, said: "The words used in the protocol are that such amendment shall have the effect without regard to the date on which taxes are levied or the taxable years to which the taxes relate. Apparently, the obvious interpretation of these words is that it is retrospective."

What has changed in the tax treaty?

THE RECENT AMENDMENT, signed at Port Louis, the capital of Mauritius, has essentially inserted the "principal purpose test (PPT)" clause in the India-Mauritius DTAA. This means that in order to claim tax benefits — in this case by an entity based out of Mauritius — the taxpayer will have to show proof to authorities that claiming the benefit was not the principle purpose of any transaction or arrangement. Through the amendment, Article 27B has been introduced in the treaty defining the "entitlement to benefits". This will, for all practical purposes, result in denial of tax reliefs for assorted incomes (dividend, royalty, technical fee, etc.) to investors and traders from the island nation. Indian high networth individuals (HNIs) who take the island route for tax avoidance will also be impacted.

Example of the changes resulting from the PPT clause

THE TAXATION RATE of a dividend income in India under the Income-Tax Act, 1961, is in the range of 20% plus applicable surcharge and cess (effective rate as high as over 42% for HNIs). But the same income for shareholders from Mauritius can be subject to withholding tax of only 5% if the Mauritian investor entity, being the beneficial owner, directly holds at least 10% of the capital of the Indian company. Such benefits of a lower tax can be denied under the PPT if it can be reasonably concluded by the tax authority that obtaining this was one of the "principal purposes" of the arrangement. Experts have called the move a "paradigm shift" in the applicability of the treaty provisions.

How will FPI flows be affected?

THE DTAA HAS significantly influenced numerous foreign portfolio investments (FPIs) and foreign entities to channel their investments into India via Mauritius. Mauritius maintains its position as India's fourth-largest source of FPIs, behind the US, Singapore, and Luxembourg. Post-DTAA, the flows are expected to take a hit.

As of March 2024, FPIs from Mauritius totalled ₹4.19 trillion, constituting 6% of India's overall FPIs. This marks an increase from ₹3.25 trillion in FPI investment from Mauritius, which accounted for ₹48.71 trillion of total investment as of March 2023. Also, cumulative foreign direct investment equity inflows from Mauritius to India from April 2000 to September 2023 was at $167 billion, representing 25% of the total inflows into India during the period. These may also be hit.

What has the finance ministry said?

LAST WEEK, THE Income-Tax Department posted on X: "Some concerns have been raised on the India Mauritius DTAA amended recently. In this context, it is clarified that the concerns/queries are premature at the moment since the Protocol is yet to be ratified and notified u/s 90 of the Income-tax Act, 1961." "As and when the Protocol comes into force, queries, if any, will be addressed, wherever necessary," it added.

Context: The recent amendment signed at Port Louis, the capital of Mauritius, has essentially inserted the "principal purpose test (PPT)" clause in the India-Mauritius DTAA.

Double Taxation

- **About**: It refers to the imposition of two or more taxes on the same source of income, often occurring across borders or jurisdictions.

Principal Purpose Test (PPT)

- **About:** The tax administration can reject the tax treaty benefit if obtaining a benefit was one of the main objectives of the action taken by the taxpayer.

Double Taxation Avoidance Agreement (DTAA)

- **About:** It is an accord between two nations aimed at promoting capital investment, trade, and economic activities by preventing International Double Taxation.
- **Mechanism of DTAA**: It entails agreed-upon tax rates and jurisdictions for specific types of income originating in one country and received by tax residents of another.
- **Coverage of DTAA:** Depending on the types of businesses/holdings, DTAA may encompass all income types or focus on particular categories, as outlined in the agreement.
- **Addressing Double Taxation**: The primary concern of DTAA is to mitigate the impact of double taxation on international income, ensuring that individuals or entities engaged in cross-border activities are not unfairly taxed in multiple jurisdictions.
- **Importance of DTAA**: Discrepancies in tax collection globally necessitate DTAA to facilitate international business activities, preventing individuals from being subjected to taxation on the same income in both their home country and the nation where the income is generated.
- **Indian Taxation Rate:** Dividend income in India is taxed at a rate of 20%, with applicable surcharge and cess, resulting in an effective rate exceeding 42% for High Net Worth Individuals (HNIs).
- **Mauritian Tax Advantage**: Shareholders from Mauritius benefit from a lower withholding tax rate of only 5% on dividend income if the Mauritian investor entity, as the beneficial owner, holds at least 10% of the Indian company's capital.

LIVEMINT

Page 6

STARLINK

(Syllabus: GS Paper 3 – Sci and Tech)

Elon Musk's Starlink cracks down on growing black market

FROM PAGE 1

service while traveling.

In its emails to users in recent days, Starlink said that its regional roaming plans "are intended for temporary travel and transit, not for permanent use in a location." Users who have been roaming on Starlink for more than two months without returning to the country where they ordered their device will see their service restricted, the emails said.

The Journal tracked Starlink devices to Russian soldiers fighting on the front line in Ukraine and to Sudan's Rapid Support Forces, a paramilitary group that the U.S. has accused of crimes against humanity and ethnic cleansing in its war with the country's military.

U.S. Assistant Secretary of Defense for Space Policy John Plumb said officials from the Pentagon, Ukraine and SpaceX have been working to prevent Russian forces from using Starlink. Ukraine's military began using Starlink soon after Russia's invasion in 2022 and Kyiv has been pressuring SpaceX to turn off devices used by the Russian military on Ukrainian territory.

At an industry event last week, Plumb declined to discuss details but said the parties involved were making progress.

"Starlink is a commercial product. It's available on the commercial market," he said. "Certainly, Russia has no problem trying to buy things through [the] black market."

In recent months, authorities in several African countries—including Sudan, South Africa, Zimbabwe and the Democratic Republic of Congo—had issued notices to the public that the use of Starlink was illegal. In Zimbabwe, police had begun confiscating Starlink kits and arrested and fined some users.

Gift Machengete, the director-general of the Posts and Telecommunications Regulatory Authority of Zimbabwe, said he had a discussion with SpaceX representatives, including Musk, about the use of Starlink in the country. The following day, Starlink emailed users in Zimbabwe, saying it had been directed by Potraz to disable their service.

In the email, Starlink also encouraged users to contact the agency "to communicate your support for Starlink to obtain the necessary regulatory approvals in Zimbabwe."

Musk once expressed limited concern about Starlink offering internet service in countries using a technology that links satellites together and thus avoids needing permission to develop on-the-ground infrastructure to support the service. Asked if the technology could cause regulatory issues, he said, "They can shake their fist at the sky."

More recently, the executive made clear that Starlink's expansion depended in part on securing permission from various authorities. "Some countries are probably unlikely to approve our system, but most countries, we think we should be able to get to," he said, according to a video of a talk he gave.



Musk once expressed concern about Starlink offering service in countries using a technology that links satellites together. REUTERS

In Sudan, owners of Starlink devices started getting notifications late last week about the impending shutdown. Most of them have been using the service via its regional roaming option for Africa, which costs around $65 a month.

Two Sudanese officials said that after Sudan's telecommunications regulator didn't get a response on its concerns over Starlink from SpaceX's Global Licensing and Activation office in the U.S., it contacted SpaceX's Middle East and Africa division in early April. The agency requested that the devices be turned off in areas controlled by the rebels, the officials.

"RSF fighters have the internet even deep in the deserts; the military commanders want this to end," one of the officials said. "They have been pressuring SpaceX."

But there are fears that severing Starlink connections in Sudan could cut off a lifeline for millions of people who have been in a telecommunications blackout for more than two months.

Shire Shadia, a Sudanese health worker exiled in Uganda, says that Starlink was the only way family members stuck in the war-torn capital, Khartoum, have been able to contact her. "Every day, they go near a camp of RSF (fighters) to find the Starlink network to communicate with us," she said. "It's the only way we have been communicating."

Many Sudanese have also been relying on Starlink connections to receive remittances from relatives living abroad that allow them to purchase food and other necessities. Aid agencies warn that parts of Sudan are likely to slip into famine in the coming weeks or months, potentially claiming hundreds of thousands of lives.

Some aid groups have also relied on the service to communicate with local staff, said Eric Reeves, a Sudan expert and fellow with the Kenya-based Rift Valley Institute. "This is the worst possible time for there to be limitations on aid agencies' ability to communicate," he said.

In South Africa, a teacher said he had bought a Starlink device while vacationing in Canada to bring internet to his school in the small rural town of Brandvlei.

"The kids are more interested in school since we've modernized it," said the teacher, who worries that the shutdown of Starlink in South Africa would again take his students offline. "How do I explain something like this ban... to the kids and parents?" he said.

© 2024 DOW JONES & CO. INC.

Context: Recently, SpaceX has initiated a crackdown on users accessing its Starlink high-speed internet service from unauthorized countries, taking measures to curb the growing black market for the company's satellite kits.

Satellite internet venture Starlink

- **About:** It is the world's largest satellite constellation utilizing low Earth orbit (LEO) to deliver broadband internet, supporting activities like streaming, online gaming, and video calls.
- **Features:** Unlike traditional satellite internet services relying on geostationary satellites at 35,786 km, Starlink's LEO satellites orbit at approximately 550 km, significantly reducing latency to around 25 ms compared to 600+ ms.
- **Satellite Lifespan:** Approximately five years.
- **Current Operational Satellites:** 5,504 (as of March 2024).
- **Planned Satellite Constellation:** Up to 42,000 satellites.

Satellite Internet Working:

- Internet service providers (ISPs) launch multiple satellites into space that orbit around the earth (low-earth orbit or high-earth orbit).
- A satellite dish is then installed on the exterior of your home free from any obstructions like trees or buildings so your satellite dish can receive the signal from space after your internet service provider routes the signal through your modem.
- By installing a Wi-Fi router, you can use that signal to power the internet devices in your home.

- **Licensing Mechanism:**
  - Global Mobile Personal Communication by Satellite (GMPCS) services license: A company must get this license to offer satellite internet in India
  - OneWeb and Jio have already obtained GMPCS licenses.



TIMES OF INDIA

Apr 17

C-C NOZZLE

(Syllabus: GS Paper 3 – Sci and Tech)

Isro Achieves Breakthrough With Lightweight Carbon-Carbon Rocket Engine Nozzle

Context: The Indian Space Research Organisation (ISRO) recently said that it has successfully developed a lightweight Carbon-Carbon (C-C) nozzle for rocket engines.

C-C nozzle

- **About:** It is a lightweight Carbon-Carbon (C-C) innovation designed to optimize rocket engine performance.
- **Developed by**: The Indian Space Research Organisation (ISRO), the C-C nozzle represents cutting-edge advancements in rocket technology.

- **Key Feature:**
  - **Anti-Oxidation Coating**: The nozzle boasts an anti-oxidation coating of Silicon Carbide, significantly expanding its operational capabilities in oxidizing environments.
  - **Enhanced Durability**: This coating minimizes thermally induced stresses and enhances corrosion resistance, allowing for extended operational temperature limits in challenging environments.
  - **Potential Application in PSLV-4**: The Polar Satellite Launch Vehicle (PSLV)-4 currently employs twin engines with nozzles made from Columbium alloy.
  - **Mass Reduction Potential:** By substituting these engines with the C-C nozzle, a substantial mass reduction of approximately 67% can be achieved.
  - **Increased Payload Capability**: This substitution is estimated to increase the payload capability of the PSLV by 15 kg, enhancing its efficiency and versatility.



ECONOMIC TIMES

Apr 17

CLOUD SEEDING

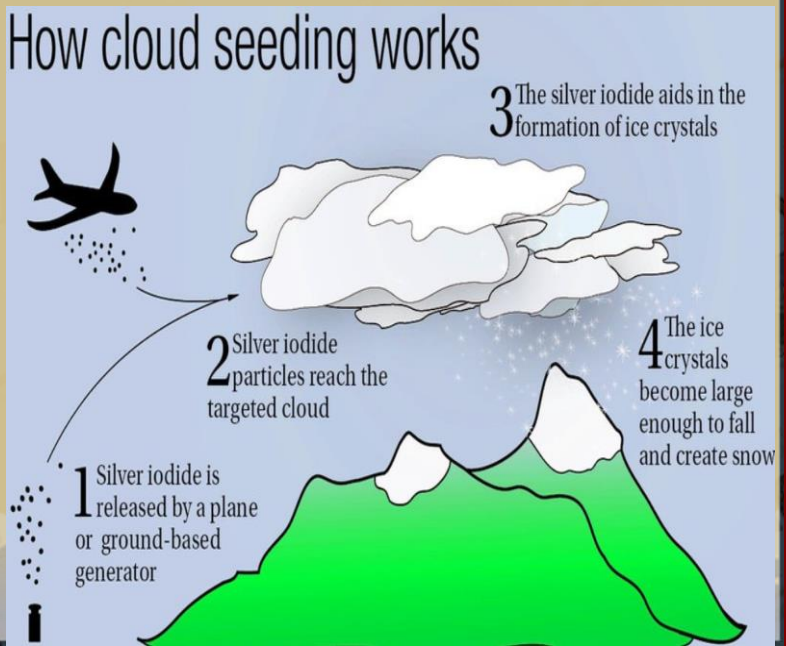
(Syllabus: GS Paper 3 – Env & Eco)

Dubai Floods: Is artificial rain behind UAE's rare torrential weather?

Context: Recently, the arid nation of the United Arab Emirates (UAE) experienced the "heaviest rain ever," resulting in flooding in Dubai, with the widespread rain believed to have been induced by "cloud seeding," among other factors.

Cloud Seeding

- **About:** It is a weather modification technique that improves a cloud's ability to produce rain or snow by introducing tiny ice nuclei into certain types of subfreezing clouds.
- **Cloud Seeding Methods**
  - **Static Cloud Seeding**: It involves the dispersion of a chemical, like silver iodide, into clouds. This substance acts as a crystal around which moisture can condense, enhancing the efficiency of rain clouds in releasing water.
  - **Dynamic Cloud Seeding**: It focuses on amplifying vertical air currents, promoting increased water passage through clouds, resulting in more rainfall. This method employs up to 100 times more ice crystals compared to the static approach [source: Cotton].
  - **Hygroscopic Cloud Seeding**: It utilizes salts dispersed through flares or explosives in the lower sections of clouds. These salts grow in size as they merge with water.
- **Process of Cloud Seeding:**
  - Weather forecasters monitor atmospheric conditions and identify suitable clouds for seeding based on precipitation patterns.
  - This technique can increase rainfall by up to 30-35 per cent in clear conditions and 10-15 per cent in more humid conditions.
- **UAE's Pioneering Cloud Seeding Program:** The UAE initiated its cloud seeding program in the late 1990s, making it one of the first Middle Eastern countries to use this technique.



Environmental Impact of Cloud Seeding

- Cloud seeding changes the expected rainfall distribution, potentially depriving neighboring ecosystems of precipitation originally destined for them.
- Introduction of seeding agents may disrupt natural processes like soil moisture levels, groundwater recharge, and river flows.
- Silver iodide, a common seeding agent, raises worries about silver toxicity, which could harm aquatic life and soil health if cloud seeding becomes widespread.

FREE Download PDF

Login to theiashub.com

- Aaj Ka Quality Enrichment (Toppers' Favourite PDF)
- News-CRUX-10 (10 News. 10 Sources. One Place)
- Monthly Editorials (The Hindu & Indian Express)
- Daily Quiz (Prelims)
- Government Schemes & Ministry Wise Year End Review
- Free Enrichment PDFs (Tailor Made Crisp Study Material)



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

SCAN HERE

9560082909

t.me/theiashub

/mkyadav

www.theiashub.com

www.theiashub.com