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GOLDEN LANGURS

(Syllabus: GS Paper 3 – Env and Eco)

7,396 golden langurs in India, reveals survey

Rahul Karmakar
GUWAHATI



Nature's charm: The previous population estimation in 2008-09 recorded 6,000 golden langurs in India. ANI

There are an estimated 7,396 golden langurs in India, the latest survey of the primate has revealed. The comprehensive population estimation of the endangered primate was carried out in two phases by the Primate Research Centre NE India (PRCNE), Assam Forest Department, Bodoland Territorial Council, Salim Ali Centre for Ornithology and Natural History (SACON), and Conservation Himalayas.

The entire distribution range of the golden langur (*Trachypithecus geei*) covers the Manas Biosphere Reserve and all fragmented forests in the western part of Assam.

In the first phase during March-April 2020, the survey covered the western part of the Manas Biosphere Reserve, including Ripu Reserved Forest – a major part of it was recently upgraded to Raimona National Park - Chirang Reserve Forest, Manas Reserve Forest, and Manas National Park up to the western bank of the Manas River.

The second phase during the same months in 2021 focused on fragmented forest habitats of golden langurs in the Bongaigaon, Kokrajhar, and Dhubri districts of western Assam. The block count method was applied for the first time to assess the abundance, spatial distribution, and densities of the golden langur populations.

"This method is considered to be relatively simple, cost-effective, and robust for arboreal and small group-living primates such as the golden langur," H.N. Kumara, the principal scientist of SACON, said.

The golden langur habitat was demarcated into 51 counting blocks, each overlaid with 50-hectare grid cells. Ten teams, each comprising one or two trained enumerators and three to four forest staff, surveyed the blocks.

"We observed 7,720 individuals of golden langurs in 706 unique groups and 31 lone males or floating males. Estimating minimum population size, we found there to be 7,396 individuals in 707 groups, inclusive of bisexual and male bands, along with 31 lone males," Jihosuo Biswas, the lead primatologist at PRCNE, said. He supervised the survey.

"The population of golden langurs is divided into two major sub-populations. The northern extended population, which encompasses the western part of the Manas Biosphere Reserve, extending from the Sankosh River to the Manas river up to the India-Bhutan border along the northern side of National Highway 27 and State Highway 2," Dr. Biswas explained.

The northern population of the primate with the golden sheen was estimated at 5,566 in 534 groups and 23 lone males. The population of the southern fragments was estimated at 1,830 langurs in 173 groups and eight lone males.

'Unstable situation'

While the Ripu Reserve Forest was home to the most (2,847) northern population golden langurs, Kokrajhar district's Chakrashila Wildlife Sanctuary had 838 individuals, the most in the southern fragmented range of the primate.

The previous population estimation in 2008-09, also conducted under the supervision of Dr. Biswas, recorded 6,000 golden langurs in India. Each group then had has average of 9.24 individuals, which was 1,45 individuals less than the average group recorded in the latest survey.

On the flip side, the survey report underlined an unstable situation in the fragmented habitats of the golden langurs, particularly due to the absence of non-breeding all-male bands. The primatologists involved in the survey highlighted the need for corridor linkage among the fragmented habitats through plantations and canopy bridges to offset potential threats the primates face from anthropogenic interactions.

Context: Recently, the latest survey conducted by the Primate Research Centre NE India (PRCNE) and Assam Forest Department revealed that there are an estimated 7,396 golden langurs in India.

Golden Langurs

- **About:** These are easily identified by the distinct color of their fur, which serves as the basis for their name.
- **Seasonal Fur Changes**: Observations indicate that the fur of Golden Langurs undergoes color changes corresponding to the seasons.
- **Distinctive Young Appearance**: Young Golden Langurs exhibit a nearly pure white fur, distinguishing them from the adults.
- **Geographic Range**: Assam and Bhutan
  - Golden Langurs inhabit the regions of Assam, India, and neighboring Bhutan, residing there throughout the year.
  - The habitat of Golden Langurs is delimited by four geographical landmarks: the Bhutan foothills (north), Manas river (east), Sankosh river (west), and Brahmaputra river (south).
- **Found**: Moist evergreen and tropical deciduous forests, riverine areas, and savannas, showing adaptability to different environments in Assam and Bhutan.
- **Conservation status**
  - **IUCN**: Endangered
  - **CITES:** Appendix I
  - **Wildlife Protection Act, 1972**: Schedule I

Key Points of Survey

- **Areas surveyed**: Ripu Reserved Forest, recently upgraded to Raimona National Park, Chirang Reserve Forest, Manas Reserve Forest, and Manas National Park up to the western bank of the Manas River.
- **Population Observation:** During the survey, 7,720 individuals of golden langurs were observed.
  - These individuals were observed in 706 unique groups and 31 lone males or floating males.
- **Minimum Population Estimation**: The estimated minimum population size of golden langurs was found to be 7,396 individuals.
  - These individuals were distributed in 707 groups, inclusive of bisexual and male bands, along with 31 lone males, according to Jihosuo Biswas.

TIGER SAFARI & REGULATION
(Syllabus GS Paper 3 – Env and Eco)

Why safari parks may be a double-edged sword for big cats

JAY MAZOOMDAAR
NEW DELHI, MARCH 10

ON MARCH 6, the Supreme Court said it was "inclined to approve the establishment of the Tiger Safari at Pakhrau" in the buffer area of Corbett tiger reserve. However, safari parks are meant only for "injured, conflicted, or orphaned" local tigers, and not those sourced from zoos, the court said, and constituted a committee to frame guidelines for such facilities within three months.

What does a "tiger safari" really mean?

Tiger safari is not defined under The Wildlife (Protection) Act, 1972, which says "no construction of commercial tourist lodges, hotels, zoos and safari parks shall be undertaken inside a sanctuary except with the prior approval of the National Board" [for Wild Life] constituted under the Act.

The concept of a tiger safari in the wild was first envisaged in the Guidelines for Tourism issued by the National Tiger Conservation Authority (NTCA) in 2012, which provided for such establishments in the buffer areas of tiger reserves "which experience immense tourist influx in the core/critical tiger habitat for viewing tigers".

Four years later, the NTCA issued guidelines to establish "Tiger Safaris" in the buffer and fringe areas of tiger reserves for injured, conflicted, or orphaned tigers, while underlining that no tiger shall be obtained from a zoo.

In 2019, however, the NTCA allowed animals to be brought from zoos for tiger safari parks, and gave the Central Zoo Authority (CZA) the power to select such animals.

IN FACT

Housing zoo tigers or other captive animals in a tiger habitat is obviously a bad idea, which would put wild tigers and other wildlife at risk of disease. Fittingly, the top court held that the NTCA's understanding that tiger safaris are merely zoos built inside tiger reserves, "would be totally contrary to the purpose of the Tiger Conservation".

But why build a tiger safari in a forest?

The 2012 NTCA guidelines justified safari parks as a means to lessen the tourism load inside tiger reserves that causes stress on wildlife.

Second, many are against packing off animals that are unfit for the wild — they may be injured, orphaned, or given to conflict — to faraway zoos. Safari parks, they argue, help hold such animals captive in their natural surroundings.

Third, some stakeholders argue that buffer areas were designated to allow activities that support the livelihood and development needs of local communities — and safari parks generate money and, in turn, local goodwill for the tiger.

And what is the counter-argument?

Records show that efforts to distribute demand seldom work in tiger reserves. Instead of bringing down the number of vehicles crowding around the tiger, opening new safari routes have ended up inviting more tourists.

Also, the very idea of displaying "rescued" tigers in safari parks is a departure from the practice of keeping such distressed animals in non-display facilities. Even the 2016 guidelines were hesitant to make this policy shift, and made it mandatory for NTCA to assess every "recovered/ treated animal" before putting them on display in safari parks.

Third, housing local "rescued" wildlife in their natural environment is an idea driven by concerns for animal welfare. But conservationists say a captive animal will be captive anywhere. They argue that building safari parks for "rescued" tigers inside tiger reserves prioritises the welfare of individual tigers over the interest of the species, since such establishments are bound to cause disturbance in wild habitats.



Lion safari in Nahargarh Biological Park in Rajasthan's Nahargarh sanctuary. *Jaipur Zoo/Rajasthan Forest Dept*

What is the ground reality in Corbett and elsewhere?

The site selected for the Pakhrau Safari Park is on the southwestern fringe of Corbett Tiger Reserve, bordering farmlands in Uttar Pradesh. Uttarakhand forest department officers argue that the dispersal of tigers and other wildlife to the west towards Rajaji tiger reserve happens mostly to the north of the proposed safari park, which can be accessed by an existing forest road, and will not require the cutting of trees.

Some local stakeholders say that the Ramnagar area on the eastern side of the reserve has bogged all the benefits of Corbett's tiger tourism so far — and the Pakhrau Safari Park carries the promise of livelihood and development on the other side.

However, a similar experiment has led to wasteful expenses in Rajasthan's Ranthambhore. In 2015-16, a safari park for rescued tigers was envisaged there with the intention of lessening the tourism load and aiding local livelihoods. The project has so far seen multiple attempts at constructing peripheral walls, which have, however, collapsed repeatedly, necessitating fresh work orders every time.

Before the SC drew the line on zoo animals this week, a number of safari parks inside protected forests stocked a range of zoo collections. For example, the Nahargarh Biological Park, a part of Nahargarh sanctuary on the Jaipur-Delhi highway, which was inaugurated in 2016, has Asiatic lions, Royal Bengal tigers, panthers, hyenas, wolves, deer, crocodiles, sloth bears, Himalayan black bears, etc.

However, introducing animals in permanent facilities built in the wild invariably creates stress for territorial species — and the resident leopards in Nahargarh often reacted aggressively to the captive ones housed in the safari park.

So what is the road ahead for safari parks in tiger reserves?

The guidelines for tiger safari parks are awaited from the SC-appointed expert committee. However, a one-size-fits-all formula is unlikely to be helpful, senior state forest officials cautioned. The more prudent approach would be to lay down guiding principles for local authorities to find site-specific solutions, they said.

It is also important to avoid the temptation of making tiger safari parks a routine feature of tiger reserves, experts said. The 2016 guidelines had said that a tiger safari can be proposed only by tiger reserves that have already utilised 100% of their tourist carrying capacity.

Context: The Supreme Court recently stated that it was "inclined to approve the establishment of the Tiger Safari at Pakhrau" within the buffer area of Corbett Tiger Reserve.

Tiger Safari

- **About:** Tiger safari lacks a clear definition under The Wildlife (Protection) Act, 1972, as it doesn't specifically mention such activities within its provisions.
- **Evolution of Tiger Safari Concept**: The concept of tiger safaris in the wild originated from the Guidelines for Tourism issued by the National Tiger Conservation Authority (NTCA) in 2012, which permitted such establishments in buffer areas of tiger reserves to accommodate high tourist influx.
- **Purpose**: Initially, tiger safaris were envisioned to accommodate injured, conflicted, or orphaned tigers in buffer and fringe areas of tiger reserves, as outlined by the NTCA guidelines issued in 2016.
- **Changes in Policy**: In 2019, the NTCA's stance shifted as it permitted the acquisition of animals from zoos for tiger safari parks, with the Central Zoo Authority (CZA) being granted the authority to select such animals.

Why build a tiger safari in a forest?

- **NTCA Guidelines and Safari Parks**: The 2012 NTCA guidelines justified safari parks as a means to lessen the tourism load inside tiger reserves that causes stress on wildlife.
- **Concerns about Unfit Animals:** Many are against packing off animals that are unfit for the wild they may be injured, orphaned, or given to conflict — to faraway zoos. Safari parks, they argue, help hold such animals captive in their natural surroundings.
- **Buffer Areas and Local Development**: Some stakeholders argue that buffer areas were designated to allow activities that support the livelihood and development needs of local communities — and safari parks generate money and, in turn, local goodwill for the tiger.

PIB Mar 10

Mahtari Vandan Yojana
(Syllabus: GS Paper 2 – Govt Scheme)

PM Modi launches Mahtari Vandan Yojana in Chhattisgarh

Context: The Prime Minister of India recently launched the Mahatari Vandana Yojana and disbursed the first installment under the scheme.

Mahtari Vandan Yojana

- **About:** The scheme has been launched in Chhattisgarh to provide financial assistance of Rs 1000 per month to eligible married women of the state as monthly DBT.
- **Financial Assistance**: Under the Mahtari Vandana Yojana, Chhattisgarh pledges Rs 1,000 per month to over 70 lakh married women, acknowledging their pivotal role in households and communities.
- **Aim**: To nurture self-reliance among women, encouraging skill development and entrepreneurial ventures alongside providing financial aid, fostering economic empowerment.
- **Features:**
- **Application Process**: The scheme offers online application processes, ensuring accessibility and convenience for potential beneficiaries.
- **Eligibility Criteria**: Married women aged 23 to 60 years in Chhattisgarh are eligible for the scheme.
- **Expanded Eligibility**: Married women aged 21 and above as of January 1, 2024, including widows, divorced, and deserted women, will benefit from the scheme, totaling approximately 70 lakh women.
- **Scope and Vision**: Launched in Chhattisgarh, the scheme extends Rs 1000 monthly DBT to eligible married women, promoting economic empowerment, financial security, gender equality, and reinforcing women's pivotal roles in families.

NEW INDIAN EXPRESS

Mar 10

MUMPS

(Syllabus: GS Paper 3 – Sci and Tech)

10,000 cases in 70 days, Kerala now has a mumps outbreak

Context: The Kerala state is facing an outbreak of mumps, a contagious viral infection that spreads the same way as cold and flu, with over 10,000 children affected in less than 70 days.

Mumps

- **About:** It is a viral illness. It can involve pain, tenderness, and swelling in one or both parotid salivary glands.
- **Caused by:** Mumps virus, a member of the paramyxovirus group, and is highly contagious.
- **Symptoms:** The illness begins with mild symptoms like headache, fever, and fatigue, progressing to severe swelling in the salivary glands, leading to puffy cheeks and a tender, swollen jaw.
- **Transmission**: Humans are the exclusive host for the mumps virus, which spreads through direct contact or airborne droplets from infected individuals' upper respiratory tracts.
- **Affected Population:** Primarily affects unvaccinated children aged 2 to 12, though vaccinated adolescents and adults can also contract the disease due to waning immunity.
- **Incubation Period**: Mumps has an average incubation period of 16 to 18 days, with a range of 12 to 25 days.
- **Treatment:** There is no specific treatment for mumps; however, symptomatic relief can be provided with medication.
- **Mumps Vaccine**: Children should get two doses of MMR vaccine:
    - the first dose at 12 through 15 months of age, and
    - The second dose at 4 through 6 years of age.



INDIA TODAY Mar 10

LOKPAL
(Syllabus: GS Paper 2 – Polity)

Ex-Supreme Court judge AM Khanwilkar sworn in as Lokpal chairperson

Context: Recently, former Supreme Court judge Ajay Manikrao Khanwilkar was administered the oath of office as the Lokpal chairperson by President of India at the Rashtrapati Bhavan.

Lokpal

- **About**: The Lokpal of India serves as the nation's inaugural anti-corruption entity, established four years ago to probe complaints against public officials.
- **Establishment:** Despite the passage of the Act in 2013, the appointment of India's first Lokpal occurred on March 19, 2019, alongside the selection of eight additional members.
- **Composition of Lokpal**: The Lokpal is a multi-member body with one chairperson and up to eight members.
  - Half of the maximum eight members will be judges, and at least half of the members will be from the SC/ ST/ OBC/ Minorities and women groups.
- **Autonomy in enquiry and prosecution**: The Lokpal will have to appoint an Inquiry Wing, headed by a Director of Inquiry, and a Prosecution Wing, headed by a Director of Prosecution.
- **Appointment of Lokpal:** The president appoints the members after a Selection Committee recommends them.
  - A search panel of at least eight people is formed by the selection committee (Headed by PM) to select the chairperson and members.
  - Lokpal Chairman and Members serve for five years or until they reach the age of 70.
- **Powers of the Lokpal:**
  - **Jurisdiction**: The Prime Minister, Ministers, Members of Parliament, Groups A, B, C, and D officers and officials of the Central Government are all subject to Lokpal's jurisdiction.
  - **Pro Active Disclosure**: The Lokpal Act requires all elected officials to disclose their assets and liabilities, as well as those of their dependents.
    - ✓ It has the authority to supervise and direct CBI's operations.
    - ✓ When Lokpal refers a case to the CBI, the investigating officer cannot be transferred without Lokpal's permission.
- **Power of civil court**: The Lokpal's Inquiry Wing has been given the authority of a civil court.
  - ✓ In exceptional cases, Lokpal has the authority to seize properties, proceeds, receipts, and benefits obtained through corruption.
- **Ensure neutrality**: Lokpal has the authority to recommend the transfer or suspension of a public servant accused of corruption.
- **Preserve evidences**: During the preliminary investigation, Lokpal has the authority to issue orders to avoid the destruction of documents.

TIMES OF INDIA

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ASIATIC LION

(Syllabus: GS Paper 3 – Env and Eco)

Asiatic lions aren't 'endangered' anymore, just 'vulnerable': IUCN

Himanshu Kaushik | TNN

Ahmedabad: In what comes as 'a matter of pride' for Gujarat, the International Union for Conservation of Nature (IUCN), which categorized the Asiatic lion as "endangered" in 2008, has reclassified it as "vulnerable", indicating a positive shift in its conservation status.

IUCN's first global report underlines a significant difference between African and Indian lions in the risk of decline the iconic predators face — the likelihood of a 33% decline in lion population in Africa is 19 times higher than in India, primarily due to rampant poaching there.

Gujarat is the only abode of Asiatic lions in the world and going by the IUCN report, Saurashtra offers them a much safer haven.

The report states, "The lion population in Africa is estimated to have a 41% probability of declining by one third (33%) within three lion generations (past, present and future), while this risk is estimated to be at just 2% in Saurashtra, India."

According to IUCN estimates, there are 23,000 lions in the wild today including 674 in Gujarat.

International Union for Conservation of Nature (IUCN)

- **About:** IUCN was founded in 1948 as the International Union for the Protection of Nature (IUPN).
- In 1956, the organization was renamed IUCN.
- **Headquarters**: Gland, Switzerland.
- **IUCN Red List**: The most extensive record of the worldwide conservation status of plant and animal species across the globe.
- **IUCN Red Data Book:** It is a publicly available document designed to record endangered and rare species of plants, animals, fungi, and certain local subspecies found in a specific region.

Context: The International Union for Conservation of Nature (IUCN) recently reclassified the Asiatic lion from "endangered" to "vulnerable", marking a positive shift in its conservation status since it was categorized in 2008.

Asiatic Lion

- **About:** It is also called the Persian or Indian Lion, was once found across West Asia and the Middle East before facing extinction in these regions.
- **Morphological Distinctions**: Compared to their African counterparts, Asiatic lions are slightly smaller in size and possess a distinctive longitudinal fold of skin along their belly.
- **Distribution**: Previously ranged from West Bengal to Madhya Pradesh, now restricted solely to Gir National Park and Wildlife Sanctuary in Gujarat.
- **Population Increase**: The Gujarat Forest Department reported a rise in the Asiatic lion population within the Gir forest region in 2020.
- **Threats to Survival**: Vulnerability to diseases, poaching, and conflicts with locals pose significant threats to the survival of Asiatic lions, particularly around Gir National Park.
- **Protection Status**: Listed as Endangered on the IUCN Red List, categorized under Appendix I of CITES, and protected under the Wildlife (Protection) Act 1972 in India.
- **Conservation Initiatives**: The "Asiatic Lion Conservation Project," initiated by the Ministry of Environment, Forests, and Climate Change, aims to involve communities and multi-sectoral agencies for the scientific management and conservation of Asiatic lions.

Global Navigation Satellite System

(Syllabus: GS Paper 3 – Sci and Tech)



Introducing a new toll collection system

How will the recently proposed highway tolling system work? Will it be based on the U.S.'s Global Positioning System? Will it be mandatory for all vehicles to fit an on-board unit device? What about the FASTags collection system?

EXPLAINER

Jagriti Chandra

The story so far:

Road Transport and Highways Minister Nitin Gadkari said in Parliament in February that the government plans to implement a new highway toll collection system based on the global navigation satellite system before the model code of conduct for the 2024 election kicks in.

What is the new proposed highway tolling system?

The global navigation satellite system is a term used to refer to any satellite-based navigation system, including the United States' Global Positioning System (GPS). It uses a large constellation of satellites to provide more accurate location and navigation information to users globally as compared to the GPS alone.

An official of the Ministry of Road Transport and Highways explained that its implementation will involve an On-Board Unit (OBU), or a tracking device, fitted inside a vehicle whose location can be mapped using GAGAN, the Indian satellite navigation system with an approximate accuracy of 10 metres. The co-ordinates of the entire length of the country's national highways will have to be logged with the help of digital image processing, and software will be used to assign the toll rate on a particular highway, calculate the toll amount for a vehicle as per the distance travelled by it and then deduct it from a wallet linked to the OBU. The system will additionally have gantries, or arches mounted with CCTV cameras, at various points on a highway for enforcement purposes. These will capture an image of the vehicle's high security registration plate and cross verify if a road user is trying to trick the system by either removing the tracking device or travelling without an OBU onboard.

The Ministry official further explained that the aim of the technology is to provide users the benefit of paying toll only for the actual distance travelled on a highway, or pay-as-you-use. The government also hopes that it will eventually allow barrier-free movement.

What are some of the challenges?

One of the major challenges posed by this technology is that of recovering the toll amount if a road user fails to clear his payment after completing a journey on a highway, for instance, if the digital wallet linked with the OBU is empty.

Because there are no barriers involved that can stop a non-compliant vehicle, there are other issues such as when a vehicle travels on a highway without an OBU device linked or the OBU device is deliberately switched off to avoid payment or if a car's OBU is installed on a truck to pay less toll. Gantry-mounted Automatic Number-Plate Recognition (ANPR)-based systems for capturing violations have to be set up on highways across India. However, no such infrastructure exists in the country today.

Further, the success of an ANPR system depends on the quality of the licence plates, which are currently limited to a few cities and States. The government will also have to amend the National Highways Fee (Determination of Rates and Collection) Rules in order to provide for the recovery of unpaid toll, define offences as well as require the necessity of an OBU in vehicles.

How does it safeguard privacy?

In response to a question on how the government plans to safeguard privacy of vehicle users, the Ministry official said that firstly, it had decided to use the GAGAN satellite system and not GPS, which is owned by the U.S., to ensure data security within the country. The official added that although the concept was still a work in progress, the Digital Personal Data Protection Act, 2023 passed in Parliament last year will address privacy concerns. The law had received flak from civil society for the widening of exemptions granted to government agencies that may facilitate increased state surveillance.

Will FASTags be discontinued?

The new tolling system will co-exist with the FASTag-based toll collection as the government has not yet taken a decision on whether OBUs will be made mandatory for all vehicles or only for new vehicles. Minister Gadkari has been speaking about implementing satellite-based toll collection since 2020, even though radio frequency identification based FASTags for toll collection was rolled out from 2016 and made mandatory only from February 16, 2021. Over the years a robust compliance has been achieved. By December 2023, 98.9% of vehicles passing through toll fee plazas at national highways were FASTag compliant. Toll collection increased 1.5 times from ₹17,942 crore in 2016-2017 to ₹27,744 crore in 2020-2021 at National Highway fee plazas due to a multitude of factors, which included rising number of vehicles as well as revision in tolls and adoption of FASTags. However, officials say that the global navigation satellite system involves lower operational cost as compared to FASTags due to absence of toll plazas and less number of entities in the toll collection process.

THE GIST

- Road Transport and Highways Minister Nitin Gadkari said in Parliament last week that the government plans to implement a new highway toll collection system based on the global navigation satellite system.
- Its implementation will involve an On-Board Unit (OBU), or a tracking device, fitted inside a vehicle whose location can be mapped using GAGAN, the Indian satellite navigation system with an approximate accuracy of 10 metres.
- The new tolling system will co-exist with the FASTag-based toll collection as the government has not yet taken a decision on whether OBUs will be made mandatory for all vehicles or only for new vehicles.

A complete overhaul: Toll collection on the Bengaluru-Mysuru Expressway in 2023. FILE PHOTO

Context: The Road Transport and Highways Minister recently announced in Parliament that the government intends to deploy a new **highway toll collection system based on the global navigation satellite system** before the onset of the model code of conduct for the 2024 election.

Global Navigation Satellite System

- **About:** A GNSS constitutes a network of satellites that broadcast timing and orbital data, serving the purpose of navigation and positioning measurements.
- **GNSS measures three things:**
  - Location: accurate within millimeters
  - Speed: User range rate error (URRE) of ≤0.006 m/sec over any 3-second period
  - Timing: ≤30 nanoseconds (billionths of a second)
- **Beyond Earth's Orbit:** GNSS encompasses more than just orbiting satellites. Constellations, comprised of multiple satellite groups, broadcast signals to both master control stations and GNSS users globally.
- **Three Key Segments:** GNSS comprises three integral segments – space, control, and user. This holistic approach recognizes the satellites in space, control stations, and end-users as interconnected components within the GNSS framework.

Several GNSS constellations around the world:

1. BeiDou – China
2. Galileo – European Union
3. GLONASS – Russia
4. GPS - United States
5. IRNSS – India (also known as NavIC)
6. QZSS – Japan

PIB Mar 10

TEPA
(Syllabus: GS Paper 2 – IR)

India-EFTA Trade and Economic Partnership Agreement

Context: India has signed a $100bn **free trade agreement with a four-member European bloc** and will lift most import tariffs on industrial products from these countries in return for the investment over 15 years.

Trade and Economic Partnership Agreement (TEPA)

- **About:** TEPA represents a modern and ambitious trade agreement, marking India's first Free Trade Agreement (FTA) with four developed nations in Europe.
- **Countries**: Switzerland, Iceland, Norway & Liechtenstein
- **Significant Commitments**: India pledges a binding commitment of $100 billion investment and 1 million direct jobs over the next 15 years, a historic milestone in the realm of FTAs.
- **Boost to Make in India**: The agreement is poised to bolster the Make in India initiative, offering opportunities for the young and talented workforce while providing a gateway to large European and global markets.
- **Comprehensive Agreement Structure:** TEPA consists of 14 chapters, addressing various aspects such as market access, rules of origin, investment promotion, intellectual property rights, and sustainable development.
- **EFTA's Importance and Commitments**: EFTA, alongside the EU and the UK, forms a crucial economic bloc in Europe. Switzerland, followed by Norway, emerges as India's largest trading partner within the EFTA group.

Highlights of TEPA

- **Services Sector Opportunities**: TEPA opens avenues for India's services exports, particularly in IT services, business services, and other sectors of interest, with provisions for improved access and recognition agreements.
- **Intellectual Property Rights (IPR):** The agreement upholds TRIPS-level commitments on IPR, addressing concerns related to generic medicines and patent evergreening while signaling a commitment to sustainable development.
- **Job Creation and Skills Development**: The agreement foresees the creation of a significant number of direct jobs for India's young workforce, coupled with provisions for vocational training and technology collaboration.
- **Integration into EU Markets**: TEPA offers an opportunity for Indian companies to integrate into EU markets, leveraging Switzerland's strategic position as a gateway to the European market.

DTE

Mar 10

YAOUNDE DECLARATION

(Syllabus: GS Paper 3 – Sci and Tech)

Yaounde Declaration: Health ministers of 11 African countries commit to end malaria deaths

Context: In a historic gathering in Cameroon's capital Yaoundé, African health ministers, global malaria partners, funding agencies, scientists, civil society organisations and other principal malaria stakeholders pledged to end malaria deaths, especially given the tools and systems available.

Malaria

- **About**: It is a mosquito-borne blood disease caused by **Plasmodium parasites.**
- **Transmission:** Spread by the bite of an infected female Anopheles mosquito.
  - The mosquito becomes infected by biting an individual already infected with malaria.
  - Malaria parasites enter the bloodstream when the mosquito subsequently bites another person.
  - The parasites travel to the liver, mature, and then infect red blood cells.
- **Parasite Species:** There **are 5 Plasmodium parasite** species causing malaria in humans.
  - The most threatening species are **P. falciparum and P. vivax.**
- **Common symptoms:** Fever, shaking chills, headache, muscle aches, and tiredness.
- **Prevention:** Malaria is both preventable and curable with timely and appropriate intervention.

Yaounde Declaration

- **About:** Health ministers from the 11 countries declared their commitment to fighting malaria in the Yaoundé Declaration, emphasizing the need to address root causes and increase investments in the health sector.
- **Host by:** WHO and the Government of Cameroon, gathered diverse stakeholders, including Ministers of Health, global partners, funding agencies, scientists, and civil society organizations.
- **Four Key Aims of the Ministerial Conference:** The conference aims to review progress and challenges in achieving WHO global malaria strategy targets, discuss funding and mitigation strategies, agree on responses for accelerated malaria mortality reduction in Africa, and establish a roadmap for increased political commitment and societal engagement with clear accountability.
- **Global Surge in Malaria Cases**: The number of malaria cases globally surged significantly in 2022, rising from 233 million in 2019 to 249 million.
- **Alarming Increase in Africa:** The African region witnessed a staggering rise in malaria cases, soaring from 218 million to 233 million, with Africa bearing 94% of global cases and 95% of global malaria-related deaths in 2022.
- **The Burden African Countries**: Eleven African countries participating in the Yaoundé conference bear the highest burden of global malaria infections and deaths.
  - Burkina Faso, Cameroon, Democratic Republic of the Congo, Ghana, Mali, Mozambique, Niger, Nigeria, Sudan, Uganda and Tanzania
- **Action and Accountability**: While the declaration marks a milestone, experts emphasize the need for concrete actions to accompany political will, especially in light of the African Union's targets to control and eliminate malaria by 2030.

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Advanced Medium Combat Aircraft

(Syllabus: GS Paper 3 – Sci and Tech)

India's indigenous fifth-gen fighter jet AMCA: features, why it is important

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THE CABINET Committee on Security (CCS) last week cleared a Rs 15,000 crore project to design and develop the Advanced Medium Combat Aircraft (AMCA), India's fifth-generation fighter multirole fighter jet.

The Aeronautical Development Agency (ADA) under the Defence Research and Development Organisation (DRDO) will be the nodal agency for executing the programme and designing the aircraft. It will be manufactured by state-owned Hindustan Aeronautics Limited (HAL).

The aircraft will put India in a select group of nations that have their own fifth-generation fighter aircraft.

Features of AMCA

STEALTH: The 25-tonne twin-engine aircraft, bigger than other fighters in the Indian Air Force inventory, will have advanced stealth features to avoid detection by enemy radar. Dr Krishna Rajendra Neeli, project director of AMCA at ADA, said the aircraft would be on par or even superior to other fifth-generation stealth fighter aircraft in use globally.

FUEL & WEAPONS: The aircraft will have a large, concealed internal fuel tank of 6.5-tonne capacity, and an internal weapons bay for a range of weapons, including indigenous weapons, to be buried in its belly.

ENGINE: The AMCA Mk1 variant will have the US-built GE414 engine of the 90 kilonewton (kN) class, while the more advanced AMCA Mk2 will fly on the more powerful 110kN engine, which will be developed by DRDO's Gas Turbine Research Establishment (GTRE) in collaboration with a foreign defence major.

Why AMCA is special

Discussions for developing the AMCA started in 2007. The initial plan was to jointly develop the aircraft with Russia under a Fifth Generation Fighter Aircraft (FGFA) programme. However, India withdrew from the FGFA project in 2018.

EXPLAINED DEFENCE

The indigenous Light Combat Aircraft (LCA) Tejas is a 4.5-generation single-engine multirole aircraft. The AMCA will be India's indigenous fifth-generation fighter aircraft.

What will set this fifth-generation aircraft apart is primarily its stealth features. The aircraft will have a low electro-magnetic signature, which will make it difficult for enemy radar to detect it. At the same time, it will have powerful sensors and new weapons, so it is able to register the signature of enemy aircraft and take them out.

"A fourth-generation aircraft is typically not designed or configured to have these stealth features, even though some features may be added later. But even that will not make it a fully fifth-generation aircraft," former AMCA project director at ADA Dr A K Ghosh said.

Stealth features such as an internal weapons bay and a bigger internal fuel tank are part of fifth-generation aircraft like AMCA. External fuel tanks and externally-attached weapons leave a huge signature and are easy to detect for radar. The special material that will be used on the aircraft surface will divert the radar signature instead of reflecting it back.

Another important aspect would be to ensure a higher utilisation time and smaller serviceability or maintenance periods for the aircraft. This will be aided by the inclusion of a comprehensive Integrated Vehicle Health Management (IVHM) system to keep track of multiple structural components, and to assess the condition of the aircraft in real time.

Development timeline

The ADA hopes to have the first flight of the aircraft in 4.5 to 5 years. The full development of the aircraft is expected to take around 10 years from now. Five prototypes will be built before HAL begins manufacturing the aircraft. Private industry is also expected to be involved in the manufacturing of the aircraft.

Other fifth-generation fighters

Only a few countries have built a fifth-generation stealth fighter aircraft, such as the F-22 Raptor and F-35A Lightning II of the US, the Chinese J-20 Mighty Dragon, and the Russian Sukhoi Su-57.

IAF's dwindling numbers

The IAF currently has around 30 fighter squadrons against the sanctioned strength of 42. This number is expected to go down further as squadrons of MiG-21s, MiG-29s, Jaguars, and Mirage 2000s are scheduled to be phased out by the middle of the next decade.

The IAF has indicated that it requires seven squadrons of the AMCA to begin with. Considering the IAF's requirements, the planned inductions of additional squadrons of LCAs and AMCA will not add up to the sanctioned squadron strength in a decade.

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Context: The Cabinet Committee on Security (CCS) recently cleared a Rs 15,000 crore project aimed at designing and developing the **Advanced Medium Combat Aircraft (AMCA),** India's fifth-generation multirole fighter jet.

Advanced Medium Combat Aircraft (AMCA)

- **About**: The AMCA is designed to be a fifth-generation, medium-weight, multi-role, and twin-engine aircraft.
- **Stealth and Configuration**: Envisaged as a 25-tonne twin-engine stealth aircraft, it features an internal weapons bay and diverterless supersonic intake, a first-time achievement in India.
- **Payload and Fuel Capacity:** Intended to carry 1,500 kg of internal payload, 5,500 kg of external payload, and boast a substantial 6,500 kg of internal fuel.
- **Government Funding and Production**: In 2009, the Central government allocated ₹90 crore for a feasibility study, with an additional ₹447 crore sanctioned later. Production is underway by Hindustan Aeronautics Limited.
- **Features of AMCA**
  - **Stealth Capabilities:** Equipped with advanced stealth features to evade enemy radar detection, surpassing the size of existing Indian Air Force fighters.
  - **Fuel and Weapons Configuration:** Equipped with a concealed 6.5-tonne internal fuel tank and an internal weapons bay for a variety of weapons, including indigenous ones.
  - **Engine Specifications:** The AMCA Mk1 variant will use the US-built GE414 engine, while the more advanced Mk2 will feature a 110kN engine developed indigenously by DRDO's Gas Turbine Research Establishment.
  - **Advanced Airflow Control**: Features like a diverterless supersonic inlet and a serpentine air intake duct contribute to controlling air flow into the engines and shielding them from radar emissions.

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