World Environment Day

For Prelims: World Environment Day, United Nations Assembly, Stockholm Conference, COP26, NAP, LiFE Movement, NRLM

For Mains: World Environment Day, Need to conserve Environment and related Intiatives

Why in News?

World Environment Day is celebrated on **5th June every year** to encourage awareness and environmental protection.

- On the Occasion, India launched **'Lifestyle for the Environment (LiFE) Movement'.**

What are the Key Highlights about World Environment Day?

- **About:**
  - The **United Nations Assembly** established World Environment Day in 1972, which was the **first day of the Stockholm Conference on the human environment.**
  - The celebration of world environment day every year **is done according to a specific theme** and slogan which addresses the major environmental concern of the time.
  - It is **hosted by a different country each year.**
    - For example, **India hosted the 45th celebration of World Environment Day** under the theme **'Beat Plastic Pollution'.**
  - World Environment Day celebration last year also kicked off the **UN Decade on Ecosystem Restoration (2021-2030)** which is a global mission to revive billions of hectares, from forests to farmlands, from the top of mountains to the depth of the seas.
- **Theme for 2022:**
  - **OnlyOneEarth:**
    - It mirrors the theme of the **first World Environment Day in 1973.**
- **Significance:**
  - 2022 is a historic milestone as it marks 50 years since the 1972 **Stockholm Conference.**

What is LiFE Movement?

- **About:**
  - The idea of LiFE was introduced by India during the **26th United Nations Climate Change** Conference of the Parties (COP26) in Glasgow in 2021.
    - The **idea promotes an environmentally conscious lifestyle** that focuses on 'mindful and deliberate utilisation' instead of 'mindless and wasteful consumption'.
  - With the launch of the Mission, the prevalent **"use-and-dispose" economy-governed by mindless** and destructive consumption-will be replaced by a **circular economy**, defined by conscious and deliberate consumption.
- **Objective:**
  - The Movement **aims to utilise the power of collective action** and nudge individuals across the world to undertake simple climate-friendly actions in their daily lives.

- It also **seeks to leverage the strength of social networks to influence social norms** surrounding climate.
- The Mission plans to create and nurture a global network of individuals, namely **'Pro-Planet People' (P3).**
    - P3 will have a **shared commitment to adopt and promote environmentally friendly lifestyles.**
    - Through the P3 community, the **Mission seeks to create an ecosystem that will reinforce and enable environmentally friendly** behaviours to be self-sustainable.

What has India Achieved in Conserving the Environment?

- **Increase in Forest Cover:**
    - **India's forest cover** is increasing and so is the population of lions, tigers, leopards, elephants and rhinos.
        - The **total forest cover is 21.71% of the total geographical area** in 2021, compared with 21.67% in 2019 and 21.54% in 2017.
- **Installed Electric Capacity:**
    - India's commitment to **reach 40% of installed electric capacity** from non-fossil fuel-based sources has been achieved, 9 years ahead of schedule.
- **Ethanol Blending Target:**
    - The **target of 10% ethanol blending** in petrol has been achieved 5 months ahead of the November 2022 target.
    - This is a major accomplishment given that blending was hardly 1.5% in 2013-14 and 5% in 2019-20.
- **Renewable Energy Target:**
    - **Renewable energy** has a very high focus in the government.
    - The **country's installed Renewable Energy (RE) capacity** stands at 150.54 GW (solar: 48.55 GW, wind: 40.03 GW, Small hydro Power: 4.83, Bio-power: 10.62, Large Hydro: 46.51 GW) as on 30th Nov. 2021 while its nuclear energy based installed electricity capacity stands at 6.78 GW.
        - **India has the 4th largest wind power capacity** in the world.

What are the Other Related Initiatives?

- **National Afforestation Programme (NAP):**
    - It **focuses on the rehabilitation of degraded forests** and afforestation around forests.
- **National Mission for a Green India (GIM):**
    - It is under the **National Action Plan on Climate Change (NAPCC)** and aimed at improving and increasing tree cover as a climate adaptation and mitigation strategy.
- **National Biodiversity Action Plan:**
    - It has been **launched to implement strategies for the reduction in rates of degradation**, fragmentation and loss of natural habitats.
- **Rural Livelihood Schemes:**
    - Recognition of natural resources intrinsically linked to rural livelihoods is also reflected in flagship schemes like the **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and the National Rural Livelihood Mission (NRLM).**

Source: PIB

Stagflation

For Prelims: Stagflation, Inflation, Recession

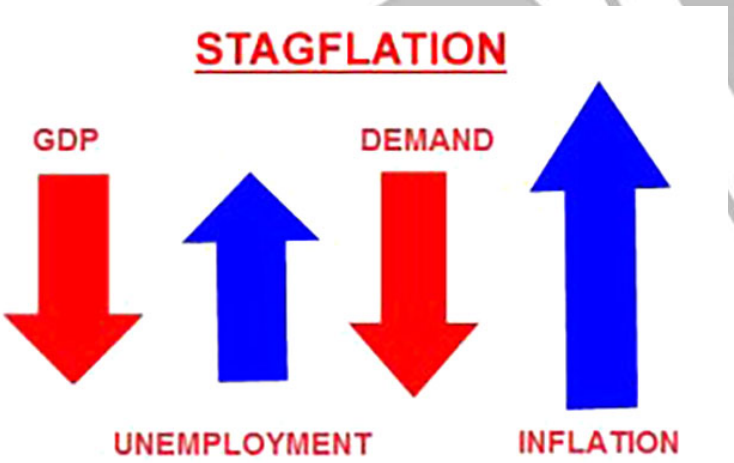
For Mains: Concerns Related to Stagflation and Way Forward

Why in News?

Central banks across the World are trying to formulate policies to ensure that **Inflation**, in some advanced economies including the U.S., is cooled without triggering a **Recession**, since some of the experts are seeing **Stagflation** in the near future.

What is Stagflation?

- **About**:
  - Stagflation means **a situation characterized by simultaneous increase in prices and stagnation of economic growth.**
    - The term Stagflation was coined by **Iain Macleod, a Conservative Party MP in the United Kingdom,** in November 1965.
  - It is described as **a situation in the economy where the growth rate slows down, the level of unemployment remains steadily high and yet the inflation or price level remains high** at the same time.
  - It is Dangerous for the economy.
    - In a usually low growth situation, central banks and governments try to **stimulate the economy through higher public spending and low interest rates** to create demand.
    - These measures **also tend to elevate prices and cause inflation.** So, these tools cannot be adopted **when inflation is already running high**, which makes it difficult to break out of the low growth-high inflation trap.



- **Case of Stagflation:**
  - In the early and mid-1970s when **OPEC (The Organisation of Petroleum Exporting Countries)**, which works like a cartel, decided to cut supply and sent oil prices soaring across the world.
  - On the one hand, the rise in oil prices constrained the productive capacity of most western economies that heavily depended on oil, thus hampering economic growth. On the other hand, the oil price spike also led to inflation and commodities became more costly.
  - For instance, in 1974, the oil prices went up by almost 70% and it leads to a consequent rise in inflation.

What has sparked the latest concerns about stagflation?

- **Covid-19 and Subsequent Fiscal and Monetary Measures:**
  - While the outbreak of the Covid-19 pandemic and the curbs imposed to contain the spread

of the virus caused the first major recent economic slowdown worldwide, the subsequent fiscal and **Monetary Measures** taken to address the downturn, including substantial increases in liquidity in most of the advanced economies, fuelled a sharp upsurge in inflation.

- **Russia- Ukraine Situation and Sanctions on Moscow:**
  - While the Fed and the Bank of England are among central banks that have started raising interest rates to cool soaring prices, the ongoing war in **Ukraine following Russia's invasion** of its southern neighbour and the consequent Western sanctions on Moscow have caused a fresh and as yet hard-to-quantify 'supply shock'.
- **Supply Factors:**
  - With the prices of commodities ranging from oil and gas to foodgrains, edible oils and fertilizers all surging sharply in the wake of the conflict, authorities face an uphill battle to contain inflation that is now less a function of demand (and so can be controlled by regulating credit) and almost entirely caused by supply factors that are far harder to manage.

Way Forward

- Policy support for a sustained and inclusive recovery may be needed for longer.
- The focus is likely to be on the normalisation of prudential policies and the strengthening of insolvency frameworks and restructuring mechanisms, including for the overhang of public and private debt.

Source: TH

Electric Vertical Take off and Landing (eVTOL) Aircraft

For prelims: eVTOL Aircraft, carbon-14

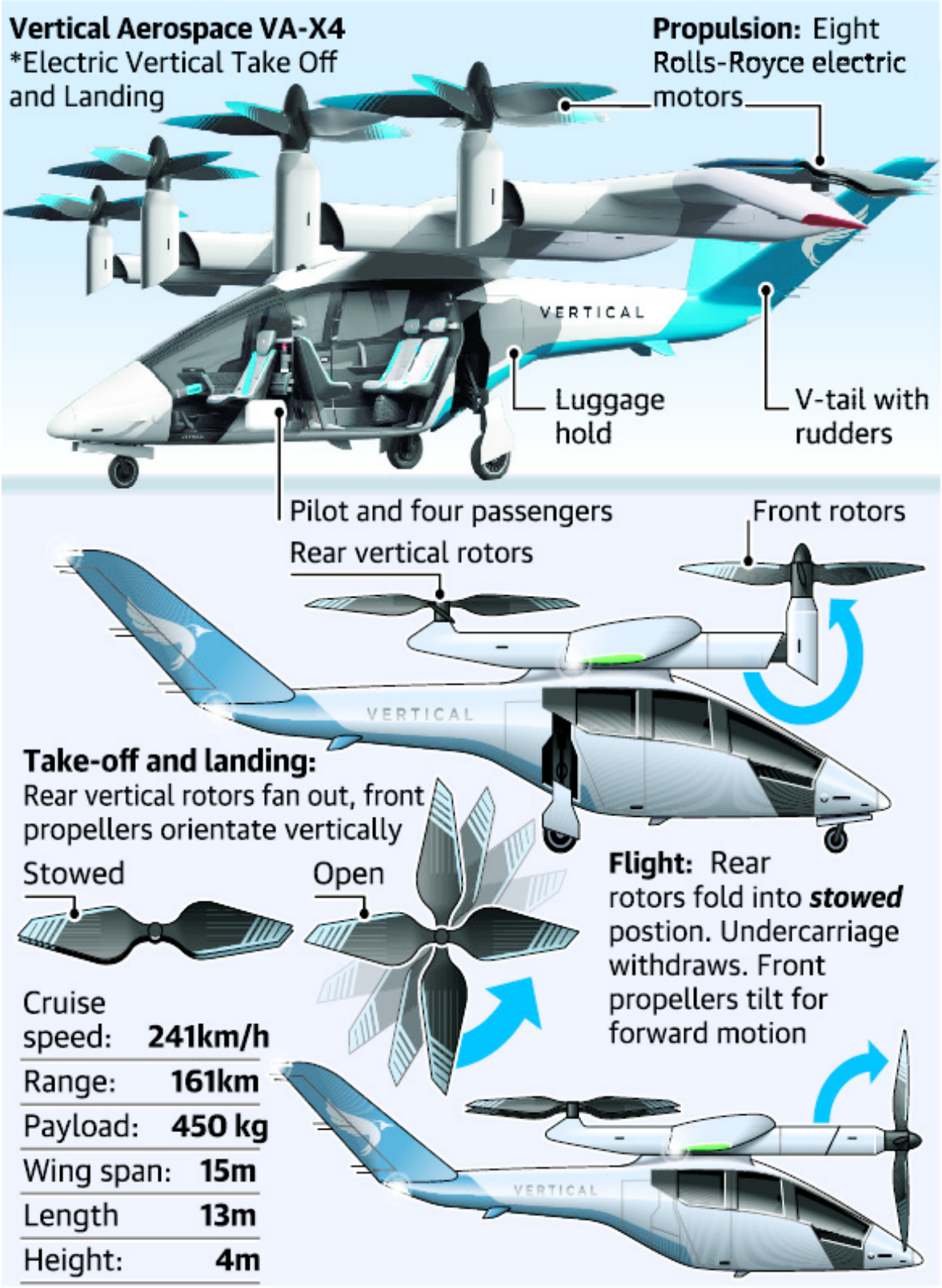
For Mains: Scientific Innovations & Discoveries

Why in News?

The Government of India is exploring the possibility of inviting manufacturers of **Electric Vertical Take off and Landing (eVTOL) aircraft to set up base in India.**

What are electric aircraft?

The Union Aviation Minister while speaking at the seventh edition of the India Ideas Conclave in Bengaluru, stated that India is in 'conversation' with a number of eVTOL producers. But how are Electric Vertical Take off and Landing aircraft structured? And what are they capable of ?



What is eVTOL Aircraft?

- **About:**
  - An eVTOL aircraft is one **that uses electric power to hover, take off, and land vertically.**
  - Most eVTOLs also use what is called as **distributed electric propulsion technology** which means integrating a complex propulsion system with the airframe.
- **Features:**
  - In order to maximize efficiency, and to also ensure safety, there are **multiple motors.**
  - This is technology that has **grown on account of successes in electric propulsion** based on progress in motor, battery, fuel cell and electronic controller technologies and also fuelled by the need for new vehicle technology that ensures **Urban Air Mobility (UAM).**
    - Thus, eVTOL is **one of the newer technologies and developments** in the aerospace industry.
  - There are an **estimated 250 eVTOL concepts or more being fine-tuned** to bring alive the concept of UAM.
    - Some of these include the **use of multi-rotors, fixed-wing and tilt-wing concepts** backed by sensors, cameras and even radar. Here the key word here is **"autonomous connectivity".**
    - Some of these are in **various test phases** and there are also others undergoing test flights so as to be certified for use.
  - In short, **eVTOLs have been likened to a third wave in an aerial revolution.**
    - The first being the advent of commercial flying and the second, the age of helicopters.

How are Developments in eVTOLs being Made?

- The roles eVTOLs **adopt depends on battery technology** and the limits of onboard electric power.
- Power is **required during the key phases of flight** such as take off, landing and flight (especially in high wind conditions).
- **Weight is also an important factor.**
  - BAE Systems, for example, is **looking at formats using a variety of** Lithium batteries.
    - BAE Systems is a **British multinational arms**, security, and aerospace company based in London, England.
  - Nano Diamond Batteries is looking at **"Diamond Nuclear Voltaic (DNV) technology"** using minute amounts of **carbon-14 nuclear waste** encased in layered industrial diamonds to create self-charging batteries.
- **The use of only batteries and looking at hybrid technologies** such as hydrogen cells and batteries depending on the flight mission has been questioned by experts.
- There is even one that **uses a gas-powered generator** that powers a small aircraft engine, in turn charging the battery system.
  - But **whatever the technology,** there will be very stringent checks and certification requirements.

What are the Challenges?

- **Crash Prevention Systems:**
  - As the technology so far is a **mix of unpiloted and piloted aircraft,** the areas in focus include "crash prevention systems".
  - These use cameras, radar, **GPS (Global Positioning System)** and infrared scanners.
- **Ensuring Safety:**
  - There are also **issues such as ensuring safety in case of powerplant** or rotor failure. Aircraft protection from cyberattacks is another area of focus.
- **Navigation and Flight Safety:**
  - A third area is in **navigation and flight safety and the use of technology** when operating in difficult terrain, unsafe operating environments and also bad weather.

What is the Value of the Market?

- The global market for eVTOLs was put at **USD8.5 million in 2021** and is to grow to **USD30.8 million by 2030.**
- The **demand will be on account of green energy** and noise-free aircraft, cargo carrying concepts and the need for new modes of transport.
- The **UAM market is expected to expand at a compound annual growth rate of 25%** between 2018-25.
    - By 2025, it is anticipated to be a USD74 billion market. This includes the eVTOLs market since UAM ideally focuses on the use of eVTOLs.

Source: TH

Pradhan Mantri Awas Yojana

For Prelims: Pradhan Mantri Awas Yojana-Gramin, Pradhan Mantri Awas Yojana-Urban

For Mains: Welfare Schemes, Government Policies and Interventions

Why in News?

The Pradhan Mantri Awas Yojana-Gramin (PMAY-G) has a completion rate of 67.72%, whereas the Pradhan Mantri Awas Yojana-Urban (PMAY-U) scheme that started a year ahead is **lagging behind with a 50% completion rate.**

What are the Reasons for Delay in Both the Schemes?

- **Pandemic:**
    - The government officials **blame the** Covid-19 Pandemic **for the slowdown** in the PMAY-U.
    - The completion rate for houses sanctioned **before the Covid-19 pandemic stood around 80%.**
- **Poor Implementation by the states:**
    - Six States account for 70% of the target units — West Bengal, Madhya Pradesh, Bihar, Odisha, Uttar Pradesh and Chhattisgarh.
    - Out of them **only two States — Uttar Pradesh and West Bengal — have a completion rate above the national average.**
        - Bihar has **one of the lowest completion rates.**
- **Lack of clear titles and Documents:**
    - In urban areas, issues such as **a lack of clear titles and other land documents tend to crop up**. This further **slowed down the pace.**
    - The **same is true for rural areas** as well.
- **Centre's withholding funds in two States:**
    - In West Bengal, there was **an allegation that the current state govt was repackaging the scheme** as the Bangla Awas Yojana.
    - Funds for **Chhattisgarh were withheld because the State failed to provide its share** of contribution for the scheme.
        - The Centre pays **60% and the States have to bear 40% of the cost.**

What is PMAY-G Scheme?

- **Launch:** To achieve the objective of **"Housing for All" by 2022**, the erstwhile rural housing

scheme Indira Awaas Yojana (IAY) was restructured to **Pradhan Mantri Awaas Yojana-Gramin (PMAY-G) w.e.f 1st April, 2016.**

- **Ministry Involved**: Ministry of Rural development.
- **Aim:** To provide a pucca house with basic amenities to all rural families, who are homeless or living in kutcha or dilapidated houses by the end of March 2022.
    - To help **rural people Below the Poverty Line (BPL) in construction of dwelling units and upgradation of existing unserviceable kutcha houses** by providing assistance in the form of a full grant.
- **Beneficiaries:** People belonging to SCs/STs, freed bonded labourers and non-SC/ST categories, widows or next-of-kin of defence personnel killed in action, ex servicemen and retired members of the paramilitary forces, disabled persons and minorities.
- **Selection of Beneficiaries:** Through a three stage validation - Socio Economic Caste Census 2011, Gram Sabha, and geo-tagging.
- **Cost Sharing:** The cost of unit assistance is shared between Central and State Governments in the ratio 60:40 in plain areas and 90:10 for North Eastern and hilly states.
- **Achievements:**
    - It was initiated with **a target of completing 2.7 crore houses.**
    - So far, according to the database maintained by the Union Rural Development Ministry, 1.8 crore houses have been constructed.
    - This is 67.72% of the target.

What is PMAY-U Scheme?

- **Launch:**
    - 25th June 2015, intends to provide housing for all in urban areas by year 2022.
- **Implemented by:**
    - Ministry of Housing and Urban Affairs
- **Features:**
    - Addresses **Urban housing shortage among the Urban Poor including the Slum Dwellers** by ensuring a pucca house to eligible urban poor.
    - The Mission **covers the entire urban area consisting of Statutory Towns,** Notified Planning Areas, Development Authorities, Special Area Development Authorities, Industrial Development Authorities or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.
    - All houses under PMAY(U) have basic amenities like toilet, water supply, electricity and kitchen.
    - The Mission promotes women empowerment by providing the ownership of houses in the name of female members or in joint name.
    - Preference is also given to differently abled persons, senior citizens, SCs, STs, OBCs, Minority, single women, transgender and other weaker & vulnerable sections of the society.
- **Achievements:**
    - It was initiated with a target of constructing 1.2 crore homes.
    - According to the latest numbers from the Union Urban Development Ministry, only 60 lakh units have been completed to date.

Source: TH

Artificial Light to Fight Against Malaria

For Prelims: Malaria, Malaria Vaccine, World Health Organization, Artificial Light, Light Emitting Diode (LED) light

For Mains: Measures and Strategies to Prevent the Spread of Malaria

Why in News?

Recently, a study demonstrated that **artificial** lights **can be used as a weapon to fight against** malaria**.**

What are the key highlights?

- Light plays a crucial role in the **regulation of** biological clocks such as timing of breeding among birds, hunting by lions and sleeping patterns of humans.
- The timing of day and night has **remained relatively constant** owing to the earth's rotation, life on the planet has evolved with such regular day-night cycles.
- **Melatonin** hormone is a gene responsible for **regulating the sleep-awake cycles.**
    - It is found **in plants as well as animals.**
- **A rapid change in the natural sleep cycles** has been observed on account of increased use of artificial light.
- Currently, around **80%** of the world's population is living under **artificially lit skies.**

What can be the Impact of Artificial Light on Malaria?

- Artificial light can **alter mosquito biology.**
- Malaria-transmitting **mosquito** species "*Anopheles*" **feeds at night.**
- Using artificial light, the mosquitoes **can be tricked to behave as if it's daytime.**
- A short pulse of **Light Emitting Diode (LED) light,** commonly can **delay the onset of biting by hours in the mosquito "*Anopheles*".**
- Therefore, it **reduces biting rates and malaria transfer.**

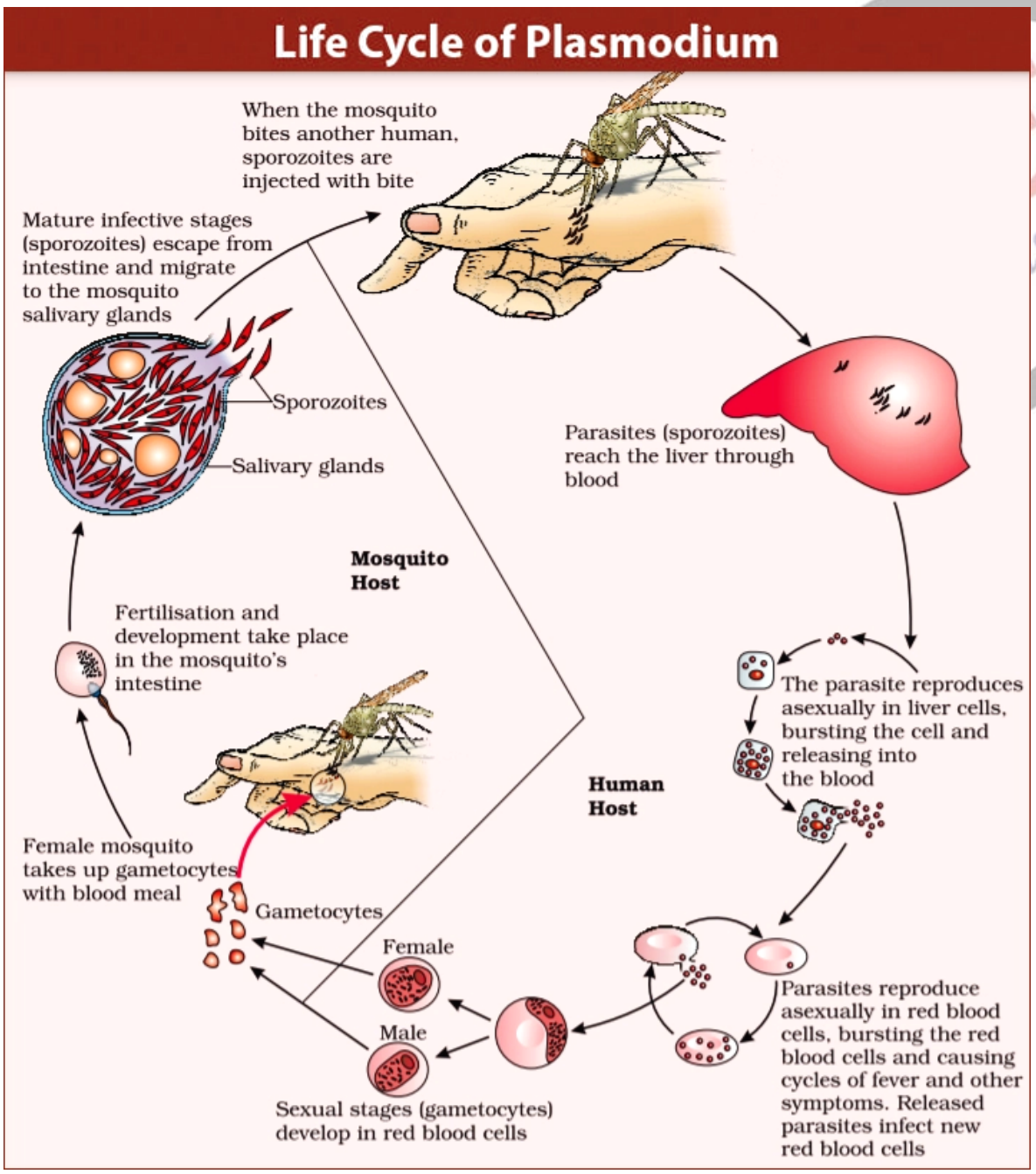
What are the Challenges?

- The first challenge is that it is still unclear **how artificial lights might be used to lessen the risk of malaria infections.**
- Demonstration of the effects of artificial light in controlled laboratory settings is one thing, but **rolling out their use as an effective vector control strategy** is quite another.
- Moreover, **LED light can have negative impacts on human health like disrupted sleep.**

What is Malaria?

- **About:**
    - **Malaria** is a **life-threatening mosquito borne blood disease caused by plasmodium parasites.** It is predominantly found in the **tropical and subtropical areas of Africa, South America as well as Asia.**
    - The parasites spread through the **bites of infected female Anopheles mosquitoes.**
    - After entering the human body, parasites initially multiply within the liver cells and then **attack the** Red Blood Cells (RBCs) **resulting in their rupture.**
    - There are **5 parasite species** that cause malaria in humans, and **2 of these species – *Plasmodium falciparum* and *Plasmodium vivax* – pose the greatest threat.**
    - **Symptoms** of malaria include **fever and flu-like illness, including shaking chills, headache, muscle aches, and tiredness.**
    - It is **preventable as well as curable.**
- **Malaria Vaccine:**
    - Known by its lab initials as **RTS, S but branded as Mosquirix**, the vaccine has passed lengthy scientific trials that found it to be **safe and reducing the risk of malaria by nearly 40%**, the best recorded.
    - It was developed by **GlaxoSmithKline (GSK)** company and **approved by the European**

Medicines Agency in 2015.
    - The RTS, S vaccine **trains the immune system to attack the malaria parasite (Plasmodium (P.) falciparum, the deadliest species of the malaria parasite).**
- **Global Scenario:**
    - Although a **decline** in total no. of cases from about **81.1 cases per 1,000 population to 59 per 1,000 since 2000,** the world has not yet won the war against Malaria.
    - Globally, **around 240 million cases and 6,00,000 deaths** were reported in 2020.
    - **Africa** carries the **world's largest disease burden for Malaria.**
    - In Africa, **94% of global cases and 96% of global deaths** have been recorded. It is alarming that **children aged five or younger** account for **80% of these deaths.**
- **Challenges**
    - Though vaccines look promising, **antimalarial drug resistance** specifically in East Africa is rising.
    - **Genetic mutations in the parasite** enables them to **escape routine diagnosis.**
    - **Increased resistance to insecticides** has been evolving in the mosquitoes.
- **Need of the hour**
    - This situation undermines the **requirement for sharpening the vector control options, and exploring new strategies.**



Way Forward

- **Impacts of artificial light use needs to be fully understood** before thinking about the implementation strategy.
- The growing body of work on this issue suggests that this definitely **needs more attention from the** World Health Organization (WHO) **and other relevant bodies.**

UPSC Civil Services Examination, Previous Year Question

Q. Widespread resistance of malarial parasite to drugs like chloroquine has prompted attempts to develop a malarial vaccine to combat malaria. Why is it difficult to develop an effective malaria vaccine? (2010)

(a) Malaria is caused by several species of Plasmodium
(b) Man does not develop immunity to malaria during natural infection
(c) Vaccines can be developed only against bacteria
(d) Man is only an intermediate host and not the definitive host

Ans: (b)

Exp:

- **Malaria is a life-threatening disease caused by Plasmodium parasites** that are transmitted to people through infected **female Anopheles mosquitoes.**
- The malarial parasite has an extraordinary ability to evade the immune system, which explains the difficulty in developing an effective malaria vaccine.
- **RTS,S/AS01 (RTS,S) is the first and, to date, the only vaccine to show partial protection against malaria in young children.**
- **Therefore, option (b) is the correct answer.**

Source: DTE

Fishing Cats

For Prelims: Fishing Cat Project, Chilika Lake, IUCN, CITES

For Mains: Conservation, Biodiversity and Environment

Why in News?

According to a census conducted by Chilika Development Authority, the Chilika Lake has 176 Fishing Cats.

- The Census was conducted in Collaboration with The Fishing Cat Project (TFCP). This is the **world's first population estimation of the fishing cat**, which has been conducted outside the

protected area network.

- **Spatially Explicit Capture Recapture (SECR) method** was used to analyze the data. SECR is used to estimate the density of an animal population from capture–recapture data collected using an array of 'detectors'.

What are Fishing Cats?

- **Scientific Name:** *Prionailurus viverrinus.*
- **Description:**
  - It is twice the size of a house cat.
  - The fishing cat is nocturnal (active at night) and apart from fish also preys on frogs, crustaceans, snakes, birds, and scavenges on carcasses of larger animals.
  - The species breed all year round.
  - They spend most of their lives in areas of dense vegetation close to water bodies and are excellent swimmers.
- **Habitat:**
  - Fishing cats have a patchy distribution along the **Eastern Ghats.** They abound in estuarine floodplains, tidal **mangrove forests** and also inland freshwater habitats.
  - Apart from Sundarbans in West Bengal and Bangladesh, fishing cats inhabit the **Chilika lagoon** and surrounding wetlands in Odisha, Coringa and Krishna mangroves in Andhra Pradesh.
- **Threats:**
  - **Habitat Destruction:** A major threat for fishing cats is the destruction of wetlands, their preferred habitat.
  - **Shrimp Farming:** Shrimp farming is another growing threat to **mangrove habitats** of the Fishing Cat.
  - **Hunting:** This unique cat also faces threats from hunting for meat and skin.
  - **Ritual Practices:** Tribal hunters indulge in ritual hunting practices throughout the year.
  - **Poaching:** It is also occasionally poached for its skin.
  - **Poisoning:** Indiscriminate trapping, snaring and poisoning.
- **Protection Status:**
  - **IUCN Red List:** Vulnerable. Despite multiple threats, the Fishing Cat was recently

downlisted to “Vulnerable” from “Endangered” in the IUCN Red List species assessment.
    - **CITES**: Appendix II
    - **Indian Wildlife Protection Act, 1972**: Schedule I
- **Conservation Efforts:**
    - Earlier, Chilika Development Authority had declared its intent to adopt **a five year action plan for fishing cat conservation** in Chilika.
    - In 2021, the **Fishing Cat Conservation Alliance** initiated a study of the bio-geographical distribution of the **fishing cat** in the unprotected and human-dominated landscapes of the northeastern Ghats of Andhra Pradesh.
    - The Fishing Cat Project, launched in 2010 started raising awareness about the Cat in West Bengal.
    - In 2012, the West Bengal government officially declared the Fishing Cat as the State Animal and the Calcutta Zoo has two big enclosures dedicated to them.
    - In Odisha, many NGOs and wildlife conservation Societies are involved in Fishing Cat research and conservation work.

WHat are the Key Points of Chilika Lake?

- Chilika is Asia's largest and **world's second largest lagoon.**

- In 1981, Chilika Lake was designated the first Indian wetland of international importance under the **Ramsar Convention.**
- Major attraction at Chilika is **Irrawaddy dolphins** which are often spotted off Satapada Island.
- The large Nalabana Island (Forest of Reeds) covering about 16 sq km in the lagoon area was declared a bird sanctuary in 1987.
- Kalijai Temple - Located on an island in the Chilika Lake.
- Chilika lake hosts birds migrating from thousands of miles away from the Caspian Sea, Lake Baikal, Aral Sea, remote parts of Russia, Kirghiz steppes of Mongolia, Central and South East Asia, Ladakh and the Himalayas.
- The birds find the vast mud-field and abundant fish stock here suitable to congregate.

Source: TH
