

WORLD POPULATION PROSPECT 2022

SYLLABUS: GS PAPER-I (HUMAN GEOGRAPHY, POVERTY & DEVELOPMENTAL ISSUES)

CONTEXT: According to the 2022 edition of the United Nations' World Population Prospects (WPP), released on Monday, India is projected to surpass China as the world's most populous country in 2023. It also projected the world's population to reach 8 billion on November 15, 2022.

ABOUT WORLD POPULATION PROSPECT (WPP)

- The **Population Division of the UN** has been publishing the WPP in a biennial cycle since 1951.
- Each revision of the WPP provides a historical time series of population indicators starting in 1950.
- It does so by considering newly released national data to revise estimates of past trends in **fertility, mortality, or international migration.**

KEY FINDINGS

- The global population is expected to grow to around 8.5 billion in 2030, 9.7 billion in 2050 and 10.4 billion in 2100.
- In 2020, the global growth rate fell under 1% per year for the first time since 1950.
- More than half of the projected increase in global population up to 2050 will be concentrated in just eight countries-**The Democratic Republic of the Congo, Egypt, Ethiopia, India, Nigeria, Pakistan, the Philippines, and the United Republic of Tanzania.**
- The share of the global population aged 65 years or above is projected to rise from 10% in 2022 to 16% in 2050.
- A sustained drop in fertility has led to an increased concentration of the population at working ages (between 25 and 64 years), creating an opportunity for accelerated economic growth per capita.
- Over the next few decades, **migration will be the sole driver of population growth in high-income countries.**

INDIA SPECIFIC CHALLENGES

- India's growth rate stood at 2.3 % in 1972, which has dropped down to less than 1% now.
- In this period, the number of children each Indian woman has during her lifetime has come down from about 5.4 to less than 2.1 now.
- This means that **India has attained the Replacement Fertility Rate**, at which a population exactly replaces itself from one generation to the next.
- Fertility rates have been declining, so have mortality rates with increased access to healthcare and advances in medicine.
- Population of 0-14 years and 15-24 years will continue to decline while those of 25-64 and 65+ will continue to rise for the coming decades.

- This reduction of premature mortality for successive generations, reflected in increased levels of life expectancy at birth, has been a driver of population growth in India.

NASA'S JAMES WEBB SPACE TELESCOPE DELIVERS DEEPEST INFRARED IMAGE OF UNIVERSE

SYLLABUS: GS PAPER-III (SPACE TECHNOLOGY)

CONTEXT: US President Joe Biden released the first of the full color images from the James Webb Space Telescope.

WHAT IT SHOWS?

- The image released by Biden is known as **Webb's First Deep Field**. Described by **NASA** as the "**deepest and sharpest infrared image of the distant universe to date**," it shows a galaxy cluster called **SMACS0723** as it appeared 4.6 billion years ago.
- The image shows shining objects packed together in hues of blue and orange.
- The combined mass of this galaxy cluster acts as a **gravitational lens, magnifying much more distant galaxies behind it.**
- Webb's **NIR Cam (Near Infrared Camera)** has brought those distant galaxies into sharp focus – they have tiny, faint structures that have never been seen before, including star clusters and diffuse features."
- Four more images from Webb were released- **a distant planet, a nebula, a star from the same nebula, and baby stars in another nebula.**



ABOUT JAMES WEBB TELESCOPE

- It is the most powerful infrared telescope of National Aeronautics and Space Administration (NASA).
- The telescope is the result of an international collaboration between **NASA, the European Space Agency (ESA) and the Canadian Space Agency.**
- It was launched aboard a rocket on December 25, 2021, and is currently at a point in space known as the **Sun-Earth L2 Lagrange point**, approximately 1.5 million km beyond Earth's orbit around the Sun.
- Lagrange Point 2 is one of the five points in the orbital plane of the Earth-Sun system.
- Named after Italian-French mathematician Joseph-Louis Lagrange, **the points are in any revolving two-body system like Earth and Sun, marking where the gravitational forces of the two large bodies cancel each other out.**
- Objects placed at these positions are **relatively stable and require minimal external energy or fuel to keep themselves there**, and so many instruments are positioned here.

GOALS OF JAMES WEBB TELESCOPE

- To search for the first galaxies that formed after the Big Bang.
- To determine how galaxies evolved from their earlier formation until now.
- To observe the formation of stars from the first stages to the formation of planetary systems.
- To measure the physical and chemical properties of planetary systems and investigate the potential for life in such systems.

PRELIMS FACTS

NATIONAL EMBLEM

- PM unveiled the national emblem placed atop the new Parliament.

About National Emblem

- It is an adaptation of the **Lion Capital of Ashoka at Saranath**.
- In the original, four lions are mounted back-to-back on a circular abacus which rests on a bell-shaped lotus (omitted later).
- The frieze of abacus has **sculptures of an elephant, a galloping horse, a bull, and a lion separated by intervening Dharma Chakras**.
- It was adopted on January 26, 1950.
- The motto "**Satyameva Jayate**" meaning 'truth alone triumphs,' written in **Devanagari script** below profile of Lion capital is part of the emblem.

BACILLUS THURINGIENSIS ISRAELENSIS (BTI STRAIN VCRC B-17)

- Bti is a biological or a naturally occurring bacterium found in soils. (Bti is short for Bacillus thuringiensis subspecies israelensis.)
- It **contains spores that produce toxins that specifically target and only affect the larvae of the mosquito, blackfly, and fungus gnat**.
- Bti has no toxicity to people and is approved for use for pest control in organic farming operations.
- Bti is used to kill developing mosquito larvae by being applied to standing water where those larvae are found. Bti can be used around homes in areas and containers where water can collect, such as flower pots, tires, and bird baths. Bti can also be used to treat larger bodies of water like ponds, lakes, and irrigation ditches.
- When ingested by mosquito larvae, the **bacterial toxins destroy their gut within 10-30 minutes of ingestion**.
- It can aid in India's fight against vector borne diseases such as malaria, filariasis, dengue, chikungunya, Japanese encephalitis etc.



AIR POLLUTION CENSORS

- To bolster measurement of air pollution in rural India, **IIT-Kanpur would install nearly 1400 sensors in rural blocks of Uttar Pradesh and Bihar.**
- The pilot project is expected to pave the way for **a national network of air quality sensors in rural India.**
- Air pollution in India is largely framed as **urban blight** though causes of pollution such as **biomass burning and reliance on diesel gensets for electricity** are worsening air quality in villages too.
- The National Clean Air Programme, launched in 2019, primarily aims at 122 cities that have been categorized as India's most polluted cities.

INTERPOL'S INTERNATIONAL CHILD SEXUAL EXPLOITATION (ICSE) INITIATIVE

- India's **Central Bureau of Investigation** has joined the Interpol's International Child Sexual Exploitation (ICSE) initiative.
- It will allow CBI to collaborate with investigators in other countries for detecting child sex abuse online and identifying abusers, victims, and crime scenes from audio-visual clips using specialized software.
- The ICSE database **uses video and image comparison to analyze Child Sex Exploitation Material (CSEM)** and make connections between victims, abusers and places.
- India reported over 24 lakh instances of online child sexual abuse from 2017 to 2020, with 80% victims being girls below the age of 14 years, according to Interpol data.
- In 2019, the CBI set up a special unit called the '**Online Child Sexual Abuse and Exploitation Prevention/Investigation (OCSAE)**', for tracking and monitoring posting, circulation and downloads of CSEM online.

