

WORLD ENVIRONMENT DAY

World Environment Day is being celebrated across the globe on June 5 every year.



About World Environment Day:

- It is observed on the 5th of June every year since 1973 as part of the United Nations Environment Programme to build awareness to save life on planet Earth.
- The event has been led by the **United Nations Environment Programme (UNEP)** since its inception in 1973.
- The theme of this year's World Environment Day will focus on **solutions to plastic pollution** under the campaign #BeatPlasticPollution.
- This year's event is **hosted by Côte d'Ivoire** in partnership with the Netherlands.

Key facts about United Nations Environment Programme (UNEP):

- It is the leading global authority on the environment.
- **Mission:** To inspire, inform, and enable nations and peoples to improve their quality of life without compromising that of future generations.
- It is driving transformational change by drilling down on the root causes of the triple planetary crisis of **climate change, nature and biodiversity loss and pollution.**
- Headquarters: **Nairobi, Kenya.**
- **Reports published by UNEP:** Emission Gap Report, Global Environment Outlook, Frontiers, Invest into Healthy Planet.
- It provides secretariat functions for numerous multilateral environmental agreements (MEAs) and other entities as follows:
 - Convention on Biological Diversity (**CBD**)
 - Convention on International Trade in Endangered Species of Wild Fauna and Flora(**CITES**)
 - Minamata Convention on Mercury
 - Basel, Rotterdam and Stockholm Conventions
 - Vienna Convention for the Protection of Ozone Layer and the Montreal Protocol
 - Convention on Migratory Species

WHAT IS OPEC+ ?

Saudi Arabia will soon pledge new voluntary production cuts as part of a broader OPEC+ deal to curb output.



About OPEC+:

- It is a group of **23 oil-exporting countries** which meets regularly to decide how much crude oil to sell on the world market.
- These nations aim to **work together on adjusting crude oil production to bring stability** to the oil market.
- **At the core of this group are the 13 members of OPEC** (the Organization of the Oil Exporting Countries), which are mainly Middle Eastern and African countries.
- **Members:** It comprises **13 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman.**

What is the Organization of the Petroleum Exporting Countries (OPEC):

- It is a permanent **intergovernmental organization of oil-exporting countries.**
- **Mission:**
 - To **coordinate and unify the petroleum policies** of its Member Countries.
 - Ensure the **stabilization of oil prices in the international oil markets**, with a view to eliminating harmful and unnecessary fluctuations.
- **Formation:** It was established in **1960** by the five founding members **Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.**
- **Currently, it has 13 members**, including **Algeria, Angola, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, and the United Arab Emirates**
- **Headquarters: Vienna, Austria.**

SMART BANDAGE

Researchers have developed a smart bandage which can help treat chronic wounds.



About Smart Bandage:

- **What it is?** It is a soft **stretchable polymer** that helps the bandage maintain contact with and stick to the skin.
- The **bioelectronics system consists of biosensors** that monitor biomarkers in the wound exudate.
- Data collected by the bandage is **passed to a flexible printed circuit board**, which relays it wirelessly to a smartphone or tablet for review by a physician.
- A **pair of electrodes control drug** release from a hydrogel layer as well as stimulate the wound to encourage tissue regrowth.

How does it work?

- Biosensors determine the wound status by tracking the chemical composition of the exudates, which changes as the wound heals.
- Additional **sensors monitor the pH** and temperature for real-time information about the infection and inflammation.
- A pair of electrodes, the same **electrodes that stimulate the tissue**, control the release of drugs from a hydrogel layer.
- The wireless nature of the device sidesteps the problems of existing electrical stimulation devices, which usually require bulky equipment and wired connections, limiting their clinical use.

[NATIONAL CENTRE FOR DISEASE CONTROL \(NCDC\)](#)

The National Centre for Disease Control (NCDC) recently alerted states about smaller outbreaks for five diseases—typhoid, malaria, dengue, scrub typhus and hepatitis A.



About National Centre for Disease Control (NCDC):

- It is an institute under the Indian Directorate General of Health Services, Ministry of Health and Family Welfare.

- **The Director, an officer of the Public Health sub-cadre of Central Health Service, is the administrative and technical head of the Institute.**
- **History:**
 - **The National Centre for Disease Control (NCDC), formerly National Institute of Communicable Diseases (NICD) had its origin as Central Malaria Bureau, established at Kasauli (Himachal Pradesh) in 1909 and following expansion was renamed in 1927 as the Malaria Survey of India.**
 - **The organization was shifted to Delhi in 1938 and called as the Malaria Institute of India (MII).**
 - **In view of the drastic reduction achieved in the incidence of malaria under National Malaria Eradication Programme (NMEP), Government of India decided to reorganize and expand the activities of the institute to cover other communicable diseases.**
 - **Thus in 1963 the erstwhile MII was renamed as National Institute of Communicable Diseases (NICD) to shoulder these additional responsibilities.**
 - **In year 2009, NICD transforms into National Centre for Disease Control (NCDC) with a larger mandate of controlling emerging and re-emerging diseases.**
- **Headquarters: New Delhi.**

Functions:

- **It functions as the nodal agency in the country for disease surveillance facilitating prevention and control of communicable diseases.**
- **In coordination with the State Governments, NCDC has the capacity and capability for disease surveillance, outbreak investigation, and rapid response to contain and combat outbreaks.**
- **It also deals with Anti-Microbial Resistance (AMR), an emerging area of concern with far-reaching consequences.**
- **It also provides referral diagnostic support, capacity building and technical support to States/UTs in the country.**

WHAT IS SONIC BOOM?

A sonic boom rattled US's Washington and Virginia recently after two F-16 fighter jets chased an “unresponsive aircraft” through the sky.



About Sonic Boom:

- A sonic boom is a **thunderous noise caused by an object**, like an aircraft, **moving faster than the speed of sound**.
- **How is it formed?**
 - As the **object zooms through the sky**, the air molecules around it are pushed aside with **tremendous force**, generating **shock waves** along its flight path.
 - The **release of pressure**, following the **shock waves' buildup**, is heard as the **sonic boom**.
 - Sonic booms **create huge amounts of sound energy**.
- The **intensity** of the sonic boom is **determined** not only by **the distance between the craft and the ground** but also by **the size and shape of the aircraft**, **the types of maneuvers that it makes**, and **the atmospheric pressure**, temperature, and winds.
- Generally, a **larger aircraft will cause stronger shock waves**, and therefore, a louder sonic boom.
- **If the aircraft is especially long**, **double sonic booms might be detected**, one emanating from the leading edge of the plane and one from the trailing edge.
- **Sonic booms can shatter glass**, but there is generally little risk for people on the ground.

HOW INDIA BECAME RELATIVELY SELF-SUFFICIENT IN PULSES COMPARED TO EDIBLE OILS

Why in News?

- After registering growth for four consecutive years, India's pulses imports in terms of the rupee declined by around 5 per cent during the 2022-23 fiscal.

Background (Context):

- There are two agricultural commodities in which India is significantly import-dependent: **Edible oil** and **Pulses**.

- Between 2013-14 and 2022-23 (April-March), the value of India's vegetable oil imports has soared from approx. Rs 44,000 crore to approx. Rs 167,200 crore.
 - Much of this has been in just the last two fiscal years.
- Out of the 24-25 million tonnes (mt) cooking oil that the country consumes annually, only 9-10 mt is from domestically produced grain. The balance 14-15 mt is imported.
- In case of pulses, the trend has been reversed.

About Pulses:

- Pulses are the **edible seeds of plants in the legume family**. Pulses grow in pods and come in a variety of shapes, sizes and colors.
- The United Nations Food and Agriculture Organization (FAO) recognizes 11 types of pulses –
 - dry beans, dry broad beans, dry peas, chickpeas, cow peas, pigeon peas, lentils, Bambara beans, vetches, lupins and pulses nes (not elsewhere specified – minor pulses that don't fall into one of the other categories).

Pulses in India:

- Pulses are the major sources of protein in the diet.
- Of all categories of people, pulses form an integral part of the Indian diet, providing much-needed protein to the carbohydrate-rich diet.
- Pulses are 20 to 25 percent protein by weight which is double the protein content of wheat and three times that of rice.
- **Varieties –**
 - Major pulses are grown chickpeas (gram), pigeon pea (tur or arhar), moong beans, urad (black matpe), masur (lentil), peas and various kinds of beans.
- **Areas of Cultivation –**
 - The main regions with high productivity are **Punjab, Haryana, Western Uttar Pradesh, West Bengal delta region, coastal Andhra Pradesh, Tamil Nadu, Kerala, coastal and eastern Karnataka** and some parts of **Maharashtra**.
- **Facts & Figures –**
 - India is the **largest producer of pulses in the world**.

- India exported 410,375.89 mt of pulses to the world for the worth of approx. Rs. 2,800 Crores during the year 2021-22.

- **Major Export Destinations (2021-22) –**

- UAE, China, US, Nepal, Canada and Iran.

Conclusion –

- Looking ahead, a subnormal monsoon can potentially lead to inflation in pulses.
- However, the government has at least two buffers against this –
 - Ample **buffer stocks** of chana (chickpea).
 - The second is **imports** - there is currently no duty on imports of masoor, arhar or urad.

SUSTAINABILITY OF GROUNDWATER: INCREASED RAINFALL ALONE WILL NOT HELP GROUNDWATER RECOVERY

Why in News?

- Between 2002 and 2022, about 95% of India's groundwater depletion occurred in north India mainly as a result of increased groundwater pumping to meet irrigation demands for crops.
- As groundwater use and summer monsoon rainfall variability are the two main drivers of groundwater storage, climate change can throw new challenges for the sustainability of groundwater.

Groundwater Scenario in India:

- **Availability:**

- Groundwater is the water that **seeps through rocks and soil** and is stored below the ground. The rocks in which it is stored are called **aquifers**.
- This hidden resource accounts for just **0.62% of the total water and 30% of the freshwater** available on earth.
- **In India**, out of the 1,123 BCM/year usable water resources of the country, the share of groundwater is **433 BCM/year (~39%)**.

- **Groundwater crisis in India:**

- Groundwater is India's most used water resource accounting for a **quarter of total GW extraction** in the world.
- The challenges in groundwater resource management are complex and multifaceted. These include -
 - Unregulated extraction; Excessive irrigation; Poor knowledge of GW management system; GW pollution; Climate change
- As per the **2021 CAG report**, groundwater extraction in India increased from 58% to 63%, between 2004-17, exceeding the groundwater recharge rate.
- Over extraction at the current rate **can threaten nearly 80% of drinking water over the next two decades.**
- **Governance:**
 - Legal framework in India **does not explicitly define** groundwater ownership and rights, as these are still determined by the archaic **Indian Easement Act, 1882.**
 - These rights tied to land ownership rights **exclude** a large part of the society and lead to violation of the fundamental right to water and the right to life (**Article 21**).
 - The **Central Groundwater Board (CGWB)** was formed in **1970** specifically to develop groundwater policies and programs.
 - The **Central Ground Water Authority (CGWA)** was constituted under **the Environment (Protection) Act, 1986.**
 - In 2004, the SC of India propounded the '**public trust doctrine**' - making groundwater a matter of private ownership would be unjustified.
 - **Atal Bhujal Yojana (2019)**, Jal Shakti Abhiyan (2019) and Aquifer Mapping and Management Programme are some of the initiatives of the government of India for groundwater management.


Challenges to Groundwater Sustainability:

- **Climate warming and unsustainable groundwater extraction:**
 - Warming climate will increase the frequency of hydro-climate extremes - floods and droughts.
 - Warming climate will also **increase the amount of summer monsoon rainfall.**

- However, the projected increase in groundwater for irrigation can **cancel the benefits of increased precipitation** (in groundwater recovery) in the future.
- **The role of increased evapo-transpiration due to warming climate:**
- **Evapo-transpiration** is the sum of all processes by which water moves from the land surface to the atmosphere via evaporation and transpiration.
- It will limit water availability for groundwater recovery.

Imperative to Reduce Groundwater Use for Irrigation:

Imperative to reduce groundwater use for irrigation
The projected increase in monsoon will be insufficient if there is continued use of groundwater at current levels for irrigation



- Warming climate will increase the frequency of floods and droughts
- Warming climate will also increase the amount of summer monsoon rainfall that north India will receive
- Summer monsoon rainfall, which is projected to increase by 6-8%, can help recover the lost groundwater
- Use of groundwater from deeper aquifers in the Indo-Gangetic Plain will make it hard for its recovery from increased rainfall
- So recovery of the depleted groundwater in north India will be insufficient if groundwater is not conserved
- There is a crucial need to restrict unsustainable groundwater use for irrigation

Caution: Increased rainfall can only help recover about 50% of groundwater lost in the last two decades. SPECIAL ARRANGEMENT

■ Between 2002 and 2022, about 95% of India's groundwater depletion occurred in north India

Way Ahead:

- There is a crucial need to **restrict unsustainable groundwater use** for irrigation. This can help in recovering groundwater storage with increased rainfall

(due to climate change).

- There is a **compulsion to make irrigation more efficient** to promote groundwater conservation to ensure long-term sustainability especially during periods of drought.
- **Satellite observations** [from the GRACE Satellites of NASA] to understand the variability of groundwater storage and plan conservation initiatives accordingly.