HOW TO DOUBLE INDIA'S FARMERS' INCOME?

Context:

- In 2016, the PM of India shared his **dream of doubling farmers' incomes** in the year (2022) **when India completes 75 years of Independence** and enters Amrit Kaal.
- The article investigates whether it is appropriate now to determine whether the dream has been realised, and if not, how best it might be accomplished.

How to Double India's Farmers' Income (DFI)?

- In this regard the Government of India had constituted an **Inter-Ministerial Committee** (in April, 2016) to examine issues relating to DFI and recommended strategies to achieve the same.
- The Committee submitted its final report in 2018 containing the strategy for DFI through **various policies, reforms and programmes.**
- To achieve the objective, the Committee identified following **seven sources of income growth**:
  - **Increase in crop productivity**
  - Increase in livestock productivity
  - Resource use efficiency – reduction in cost of production
  - Increase in cropping intensity
  - **Diversification to high value agriculture**
  - Remunerative prices on farmers' produce
  - Shift of surplus manpower from farm to non-farm occupations
- The premise of the strategy is based on the f**ollowing primary principles:**
  - Increasing total output across the agricultural sub-sectors through realising higher productivity
  - **Rationalising/reducing the cost of production**
  - Ensuring remunerative prices in the agricultural produce
  - **Effective risk management**
  - Adoption of sustainable technologies

What are the Initiatives Adopted and Implemented for DFI?

- **Unprecedented enhancement in budget allocation:** The Budget allocation for the Ministry of Agriculture and Farmers Welfare (MoAFW) increased from only Rs. 25460.51 crore (2015-16) to Rs. 1,38,550.93 crore in 2022-23 (by more than 5.44 times).
- **PM Kisan Samman Nidhi (PM KISAN):** Launch of PM-KISAN in 2019 - an income support scheme providing Rs. 6000 per year in 3 equal instalments. More than Rs. 2 lakh crores have been released to approximately 11.3 crore eligible farmer families.
- **Pradhan Mantri Fasal Bima Yojana (PMFBY): L**aunched in 2016, the scheme is an insurance service for farmers for their yields. In the last 6 years, for every 100 rupees of premium paid by farmers, they have received about Rs. 493 as claims.
- **Institutional credit for agriculture sector:** Increased from Rs. 8.5 lakh crore in 2015-16 with a target to reach Rs. 18.5 lakh crore in 2022-23.
  - Benefits through **Kisan Credit Cards (KCC)** at 4% interest per annum have also now been extended to Animal Husbandry and Fisheries farmers **for meeting their short-term working capital needs.**
- **Fixing of Minimum Support Price (MSP)** at one-and-a-half times the cost of production: **For example,** MSP for Wheat increased from Rs. 1400 per quintal in 2013-14 to Rs. 2125 per quintal in 2022-23.
- **Other initiatives:** Promotion of organic farming in the country, Per Drop More Crop, Micro Irrigation Fund, Fertiliser subsidies, Promotion of Farmer Producer Organisations (FPOs), e-NAM, Launch of the National Mission for Edible Oils - Oil Palm, etc.

Way Ahead:

- DFI must **encompass policies that also protect the basic resources** of this planet, say soil, water, air, and biodiversity.
  - **Millets**, pulses, oilseeds, and much of horticulture could perhaps be **given carbon credits** to incentivise their cultivation. **They consume less water and fertilisers.**
- The CAG should take up the **audit of all subsidies** given by the Centre and states to examine their outcomes in terms of the incomes of farmers and environmental consequences.

BIO-COMPUTERS: WHAT ARE THEY AND WHAT CAN THEY TELL US ABOUT THE HUMAN BRAIN?

Why in News?

- Scientists at Johns Hopkins University (JHU) recently outlined a plan for a potentially revolutionary new area of research called "**organoid intelligence (OI)**, which aims to create "**biocomputers**."

What is the Premise of this Bio-computer Technology?

- Traditionally, researchers have used **rat brains** to investigate various human neurological disorders.
- However, there are **several differences** in structure, function and cognitive capacities of rodents and humans.
- In a quest to develop systems that are more relevant to humans, s**cientists are building 3D cultures of brain tissue in the lab**, also called **brain organoids.**
- These mini-brains, built using human stem cells, however, **have certain limitations -**
  - No input sensory inputs (touch, smell, vision, etc.)/output connection
  - No blood circulation
  - When inserted in a rat shows different behavioural interpretation

What is the new 'Bio-computer'?

- The JHU researchers' scheme **will combine brain organoids** (with multiple electrodes similar to those used to take EEG readings from the brain) **with modern computing methods** (machine learning) to create "bio-computers".
- These brain cultures (organoids) grown in the lab are **coupled to real-world sensors and input/output devices** to develop into the complex organ.
- The scientists were able to **grow human neurons** on top of a microelectrode array that could both record and stimulate these neurons.

What are the Opportunities for 'Bio-computers'?

- While human brains are slower than computers (say, simple arithmetic), **they outshine machines at processing complex information.**
- Comparing the data on brain structure, connections, and signalling between 'healthy' and 'patient-derived' organoids **can reveal the biological basis of human cognition, learning, and memory.**
- They could also help decode the pathology of and drug development for devastating neurodevelopmental and degenerative diseases such as **Parkinson's disease.**

Are 'Bio-computers' Ready for Commercial Use?

- Currently, brain organoids have a diameter of less than 1 mm and have fewer than 100,000 cells, which make it **roughly three-millionth the size of an actual human brain**.
  - So scaling up the brain organoid is key to improving its computing capacity.
- Researchers will also have to **develop microfluidic systems** to transport oxygen and nutrients, and remove waste products.
- They will also need to **develop and use advanced analytical techniques** to correlate the structural and functional changes in the brain organoids to the various output variables.
- The first, **very-primitive forms of learning** are already around, and the challenge is now to establish long-term memory, which may take more time.
- There is also a proposal to have an ethics team to parallelly identify, discuss, and analyse **ethical issues** as they arise in the course of this work.

WHAT IS THE NANO LIQUID DAP (DI-AMMONIUM PHOSPHATE) FERTILIZER?

The Government recently approved the launch of nano liquid DAP (di-ammonium phosphate) fertilizer in India and has been notified in the Fertilizer Control Order (FCO).

About nano liquid DAP fertilizer:

- It is a **concentrated phosphate-based fertilizer**.
- It **provides phosphorous nutrition** throughout the crop growth and development cycle.

- Nano-DAP is jointly **manufactured by Indian Farmers Fertiliser Cooperative (IFFCO**) in **association with a private player Coromandel.**
- Nano-DAP will be **sold at Rs 600 per bottle of 500 ml**. **One bottle** will be **equivalent to one bag of DAP**, which currently costs Rs 1,350.
- **Expected benefits:**
  - **DAP is the second most consumed fertilizer** in the country after urea.
  - Out of the estimated annual consumption of around 10-12.5 million tonnes, local production is around 4-5 million tonnes, while the rest has to be imported.
  - Nano-DAP **will help to bring down India's fertilizer import bill.**
  - It is also expected to contribute to **bringing down the annual subsidy on non-urea fertilizers.**

What is Fertilizer Control Order (FCO)?

- It has been **issued under the Essential Commodities Act 1955.**
- It is **administered by Department of Agriculture Cooperation**, Govt. of India.
- The **FCO lays down,**
  - **what substances qualify for use as fertilizers** in the soil;
  - **product-wise specifications**;
  - **methods for sampling and analysis** of fertilizers;
  - the **procedure for obtaining a license**/registration as a manufacturer/dealer in fertilizers;
  - conditions to be fulfilled for trading thereof;

WHAT IS THE UNITED NATIONS HIGH SEAS TREATY?

After more than a decade of negotiations, the countries of the United Nations have recently agreed to the High Seas Treaty.

About UN High Seas Treaty:

- It is the **first-ever treaty to protect** the world's **oceans that lie outside national boundaries.**
- It is also known as the '**Paris Agreement for the Ocean**.'

- It is a **legally binding treaty** to protect marine life in international waters.
- It **aims to place 30% of the seas into protected areas by 2030** (a pledge made by countries at the UN biodiversity conference in 2022).
- It will **provide a legal framework for establishing vast marine protected areas (MPAs)** to protect against the loss of wildlife and **share out the genetic resources of the high seas.**
- It **also covers environmental assessments** to evaluate the potential damage of commercial activities, such as deep-sea mining.
- It will **establish a conference of the parties (CoP)** that will **meet periodically** and **enable member states to be held to account on issues such as governance and biodiversity.**
- The treaty **also includes a pledge by signatories to share ocean resources.**
- The treaty is **built on the legacy of the UN Convention on the Law of the Sea (UNCLOS),** which is the **last international agreement on ocean protection**, signed 40 years ago in 1982. UNCLOS established an area called the high seas.

What are High Seas?

- The high seas **begin at the border of countries' exclusive economic zones**, which extend up to 370km (200 nautical miles) from coastlines.
- Beyond that point, the seas are **under the jurisdiction of no country**, and **all countries have a right to fish, ship, and do research.**
- They make up **more than 60% of the world's oceans by surface area.**
- **Activities on the high seas are often unregulated** and insufficiently monitored, leaving them vulnerable to exploitation.

WHAT IS THE RAISINA SECURITY DIALOGUE?

India recently held the second edition of the Raisina Security Dialogue.

About Raisina Security Dialogue:

- It is a **conference of intelligence and security chiefs** and top

officials from around the world.

- It is **modeled on the lines of the Munich Security Conference** and **Singapore's Shangri-La Dialogue.**
- It is **organized by the Research and Analysis Wing (R&AW)** and **the National Security Council Secretariat (NSCS).**
- It was **held for the first time in April 2022.**
- **Raisina Security Dialogue** 2023:
  - This is the **second edition** of the dialogue.
  - It saw **participation from over 26 countries**, including intelligence chiefs from the U.K, Japan, France, and Bahrain.
  - The **focus of the discussions was largely on global security**, which encompassed counterterrorism, radicalization, drug trafficking, and illegal arms smuggling, among others.

Munich Security Conference:

- It is an **annual conference on international security policy** that has been **held in Munich, Bavaria, Germany since 1963.**
- It has become the **most important independent forum** for the exchange of views by **international security policy** decision-makers.
- The list of attendees includes **heads of state, governments and international organizations, ministers**, members of parliament, high-ranking representatives of armed forces, science, and civil society, as well as business and media.
- The conference is **held annually in February**. The **venue is the Hotel Bayerischer Hof in Munich**, Bavaria, Germany.

Shangri-La Dialogue:

- It is **Asia's premier defense and security summit.**
- It is attended **by Defence Ministers, permanent heads of ministries and military chiefs** of 28 **Asia-Pacific countries.**
- It is **organized by** an independent think-thank, **International Institute for Strategic Studies (IISS).**

- The summit is **named after the Shangri-La hotel in Singapore,** where it has been held since 2002.

ARMY COURT MARTIAL

An Army court martial in Jammu and Kashmir has recommended life imprisonment for a Captain in connection with the killing of three men in a staged encounter at a remote hilly village at Amshipura in the Shopian district of south Kashmir in July 2020.

About Court martial:

- A court-martial has been granted the authority **to judge the guilt of members of the armed forces** which is subject to military law, and, in the case, if the accused or defendant is found guilty, to decide upon punishment which they have to carry.

What is the legal Provision related to court martial in India?

- The **Armed Forces Tribunal Act 2007** was passed by the Parliament and led to the formation of the Armed Forces Tribunal.
- This tribunal is empowered with the adjudication of disputes and complaints concerning the commission, appointments, enrolments and conditions of service in respect of persons subject to **the Army Act, 1950, The Navy Act, 1957 and the Air Force Act, 1950**
- **Composition of the Armed Forces Tribunal**
  - The Judicial Members are **retired High Court Judges**and Administrative Members are **retired Members of the Armed Forces** who have held the rank of Major General/ equivalent or above for a period of three years or more.
  - Judge Advocate General (JAG) who has held the appointment for at least one year is also entitled to be appointed as the Administrative Member.
- There are **four kinds** of courts-martial in India namely; General Court Martial (GCM), District Court Martial (DCM), Summary General Court Martial (SGCM) and Summary Court Martial (SCM).

- Under the Army Act, army courts can try personnel for all kinds of offences, **except for murder and rape of a civilian**, which are primarily tried by a **civilian court of law.**
- **Pardoning power:** The **president of India** can use his judicial power **under Article 72** of the Constitution to pardon, reprieve, respite or remission of punishment or sentence given by a court martial.

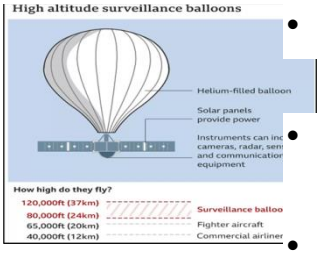
PROTOCOLS TO TACKLE THREAT OF SPY BALLOONS

Why in news?

- The Indian military has drafted a set of basic protocols to tackle newer threats like surveillance balloons or other unidentified objects in the sky.
- This was after a similar entity was spotted a year ago over the strategic Andaman and Nicobar Islands.

What are spy balloons?

- A contemporary spy balloon is a piece of spying equipment, for example a camera, suspended beneath a balloon that floats above a given area, carried by wind currents.
  - The equipment attached to the balloons may include **radar and be solar powered.**
- Balloons are one of the oldest forms of surveillance technology. The Japanese military used them to launch incendiary bombs in the US during World War Two.
- They were also widely used by the US and the Soviet Union during the Cold War.
- Modern balloons typically hover between 24km-37km above the earth's surface (80,000ft-120,000ft).



Why use spy balloons rather than satellites?

- For the last few decades, satellites were used on a regular basis. But now lasers or kinetic weapons are being invented to target satellites.
- Hence, there is a resurgence of interest in balloons.
- Although, these balloons don't offer the same level of persistent surveillance as satellites, but are easier to retrieve, and much cheaper to launch.

- Balloons can also **scan more territory** from a lower altitude and spend more time over a given area because they move more slowly than satellites.

Why Indian Military is keen on formulating protocols to tackle threat of spy balloons?

- **Increasing cases of spy balloons**
  - In February 2023, the United States shot down a giant Chinese balloon, which it accused of spying on its crucial military sites.
- **Aerial object was spotted over the Andamans**
  - Even though its origin could not be ascertained, as per media reports, the object had drifted away over the ocean before military authorities could take a decision on action to be taken.

What is the significance of Andaman & Nicobar for India?

- The Andaman and Nicobar Islands house the tri-service Andaman and Nicobar military command.
- What makes these islands strategically important is their proximity to the Indo-Pacific as well as to major choke-points or sea lines of communication (SLOC) in the Bay of Bengal — the Malacca Strait, Sunda Strait, Lombok Strait and the Ombai-Wetar straits.
  - Most of the world's shipping trade passes through these choke-points.
- The islands offer India the potential to play a critical role towards enhancing its influence in the Indian Ocean region and support its military operations in the area.