

The Unified Payments Interface (UPI)

❖ Context

- The Unified Payments Interface or the UPI, processed ₹10,41,520 crore worth of transactions just in May of this year in India.
- More than **40% of all retail digital payments** (non-cash and non-paper payments) in India happen through UPI now.



• About:

- The UPI was **launched in 2016**.
- It is **operated by the National Payments Corporation of India (NPCI)**.

• **Functioning:** UPI operates on top of the **Immediate Payment Service (IMPS)** which was created by the NPCI for immediate fund transfers.

- UPI based payments **function broadly through three steps**.
 - **First**, one's bank account is mapped to a **Virtual Payment Address (VPA)**.
 - A VPA **eliminates the risk of mentioning account details** in every transaction.
 - It can be created in a couple of minutes using a UPI app.
 - The only prerequisite is that your bank account be linked to a mobile number.
 - **Secondly**, a **Payment Service Provider** (typically a bank) takes care of the **to-and-fro transactions** to this VPA.
 - Finally, the **UPI software organizes the fund movement** from a customer's VPA to a target VPA and completes the transaction.

❖ Recent Innovations in UPI

- Recurring payments for monthly bills.
- International payments.
- linking UPI to credit cards.
- Allowing one-time payment by letting a merchant generate a QR (Quick Response) code.
 - It is valid for just that specific transaction and many more features.
- **123PAY:** It allows people without smartphones but with only ordinary mobile phones to use UPI using missed calls.
- ❖ **NPCI**
 - The NPCI was formed in 2009 as an initiative of the RBI and the Indian Banks' Association (IBA).
 - NPCI's goal is to create a robust payment and settlement infrastructure.
- ❖ **Side Note**
 - Globally, **UPI is accepted in Bhutan, Nepal and UAE**.
 - It is likely to go live in **Singapore later this year**.
 - In the financial year 2022, (FY22), UPI enabled 45.6 billion transactions, worth \$1 trillion, making it the best performing real-time payment ecosystem in the world.

Banni Grasslands

❖ Context

- The Gujarat forest department will **restore 10,000 hectares of the Banni grasslands** in the coming year, and every year in the coming decade.



❖ Key Highlights

- The state plans on **restoring at least 76,000 hectares** of this 2,497 sq km grassland which is a high-biodiversity area.
- It has **already restored 10,000 hectares** over the past couple of years.

❖ About Banni Grasslands

- The grasslands of Gujarat **constitute about 4.33 per cent (8,490 sq km) of the total geographical area**.



- It is distributed in eight districts and three different climatic regions - Kutch, Saurashtra and central Gujarat.
- A majority of grasslands in Gujarat (41 per cent) are found in the Kutch district.

- Banni grassland was **declared a Protected Forest in 1955**, under the Indian Forest Act, 1927.
- **Wildlife Institute of India (WII)** has identified this grassland reserve as one of the last remaining habitats of the cheetah in India.
- **Maldharis are a tribal herdsman community inhabiting Banni**.
- **Flora and Fauna:**
 - It has 40 species of grass and 99 species of flowering plants.
 - Banni is also home to the Indian wolf, jackal, Indian fox, desert fox, desert cat, caracal, hyena, chinkara, Nilgai, wild boar, Indian hare, common monitor lizard — and the cheetah before it became extinct.
 - Banni also has 273 bird species and in years of good rainfall, is home to thousands of migratory birds.

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CAR-T Cell Therapy

❖ Context

- A Spanish CAR-T cell therapy has been inaugurated in Bengaluru. It would conduct phase - II clinical trials, for treating patients with leukaemia and lymphoma.

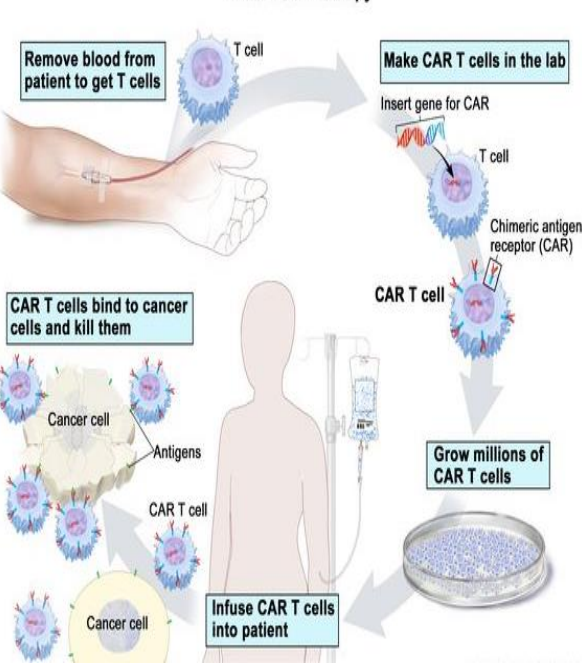
❖ About the Therapy

- **Chimeric antigen receptor (CAR) T-cell therapy** is a type of **cell-based gene therapy** that involves changing immune cells called T cells (a type of white blood cell) in the lab so that they can find and destroy cancer cells.
- Clinical trials conducted globally have shown promising results in end stage patients, especially in patients suffering from Acute Lymphocytic Leukaemia.

❖ How it works

- The immune system recognizes foreign substances in the body by finding proteins called **antigens** on the surface of those cells.

CAR T-cell Therapy



- Immune cells called **T cells** have their own proteins called **receptors** that attach to foreign antigens and help trigger other parts of the immune system to destroy the foreign substance.
- Cancer cells also have antigens.
- T cells are taken from the patient's blood through a process called **apheresis** and are changed in the lab by adding a gene for a receptor (called a chimeric antigen receptor or CAR).

- An **inactivated HIV virus** (that has no risk for HIV) - is used to deliver the gene to T-cells.
- It helps the T cells attach to the specific cancer cell antigen.
- The CAR T cells are then transmitted back to the patient. Since different cancers have different antigens, **each CAR is made for a specific cancer's antigen.**

❖ Cytokine Release Syndrome

- It is an acute **systemic inflammatory syndrome** characterised by fever and multiple organ dysfunction.
- As CAR T cells multiply, they can release large amounts of chemicals called cytokines into the blood, which can ramp up the immune system.
- It is a **possible serious side-effect** associated with the therapy.

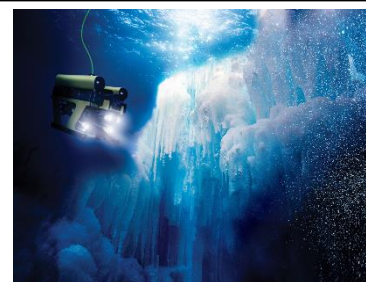
❖ Status of therapy in India

- This technology is **not available** in India.
- Each patient's CAR-T cell therapy costs 3-4 crore (INR).
- The challenge therefore is to develop this technology in a cost-effective manner and make it available for the patients.
- A similar therapy that had been developed indigenously by **IIT Bombay & Tata Memorial Hospital** is in phase I clinical trial stage.

Swimming Robots

❖ Context

- The National Aeronautics and Space Administration (NASA) has recently announced a study into the **feasibility of sending swarms of independent miniature swimming robots** to explore oceans beneath the icy shells of our Solar System's many "ocean worlds".



❖ Key Highlights

- They will probably be 12 cm long and of simple, triangular wedge shape.
- **Pluto** is one example of a likely ocean world.
- But the worlds with oceans nearest to the surface, making them the most accessible, are **Europa**, a moon of Jupiter, & **Enceladus**, a moon of Saturn.
- Europa's ocean probably has about twice as much water as the whole of Earth's oceans.

❖ Why Scientists are Interested in these Worlds

- **Chemical interactions between rock and the ocean water can support life.**
- These are environments where water that has seeped into the rock of the ocean floor becomes hot and chemically enriched – water that is then expelled back into the ocean.

- Microbes can feed off this chemical energy, and can in turn be eaten by larger organisms.
- Such environments may be very similar to that on Earth at the time life began.
- Many warm, rocky structures of this type, known as "**hydrothermal vents**", have been documented on Earth's ocean floors since 1977.
- In these locations, **no sunlight or atmosphere is actually needed.** The local food web is supported by **chemosynthesis** (energy from chemical reactions).

❖ Source of Interior Energy in these Ocean Worlds

- In most of our Solar System's ocean worlds, the energy that heats their rocky interiors and prevents the oceans from freezing all the way to the base comes principally from **tides**.
- This is in contrast to the largely radioactive heating of the Earth's interior. However, the chemistry of the water-rock interactions is similar.

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Wheat and Rice Consumption Trends in India

❖ Context

- Recently, **Gujarat and Uttar Pradesh** have demanded more wheat in place of rice and asked the Centre to restore their original allocations under the National Food Security Act (NFSA), 2013.
- **Wheat-rice allocation ratio was revised** by the Union Food Ministry in May, 2022.

❖ Changes in the Wheat-Rice Allocation Ratio

- The Centre has **reallocated some quantities by changing ratios of wheat and rice** under the NFSA.
- For example: States getting wheat and rice at a 60:40 ratio will now get it at 40:60.
 - Those getting allocations at 75:25 would now get these at 60:40.
- **States, where rice allocation has been zero, will continue to get wheat.**
- For small states, **NE states and special category states, allocation has not been changed.**
- Centre had also announced a **cut in wheat allocation under the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)** for the remaining five months until September.
- **Significance of the Reallocation:** According to the Food Ministry, the move would **save about 61 lakh tonnes of wheat** over the remaining 10 months (June-March) of the current financial year.

❖ Wheat and Rice Consumption Trends in India

- Generally, there has been a **gradual decline in per capita cereal consumption in India.**

- As per the National Sample Survey Office (NSSO),
 - **Rice consumption (per person per month):**
 - It has fallen in rural India from 6.38 kg in 2004-05 to 5.98 kg in 2011-12.
 - In urban India from 4.71 kg to 4.49 kg.
 - **Bihar, Jharkhand, Odisha, W.Bengal & Tamil Nadu — had a higher rice consumption** than the all-India average (rural: 5.976, urban: 4.487 kg/person/month) in 2011-12
 - **Wheat consumption:**
 - It was **4.29 kg in rural areas & 4.01 kg in urban areas** during 2011-12 (July-June).
 - It had risen by about 0.1 kg per person per month since 2004-05 in rural areas and fallen 0.35 kg in urban areas.
 - Consumption of wheat was **higher in Uttar Pradesh, Madhya Pradesh, Bihar, Delhi and Maharashtra;** and lower in Odisha, West Bengal and Tamil Nadu.

STATE	RICE		WHEAT	
	RURAL	URBAN	RURAL	URBAN
All India	5.976	4.487	4.288	4.011
Bihar	6.044	5.366	5.584	5.512
Jharkhand	8.838	5.716	2.671	4.458
Odisha	12.139	8.800	0.673	1.752
W Bengal	9.923	6.243	1.345	2.286
Tamil Nadu	8.604	7.337	0.530	0.726
Delhi	1.452	2.072	6.104	5.447
Uttar Pradesh	4.063	2.835	7.160	6.543
Gujarat	2.042	1.835	3.710	4.928
Maharashtra	3.238	2.945	4.313	4.145
Madhya Pradesh	2.194	1.876	8.484	7.850

NSSO: Household Consumption of Various Goods and Services in India, 2011-12



Markets in Crypto-Assets (MiCA)

❖ Context

- The European Union officials agreed upon a new, the **MiCA** law, to **regulate crypto-assets.**



❖ Key Highlights

- Crypto-assets are digital assets that can be transferred and stored electronically, using technology known as '**distributed ledger technology**'.
- It will be the **first comprehensive regulation** for crypto-assets, and can become a trendsetter for crypto regulation globally.
- The new law will need formal approval by the European Parliament and EU states to become law, followed by an implementation period.
- The rules will give issuers of crypto assets and providers of related services a "passport" to serve clients across the EU from a single base.
- The proposed rules also lay down requirements for the emerging category of so-called 'stablecoins'. **Stablecoin issuers will have to maintain reserves** that will cover for mass withdrawals and be based in the EU.

- Trading platforms for tokens without issuers, like bitcoins, will have to outline a coin's technology, purpose and be liable for any misleading information.
- They will be obliged to lay out risks for consumers and obey rules on disclosure of insider information.

❖ About Stablecoins

- It is a non-volatile crypto-currency whose value is pegged to some other asset or currency like \$1.
- Stablecoins are divided into e-money tokens and asset-referenced tokens.
- An **e-money token** is a crypto-asset designed to maintain a stable value by referring to one currency.
- **Asset referenced tokens** are crypto-assets that seek to maintain a stable value by referring to several currencies, commodities or other crypto-assets, or a combination of such assets.

News in Between the Lines

Fields Medal

❖ Context

- Recently, **Ukrainian mathematician Maryna Viazovska** was named as one of **four recipients of the 2022 Fields Medal.**

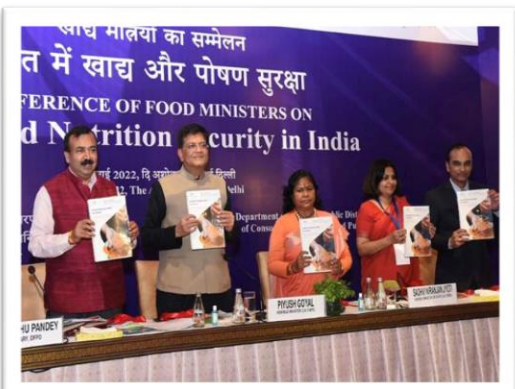
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❖ About Fields Medal

- This honour is often described as the Nobel Prize in mathematics.
- The Fields Medal is **awarded by the International Mathematical Union (IMU)**.
 - It is an international non-governmental and non-profit scientific organization that aims to promote international cooperation in mathematics.
- The Fields Medal is **awarded every four years** to one or more mathematicians under the age of 40.
- The honour carries:**
 - A physical medal of 14K gold, 63.5 mm in diameter and weighing 169 g.
 - A unit price of approximately 5,500 Canadian dollars.
 - There is also a cash award of CAD 15,000.
- Indian Origin winners: Akshay Venkatesh** of the Institute for Advanced Study at Princeton (2018) and **Manjul Bhargava** of the Department of Mathematics at Princeton University(2014).

States Ranking Index for NFSA Report



❖ Context

- The **Ministry of Consumer Affairs, Food & Public Distribution** released the 1st edition of 'State Ranking Index for NFSA' during the conference of Food Ministers of States/UTs on 'Food Nutrition and Security in India'.

❖ Key Highlights

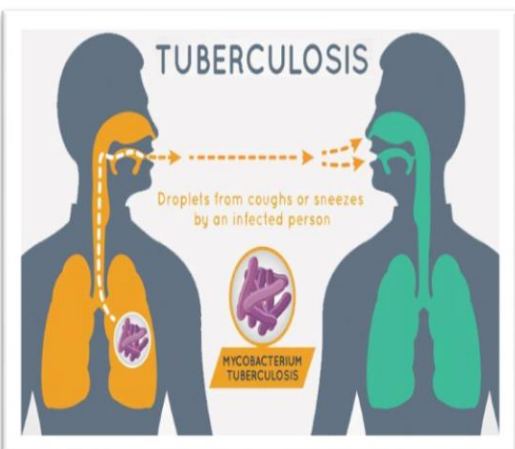
- The index attempts to document the status & progress of implementation of NFSA. It also highlights the reforms undertaken by States and UTs.
- The present Index is largely focused on NFSA Distribution and will include procurement in future.
- The index is built on **three key pillars** which covers the end-to-end implementation of NFSA through TPDS.
 - These pillars are: **i) NFSA - Coverage, targeting and provisions of the Act, ii) Delivery platform, and iii) Nutrition initiatives.**
- Among the Special Category states/UTs, **Tripura** stood first followed by Himachal Pradesh and Sikkim respectively.

TOP THREE		
Rank	State	Index score
1	Odisha	0.836
2	Uttar Pradesh	0.797
3	Andhra Pradesh	0.794
BOTTOM THREE		
18	Delhi	0.658
19	Chhattisgarh	0.654
20	Goa	0.631

❖ Key Highlights of the Conference

- India is now 100% connected under One Nation One Ration Card (ONORC).**
- The system of digitised, **Aadhaar linked Public Distribution will be used to issue Ayushman Bharat Card.** It has already been started by **UP**.
- The immunisation of migrant kids can also be linked with the system to ensure both health and food security.

Tuberculosis(TB)



❖ Context

- Researchers at the Indian Council of Medical Research-National Institute for Research in Tuberculosis (ICMR-NIRT) have **found human-to-animal transmission of TB in livestock (cattle).**

❖ Key Highlights

- India reported more than 2.4 million TB cases in 2019** and continues to have the largest share of the global TB burden.
- Meanwhile, the **country's total livestock stands at 535.78 million**, with an increase of 4.6% over the last census in 2012.

❖ About TB

- TB is an **infectious disease** caused by the **bacillus Mycobacterium tuberculosis**. It typically **affects the lungs (pulmonary TB)** but can also affect other sites like the brain, eyes and spine.
- The disease is spread when people who are sick with pulmonary TB **expel bacteria into the air, for example by coughing.**
- Directly observed treatment (DOTs): Short-course (DOTS,** also known as TB-DOTS) is the name given to TB control strategy recommended by the World Health Organization. It was also deployed by India to curb the menace of TB.

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