

- **Moist Deciduous Forests** are more pronounced in the region which record rainfall between 100-200 cm. They are found in NE states along the foothills of Himalayas, eastern slopes of western ghats, and Odisha.
 - **Mains species** - Teak, Sal, Bamboos, Shisham, sandalwood, kair, kusum, arjun, semul, mulberry, Mahua etc.

- **Dry Deciduous** are found in areas where rainfall range from 70-100 cm. It acts as transition between moist deciduous and thorn forests. They are found in rainier area of Peninsula and plains of UP and Bihar.
 - In the higher rainfall area of the peninsular India and northern plains, these forests have a parkland landscape with open stretches in which teak and other trees interspersed with patches of grass are common. As the dry season begin, the trees shed their leaves and forest appears like vast grassland with naked trees all around.
 - **Main Vegetation:** Tak, Sal, Peepal, Neem, Tendu, etc.

C) TROPICAL THORN FORESTS

- Areas with rainfall less than 50 cm.
- Consist of variety of grasses and shrubs

- It includes semi-arid areas of south west Punjab, Haryana, Rajasthan, Gujarat, MP and UP. In these areas plants remain leafless for most part of the year and give an expression of scrub vegetation.

- **Important Plant Species:**
 - Acacia, palms, euphorbias, and cacti are the main plant species.
 - Babool, Ber, date palm, khair, neem, palas etc are also common.
 - **Tussocky grass** grows upto a height of 2m as the undergrowth.

D) MONTANE FORESTS

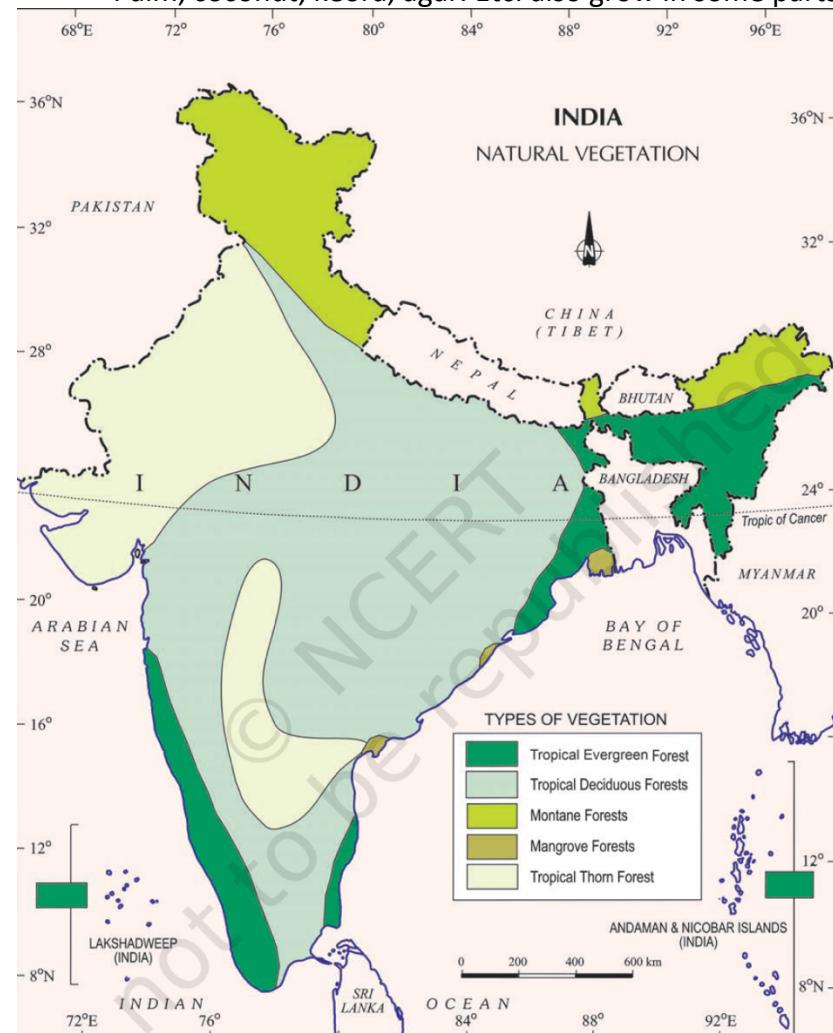
- In Mountainous region, the decrease in temperature with increasing altitude leads to corresponding change in natural vegetation. We see a succession of vegetation from tropical to tundra region.
 - **The Wet Temperate** type of forests is found between 1,000 m to 2000 m height. Here, Evergreen broad leaf trees, such as oaks, chestnuts dominate.
 - **The Temperate forests containing coniferous trees** are found between 15,00 and 3,000 metres. It include pine deodar, silver firs, spruce and cedar. These forests are generally found in southern slope of Himalayas, places having high altitudes in southern and northeastern India.
 - **Temperate grasslands** are common at higher altitudes.
 - **At height above 3,600 metres** temperature forests and grasslands give way to Alpine vegetation. Silver fir, junipers, pines and birches are the common trees of these forests. However, they become progressively stunted as they approach the snowline.

Ultimately through shrubs and scrubs, they merge into **Alpine grasslands**. These are used extensively for grazing by nomadic tribes, like Gujjars, and Bakarwals.

- At higher altitudes Mosses and Lichens are part of the **tundra vegetation**.

E) LITTORAL AND SWAMP FORESTS:

- Mangrove Forests are found in areas of coasts influenced by tides.
 - Sundari trees provide durable hard timber.
 - Palm, coconut, keora, agar. Etc. also grow in some parts of the delta.



11. INDIA STATE OF FOREST REPORT, 2021

- **Introduction**
 - » Published by Forest Survey of India, MoEF&CC, Gol.
 - » Biennial report
 - » Provides state/district wise forest cover of the country and changes thereon wrt previous assessment.
 - » The forest cover assessment is a wall-to-wall mapping exercise based on remote sensing supported by intensive ground verification and field data from National Forest Inventory.

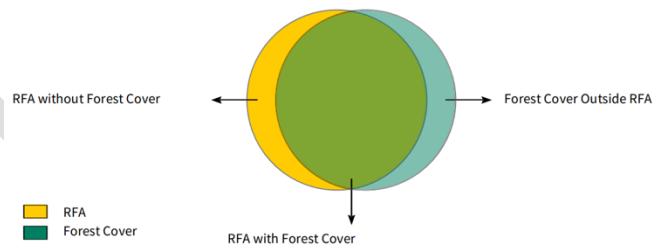
- **About Forest Survey of India**
 - » It was **founded in 1976** as a key National Survey Organization under Ministry of Environment Forest and Climate Change. It is headquartered in Dehradun.
 - » It conducts forest surveys, conducts research to monitor changing land and forest resources, implements social forestry.
 - » **Reports**
 - ISFR
 - 'The Reports on Inventory of Wood Consumption'.

- **Some other Basic Information**

- » **Forest cover classified into three density classes.**
 1. **Very Dense Forest** (canopy density > 70%)
 2. **Moderately Dense Forest** (40-70% of canopy density)
 3. **Open Forest** (10-40% of canopy density)
- » **Scrub** (degraded forest lands with density less than 10%) -> not counted in forest cover
- » **Non-Forest** (land not included in any of the above 4 categories (includes water bodies))

- **Forest Cover and Recorded Forest Area**

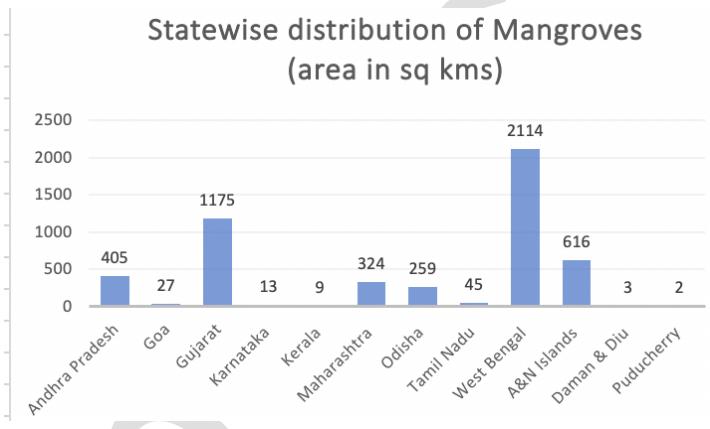
- » **Forest Cover:** All land more than 1 hectare in area with a tree canopy of more than 10%, irrespective of land use, ownership, and legal status. It may include even orchards, bamboo, palm etc. and is assessed through remote sensing.
- » **Recorded Forest Area/Forest Area:** Refers to all geographical areas recorded as 'Forests' in government record.
- » **Note:** There may be areas under Forest Area which will not be covered under definition of Forest cover. Similarly, there will be areas outside Forest Area which may be included in forest cover.



1) KEY HIGHLIGHTS OF THE 2021 SURVEY

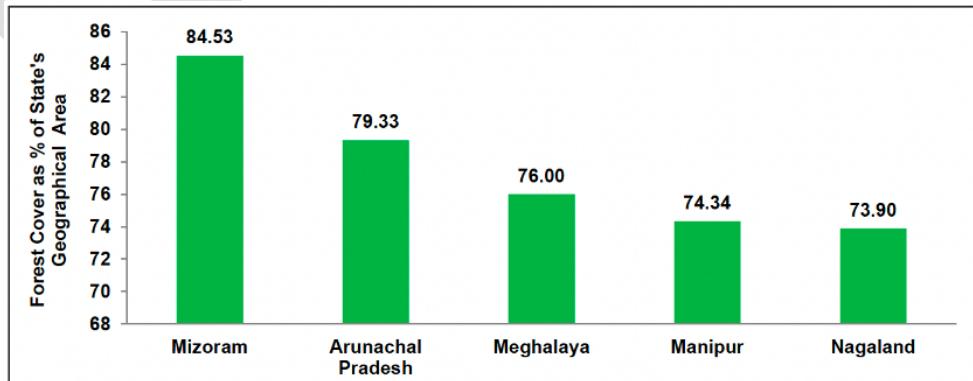
- India's **total forest cover**: 7.13 lakh sq km (**21.71%** of India's total area)
 - » In 2011, the total area under forest cover was **21.05%**. So, there has been an increase of 3.14 percent in the forest cover over 2011.
 - » This increase in total forest cover is mainly attributed to increase in very dense forest, which rose by 19.54 per cent between 2011 and 2021. Open forest also improved by 6.71 per cent, while moderately dense forest declined by 4.32 per cent between 2011 and 2021.
 - **Causes of Concern?**
 - **Decline in Natural Forests:**
 - **Decline in North-East India**
 - **Importance of NE:** It accounts for 7.98% of total geographical area but 23.75% of total forest cover.
 - » The Forest cover has increased by 1,540 sq km since 2019.

- **Total Forest and Tree Cover:** 8.09 lakh sq km (**24.62% of India's total area**).
 - » There has been a 1,540 sq km increase in forest cover and 721 sq km increase in tree cover since the last report in 2019.
- **Total Mangrove cover** in the country is 4,992 sq km which is 0.15% of the country's total geographical area.
 - » As per the ISFR 2021, there has been a net increase of 17 sq km in the mangrove cover of the country compared to 2019 assessment.
 - » Very Dense (29.55%), Moderately Dense (29.67%), and Open Mangroves (40.78%).
 - **Odisha** (8 sq km), **Maharashtra** (4 sq km) and **Karnataka** (3 sq km) have shown **most increase**.



- **Bamboo Forests** have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021.
- **The total carbon stock in forests** was estimated to be 7,204 million tonnes, an increase of 79.4 million tonnes from 2019.
- **States with more than 33% of area under forest cover:** 17 states
 - » 5 States/Uts: Lakshadweep, Mizoram, Andaman & Nicobar Islands, Arunachal Pradesh and Meghalaya have more than 75% forest cover.
 - » 12 States/Uts: Manipur, Nagaland, Tripura, Goa, Kerala, Sikkim, Uttarakhand, Chhattisgarh, Dadra & Nagar Haveli and Daman & Diu, Assam, and Odisha have forest cover between 33% and 75%.
- **Top 5 States in terms of Forest Cover**
 - » Madhya Pradesh (11% of the total forest cover), Arunachal Pradesh (9%), Chhattisgarh (8%), Odisha (7%), and Maharashtra (7%).

- **Top 5 States by % of Geographical Area under Forest Cover**



- **Note:** The above data has not included islands of A&N and Lakshadwee as they are UTs:

- Lakshadweep (90%) A&N Islands: 81.75%
- **Assessment of Forest Cover in tiger reserves, tiger corridors and Gir Forest** which house the Asiatic Lion.
 - » In Tiger Corridors the forest cover has increased by 37.15 sq km (0.32%) between 2011 - 2021.
 - » In Tiger Reserves the forest cover has decreased by 22.6 sq km (0.04%) between 2011-2021.
 - » Forest cover has increased in 20 tiger reserves in these 10 years and decreased in 32.
 - **Pakke Tiger Reserve** (in Arunachal Pradesh) has the highest forest cover at 97%.

12. MANGROVES

- Introduction

- » Mangroves are salt tolerant plant communities found in tropical and sub-tropical intertidal regions of the world. They are a group of 70 species of trees, shrubs and ferns. Mangrove areas are characterized by high rainfall (100 - 300 cm) and high temperature (26 degree C - 35 degree C).
- » Mangrove species exhibit a variety of adaptation in morphology, anatomy, and physiology to survive in water logged, highly saline soils and cyclone and tide prone environment.
- » They show convergent adaptations to saline, oxygen deficient, habitats. The 'true mangroves' exhibit all or few of the typical mangrove adaptations:
 - Tolerance to Salinity; Salt filtering or exuding system**
 - Tolerance to oxygen deficient soil**
 - Stilt or knee roots, Aerial Roots (pneumatophores)**
 - **Note:** Aerial roots project above the mud and have small openings (lenticles) through which air enters, passing through the soft spongy tissues to the roots beneath the mud. This acts as site of oxygen intake for the submerged roots.
 - Succulents (thick fleshy leaves)**
 - Viviparous Seedlings**

Vivipary is a phenomenon that involves seeds germinating prematurely while they are still inside or attached to the parent plant or fruits. Many mangrove species show vivipary. The ovum is fertilized while still on the parent tree and grows by a combination of photosynthesis and acquisition of nutrients from the parent until it may reach a length of 50 cm



- » These features allow these species, belonging to different families and genus survive along the coasts. Some prominent mangrove genera are Avicennia, Rhizophora, Sonneratia, Brugueira, etc.
- **Global Distribution of Mangroves:**

- » The distribution and diversity of mangroves is higher in the tropical Indo-West Pacific region and goes on reducing the subtropical, Atlantic, Caribbean, and Eastern Pacific regions.



» **Continental Distribution:**

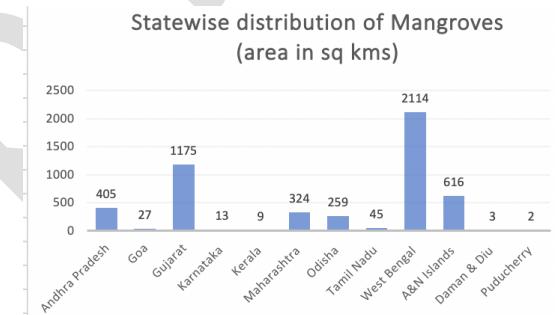
- As per the India State of Forest Report (ISFR), 2021, globally around 113 countries have mangrove forests with highest continental distribution in Asia, followed by Africa, North and Central America, South America and Oceania.

» **Country wise distribution:**

- More than 40% of the total area of Mangroves was reported to be in just four countries: Indonesia (19%), Brazil (9%), Nigeria (7%), and Mexico (6%).

- **Mangroves in India:**

- » India has 3.3% of the world's mangroves. Important species of Mangrove ecosystem in India include *Avicennia officinalis*, *Rhizophora mucronata*, *Sonneratia Alba*, *Avicennia Alba*, *Bruguiera cylindrica*, *Heritiera littoralis*, *Phoenix paludosa*, *Morinda citrifolia* & *Ceriops tagal*.
- » **Sundarban**, located in the northern Bay of Bengal is the world's largest single patch of Mangrove forests. It is spread over approx. 10,000 sq km, in BD and India. It was the first mangrove forest to be brought under scientific management as early as in 1892.
 - Gol, had set up a National Mangroves Committee in 1976 to advise the government on issues related to conservation and development of mangroves in the country.



- **Importance:**

- » **Protection against Tsunamis, Storm Surges and Soil Erosion**
- » **Enhance Sediment deposition:** Act as a zone of land accretion
- » **Reduces sea water pollution**
- » **Biodiversity:** They act as fertile breeding ground for many fish species and other marine fauna.
- » **Economy:** They act as important source of livelihood for the coastal communities dependent on collection of honey, tannins, wax and fishing
- » **Fight Climate Change:** Important carbon sink

- **Factors harming Mangrove Ecosystem:**

- » Land Reclamation for agriculture.
- » Industrialization along the coastlines
- » Discharge of untreated domestic sewage and industrial effluents

1) MISHTI

- **MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes):**
 - » It is a centrally sponsored scheme launched by MoEF&CC in 2023-24.

- » It aims to:
 - **Increase the mangrove cover** in India by 540 sq km along the coastline and on saltpan lands in 9 coastal states and 4 Union territories during five years commencing FY 2023-24 onwards.
 - **Conserve and restore mangrove ecosystem.**
 - **Promote ecotourism and Livelihood generation** activities in mangrove areas.
- » **Components:**
 - Mangrove Plantation
 - Awareness Generation
 - Capacity Building
 - Research and Development

2) MANGROVES ALLIANCE FOR CLIMATE (MAC)

- **Mangrove Alliance for Climate (MAC)** (Nov 2022)
 - » **Why in news?**
 - Launch of Mangrove Alliance for Climate (MAC) on the sidelines of COP 27 (Nov 2022)
- **Details**
 - » Mangrove Alliance for Climate (MAC) is an initiative led by UAE and Indonesia. It also includes India, Sri Lanka, Australia, and Spain.
 - » It seeks to educate and spread awareness worldwide on the role of mangroves in curbing global warming and its potential as a solution for climate change.
 - » The intergovernmental alliance works on a voluntary basis meaning that there are no real checks and balances to hold the members accountable. Instead, the parties will design their own commitments and deadlines regarding planting and restoring mangroves.
- **Suggestions: Integration of Mangroves** into the national REDD+ programs need of the hour

3) UNESCO WORLD HERITAGE FORESTS: INDIA'S SUNDARBANS AMONG 5 SITES WITH HIGHEST 'BLUE CARBON' GLOBALLY

- Researchers at UNESCO, the World Resource Institute and the IUCN estimated the **gross and net carbon absorbed and emitted by the UNESCO World Heritage Forests between 2001 and 2020**
- **Key highlights of the study:**
 - » **UNESCO World Heritage Forests in 257 sites** absorbed approx. 190 million tonnes of CO₂ from the atmosphere each year. This is roughly equal to half of UK's annual CO₂ emissions from fossil fuels.
 - » They also store a substantial amount of carbon in addition to absorbing CO₂ from the atmosphere. The total carbon stored by these forests is approx. 13 billion tonnes.
- UNESCO lists 50 sites across the globe for their unique marine values. This represents just 1% of the global ocean area. But they comprise at least 15% of the global carbon assets.

- » The top five sites include Great Barrier Reefs (502 million tonnes of Carbon), Everglades National Park in USA (400 Mt C), Banc d'Arguin National Park in Mauritania (110 Mt C), Bangladeshi Portion of Sundarbans (110 Mt C) and Sundarban National Park in India (60 Mt C).

- **Worrying trend:**

- » 10 of the 257 forests emitted more carbon than they captured between 2001 and 2020 due to different anthropogenic disturbance and pressures.

13. GRASSLANDS

- Grasslands are types of vegetation mainly comprised of grasses belonging to the families **Poaceae** that include plants like **millets, rice, wheat, bluegrass, ryegrass, bamboos, sugarcane and many more.**
 - » In India various famous grasses are doab (durva), lemongrass, kans, sewan, congress grass etc.

- **Global Distribution of Grasslands:**

- » Grasslands go by different names in different parts of the world.

Region	Name
US Midwest	Prairies
South America	Pampas, Llanos, and cerrados
Central Eurasia	Steppes
West African	Savannas
Australia	Rangelands

- » **Climatic Conditions:**

- Grasslands would be found in places where there is not enough regular rainfall to support the growth of forest, but not so little that deserts form.

- **Types of Grasslands:** Tropical and Temperate

- » **Tropical Grasslands** are also called Savannahs. They are found in warm and hot climates where the annual rainfall is between 50.8 to 127 cms per year.

- They have scattered trees and some shrubs.

- **Distribution:**

- The largest savannahs are found in Africa (Savanna). It covers more than 50% of the entire continent.
- They are also found in Australia, South America (campos in Brazil, Llanos in Venezuela) and India.

- » **Temperate grasslands** include the Eurasian steppes (in Ukraine and Russia), North American Prairies, Argentine Pampas, Down in Australia, and Veld in South Africa.

- They are found in wide plains which are drier than Savannahs with but much colder.
- They are flat, treeless, covered with grass, and have rich soil.

- What they have in common is that grasses are their naturally dominant vegetation.

- Depending on how they are defined, they account for 20-40% of the global land area.
- They are generally open and fairly flat. Also, grasslands are **generally very fertile** as there is no heavy rain to wash away the nutrients.
 - This makes them vulnerable to human encroachment. For e.g., the much of the prairies have been encroached upon for agriculture purpose. This threatens biodiversity which depends on the grassland ecosystem.
- **Key threats:** Farming, overgrazing, invasive species, illegal hunting, climate change etc.
- **Grasslands and Biodiversity:**
 - **Grassland support variety of species.** Vegetations on the African Savannah, for example, feeds animals including zebras, wildebeest, gazelles, and giraffes. Similarly, temperate grasslands support prairies dog, badgers, coyotes and a variety of birds.

14. FAMOUS GRASSES IN INDIA

Doab Grass or Durba grass (*Cynodon dactylon*):

These are common type of grass seen across India. They also have cultural significance and is used in deity worship. They are also used in Ayurveda system of India and in ancient medicines.



Lemon Grass:

Cymbopogon genus, also known as lemongrass, barbed wire grass, silky heads, Malabar grass.

- Some species, particularly *Cymbopogon citratus* are commonly cultivated as culinary and medicinal herbs because of their scents, resembling that of lemon.
- Lemongrass and its oil is also believed to produce therapeutic properties.
- They may be used for producing citronella oil, which is used in soaps, as an insect repellent (especially mosquitoes and houseflies)



Kans Grass is a grass native to Indian subcontinent. It is a perennial grass, growing upto three meters in height, with spreading rhizomatous roots.

They form important habitat for the Indian Rhino in Assam.



Revenna Grass (elephant grass): It is a big, tall and large kind of grass that grows in moist and wet habitat types in India.

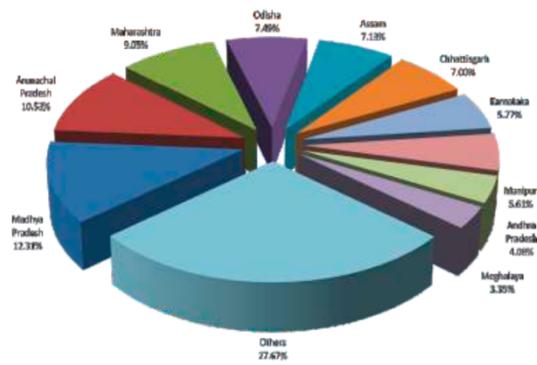


Other important grasses are Sewan grass, Carpet grass, Manila Grass (Korean grass), Napier Grass, Desho Grass, Foxtail Bristle grass, Big Leaf Grass, Congress grass,

15. BAMBOOS

- **Introduction:**
 - » Bamboos, the most diverse groups of plants in the grass family belong to subfamily Bambusoideae of the family Poaceae (Gramineae).
 - » They are fast growing perennial plants and are found in tropical, sub-tropical and mild temperature regions of the world.
 - » **Factors for geographical distribution:** Precipitation, temperature, altitude, and soil conditions.
 - As per FAO, globally there are 1,200 species of Bamboo in 90 genera across the world.
 - Large tracts of natural bamboo forests are found in tropical Asian countries between 15 degree N - 25 degree N latitudes.
- **In India**, bamboo is found naturally almost throughout the country except in Kashmir region.
 - » There are 125 indigenous and 11 exotic species of bamboo from 23 genera.
 - » Bamboos are found in abundance in the deciduous and semi-evergreen forests of the NE India and tropical moist deciduous forests of Northern and Southern India.
 - NE states and WB account for more than 50% of the bamboo resource of the country.
 - Other Bamboo rich areas are A&N, Chhattisgarh, MP, and the Western Ghats.
 - » **Major bamboo genera of India** are Arundinaria, Bambusa, Chimonobambusa, Dendrocalamus, Dinnochla, Gigantochloa etc. Different climatic conditions have different species in abundance.
- **Various properties of Bamboo:**
 - » The various properties of bamboos are availability in different sizes, light weight yet strong, hard, flexible, straight, fast growing, abundant, and hence having many uses.
- **Significance of Bamboo:**
 - » **Economic Significance:** Bamboo contributes to subsistence needs of about 2.5 billion people around the world, a majority of whom are tribal, forest dwellers, or communities dependent on forest resources.
 - » **Other uses** of bamboo include making normal and final quality paper, fishing poles, furniture, flooring, handicrafts, walking sticks etc.
 - » **Environmental benefits:** Bamboo plays a very important role in bio-diversity conservation, carbon sequestration and soil moisture conservation.
 - » **Food:** Young Bamboo shoots are used as food in some cuisines.

- **Protection Status in India:**
 - » **Indian Forest Act** was amended in 2017 to exempt Bamboo grown in non-forest areas from **definition of tree**. This did away with the requirement of felling/ transit permit of its transport and economic use.
- **Total Bamboo bearing area of the country** has been estimated to be 15.0 million ha.
 - » **Madhya Pradesh** (1.84 million ha) has the largest area followed by Arunachal Pradesh (1.57 million ha), Maharashtra (1.35 million ha) and Odisha (1.12 ha).



16. SEAGRASSES

- **Why in news?**
 - » In Baltic Sea, citizen drivers restore seagrass to fight climate change (July 2023)
 - » This is part of a new project that trains local citizens to restore seagrass meadows in the Baltic Sea. The hope is that this painstaking work can help tackle climate change. **Seastore Seagrass Restoration Project**, run by the GEOMAR Helmholtz Centre for Ocean Research in Keil, Germany, is one of the first that aims to enable citizens to restore seagrass autonomously.
- **Introduction:**
 - » Seagrasses are marine flowering plants that thrive fully submerged in shallow oceanic and estuarine habitats. They are one of the most important coastal habitats.
 - » **Global coverage** of seagrass is estimated to be **$3.45 \times 10^5 \text{ km}^2$** , which represent about **0.1% - 0.2%** of the ocean floor.
 - » In India, total seagrass cover is estimated to be 517 km² with 14 reported species and six genera.
 - ***Halophila beccarii* (IUCN: VU)**, is the most commonly distributed species reported from all the coastal states except islands, acts as a pioneer species in the succession process of mangrove formation.
 - » **Distribution of seagrasses in India:**

The overall distribution of seagrass meadows in India occurs from the intertidal zone to a maximum depth of 15 m with varying species diversity.

The Major seagrass ecosystem along the coast of India are found in:

1. Gulf of Mannar and Palk Bay regions on the east coast comprise the largest seagrass meadows in India, covering 80 and 320 km² respectively.
2. The Ramasar site of Chilika Lagoon in Odisha state also has seagrass meadows that have expanded from 20 km² to 80 km² after the opening of the new bar mouth.
3. Gulf of Kuchchh on the west coast;
4. The lagoons of islands in the Lakshadweep in the Arabian Sea and;
5. Andaman and Nicobar Islands in Bay of Bengal.



- Significance of Seagrasses Ecosystem:

Provisioning Services:

- **Medicine** (treatment of heart conditions, sea sickness etc.)
- **Food** (Nutritious seeds)
 - Recently, a study has shown the presence of various biological metabolites in some India seagrass that can be used effectively in the food and pharmacological industries.
- **Fertilizer** (Nutrient rich biomass)
- **Livestock feed** (food for goats' sheep etc.)
- **Building Material** (Such as roofing for houses)

Supporting Services:

- **Key Fishing Grounds** as they offer a complex habitat for a variety of fish and other marine organisms like Dugongs.
- Seagrass based fisheries are globally important and are present wherever seagrass exists, supporting subsistence, commercial and recreational activities.
- Their high rates of primary production result in well-oxygenated waters that support complex food webs.



Regulating Services:

- **Coastal Protection**: Seagrass reduce the energy of waves and thus protect the seashore.
- **Carbon Sequestration**: Seagrass store more than twice as much carbon from planet warming CO₂ per square mile than forests do on land, according to a 2012 study. They accumulate CO₂ from both in-situ production and sedimentation of particulate carbon from the water column.

- **Water Purification:** They trap fine sediments and suspended particles in the water column and increase water clarity.

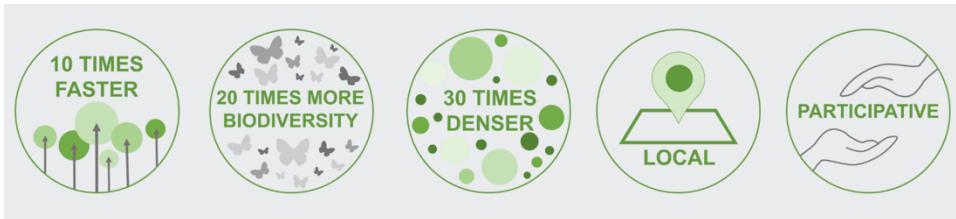
- **Threats to Seagrass Ecosystems:** Globally, seagrass habitations have declined in area and several species are threatened due to several natural and anthropogenic stressors:
 - **Natural Stressor:** Cyclones, heavy rainfall, coastal uplift and subsidence, grazing herbivores, and diseases
 - **Anthropogenic Stressors:**
 - i. **Commercial Fishing and trawling activities:** this is the most important threat to seagrass in India.
 - ii. **Boat activities** for recreational purposes
 - iii. **Runoff (Pollution)** from coastal aquaculture and agriculture
 - iv. **Shell Harvesting and Seaweed cultivation**
 - v. **Accidents like Oil Spills.**

- **Key Steps** which protect Seagrasses:

- » **CRZ Notification** 2011, issued under Environmental (Protection) Act, 1986, has classified seagrass meadows as CRZ1-A (Ecologically sensitive area). It prohibits developmental activities in its vicinity.

17. RECENT INITIATIVES TOWARDS ENHANCING GREEN COVER: MIYAWAKI FORESTS

- These forests are developed using Miyawaki method to create urban forests. **Dr Akira Miyawaki**, botanist and professor, is the inventor of the technic since 1980. He is a recipient of the 2006 Blue Planet Prize, which is the equivalent of a Nobel prize in ecology.
- Using the method, native urban forest ecosystems can be created much quicker.
 - The method take its inspiration directly from process and diversity in nature: 15 to 30 different species of trees and shrubs are planted together. This plant community works very well together and is perfectly adapted to local weather conditions.
 - The habitat thus created get more complex over time and attract much more biodiversity. Vegetation becomes much denser than conventional plantations, and it has the structure of a mature natural forest.
 - It is a multistorey structure, where different levels of vegetation appear. The forest thus structured delivers many benefits in the form of ecosystem services.
 - **Faster Recovery:** It would take 200 years to let a forest recover on its own. But with the Miyawaki method a similar result is achieved in 20 years.



- The technique works worldwide irrespective of soil and climatic conditions.
- **Miyawaki Forest at Ektanagar Gujarat:**
 - » At Ektanagar, the Miyawaki Forest will include following divisions: A native Floral Garden, a timber garden, a fruit garden, a medicinal garden, a Miyawaki section of mixed species and a Digital Orientation Centre.

18. ORCHIDS IN INDIA

- **What are orchids?**
 - They are a diverse and widespread group of flowering plants, with blooms that are often colorful and often fragrant commonly known as the Orchid family. They belong to the family Orchidaceae, which is one of the largest family of flowering plants with possibly over 27,000 species and more than 800 genera.
 - **Habitats:** Orchids can be found in nearly every habitat, but most orchid species are tropical.
- As per Botanical Survey of India, there are 1256 species of Orchids in India.
 - **Orchids can be classified** in three types:
 - **Epiphytic:** (Plants growing on another plants including those growing on rock boulders and often termed lithophyte).
 - **Terrestrial:** (Plants growing on land and climbers)
 - **Mycoheterotrophy:** (Plants that derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plants).
 - In India, of all orchids 757 are epiphytic, 447 are terrestrial, and 43 are mycoheterotrophy.
- **State wise distribution:**
 - **Arunachal Pradesh** (612 species); Sikkim (560 species) and West Bengal (with Darjeeling Himalayas having high species concentration) with 479 species.
- **Orchids of North Bengal are facing threats** (June 2023)

The wild orchids of Darjeeling Hills and Dooars are facing threats due to habitat loss (mostly due to deforestation).

The most endangered are the epiphytic orchids - the type that grows on another plant/tree merely for physical support.

Orchids are also natural gauges of air quality because they don't grow in polluted air



Applications:

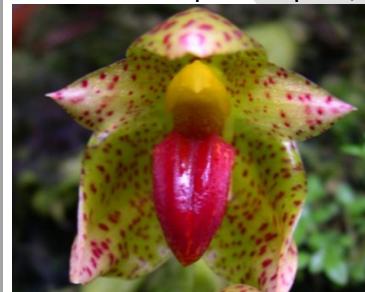
- The Oraon and Kharia tribal communities use wild orchids to treat range of diseases - cut and fractures, skin diseases, aches and pains.

- Some Important species of Orchids:

The Dendrobium aphyllum carries pinkish violet, fragrant flowers;



The Bulbophyllum leopardinum, with its pale green and spotted red flowers simulate a leopard's spots;



Dendrobium transparens



Aerides Maculosa - Foxrush Orchid



Vanda Tessellate is greenish with a striking blue purple lip



- The Vanda's scent is fusion of grape and lavender and the blooms are long lasting.

19. EXOTIC ALIEN PLANT SPECIES

1) EXOTIC ALIEN PLANT SPECIES

- A study published in ***Biological Invasions*** in 2018 showed that **as many as 471 plant species** that are alien or exotic - not native to India - are '**naturalized**' for they can thrive in the country's wilderness by forming stable populations.
- **Naturalized species** reproduce naturally in the environments they colonize.
- **Invasive species** are naturalized species which reproduce naturally but so prolifically that they alter the workings of the natural ecosystem they colonize and invade.
- **The list of 471 Exotic – Naturalized Plant Species include:**
 - **Common Guava** (*Psidium guajava*)
 - Not invasive
 - Exotic species in India. Native to Mexico and Central Asia.
 - **Lantana Camara**
 - Invasive
 - It replaces undergrowth and prevents native undershrub and plants from surviving.
 - **Siam Weed** (*Chromolaena odorata*) (native to South America and central America)
 - Invasive
 - **Tridax daisy**
 - Invasive
 - **Mimosa Pudica**
 - Invasive
 - **Proposis Juliflora**
 - Invasive
 - **Parthenium Hysterophorus** (Carrot grass, Gajar Ghans)
 - Invasive
- **Tamil Nadu (331)** leads the states having highest number of naturalized plants, followed by **Kerala (290)**.
- **Lakshadweep (17)** has the least number of exotic naturalized plant species.
- **110 alien plants** now occur in more than 31 states in India.
- **Cause of Worry?**
 - We have to worry about invasive species among these. The government needs to strengthen quarantine measures adopted before a plant is brought to the country.
 - In 2017, a study identified India as one of the 'hot-spots' of naturalized plant species and among the seven regions in the world that have the highest number of invasive species.

2) INVASIVE PLANT SPECIES IN INDIA

- **Invasive Plant Species** threaten 66% of India's natural systems: report published in *the Journal of Applied Ecology*.
 - The finding is based on National level survey conducted in India.
 - The 11 high concern invasive plant species that showed presence in 20 states of the country included Lantana Camara, Prosopis juliflora and Chromolaena odorata.
 - **Economic loss:** The study estimates that loss due to these biological invasions will cost the Indian economy upto **\$182.6 billion**

A) PROSOPIS JULIFLORA / MESQUITE (ANGREJI BABOOL OR VILAYATI BABOOL IN HINDI) (SEEMAI KARUVELAM IN TAMIL)

- It is a shrub of small tree in the family Fabaceae.
- It is native to Mexico, South America and the Caribbean.
- It has become an invasive weed in Africa, Asia and Australia.
- **Distribution in India**
 - They are distributed throughout the country and are aggressive colonizer.
 - They are common weed of waste lands, scrub lands and degraded lands.
- **Considered a threat to biodiversity**
 - It has survived where other tree species have failed, and in many cases, becomes a major nuisance.
 - It is a water-greedy plant that depletes ground water and nullifies the growth of native trees.
 - In 2004, it was rated one of the world's top 100 least wanted species (Invasive species specialist group of the IUCN, 2004)
- **Was considered a boon in 1960s**
 - In the light of severe firewood shortage
 - In 1960s, TN government had made provisions for aerial seeding of the plant from helicopter
 - The tree was also used to erect fences, making it difficult for animals to invade agriculture fields.
- **Other news about it**
 - It is affecting the wild ass population in Kutch Gujarat.



B) PROPOSIS CHILENSIS

- **Why in news?**
 - An invasive plant from South America (Prosopis Chilensis) is threatening to pulverise indigenous plants across the 21 islands where 96 species of birds have been recorded. (April 2023: Source - TH)
- **About Prosopis Chilensis**
 - It is a drought resistant plant native to arid regions of four South American countries - Argentina, Bolivia, Chile, Peru.
 - **Invasive in India:**
 - » It has become a cause of trouble in Gulf of Mannar Biosphere Reserve.
 - There is vary less or no study on the invasiveness of this species on how it came to India unlike the equally invasive Prosopis juliflora.

C) BLACK MIMOSA (MIMOSA PIGRA)

Genus Mimosa contains 400-500 species, which are mostly native to South America.

It is a **woody invasive shrub** that originates from tropical America and has now become widespread throughout the tropics.

- It has been listed as one of the world's 100 worst invasive species and forms dense, thorny, impenetrable thickets in wet areas.



Distribution in India

- Throughout
- Abundant in still or slow floating waters. Nuisance for aquatic ecosystem.

D) PARTHENIUM HYSTEROPOHORUS (CARROT GRASS)

- It is an annual herb which is native to the American Tropics.
- It is an invasive species in India and several other countries. In India it is also known as **Carrot grass, Congress grass or Gajar Ghans**.
- It invades disturbed land, including roadsides, infests pastures and farmlands, leading to disastrous loss of yield.
- The plant produces allelopathic chemicals that suppress crop and pasture plants, and allergens that affect humans and livestock. It also frequently cause pollen allergies.
 - **All four of Assam's Rhino reserves** - The national park of Kaziranga, Orang, Pobitora and Manas - are currently reeling under the attack of these invasive plants.



E) LANTANA CAMARA

It is also known as big-sage, wild sage, red sage and tickberry. It is a species of flowering plant within the verbena family, Verbenaceae, that is native to American tropics.

How was it introduced in India?

Lantana arrived in India as a decorative shrub in the British colonial period but quickly took over several ecosystems as an invasive species.

Current Spread: The plant currently covers 40-50% of India's area and have also invaded national parks and pasture lands.

It has spread from its native Central and South America to 50 different countries, where it has become invasive species.

- **Reduces biodiversity:** It often outcompetes more desirable species, leading to reduction in biodiversity.
- **Impacts Agriculture:** It can also cause problems if it invades agricultural areas as a result of its toxicity to livestock as well



Flowers and leaves of the Lantana camara. (Via Wikimedia Commons)

as **ability to form dense thickets** which if left unchecked can greatly reduce the productivity of farm land.

Recent Updates: A decade long initiative in MP to reclaim land overrun by Lantana helps residents restart agriculture and restore natural biodiversity. (Dec 2023: Source: DTE)



F) SIAM WEED (COMMUNIST PACHA)

- It is a common invasive species of Kerala, and is locally known as **Communist Pacha** (green) as it spread all over the state within a short span of time just like Communism did during the same time in 1950s.
- Siam weed is native to South America. Researchers have regularly pointed out this plant being responsible for harming many native plant species.
- **Why in news?**
 - After flood, there were reports of Siam weed becoming more common in Kerala.

G) SENNA SPECTABILIS (CALCEOLARIA SHOWER)

- **Details about Senna Spectabilis**
 - It is a plant species of the legume family and is native to South and Central America.
 - Here, they are often grown as an ornamental in front yards, parks, gardens, buildings, etc. due to their **bright yellow flowers** that bloom during the summer months.



- The species has become an invasive alien species in Africa and South-India, after it was introduced for resources such as firewood as well as to fight deforestation and desertification.
- Along with Lantana Camara and Wattle, it is among five major invasive weeds that had taken over vast swathes of the Nilgiris.
- In Madumalai Tiger Reserve, policy level decisions are being considered that will allow Tamil Nadu Newsprint and Papers Limited (TNPL) to remove the species from the landscape for paper making.

H) WATER HYACINTH

- **Why in news?**

- » MP's newest Ramsar wetland covered in invasive water hyacinth which is threatening biodiversity (2023)
- **About Water Hyacinth (*Pontederia crassipes*)**
 - » It is an aquatic plant native to South America. It is naturalized throughout the world and often invasive outside the native range.
 - » It is also known as "Terror of Bengal" as it competes strongly with native species. They have caused shortage of fish in Bengal.
 - It flourishes in Bengal's hot and humid climate and can live well and kill nearby plankton and water-borne species.
 - They double their biomass in six days and is one of the fastest growing plant known.
 - They take over local aquatic species. Additionally, these plants can produce thousands of seeds every year and these seeds can remain viable for over 28 years.
 - » It reduces the dissolved oxygen in the water and increases the biochemical oxygen demand causing the death of aquatic species.
- **Other problems caused by Hyacinth:** Economic loss, negatively impact hydel power project, pisciculture etc.
- **Note:** In small quantities water hyacinth can be good for ecosystem as they can remove heavy metal from water and can thus act as a water purifier.
- **News:** Sankhya Sagar in Madhya Pradesh (which was declared a Ramsar site) has virtually disappeared under a thick layer of water hyacinth.

I) CANOCARPUS TREES

- **Concerns** over the management of invasive Conocarpus species of trees have recently led to Gujarat (2023) and Telangana (2022) banning their use. Several other states may follow suit - which is likely to discourage horticulturalists and nurseries from multiplying the species and using lakhs of its saplings in afforestation and landscaping projects across the country over the next year.
- **About Canocarpus Trees:**
 - There are two species of Canocarpus (buttonwood) trees, with several varieties of hybrids - *Canocarpus erectus*, which is widely used in India (and is native to South America) and *Canocarpus lacistema* is native to East Africa.
 - They are easily propagated and multiplied in nurseries through stem cuttings.
 - They have also been known to cause pollen allergies and respiratory problems in the vicinity of plantation.
- **Why do urban green initiatives end up deploying them in the first place?**
 - Since they are non-native species - they face very few or no pests or pathogens in new habitats, which makes their proliferation easy. They often require very little aftercare.
 - Some species like Canocarpus are not browsed by livestock and are thus favored for horticultural and landscaping projects.

20. PARASITIC PLANTS

1. Glechoma Konyakianorum

- A Parasitic plant discovered in Nagaland recently. It is a **holoparasite** (i.e. complete parasite) as it derives all its food from the host.

- It has no chlorophyll of its own and survives by feeding on another species of plant that has chlorophyll.
- It has been named in the honour of Konyak tribe of Nagaland.
- Conservation Status: Data deficient.

2. **Orabanche Cernua (Broomrape or Broom-rape): A parasitic weed that is affecting tobacco cultivation**

- **Introduction :**
 - Orobanche is a genus of over 200 species of parasitic herbaceous plants in the family Orobanchaceae, mostly native to the temperate Northern Hemisphere.
 - These plants completely lack chlorophyll, bearing yellow, white or blue snapdragon like flower.
 - As they have no chlorophyll, they are totally dependent on other plants for nutrients.
 - Broomrape seeds remain dormant in the soil, often for many years, until stimulated to germinate by certain compounds produced by living plant roots.
 - In India, it is recorded as a 'principal weed'. And adversely affects tobacco crops.
 - Globally it affects tomato, eggplant, potato, cabbage, coleus, bell pepper, sunflower, celery and beans.

3. **Some other details about Parasitic Plants**

- Plant parasites are differentiated as **stem and root parasites**.
 - **Common stem parasites found in India are**
 - Loranthus sp, on Mango trees, and Cuscuta reflexa, a climber.
 - Among the **root parasites** are
 - **Sapria himalayana**, a rare holoparasitic flowering plant found in Arunachal Pradesh and Meghalaya

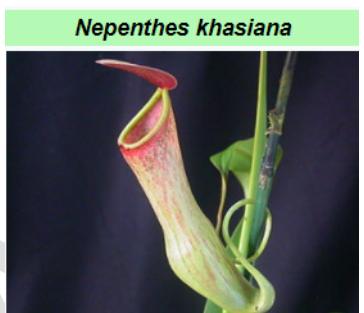
21. CARNIVOROUS/ INSECTIVOROUS PLANTS

- **Introduction**
 - Carnivorous plants are those plants which derive some or most of their nutrients (but not energy) from trapping and consuming animals or protozoans, typically insects and other arthropods. Insects are the most common prey for these plants and therefore they are also sometimes called insectivorous plants.
 - These plants have adapted to grow in areas which lack nutrients like swamps and rocky areas. The plants receive these nutrients, especially nitrogen from their preys.
 - They extract water and some minerals from soils too.
 - **Remember:** They have chlorophyll and they do photosynthesis to convert sun's energy into carbohydrate.
- **Types**
 - The plants are divided into active and passive types based on their trapping mechanism.
 - **Active** insectivorous use movements to trap the insect (ex. Venus fly-trap, Utricularia)
 - They use trapping mechanism like leaf traps etc
 - **Passive** insectivorous depend on long tubes with hairs that trap prey.
 - They use pitfall mechanism having some kind of jar or pitcher-like structure.

- **Insectivorous Plants in India**
 - Insectivorous plants in India are naturally found in Sikkim, Arunachal Pradesh, West Bengal and the Garhwal Himalayas.
 - The important genus of carnivorous plants in India are:

- **Nepenthes**

- These are the most glorious and spectacular genus of carnivorous plants in India.
- These plants form **wonderful pitchers** and their carnivorous traps are hungry looking maws that look every bit dangerous.
- It relies on pool of water to trap its prey by a combination of decaying odours and sometimes a red coloration. Once inside the picture, the prey fails to get a grip on the interior walls of this carnivorous plant because of the flaky wax on them, falls into water and hence is digested.
- Unlike other carnivorous plants, besides insects, gnaws and flies they feed on mice and frogs too.
- E.g.
 - **Nepenthes Khasiana** (Indian Pitcher Plant)
 - <https://youtu.be/1CP1i0UKvb8?t=144>



- **Pinguicula**

- Also known as Butterworts, and are mostly grown for their pretty orchid like flowers.
- The leaves of these plants emit a faintly fungal scent that attracts prey which gets stuck to the glandular surface of the leaves which then drowns in the moist pool of slime and is indeed digested.
- They are **absent** in India.
- <https://youtu.be/teLkmlaDSVU>



- **Drosera**

- Drosera is a sticky flypaper Carnivorous plant that bears long tentacles on its leaves. These stalks are tipped with brightly **colored glands**.
- As soon as an insect lands on these leaves, it sticks to them and these leaves coil around their prey to slowly digest it.
- There are around 180 species of these plants found globally. They are mostly found in region which are poor in organic nitrogen and phosphorus. (e.g. bogs on sandy banks or other mineral soils that are poor in organic nitrogen and phosphorus)
- <https://www.youtube.com/watch?v=h9NnctZVrvk>



Utricularia

- largest genus of carnivorous plant that one can find, with more than 200 species occurring globally. It is a plant festooned with utricles or little bag like bladders and thus is named Utricularia. The little bladders in these plants are actually the carnivorous traps or the suction traps.
- The **flowers** of these plants are very small with a wild & varied display of Colors and form.

They mostly prey on worms, frogs, mosquitoes, scuds, flies, fleas and even amoeba.



- Conservation Status

- The endangered species of carnivorous plants in India are Drosera Peltata, Aldrovenda vesiculosa and Nepenthes Khasiana have been included in the Red Book as endangered plants.

- Main threats faced

- Gardening trading for medicinal properties
- Habitat destruction
- Pollution

22. OTHER SPECIAL PLANTS

1) NEELKURINJI (STROBILANTHES KUNTHIANUS) -> MONOCARPIC PLANTS

- About Neelakurinji

- It is a shrub found in Shola forests of Western Ghats in South India. Nilgiri Hills, which literally means the blue mountains, got their names from the purplish blue flowers of Neelkurinji that blossoms every 12 years.
- The shrub has been documented to bloom in 1838, 1850, 1862, 1874, 1886, 1898, 1910, 1922, 1934, 1946, 1958, 1970, 1982, 1994, 2006, and **2018**.



- Why Neelakurinji flowers only once in 12 years?

- Some perennial flower only once in lifetime, set seeds and die. The next generation of plants is established from these seeds and the cycle is repeated. Such plants are known as **monocarpic**, opposed to polycarpic plants that flower and set seeds many times during its lifetime. They flower only after attaining maturity. The time taken for attaining maturity may differ for different species. This is 12 years for Neelakurinji.
- Another characteristic shown by monocarpic plants is that it flowers gregariously in a single season. The term "Plietesials" is used to refer to such plants.

- Other example of Monocarpic Plants

Bamboos are monocarpic plants which take around 40 years to mature and flower

2) THE LIVING ROOT BRIDGE (THE JING KIENG JRI)

- More details about the living root bridges.
 - » The **Jing kieng jri or living root bridges** are aerial bridges built by weaving and manipulating the roots of Indian rubber tree (*Ficus Elastica*). They have been serving as connectors for generations in Meghalaya for Khasi and Jaintia people. Some root bridges have also been observed in Nagaland.
 - » These bridges have been built over many centuries and are a primary means to cross streams and rivers. The span distances between 15-250 feet and have also become a source of tourist attraction.



- » The root bridge uses **traditional tribal knowledge** to train the roots of Indian Rubber Fig Tree, found in abundance in the area, to grow laterally across the stream bed, resulting in a living bridge of roots.
- » The **process** begins with placing of young pliable aerial roots growing from Ficus Elastica trees in hollowed out areca catechu or bamboo trunks. These provide the essential nutrition and protection from weather, and also perform as aerial root guidance system. Over time, the aerial roots increase in strength and thickness, and the support bamboo trunks are no longer needed.
- » **The nature of Ficus Elastica** makes its conducive to the growth of bridges because of its very nature. They are elastic, the roots easily combine, and plants grow in rough, rocky soils. Further, they become stronger with time and are self-repairing in nature.
- » Experts consider these living root bridges as an example of indigenous climate resilience.

- **Research in its application in modern architecture (2019)**

- » Researchers from Germany studied 77 bridges in 2015, 2016 and 2017. This study has been published in the journal Scientific Report and suggest that bridges can be considered a reference point for future botanical architecture projects in urban contexts.

- **Attempt to get World Heritage Tag for living root bridges (Jan 2022)**

23. IMPORTANT MEDICINAL PLANTS IN NEWS

4) COMMONLY USED MEDICINAL PLANTS (AS DETAILED IN NCERT)

MEDICINAL PLANTS

India is known for its herbs and spices from ancient times. Some 2,000 plants have been described in Ayurveda and at least 500 are in regular use. The World Conservation Union's Red List has named 352 medicinal plants of which 52 are critically threatened and 49 endangered. The commonly used plants in India are:

Sarpagandha	: Used to treat blood pressure; it is found only in India.
Jamun	: The juice from ripe fruit is used to prepare vinegar, which is carminative and diuretic, and has digestive properties. The powder of the seed is used for controlling diabetes.
Arjun	: The fresh juice of leaves is a cure for earache. It is also used to regulate blood pressure.
Babool	: Leaves are used as a cure for eye sores. Its gum is used as a tonic.
Neem	: Has high antibiotic and antibacterial properties.
Tulsi	: Is used to cure cough and cold.
Kachnar	: Is used to cure asthma and ulcers. The buds and roots are good for digestive problems.

Identify more medicinal plants in your area. Which plants are used as medicines by local people to cure some diseases?

Source : Medicinal Plants by Dr. S.K. Jain, 5th edition 1994, National Book Trust of India

5) THREE HIMALAYAN MEDICINAL PLANT ENTER IUCN RED LIST (DEC 2022)

A. *Meizotropis Pellita* (CR)

Commonly known as Patwa, it is a perennial shrub with restricted distribution in Uttarakhand. The Species has been listed CR based on its limited area of occupancy (less than 10 sq km).



Threats: Deforestation, habitat fragmentation and forest fires.

Medicinal Properties: The essential oil extracted from the leaves of the species possesses strong anti-oxidants and can be promising natural substitute for synthetic anti-oxidants in pharmaceutical industries.

B. *Dactylorhiza hatagirea* (EN)

It is commonly known as Salampanja.



It is perennial tuberous species endemic to the Hindu Kush and Himalayan ranges of Af, India, Nepal, Bhutan and China.

Threats: Habitat loss, livestock grazing, deforestation, and climate change. It is extensively used in Ayurveda, Siddha, Unani and other alternative systems of medicine to cure dysentery, gatritis, chronic fever, cough and stomach ache.

C. *Fritillaria cirrhosa* (VU)

Also known as Himalayan fritillary is a perennial bulbous herb.



It's population is estimated to have declined by at least 30% in last 24 years. Considering the rate of decline, long generational length, poor germination potential, high trade value, extensive harvesting pressure and illegal trade, the species is listed as 'Vulnerable'.

Medicinal Properties: In China, it is used for treating bronchial disorders and pneumonia. It is also a strong cough suppressant and source of expectorant drugs in traditional Chinese medicine.

The Himalayan region is a biodiversity hotspot but there is a lack of data on many species here. The assessment of these plants will set our conservation priorities and help protect the species.

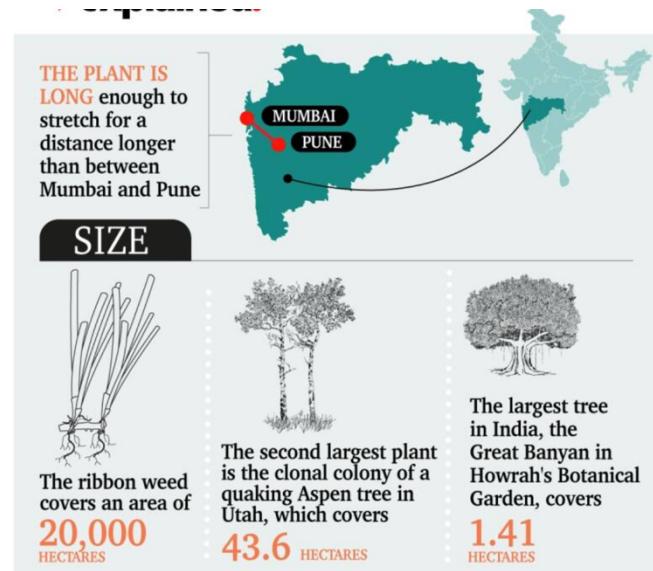
6) AROGYAPACHA (TRICHOPUS ZEYLANICUS)

- More About Arogyapacha

- Trichopus zeylanicus (Arogyapacha) is a **highly potent medicinal plant endemic to the Agasthya hills**. It is traditionally used by the **Kani Tribal community** to combat fatigue.
- Studies have also proved its **varied spectrum of pharmacological properties** such as anti-oxidant, aphrodisiac, anti-microbial, anti-inflammatory, immunomodulatory, anti-tumor, anti-ulcer, anti-hyperlipidemic, hepatoprotective, and anti-diabetic.

- Significance of Genome mapping of the plant

- It will help us get deeper knowledge of plant's molecular secret. The genetic data will expedite research on Arogyapacha, particularly its secondary metabolism, genetic breeding, and comparative studies.



7) INDIAN BIRTHWORT (ARISTOLOCHIA INDICA L.) - A THREATENED MEDICINAL PLANT IN ASSAM

The population stock of the species has been depleting fast in its natural habitats as a consequence of certain factors such as **habitat fragmentation**, **over-exploitation** due to its high medicinal properties, and **other anthropogenic activities**.

24. PLANTS/ HYBRIDS/ VARIETIES IN NEWS RECENTLY

8) LARGEST PLANT THE WORLD

- Details

- » This plant is Ribbon Weed (or **Posidonia australis**) and has been discovered in Shark Bay off the West Coast of Australia.
 - The researchers have found that it is 180 km in length and covers 20,000 hectares of area. Its age has been estimated to be 4,500 years.
 - It has double the number of chromosomes than other plants.
- » Over the years, it has managed to survive the volatile atmosphere of the shallow shark Bay.

- Why has been discovered so late when it is so large?

- » The existence of the sea grass was known, but it wasn't known that it was a single plant.

- **How do we know that it's a single plant?**
 - » Researchers sampled seagrass shoots from across Shark Bay's variable environments and generated a 'fingerprint' using 18,000 genetic markers. This fingerprint was found to be the same.
- **How did it grow and survive for, so long?**
 - » Around 4,500 years ago, the plant took root in the Shark Bay. Then it kept spreading through its rhizomes overcoming everything in its way.
 - » Ribbon week rhizomes can usually grow to around 35 cm per year, which is how the scientists arrived at its lifespan of 4,500 year.
 - » One reason that it has survived for so long is that it is **Polyploid** - instead of taking half-half genome from both parents, it took 100%, something not unheard of in plants. Therefore, this ribbon weed has twice the number of chromosomes other plants of the same variety has. Polyploid plants often reside in places with extreme environmental conditions, are often sterile, but can continue to grow if left undisturbed, and this giant seagrass has done just that.

- **Note:**

- The second largest plant known on earth is the clonal colony of a quaking Aspen tree in Utah, which covers 43.6 hectares.
- The largest tree in India is the Great Banyan in Howrah's Botanical Garden. It covers 1.41 hectares.

3) THEOBROMA CACAO



- It is also called the Cacao tree and the Cocoa tree. It is a small evergreen tree in the family Malvaceae.
- It's **seeds**, the Cocoa beans, are used for making chocolate liquor, cocoa solids, cocoa butter, and chocolate.
 - Cocoa beans are fermented, dried, roasted, and ground to form the chocolate powder. Most chocolate sold today are made from the species **Theobroma cacao**. But, indigenous people in South America, Central America and Mexico make food, drink and medicine with many other Theobroma species.
- **History of Chocolates:**
 - The history of chocolates has a compelling and rich story.
 - **Cacao** was domesticated at least 4,000 years ago, first in Amazon basin and then in Central America.
 - Four thousands of years, Mesoamericans have used Cacao for many purposes: as a ritual offering, a medicine, and a key ingredient in both special occasion and everyday food and drink - each of which had different name. One of these special, local cacao concoctions was called "chocolat".
- In **16th century**, it was brought to Europe and Africa. Drinking chocolate soon became a way to socialize.
- **Advantages:**

- Cacao is one of the most anti-oxidant rich fruit and eating it increases endorphin, a hormone which makes you calm and happy.

4) DRAGONFRUIT (KAMALAM)

- Scientific name: *Hylocereusundatus*.
- It is grown in countries such as Malaysia, Thailand, the Phillipines, the USA and Vietnam.
- It is very rich in fiber, vitamins, minerals and anti-oxidants.
- In India, the beginning of Dragon fruit cultivation started in 1990s. In recent years it has become very popular since farmers have taken up the cultivation across various states. It's cultivation requires less water and can be grown in various kinds of soil.
- There are three main varieties of dragon fruit: white flesh with pink skin, red flesh with pink skin, and white flesh with yellow skin.
- In July 2020, PM Modi in 'Mann Ki Baat' had mentioned about Dragon fruit farming in the arid Kutch region of Gujarat.



5) ROSEWOOD

- Rosewood refers to any number of richly hued timber, often brownish with darker veining, but found in many different hues. All genuine rosewood belong to genus *Dalbergia*.
- Pre-eminent rosewood appreciated in the Western World is the wood of *Dalbergia nigra*. It is best known as 'Brazilian Rosewood' or 'Bahia Rosewood'. The wood has a strong, sweet smell, which persists for many years, explaining the name rosewood.
- Another classical rosewood comes from *Dalbergia latifolia (VU)*, known as (East) Indian rosewood. It is native to India and is also grown in plantations elsewhere in Pakistan.
- Other species**
 - Dalbergia sissoo (LC)* is a rosewood species from India and Bangladesh, usually known as Sheesham or North-Indian Rosewood.
 - Its timber is extremely dense and has mild rot resistance. It is used for making cabinets and flooring, and for carving. Due to its after work quality when sealed and dyed, it is often sold as genuine rosewood and teak.
- Properties and uses**
 - All rosewoods are strong and heavy, taking an excellent polish, being suitable for guitars, marimbas, recorders, handles, furnitures, luxury floorings etc.
- Uses**
 - Steep demand in international market for musical instruments and furniture.
- Dalbergia Sissoo (LC)**
 - Its timber is extremely dense and has mild rot resistance. It is used for making cabinets and flooring, and for carving. Due to its after work quality when sealed and dyed, it is often sold as genuine rosewood and teak.

6) INDIAN ROSEWOOD (*DALBERGIA LATIFOLIA*)

- *D latifolia* is native to India and Indonesia, but is also grown in Nigeria, Kenya, Vietnam, the Phillipines, and other tropical Africa and Asia as an ornamental plant.
- It is very well known for producing very hard and durable wood with a long straight bore, which makes it highly valued on international markets. Its bark is also used for medicinal purpose in natural ranges.



- IUCN: EN
- CITES: Appendix-II

7) RED SANDERS (*PTEROCARPUS SANTALINUS*)

- Why in news?
 - » Red Sanders falls back in IUCN's 'endangered' category (Jan 2022)
 - Why?
 - IUCN assessment stated that "over the last three generations, the species has experienced a population decline of 50-80%. It is assessed as Endangered."
 - The overharvesting of the species has left the population structure skewed, with trees of harvestable size and maturity being scarce and making up less than 5% of the trees remaining in the wild.
 - Illegal international trade has continued - Large volume of Red Sanders timber and products are seized regularly by authorities at all stages of the illegal supply.
 - In 2018, IUCN moved it to Near Threatened Category from Endangered earlier.
 - About Red Sanders:
 - » Red Sander (*Pterocarpus Santalinus*) or Red Sandalwood or Rakt Chandan, and Saunderwood, are endemic to Southern Eastern Ghat Mountain Ranges of South India (Seshachalam Forests of Andhra). They are found in districts of Chittoor, Kadapa, Nandhyal, Nellore, Prakasam of Andhra Pradesh.
 - These are known for its rich hues and therapeutic properties and are high in demand across Asia, particularly in China and Japan, for use in cosmetics and medicinal products as well as for making furniture, woodcrafts and musical instruments.
 - The rare wavy grain variant is highly valued in Japan for its acoustic properties and is used to make musical instruments.
 - In addition, the timber is also exploited for the extraction of Santalin (a red pigment used as dye and colorant in food), medicine and cosmetics.
 - Its popularity can be gauged from the fact that a tonne of Red Sanders costs anything between Rs 50 lakh to Rs. Crore in international market.

- Note: this is **not aromatic**. (it should not be confused with the aromatic **Santalum Album (Indian Sandalwood) (VU)** tree that grow natively in South India.
 - IUCN: Endangered
 - WPA: Schedule-II
 - CITES: Appendix-II

8) SANDALWOOD

- It is also known as Chandan, Cendana, East Indian Sandalwood, Sandal, Sandal tree, White Indian sandalwood, chandal and Peetchandan.
- **Where is it found?**
 - S Album, commonly known as Indian Sandalwood, is a dry deciduous forest species native to India, China, Indonesia, Australia and Phillipines. It is also grown in plantation in Australia.
- The small tropical tree grows to 20m in height with red wood and a variety of dark colors of bark (dark brown, reddish and dark grey).
- **Applications:**
 - Because it is strong and durable - it is mostly harvested for its timber. Sandalwood heartwood, which is close grained, is used for fine furniture and carving.
 - The heartwood and roots also contain 'Sandal oil' which is used in perfumes, incenses, cosmetics, soaps, and medicines.
 - The bark contains tannin, which is used for dye.
- **Protection:**
 - Sandalwood is highly valued in India. Over the years, uncontrolled harvesting have caused populations to dwindle in recent years.
 - To Conserve Sandalwood, India has imposed an export ban on Sandalwood and instated conservation measures to protect the species in the country.
 - **IUCN: VU**
 - **CITES: Not listed**

9) MAHUA (MADHUCA INDICA)

- It is an Indian tropical tree found largely in Central, southern and north Indian plains and forests. They are also found in Nepal, Myanmar, and Sri Lanka.
- **Uses:**
 - i. Mahua flowers, fruits, and leaves are edible and used as vegetables in India and other Southern Asian Countries.

The **sweet, fleshy flower** are eaten fresh or dried, powdered and cooked with flour, used as a sweetener or fermented to make alcohol.
 - ii. It is also an oil plant, whose seeds yield between 35 and 47% oil. This oil is used for making soaps and candles. It also has a potential use in bio diesel production. Though, it is used as edible oil by tribals, WHO recommends against it as it contains **aflatoxin**, a toxin component. The processing of oil can get rid of aflatoxin and makes it edible.

- iii. **Cocoa Butter Extender:** It is prepared from Mahua seed oil and is a prized product. It can be used for making chocolate and other confectionaries. Experts feel that **this product has the scope of altering socio-economic conditions of tribals in India.**
- iv. **Timber:** The tree is also used for its hard, strong, dense and reddish timber.
- v. **Traditional Medicines** also use some mahua components.

10) SEABUCKTHORN

- Details

- Seabuckthorn is a shrub where an orange-yellow coloured edible berry grows. This plant is found in upper tree line of Himalayan region in India including in the wild in Lahaul, Spiti, and parts of Kinnaur. There are many medicinal, ecological and economic benefits of growing the seabuckthorn plant.
- **Importance of the plant:**
 - As **folk medicine** it is used for the treatment of stomach, heart and skin problems. Some modern scientific research also back these uses.
 - The leaves and fruits of this shrub is rich in carotenoids, omega fatty acids and vitamins. It also help troops in getting accustomed to high altitude.
 - The plant is also a crucial source of fodder and fuelwood. It is also a soil binding plant which means it is capable of preventing soil-erosion.
 - It can also help to preserve floral biodiversity.
 - Due to pest attacks, many willow trees in the Lahaul valley are dying and this small plant can turn out to be a good alternative in order to protect the local ecology.
 - The plant also has commercial value and is utilized for production of jams, juices, as well as nutritional capsules.
- So, seabuckthorn needs to be cultivated on large scale for it to be a raw material for the industry. This can be done on arid and marginal lands with the help of CAMPA funds.
- MoEF&CC has asked these states to come up with a proposal where they can take up such plantations.
 - This will also reduce water flow from Himalayan glaciers.
 - Following this, the Himachal Pradesh CM has announced that the government will be planting seabuckthorn on 250 hectares of land in the state. This will be done over the next five years.



11) MADHUCA DIPLOSTEMON (FAMILY SAPOTACEAE)

- Why in news?

- Madhuca Diplostemon, a tree species, long believed to be extinct, has been discovered in Western Ghats after a gap of more than 180 years. (Oct 2020)

- Details

- This species was last spotted in 1835, when its specimen was first collected. Since its original collection, specimens of **Madhuca Diplostemon** was never collected again, neither from its locality nor elsewhere, and botanical exploration both in Western and Eastern Ghats failed to locate the species.
- Recently, it was again discovered from a sacred grove in **Kollam district** in Western Ghats.
 - This sacred grove is **Koonayil Ayiravilli Siva Temple at Paravur, Kollam**.
- Scientists at the **Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRI)** at Palode have identified this species.
- Only 1 mature species has been found so far, meaning that this rediscovery was extremely valuable from a scientific, environmental and conservation point of view.
- The species should also be eligible to be categorized as **Critically endangered**.



Madhuca diplostemon

12) SONNERATIA ALBA (MANGROVE APPLE)

- Why in news?

- Sonneratia Alba species declared the state Mangrove tree of Maharashtra.

- Details

- It is an evergreen mangroves species that grows upto five feet. It has white flowers with pink base and bears distinctive green apples as fruits. The fruit is used for making pickles.
 - They often grow on newly-formed mud flats playing an important role in combating land erosion.



- Maharashtra is the first coastal state in India to declare a state mangrove tree species to enhance conservation of the salt-tolerant vegetation.
 - Globally, there are around 60 mangrove species. Maharashtra is home to 20 of them.

25. SOME RECENT CURRENT AFFAIRS UPDATE

9) HUMBOLDT'S ENIGMA

- **Background:** Conventionally, it was understood that biodiversity will be highest around the equator, in tropics, as this region has higher primary productivity as it receives the highest sunlight (energy). As one moves away from equator biodiversity decreases. Tropical rainforests thus hold the crown for species richness.
- **Humboldt's Observation:** Alexander von Humboldt, a German naturalist, during his extensive travels through South America in the early 19th century, noticed something intriguing. Mountain ranges, despite occupying relatively small areas compared to vast tropical forests, displayed exceptionally diverse plants and animal life. This stood in stark contrast to the predicted decrease in higher latitudes.
 - » Two centuries later, group of bio-geographers - scientists who explore the relationship of diversity with geography - used modern tools to take another look at the drivers of biodiversity. Based on their findings, they proposed their own version of the link between biodiversity and mountains and called it Humboldt's enigma.
 - » **Examples** of Humboldt's enigma in India:
 - **Eastern Himalayas:** These are the second-most diverse area of perching birds in the world. For river birds, the eastern Himalayas may be the most diverse.
- **Reasons for the Enigma:**
 - » **Compression of a wide range of ecosystem into relative short distance:** Mountains boast diverse landscapes with varied terrain, elevation, and microclimates. This creates a mosaic of distinct habitats, fostering speciation and niche adaptation among organisms.
 - » **Geological Process like Uplifts,** result in new habitats where new species arise, so the habitats are 'cradles'.
 - » **Climatic Stability:** Some climatologically stable mountains persist there for a long time, so these spots are 'museum' that accumulate many such species over time.
 - This provides refuge and protection to species during changing environment and thus aids biodiversity.
 - » **Unique Resources:** Mountains have resources like nutrient rich volcanic soils and unique water regimes which gives sustenance for specialized species.
- **E.g.:**
 - » **Coastal Tropical Sky Islands** (mountain surrounded by lowlands), like the Shola Sky Islands in the Western Ghats, are good examples of 'museum'. Here old lineage has persisted on the mountains tops as climates and habitats fluctuated around them in lower elevations. This is the reason, some of the oldest bird species in the western ghats, such as the *Sholicola*, and the *Montecincla*, are housed on the Shola Skey Islands.
 - » The **Northern Andes Range** - including Chimborazo - is considered the most biodiverse place in the world. If we start from the foothills of the Andes and climb, we're going to counter different temperature and rainfall levels that support everything from tropical evergreen biomes in the lower elevation to the alpine and tundra biomes near the top. Such a large variation over short distances supports the immense biodiversity found in mountain regions - and worldwide.



TARGET PRELIMS 2024

BOOKLET-20; ECONOMY-1

BUDGET 2024-25; OTHER UPDATES RELATED TO FISCAL DEVELOPMENT

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LevelupIAS

2. KEY HIGHLIGHTS FROM THE SPEECH

1) SOCIAL JUSTICE:

- As our PM firmly believes, we need to focus on **four major castes**. They are, 'Garib' (Poor), 'Mahilayen' (women), 'Yuva' (Youth) and 'Annadata' (farmer). Their needs, their aspirations, and their welfare are our highest priority.
- **Garib Kalyan, Desk Ka Kalyan:**
 - o Government has assisted 25 crore people to get freedom from multi-dimensional poverty.
 - o '**Direct Benefit Transfer**' of 34 lakh crore from the government using PM-Jan Dhan accounts has led to savings of Rs 2.7 lakh crores for the government. The savings have helped in providing more funds for Garib Kalyan.
 - o '**PM SVANidhi**' has provided credit assistance to 78 lakh street vendors. From that a total of 2.3 lakh have received credit for the third time.
 - o '**PM JANMAN**' Yojana reaches out to the PVTG groups.
 - o '**PM Vishvakarma Yojna**' provides end to end support to artisan and craftspeople engaged in 18 trades.
- **Momentum to Nari Shakti:**
 - o 30 crore Mudra Yojna loans have been given to women entrepreneurs.
 - o Making Triple Talaq illegal.
 - o Reservation of 1/3rd of the seats for women in the Lok Sabha and State legislative assembly.
 - o Giving over 70% houses under PMAY in rural areas to women.
- **Welfare of Annadata:**
 - o **PM-KISAN SAMMAN Yojna**: It provides direct financial assistance to 11.8 crore farmers including marginal and small farmers.
 - o **PM Fasal Bima Yojna** provides crop insurance for 4 crore farmers.
 - o **E-NAM** mandis have integrated 1361 mandis and is providing services to 1.8 crore farmers with trading volume of Rs 3 lakh crores.
- **Empowering Amrit Peedhi, the Yuva:**
 - o **PM Schools for Rising India (PM SHRI)** are delivering quality teaching and nurturing holistic and well-rounded individuals.
 - o **The Skill India Mission** has trained 1.4 crore youth, upskilled and reskilled 54 lakh youth, and established 3,000 new ITIs.
 - o A large number of new Institutions of Higher Learning, namely 7 IITs, 16 IIITs, 7 IIMs, 15 AIIMs, and 390 universities have been set up.
 - o **PM MUDRA Yojna** has sanctioned 43 crore loans aggregating 22.5 lakh crores for entrepreneurial aspiration of youth.

2) ECONOMIC MANAGEMENT

The multipronged economic management over the past ten years has complemented people-centric inclusive development. Following are some of the major elements.

- (1) All forms of infrastructure, physical, digital or social, are being built in record time.
- (2) All parts of the country are becoming active participants in economic growth.
- (3) Digital Public Infrastructure, a new ‘factor of production’ in the 21st century, is instrumental in formalization of the economy.
- (4) GST has enabled 'One Nation, One Market, One Tax'. Tax reforms have led to deepening and widening of tax base.
- (5) GIFT IFSC and the unified regulatory authority, IFSCA are creating a robust gateway for global capital and financial services for the economy.
- (6) Proactive inflation management has helped keep inflation within the policy band.

3) GLOBAL CONTEXT

- **Several achievements during G20 President of India.** The country showed the way forward and built consensus on solutions for those global problems.
- **India-Middle East Europe Economic Corridor** announced recently, is a strategic economic game changer for India and others.

4) VISION FOR VIKASIT BHARAT

- Our vision for Vikasit Bharat is that of "Prosperous Bharat in harmony with nature, with modern infrastructure, and providing opportunities for all citizens and all regions to reach their potential".
- The trinity of Democracy, Demography and Diversity backed by 'Sabka Prayas' has the potential to fulfill aspirations of every Indian.

5) STRATEGY FOR ‘AMRIT KAAL’

- Government will adopt measures to foster and sustain growth, facilitate inclusive and sustainable development, improve productivity, create opportunities for all, help them enhance their capabilities, and contribute to generation of resources to power investments and fulfill aspirations.
- Government is guided by 'Reform, Perform and Transform', the government will take up next generation reforms, and build consensus with the states and stakeholders for effective implementation.

- Government will facilitate sustaining high and more resource-efficient economic growth in line with 'Panchamrita' goals'. This will work towards energy security in terms of availability, accessibility, and affordability.
- **To facilitate** investment, government will prepare financial sector with size, capacity, skills and regulatory framework.

6) IMPORTANT INITIATIVES DISCUSSED IN THE BUDGET (WILL BE DISCUSSED IN DETAIL LATER IN THE CLASSES)

- **Aspirational District Program**
- **PMAY (Grameen):** Government is close to achieving the target of 3 crore houses. **Two crores more houses will be taken up in next five years** to meet the requirements arising from increase in the number of families.
- **Rooftop Solarization and Muft Bijli:** Through this program 1 crore households will be enabled to obtain upto 300 units free electricity every month. The scheme is expected to have following benefits:
 - 1) Financial saving of 15k-18K per year for households from free electricity and selling of surplus to the distribution companies.
 - 2) Charging of electric vehicles.
 - 3) Entrepreneurship opportunities for large number of vendors for supply and installation.
 - 4) Employment opportunities for the youth with technical skills in manufacturing, installation, and maintenance.
- **Housing for Middle Class:** Government will launch a scheme to help deserving sections of middle class "living in rented houses, of slums, or chawls, and unauthorized colonies" to buy or build their own houses.
- **Medical Colleges:** Government plans to set up more medical colleges by utilizing the existing hospital infrastructure under various department. A committee for this purpose will be set-up to examine the issues and make relevant recommendations.
- **Cervical Cancer vaccination:** Government will encourage vaccination for girls in age group of 9 to 14 years for prevention of cervical cancer.
- **Maternal and Child healthcare:**
 - 1) Various schemes for maternal and child health care will be brought under one comprehensive program for synergy in implementation.
 - 2) Upgradation of anganwadi centres under "**Saksham Anganwadi and Poshan 2.0**" will be expedited for improved nutrition delivery, early childhood care and development.
 - 3) The newly designed U-WIN Platform for managing immunization and intensified efforts of mission Indradhanush will be rolled out expeditiously throughout the country.
- **Ayushman Bharat:** Healthcare cover under AB Scheme will be extended to all ASHA workers, Anganwadi Workers and Helpers.

- **Agriculture and Food Processing:**

- 1) **Pradhan Mantri Kisan Sampada Yojna** has already benefitted 38 lakh farmers and generated 10 lakh employment.
- 2) **Pradhan Mantri Formalization of Micro Food Processing Enterprise Yojana** has assisted 2.4 lakh SHGs and 60,000 individuals with credit linkages.
- 3) **NANO DAP:** After the successful adoption of Nano-UREA, application of Nano DAP on various crops will be expanded in all agro-climatic zones.
- 4) **Atmanirbhar Soil Seeds Abhiyan:** Building on the initiative announced in 2022, a strategy will be formulated to achieve 'atmanirbharta' for oil seeds such as mustard, groundnut, sesame, soybean, and sunflower. This will cover research for high-yielding varieties, widespread adoption of modern farming techniques, market linkages, procurement, value addition, and crop insurance.
- 5) **Dairy Development:**
 - **Efforts to control foot and mouth disease** (a highly contagious viral disease) are on.
 - **India is the world's largest milk producer**, but Indian milch-animal has low productivity.
 - **A program will be built on the successes of existing schemes**, such as Rashtriya Gokul Mission, National Livestock Mission, and Infrastructure Development Funds, for daily processing and animal husbandry.
- 6) **Matsya Sampada:**
 - Government has taken several steps like setting up of separate fishery department etc. for the fishery sector. All this has contributed to doubling of both inland and aquaculture production and exports since 2013-14.
 - **Implementation of Pradhan Mantri Matsya Sampada Yojna (PMMSY)** will be stepped up to:
 - a) Enhance aquaculture productivity from existing 3 to 5 tons per hectare.
 - b) Double exports to 1 lakh crore
 - c) Generate 55 lakh employment opportunity.
 - **Five integrated aquaparks** will be set up.

- **Lakhpatti Didi:**

- 1) **What is Lakhpatti Didi Initiative:** This initiative was announced in PM's Independence Day Speech in which he said that it was his dream to make 2 crores 'Lakhpatti Didis' in the country's villages. In the Budget speech the target has been enhanced to 3 crores. The target is a 3-year timeline under the scheme that is being executed by Deendayal Antyodaya Yojna – National Rural Livelihood Mission.
- 2) **83 lakh SHGs** with nine crore women are transforming rural socio-economic landscape with empowerment and self-reliance. Their success has assisted around 1 crore women to become Lakhpatti Didi already. Their achievements will be recognized by honoring them.

- **Research and Innovation for Catalyzing growth, employment and development.**
 - PM Shashtri gave the slogan of "Jai Jawan, Jai Kisan". PM Vajpayee made that "Jai Jawan, Jai Kisan, Jai Vigyan". PM Modi has furthered that to "Jai Jawan, Jai Kisan, Jai Vigyan, Jai Anusandhan".
 - A corpus of **Rs 1 lakh crore** will be established with fifty-year interest free loan. This corpus will provide **long term financing or refinancing with long tenors and low or nil interest rates**. This will encourage private sector to scale up research and innovation significantly in sunrise domain.
 - A new scheme will be launched for strengthening deep-tech technologies for defence purposes and expediting Atmanirbharta.

7) INFRASTRUCTURE DEVELOPMENT RELATED INITIATIVES

- **Capital expenditure outlay** for FY25 is being increased by 11.1% to elevent lakh, eleven thousand, one hundred, eleven crore rupees (11,11,111 crores). This will be **3.4% of the GDP**.
- **Railways:**
 - 1) Three major economic railway corridor programs will be implemented. These are:
 - Energy, mineral and cement corridor
 - Port Connectivity corridors, and
 - High traffic density corridors
 The projects have been identified under PM GatiShakti for enabling multi-modal connectivity. This will improve logistics efficiency and reduce cost.
Significance: Improved operation of passenger trains; accelerate logistic efficiency; promote GDP growth.
 - 2) Fourty thousand normal rail bogies will be converted to the Vande Bharat standards to enhance safety, convenience and comfort of passengers.
- **Aviation Sector:** In the past 10 years, number of airports have doubled to 149. Roll out of regional connectivity under UDAN scheme has been widespread. 570 new routes are carrying 1.3 crore passengers. Indian carriers have also placed orders for over 1,000 new aircrafts. This expansion of new airports and development of new airports will continue expeditiously.
- **Metro and NaMo Bharat:** India is seeing an expansion of middle class and increased urbanization. Metro Rail and Namo Bharat can be the catalyst for required urban transformation. Expansion of these systems will be supported in large cities focusing on transit-oriented development.
 - 1) **Note:** NaMo Bharat is an electric multiple unit (EMU) train built for RapidX (Regional Rapid Transit Services). The train was designed by the French rolling stock manufacturer Alstom at its engineering centre in Hyderabad, and was manufactured in Savli, Gujarat. The train has an aerodynamic design which reduces the drag when it travels. The train has a design speed of 180 km/h and is operated at a speed of 160 km/h. Currently, it is operational on Delhi Meerut RRTS system.

- **Green Energy:** To meet the commitment of **Net Zero** by 2070 following steps will be taken:
 - 1) **Viability Gap Funding (VGF)** will be provided for harnessing offshore wind energy potential for initial capacity of one giga-watt.
 - 2) **Coal Gasification and Liquefaction capacity** of 100 MT will be set up by 2030. This will help in reducing the import of natural gas, methanol and ammonia.
 - 3) **Phased Mandatory Blending** of Compressed Biogas (CBG) in Compressed Natural Gas (CNG) for transport and Piped Natural Gas (PNG) for domestic purpose will be mandated.
 - 4) **Financial Assistance** will be provided for procurement of biomass aggregation machinery to support collection.
- **Electric Vehicle Ecosystem:** Government will expand and strengthen the E-vehicle ecosystem by supporting manufacturing and charging infrastructure. Greater adoption of e-buses for public transport networks will be encouraged through payment security mechanism.
- **Biomanufacturing and Bio-boundary:** A new scheme of biomanufacturing and bio-boundary will be launched to promote green growth. It will provide environment friendly alternatives such as biodegradable polymers, bioplastics, biopharmaceuticals and bio-agri-inputs. This scheme will also help in transforming today's consumptive manufacturing paradigm to the one based on regenerative principles.
- **Blue Economy 2.0:** For promoting climate resilient activities for blue economy 2.0, a scheme for restoration and adaptation measures, and coastal aquaculture and mariculture with integrated and multi-sectoral approach will be included.
 - 1) **Note:** Mariculture has been defined as the cultivation, management, and harvesting of marine organisms in their natural environment (including estuarine, brackish, coastal, and offshore waters) or in enclosures such as pens, tanks, or channels.
- **Comprehensive Development of Tourism Sector:**
 - 1) States will be encouraged to take up comprehensive development of iconic tourist centres, branding and marketing them at global scale. A framework for rating of the centres based on quality of facilities and services will be established. Long-term interest free loans will be provided to States for financing such development on matching basis.
 - 2) To address the emerging fervour for domestic tourism, projects for port connectivity, tourism infrastructure, and amenities will be taken up on our islands, including Lakshadweep.

8) OTHER INITIATIVES DISCUSSED IN THE BUDGET

A) PROMOTING INVESTMENT

- During 2014-2023, FDI inflow in country was \$596 billion (double of previous 10 years).
- For further promoting investments, government is negotiating **bilateral investment treaties** with foreign partners, in the spirit of '**First develop India**'.

B) REFORM IN THE STATE FOR VIKASIT BHARAT

- A provision of 75,000 crore rupees as fifty year interest free loan is proposed this year to support those milestone-linked reforms by the state governments.

C) DEALING WITH FAST POPULATION GROWTH AND DEMOGRAPHIC CHANGES

- Government will form a high powered committee for an extensive consideration of the challenges arising from fast population growth and demographic changes. The committee will be mandated to make recommendations for addressing these challenges comprehensively in relation to the goal of 'Vikasit Bharat'.

3. VOTE ON ACCOUNT

Government sought a 'vote on account' approval of the Parliament through appropriation Bill for a part of the financial year 2024-25.

Details about Vote on Account:

- **Article 116 of the Indian Constitution** defines Vote on Account as an advanced grant to the government from the Consolidated Fund of India to cover short-term expenditure requirement until the new financial year begins.
- A VOTE ON ACCOUNT, is the process of withdrawing money from CFI (for the period when the final appropriation bill is not passed), usually 2 months. A vote on account doesn't require debate. When elections are scheduled in the same year, government seeks a vote on account for four months. Vote on account is essentially Parliament's interim approval of spending by the government.
- Thus, in an election year, the government doesn't present a full-fledged budget for the whole year, instead the government prepares an interim budget or vote on account.
- **Reasons:**
 - It would be prerogative of the new government to signal its policy direction, which is often reflected in the budget.
 - There is little time to get approval from Parliament for various grants to ministries and departments, and to debate these as well as any provisions for changes in taxes.
- **Because of the above reasons**, starting 1948, when Finance Minister R K Shanmukham Chetty presented a vote on account and followed it up with Independent India's regular budget, most governments have followed this convention.
 - **Note:** Some governments have made policy announcements or tweaked tax rates in the vote on account.
- **Difference between Vote on Account and Interim Budget:**
 - **A vote on account** only includes government's expenditure, whereas the interim budget deals with both receipt and expenditure.
 - Vote on account is passed by LS without discussion. An interim budget is passed after discussion with LS.
 - Vote on account can't change the direct taxes, whereas interim budget may change the tax regime.

- Vote on account can be used by both regular and caretaker government, whereas interim budget is only used by caretaker (outgoing) government.

4. IMPORTANT DATA FROM BUDGET

i. Fiscal Deficit

= Total Expenditure - Total Receipts other than borrowings

= Revenue Expenditure + Capital Expenditure - (Revenue Receipt + Non-Debt Creating Capital Receipt)

- Targeted Fiscal Deficit to be below 4.5% by 2025-26.

- **CURRENT SCENARIO: FISCAL DEFICIT**

i. **FY23: (ACTUAL): 6.32%**

ii. **FY24: (BE): 5.9%**

iii. **FY24: (RE): 5.8%**

iv. **FY25: (BE): 5.1%**

- **Implications of High fiscal deficit:**

- **Inflationary Spiral**
- **Increased national debt:** This will impact future economic growth as a large part of the expenditure will go in paying interest for the debt rather than for capital investment.
- **Vicious Cycle of high Fiscal Deficit and Low GDP Growth**
- **Crowding out Effect:** This is the situation when high borrowing by the government (due to high fiscal deficit) leads to reduction in availability of funds for private investors. Accordingly overall investment in the economy reduces.
- **Erosion of government credibility** and credit ratings
- **Therefore**, fiscal deficit shouldn't be allowed to go beyond manageable limits (about 3% of the GDP is considered manageable).
 - **High deficit** also signifies fiscal indiscipline. It points to a situation when GDP growth is low, and unemployment is high. The economy slips into stagnation and revival becomes difficult with FDI.

- ii. **Revenue Deficit:** It refers to excess of revenue expenditure over revenue deficit.

- **FY24(RE): 2.8%**

- **FY25(BE): 2.0%**

- iii. **Effective Revenue Deficit** is the difference between Revenue Deficit and Grants for Creation of Capital Assets.

- **The calculation of effective revenue deficit was introduced from 2010-11 budget.**

- **FY24(RE): 1.8**

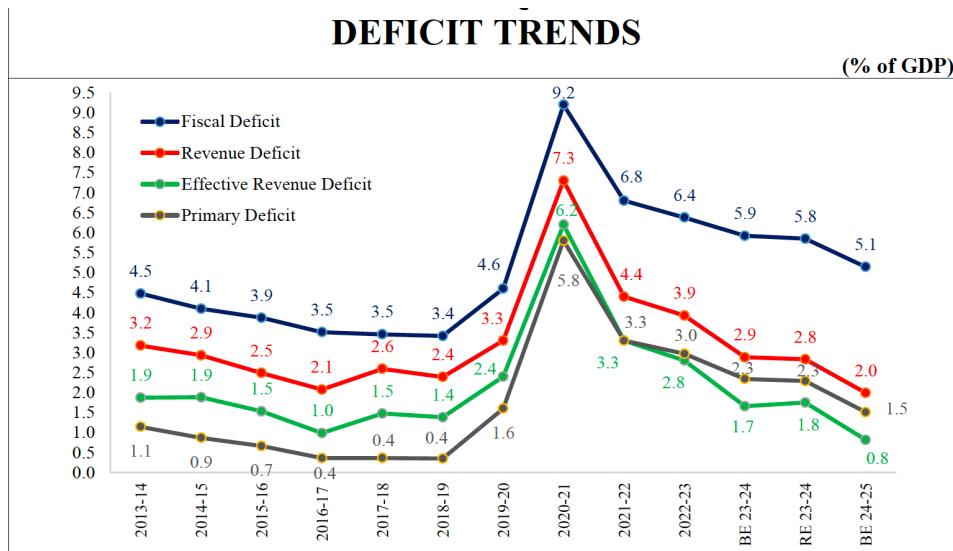
- **FY25(BE): 0.8**

- iv. **Primary Deficit** is measured as Fiscal Deficit less interest payments.

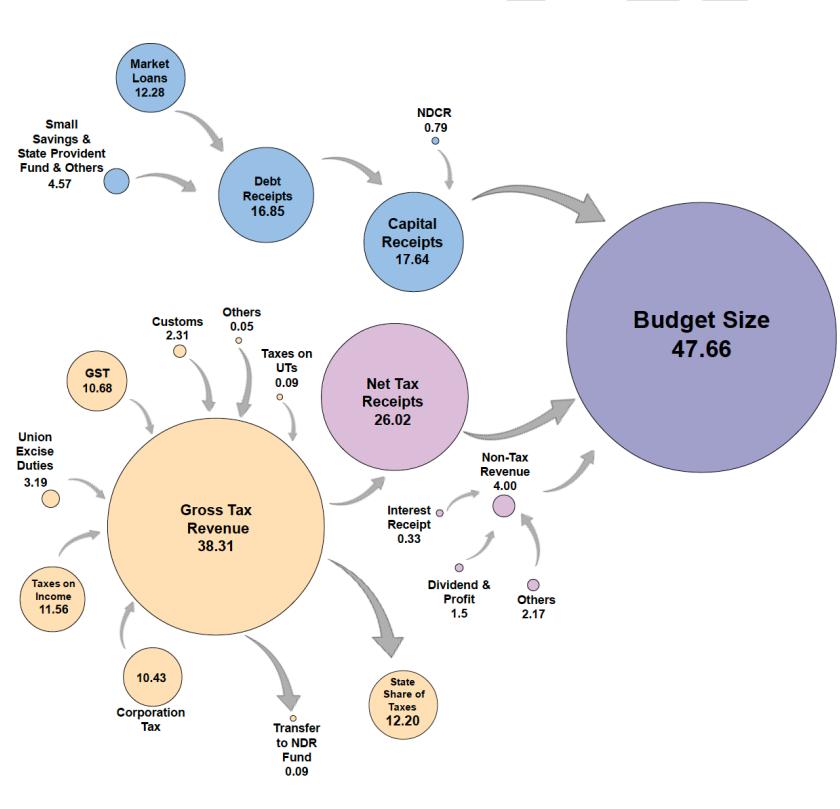
- **Primary Deficit** = Fiscal Deficit - Interest Payment

- **FY24 (RE): 2.3%**

- **FY25 (BE): 1.5%**
- v. **Monetized Deficit:** It goes beyond the government's budgetary operations. It represents increase in the net RBI credit to the Union government which is the sum of increase in RBI's holding of government debt and any draw down by the government of its cash balance with RBI.
- vi. **Fiscal Slippage:** If the actual fiscal deficit is more than what was expected it is called fiscal slippage.

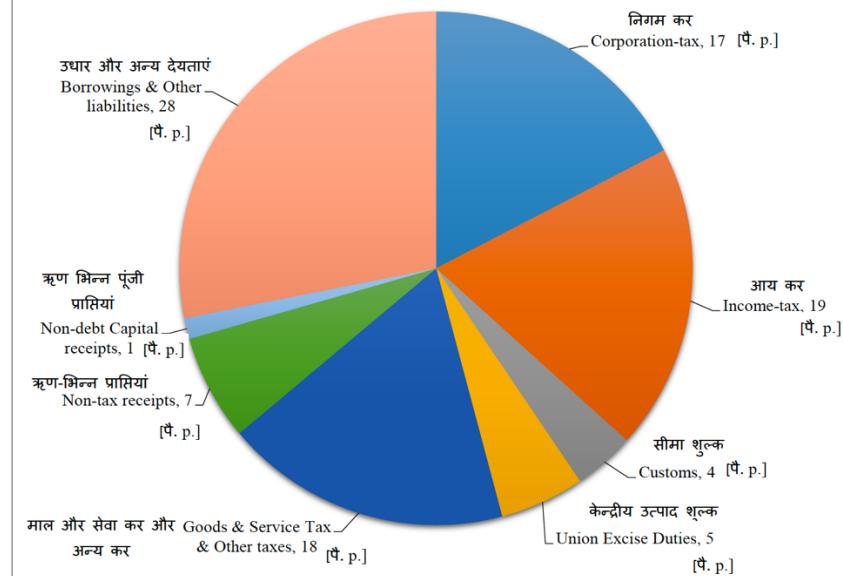


D) FY25 (BE): RECEIPT

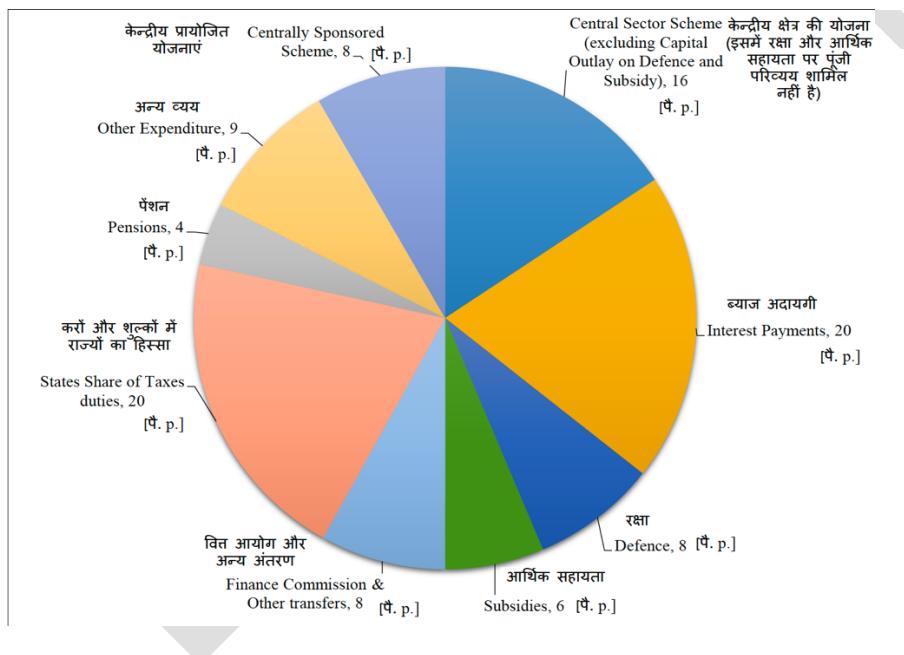
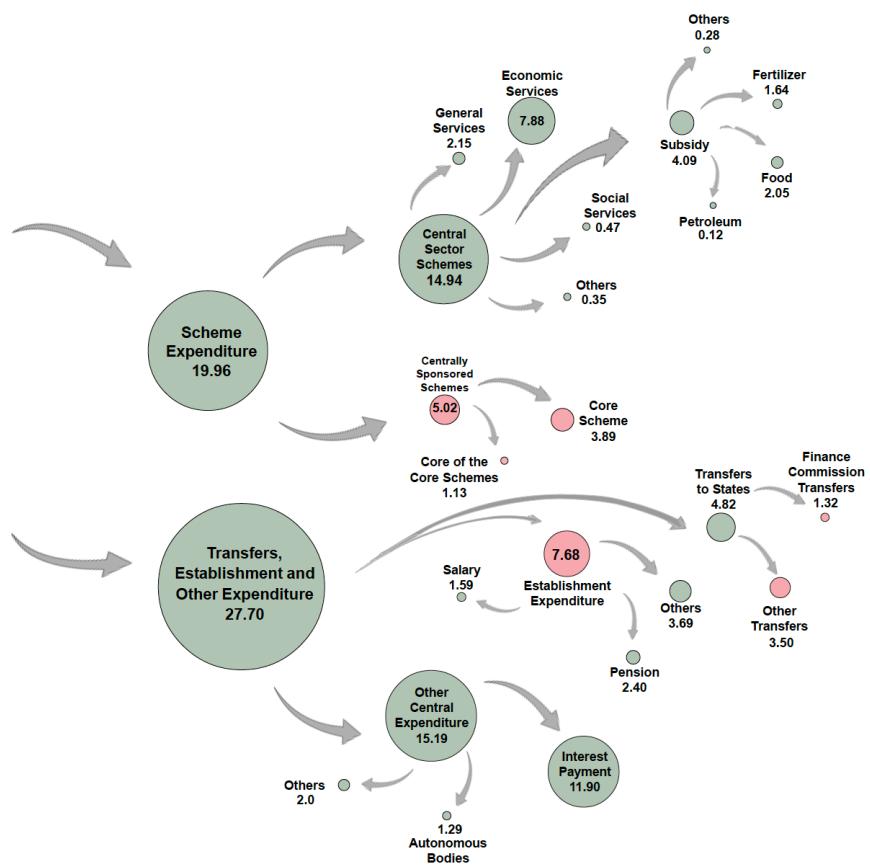


Total Receipt (other than borrowing) is estimated at 30.80 lakh crores. Total Expenditure: 47.66 lakh crores.

Understanding different sources of Money:

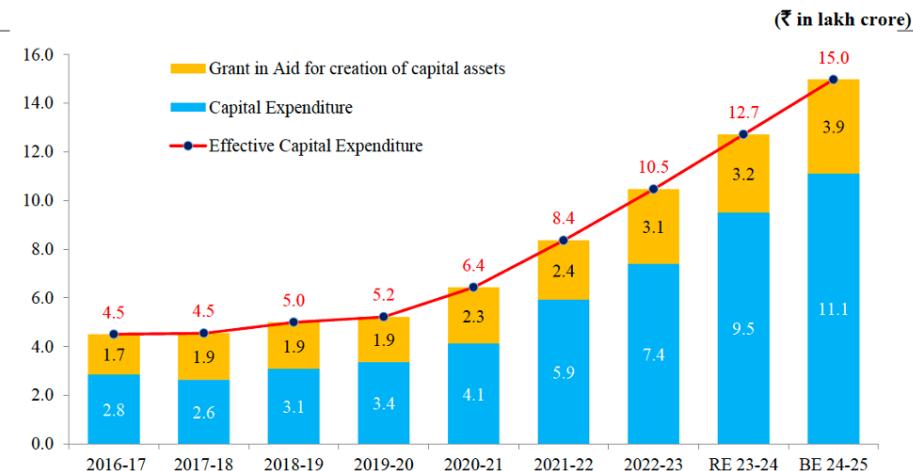


E) EXPENDITURE:



5. TREND IN CAPITAL EXPENDITURE

पूंजीगत व्यय की प्रवृत्ति TREND IN CAPITAL EXPENDITURE



- Capital Expenditure has rose substantially in last 5 years.
 - The government's thrust on capital expenditure, particularly in the infrastructure intensive sectors like roads and highways, railways, and housing and urban affairs, has longer term implications for growth.
 - **Advantages of Higher Capital Expenditure:**
 - Strengthens aggregate demand.
 - Crowds in private spending
 - Enhances longer term supply chain productivity.
 - Centre has also worked towards enhancing capex from state governments by providing long-term interest free loans and capex-linked additional borrowings.
- In the **Budget FY25**, government has announced that the scheme of fifty-year interest free loan for capital expenditure to states will be continued this year with total outlay of 1.3 lakh crores.

6. ANY CHANGES IN THE TAX REGIME IN THE INTERIM BUDGET (NO)

- **Direct Taxes:**
 - FM proposes to retain same tax rates for direct taxes
 - Direct tax collection tripled, return filers increased to 2.4 times, in the last 10 years
 - Government to improve tax payer services
 - Outstanding direct tax demands upto Rs 25000 pertaining to the period upto FY 2009-10 withdrawn
 - Outstanding direct tax demands upto Rs 10000 for financial years 2010-11 to 2014-15 withdrawn
 - This will benefit one crore tax payers
 - Tax benefits to Start-Ups, investments made by Sovereign wealth funds or pension funds extended to 31.03.2025
 - Tax exemption on certain income of IFSC units extended by a year to 31.03.2025 from 31.03.2024
- **Indirect Taxes**

- FM proposes to retain same tax rates for indirect taxes and import duties
- **GST unified the highly fragmented indirect tax regime in India**
 - Average monthly gross GST collection doubled to Rs 1.66 lakh crore.
 - GST tax base has doubled
 - State SGST revenue buoyancy (including compensation released to states) increased to 1.22 in post-GST period (2017-18 to 2022-23) from 0.72 in the pre-GST period (2012-13 to 2015-16)
 - 94% of industry leaders view transition to GST as largely positive
 - GST led to supply chain optimization
 - GST reduced the compliance burden on trade and industry
 - Lower logistics cost and taxes helped reduce prices of goods and services, benefiting the consumers

7. FISCAL CONSOLIDATION

- **Fiscal consolidation** refers to long term permanent strategies to reduce deficit by increase the revenue and reducing expenditure.
- **Why is Fiscal Consolidation** (i.e. reduction of fiscal deficit) **needed / Negative Impacts of High Fiscal Deficit:**
 - **Inflationary Spiral:** Borrowing from RBI leads to increased money supply in economy which leads to higher inflation.
 - **Increased national debt:** This will impact future economic growth as a large part of the expenditure will go in paying interest for the debt rather than for capital investment.
 - **Vicious Cycle of high Fiscal Deficit and Low GDP Growth**
 - **Crowding out Effect:** This is the situation when high borrowing by the government (due to high fiscal deficit) leads to reduction in availability of funds for private investors. Accordingly overall investment in the economy reduces.
 - **Erosion of government credibility:** High fiscal deficit (thus high debt of government) erodes credibility of the government in domestic as well as international money market. It may also lead to reduction in the 'Credit Rating' of the government (and the economy). Lower credit rating may lead to global investors withdrawing their investment from the domestic economy.
 - **High Burden on Future Generation** as they are the ones who have to bear the brunt of higher interest rates.
- **Therefore**, fiscal deficit shouldn't be allowed to go beyond manageable limits (about 3% of the GDP is considered manageable).
- **However**, some amount of fiscal deficit may be crucial for developing economies like India.
 - Promote capital expenditure (fiscal deficit with high capex)
 - Revitalize the business cycle (Counter-cycle fiscal policies)
 - Promote crowding in investment (if better infrastructure is created -> fall in cost of production)
 - Spending has higher fiscal multipliers during slowdown.
- **Thus, fiscal deficit may be ok, if following things are kept in mind:**
 - Loan interest shouldn't become very high. Rate of growth of interest shouldn't be higher than the rate of growth of the GDP.
 - Loans shouldn't be used to fund revenue deficit. It should go on capital expenditure.

- **Current Situation of India:**
 - Structural reforms in FY20 (reduction in corporate taxes) and COVID-19 lockdowns in FY21 and FY22, diverted India from the track of fiscal consolidation.
 - But currently India is back on track with target of fiscal deficit to be 4.5% by FY26. In FY 25 (BE) fiscal deficit will reduce to 5.1% of the GDP.

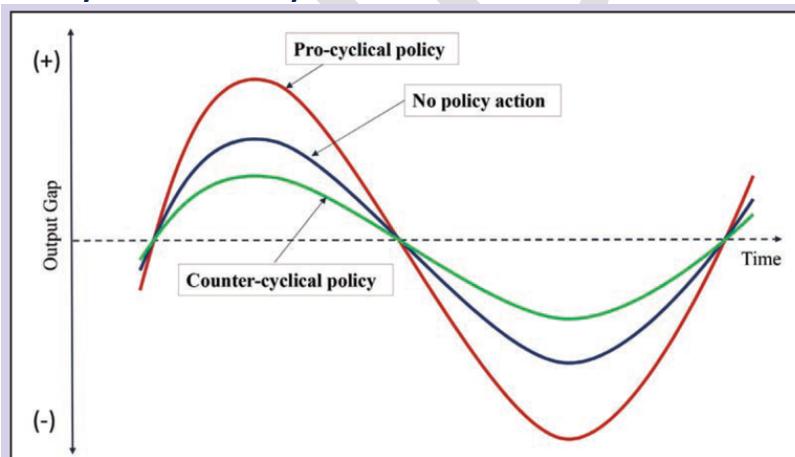
8. MONETIZATION OF DEFICIT

- **What is Monetization of Deficit?**
 - » In simple terms, monetization of deficit means printing more money i.e. RBI buys government securities from the primary market to fund the government's expenses. It thus means increase in RBI credit to government.
 - » **Note:** Monetization of deficit doesn't mean that government is getting free money, rather it is highly subsidized money.
- **Monetization of Deficit in India**
 - » Till 1997, monetization of deficit was a common practice in India and RBI used to automatically monetize government's deficit through the issue of ad-hoc treasury bills.
 - But, through agreements in 1994 and 1997 the funding through ad-hoc treasury bills was completely phased out. Later, FRBM act completely prohibited RBI from subscribing to the primary issuance of the government from 1st April 2006.
 - Now, RBI only buys government bonds in secondary market through open market operations. Here RBI is indirectly monetizing the deficit.
 - **Note:** FRBM Act has an escape clause which permits monetization of the deficit under special circumstances.
- **Advantages of the above decision to prohibit/phase out monetization of deficit** i.e. of prohibiting RBI from subscribing to the primary issuance of the government.
 - » Since the government started borrowing in the open market, interest rates went up which incentivised saving and thereby spurred investment and growth
 - » Also, the interest rate that the government commanded in the open market acted as a critical market signal of fiscal sustainability.
 - » Importantly, the agreement shifted control over money supply, and hence over inflation, from the government's fiscal policy to the RBI's monetary policy.
 - » The India growth story that unfolded in the years before the global financial crisis in 2008 when the economy clocked growth rates in the range of 9 per cent was at least in part a consequence of the high savings rate and low inflation which in turn were a consequence of this agreement
- **Advantages/ Need of Monetization during recessionary face**
 - » **Fiscal Stimulus**
 - » **Reducing cost of borrowing**
- **Limitations**

- » It triggers **inflation**. In long run, the increased money supply would definitely add to the inflationary pressure.
- » **Increased supply of Rupee** may also lead to depreciation of the value of Rupee. This makes imports expensive and exports cheap.
- » It gives rise to **unproductive spending**.
- » **Impacts credibility of government** -> portrays government as unable to meet its own financial needs.
- » Finally, it also **erodes RBI's control over monetary policy** (and thus its independence). If RBI agrees to monetize the deficit, it is effectively agreeing to subordinate monetary policy to the financing policy of the government.

9. COUNTERCYCLICAL FISCAL POLICY

- **What is Countercyclical Fiscal Policy?**
 - » During slow-down or recession, government should allow slippage of fiscal target and reduce taxes and increase expenditure. This creates more demand and brings economic upswing.
 - » During Boom Period, government should perform fiscal discipline, increase taxes and reduce government expenses. Otherwise, the growth would not be sustainable, high inflation may result and the amplification of boom can be disastrous in long run.
- **Pro Cyclic Fiscal Policy**
 - » It is opposite of counter cyclic policy. During Boom, government may further increase the expenditure to allow further growth of the boom.
- **Why counter-Cyclic Fiscal Policy is crucial?**



- At the time of recession, private consumption (C) reduces, and private investment (I) also go down. In such scenario, increasing government expenditure – both consumption and expenditure – will support GDP and minimize the output gap. This happens primarily through the **following mechanism**:
 - Increased government expenditure cushions the contraction in output by contributing to the GDP growth and offsetting the decline in consumption and investment.
 - During recession spending multiplier is higher which leads to boosting of private investment and consumption.
 - Higher spending by government compensates for 'risk aversion' by private sector and brings back 'animal spirits'.

- iv. It also enhances expectation multiplier by building confidence in tough times. Since government is able to exhibit their commitment to sound fiscal management, the rational players in the economy would not expect the economy to fluctuate as much and therefore private players will further increase the investments and reinforce this expectation multiplier.

10. FRBM ACT

- **Background: Need to institutionalize a new fiscal discipline framework:**
 - » In 1980s, India saw a sharp deterioration in fiscal situation, which ultimately culminated in the balance of payment crisis of 1991. Within a decade of economic liberalization, the fiscal deficit and debt situation again seemed to head towards unsustainable level around 2000. At that time, a need to institutionalize a new fiscal discipline framework.
- **FRBM Act** was passed in 2003 and became effective from July 5, 2004. It enjoins government to conform to a pre-set fiscal target, and in the event of failure to do so, to explain the reasons for deviation.
 - » The aims of the act are to:
 - Introduce transparency in India's fiscal management systems.
 - Achieve inter-generational equity by ensuring equitable distribution of debt over the years.
 - Ensure long term macro-economic stability through fiscal stability
 - » **To promote transparency** in fiscal management, section 3 of the act provides that Union government will place three more documents on fiscal policy along with the budget:
 1. Macroeconomic framework Statement
 2. Medium Term Fiscal Policy Statement
 3. Fiscal Policy Strategy Statement
 - » Later, through an amendment a fourth statement, Medium Term Expenditure Framework (MTEF) needs to be presented.
 - » At the end of the second quarter, the finance minister would make a statement on the trend of fiscal indicators and corrective measures taken thereof.
 - » The Act requires the central government to progressively reduce outstanding debt, revenue deficit, and fiscal deficit.
 - The central government gives three year rolling targets for these indicators when it presents the Union Budget each year.
 - » It says that the Central Government shall not borrow from the RBI except by way of advances to meet temporary excess of cash disbursements over cash receipts.
 - Further, RBI shall not subscribe to the primary issue of the Central government securities from the year 2006-2007.
- **Originally, the following targets were set under the act and FRBM rules.**
 - Revenue Deficit -> 0 by 2007-08; Fiscal Deficit -> 3% by 2007-08.

- Total liabilities of central government should not rise by more than 9% a year.
 - Union government will not give guarantee to loans raised by PSUs and state governments for more than 0.5% of the GDP aggregate.

- **2008 Financial crisis and its aftermath**
 - Deadlines for the implementation of the targets in the act was initially postponed and subsequently suspended in 2009. In the next few years, the act was largely neglected.

- **NK Singh Committee to review FRBM Act (Report submitted in 2017): Key Recommendations:**
 - The committee said that debt should be considered primary target. It suggests Public Debt to GDP ratio as a medium-term anchor for fiscal policy in India.
 - It also gave targets of (Fiscal Deficit, Revenue Deficit and debt) to be achieved by 2022-23.
 - Creation of a **Fiscal Council**: It is a proposed 3 member body which will have functions like preparing multi-year fiscal forecast; preparing fiscal sustainability analysis; providing independent assessment of the central government's fiscal performance; and improving quality of data.
 - **Escape Clause and Buoyance Clause**

- **In 2018, the FRBM Act was amended to specify three conditions upon which the escape clause can be invoked.**
 - First, over-riding considerations of national security, acts of war, and calamities of national proportion and collapse of agriculture severely affecting farm output and incomes.
 - Second, far-reaching structural reforms in the economy with unanticipated fiscal implications.
 - Three, a sharp decline in real output growth of at least 3 percentage points below the average for the previous four quarters.
 - The FRBM amendments also mentioned that the **deviation from the stipulated fiscal deficit target must not exceed 0.5 percentage** points in a year.

 - **Note:** the term "escape clause" hasn't been used in the act. It was used by the FRBM review committee chaired by NK Singh.

 - In Budget 2020-21, the finance minister Nirmala Sitharaman has used the escape clause provided under the act to relax the fiscal deficit target. It was done on the grounds of reduction in corporate tax (structural reform)
 - The fiscal deficit of FY19-20 was 3.8% (BE was 3.3%, therefore the 0.5% relaxation)

- **Recommendations of the 15th Finance Commission**
 - The 15th Finance Commission for 2021-26 suggested a path for fiscal consolidation for the centre by reducing fiscal deficit to 4% of GDP and outstanding debt liabilities to 56.6% of the GDP by 2025-26.

- **Current Scenario:**
 - » Due to **COVID-19 scenarios**, the targets were against missed. Therefore, FRBM Act should have been amended to set new targets.

- » But the revisions to the FRBM Act Medium Term Fiscal Policy Statement for 2021-22 and 2022-23 omitted the rolling targets for budget deficits.
 - **Government wants a fiscal flexibility to respond to emerging contingencies** till the pandemic induced uncertainties ease.
- » However, government has said that it would pursue a **broad path of fiscal consolidation** reaching the target of **4.5% of Fiscal Deficit by 2025-26**.

In Aug 2023, the Finance Ministry conveyed its inability to release **Medium Term Expenditure Framework (MTEF)**, mandated by FRBM Act, 2003. It said that since the presentation of Union Budget for FY24 in Feb, there hasn't been any significant and favourable change in global headwinds and associated risks. Therefore, the **medium-term projections are not feasible**. Further, effective management of exogenous shocks and global uncertainties **necessitated additional flexibility** for the Government in terms of expenditure management and fiscal consolidation.

TARGET PRELIMS 2024

BOOKLET-21; ECONOMY-2

AGRICULTURE AND RELATED ISSUES

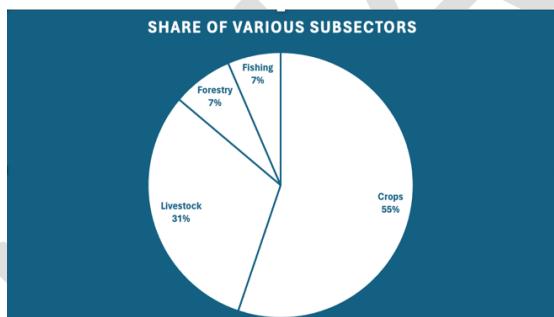
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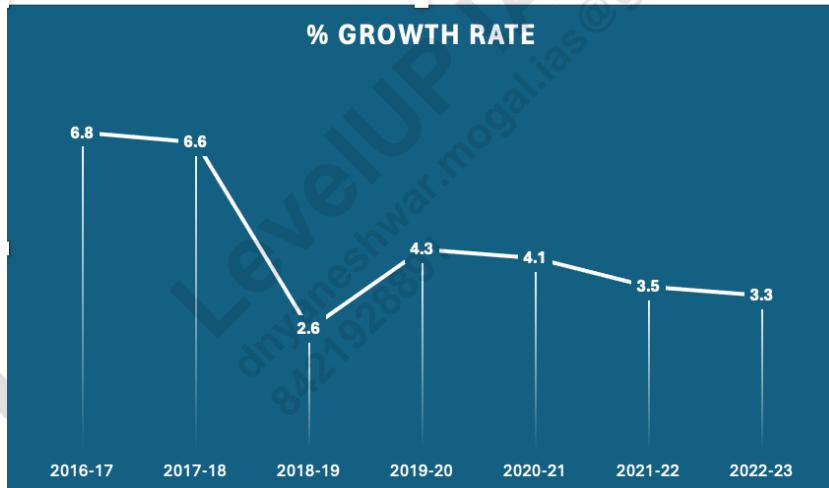
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2. AGRICULTURE AND ALLIED SECTOR: SHARE IN ECONOMY

- Declining share of Agriculture in India's economy:
 - It is estimated that at the time of independence Agriculture contributed to more than 50% of India's GDP and employed 2/3rd of the population.
 - Today, agriculture contributes to around 18% of India's GDP and employs more than 50% of India's population.
- **GVA Share:** According to Ministry of Statistics & Program Implementation (MoSPI), the GVA of agriculture and allied sectors in 2020-21 was 20.1%, it was 19% in 2021-22 and it again came down to 18.3% in 2022-23.
- Distribution of various sub sectors:

<p>FY22:</p> <ul style="list-style-type: none">- Crops: 55%- Livestock: 30.87%- Forestry: 7.36%- Fishing 6.44%	 <p>SHARE OF VARIOUS SUBSECTORS</p> <table border="1"><caption>Share of Various Subsectors (FY22)</caption><tr><td>Crops</td><td>55%</td></tr><tr><td>Livestock</td><td>31%</td></tr><tr><td>Forestry</td><td>7%</td></tr><tr><td>Fishing</td><td>7%</td></tr></table>	Crops	55%	Livestock	31%	Forestry	7%	Fishing	7%
Crops	55%								
Livestock	31%								
Forestry	7%								
Fishing	7%								
- Note: Share of Livestock and fishery has been going up and share of Crops and forestry has been going down



3. AGRI-CENSUS (2015-16) (RELEASED IN 2018)

- **Intro**
 - Department of Agriculture, Cooperation and Farmers Welfare, MoA&FW conducts a quinquennial Agriculture Census (every five years) in the country to collect **key information about the structure and agriculture holdings in the country and monitor changes that take place over time**.

- 2015-16 census was the **10th Agri census** conducted in the country. (the first census was done in 1970-71)
 - **Note:** As of Jan 2024, 11th Agri-Census is going on. It was launched in July 2022.
- In the census, the unit of enumeration is defined by the term '**Operational Holding**' and it corresponds to the person who actually cultivates the land rather than its ownership. The concepts followed are broadly in conformity with the World Census of Agriculture, FAO of the UN.

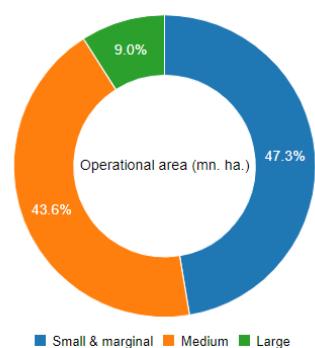
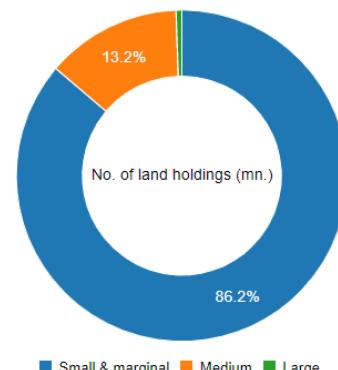
- **Some other terms to understand**

- **Operational Holding**
 - All land which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone.
- **Operated Area**
 - Include both cultivated and uncultivated area, provided part of it is put to agricultural production during the reference period.
- **Size Classes**

S.No.	Group	S.No.	Classes (in ha.)
I.	Marginal	1.	Below 0.5 ha.
		2.	0.5 – 1.0 ha.
II.	Small	3.	1.0 – 2.0 ha.
		4.	2.0 – 3.0 ha.
III.	Semi-medium	5.	3.0 – 4.0 ha.
		6.	4.0 – 5.0 ha.
IV.	Medium	7.	5.0 – 7.5 ha.
		8.	7.5 – 10.0 ha.
V.	Large	9.	10.0 – 20.0 ha.
		10.	20.0 and above.

- **Key Highlights**

- **Decline in total operated area by 1.53%**
 - From 159.59 million hectares to 157.14 million hectares.
- **State wise total operated area is highest in:**
 - Rajasthan, followed by Maharashtra, UP, MP and Karnataka.
- **Total Number of Land Units (Operational holdings)**
 - Increase of 5% (from 138 million 2010-11 to 146 million in 2015-16)
 - Uttar Pradesh is the state with highest number of landholders, constituting 16% of the total number. UP is followed by Bihar and Maharashtra.
- **Small and marginal landholdings (<2 hectare area) constituted 86.21% of the total landholding, an increase of 1.2% points compared to 2010-11.**
 - Farmers holding 10 hectares and more account for just 0.57%.
 - Semi-Medium and Medium: 13.2%
- **Decline in average size of landholding from 1.15 hectare to 1.08 hectare.**
- **Average size of farm holding was the highest in Nagaland at 5.06 hectares and lowest in Kerala at 0.18 hectares.**
- It is noteworthy that **small, marginal and medium landholdings** constitute the lion's share of operated area - large landholding account for only 9% of the total operated area.



- **Marginal Increase in number of Small and Marginal agricultural land holdings** in the country
 - This means that there are more people now who own smaller parcel of land.
- **Percentage of women landholders have increased**
 - From 12.79% in 2010-11 to **13.87%** in 2015-16
 - There is also a corresponding increase of **1.2%** () in operated area.

4. INPUT MANAGEMENT

1) SEEDS

- **Introduction**
 - » **Good seeds** are catalysts for change in agriculture. The **Green Revolution** was ushered in by the import of 18,000 tonnes of high-yielding varieties of **wheat seeds, Lerma Rojo and Sonaro-64, and IR-8 rice seeds**.
 - » Today, India is AtmaNirbhar in staple crops and exports seeds to its neighbouring countries. This is thanks to these seeds and research conducted by ICAR.
- **Recognizing the significance of seeds government has taken several steps:**
 - » **Seed Production in Agricultural Crops:** This is a seed project to promote Seed Replace Rate (SRR) and Varietal Replacement Rate (VRR)
 - » **Sub-Mission on Seeds & Planting Materials**
 - The submission is focused on production and supply of quality seeds to farmers through its various components:
 - **Seed Village Program**
 - The program is aimed at upgrading the quality of farm saved seeds.
 - Under this by 2020-21, 4.29 lakh seed villages have been created wherein 38.01 lakh qtls. of foundation/certified seeds were distributed at concessional rates to 170 lakh farmers.
 - **Establishment of Seed Processing-cum-Seed Storage Godowns at Gram Panchayat Level**
 - Centre provides financial assistance to states to establish Seed processing-cum-storage godowns units each of 500 Mt capacity at Gram Panchayat Level.
 - **National Seed Reserve**
 - Under this seed of short and medium duration crops varieties are kept to meet the requirement of farmers for re-sowing during natural calamities and unforeseen conditions i.e. drought, cyclone and floods etc.
 - **Boosting Seed Production in Private Sector**
 - **Strengthening of Quality Control Infrastructure Facilities**

A) REGULATION OF SEED SECTOR IN INDIA

- » Currently, the **Seeds Act, 1966** regulates the quality of seeds in India.
 - This was introduced right after the ushering of the 'Green Revolution' in India.

- The Act along with the **Seed Rules, 1968, Seed (Control) Order (1983), New Policy on Seed Development (1988)**, Plants Fruits & Seeds (Regulation of Import into India) Order (1989) has served well in making the Indian Seed Industry vibrant and competitive to serve the interest of farmers.
 - **Protection of Plant Varieties and Farmers' Right Act (2001)** and the **Essential Commodities, Act 1955** have also served a role in the regulation of seed sector in India.
- » **Key highlights of the Seeds Act, 1966**
- It only covers "notified kinds of varieties of seeds".
 - **Labelling of seeds** with notified quality parameters has been made mandatory under the 1966 Act with **punitive measures against seed sellers** in case of any deficiency in seed quality parameters mentioned on the label.
 - Essentially, the seed label is treated as a guarantee card and it is given a unique ID number to ensure traceability of seeds.
 - **Central Seed Committee** notifies any seed variety found suitable as per the act.
- » **Some limitations of Seeds Act, 1966**
- It only covers notified kinds or varieties of seeds. Thus, seed varieties which are not officially notified are not covered.
 - **Seed variety registration** has been left to the discretion of the developers.
- » **The Draft Seeds Bill, 2019:** Hasn't progressed ahead because of various criticisms.

B) OPEN SOURCE SEED MOVEMENT

- **Background:**
 - » The advent of hybrid seeds, GM seeds etc have conferred plant breeders and developers of new varieties with the so-called plant breeder's rights (PBR). In this regime, farmer's rights were limited while right-holders could demand royalty on seeds and legally enforce PBRs.
- **Need of Open-Source Seed Movement:**
 - » Decline in public sector breeding and increasing domination of private sector in seed breeding
 - » High prices of private sector owned seeds.
- **What are Open-Source Seeds?**
 - » Open-Source Seeds are those seeds which have been freed from IPR restrictions to allow open use of these seeds.
 - » In 1999, a Canadian plant breeder named **T.E. Michaels suggested an approach** to seeds based on the principles of open-source software.
 - » In 2012, Jack Kloppenburg, whose 1988 book ***First the Seed altered the world*** to trends in the seeds sector and the use of IP to control farmers' right, launched the '**Open Source Seed Initiative**' (OSSI) in Wisconsin. **OSSI simply asks for a pledge, that an individual won't restrict others use of these seeds or their derivatives by patents or other means, and to include these pledges with any transfer of these seeds or their derivatives.**
 - Since then several programs have come up around the world.

- » In India, the Hyderabad based **Centre for Sustainable Agriculture (CSA)**, part of the **Apna Beej Network**, developed a model incorporated into an agreement between CSA and the recipient of the seed/germplasm.

2) IRRIGATION

- **Introduction**
 - » Irrigation is crucial to ensure that farmers reap full benefit of better-quality seeds and fertilizers. But, as per ESI 2021-22, only 49% of India's total cropped area is irrigated. Rest depends on Monsoon rainfall for agriculture. This is the most important factor which makes farming a vulnerable profession.
- **Importance of Irrigation:**
 - 1. Insufficient, Uncertain and Irregular Rains**
 - 2. Higher Productivity of Irrigated Fields**
 - 3. Multiple Cropping Possible**
 - 4. Bringing More Land Under Cultivation**
 - 5. High Yielding Varieties Program's success depends to a large extent on the timely availability of ample supply of water.**
 - 6. Reduces Instability in output levels**
 - 7. Other Indirect Benefits of Irrigation:** employment potential of irrigated land increases. It also helps in developing allied activities, means of water transport etc.
 - For e.g. it has been estimated that for every Rs 100 of direct benefits from Bhakra Nangal Dam, there was a generation of Rs 90 of indirect benefits.

A) DIFFERENT TYPES OF IRRIGATION IN INDIA:

- » Sources of Irrigation in India can be divided into the following: (i) **Wells/Tube Wells** (ii) **Canals** (iii) **Tanks, and Others**
- » **Wells and Tube-wells** are the most important source of irrigation in India.
 - They are spread over large areas of Punjab, Haryana, Uttar Pradesh, Bihar, Rajasthan, and Tamil Nadu.
 - **Advantages of Well and Tube well Irrigation:** Simplest and cost-effective way, easily affordable by poor Indian farmers (wells). It is an independent source of irrigation and can thus be used whenever the necessity arises. Certain chemicals from ground water such as nitrate, chloride, sulfate etc. are generally found mixed in well water. This can be good for agriculture.
 - **Disadvantages:**
 - Only limited area can be irrigated (upto 1 to 8 hectare of land per day)
 - Excessive extraction has caused ground water depletion in several parts of the country.
- » **Canals** contribute to irrigation of around 24% of the irrigated area. This includes large area of Punjab, Rajasthan, Haryana, Uttar Pradesh, Bihar and some parts of southern states.

- Digging of Canals in stony and uneven areas is difficult and unprofitable. Thus the canals are practically absent from the Peninsular plateau. However, the coastal and delta region of south India do have some canal system.
 - **Advantages of Canal Irrigation:**
 - Canals can convert dry regions into fertile territory (e.g. Rajasthan impacted by Indira Gandhi Canal)
 - They carry a lot of sediments carried by rivers -> this when deposited in agri field contributes to soil fertility.
 - It's quite cheap in long run (initially it can be expensive due to the cost of multipurpose projects etc.)
 - **Drawbacks:**
 - **Water logging** along the canal route: It is caused by soaking on canal water into the ground.
 - **Land Degradation:** Capillary action brings alkaline salts to the surface and makes large areas unfit for agriculture.
 - **Overflow of canals during rainy season** also becomes a reason for floods.
 - Taken together, Canals and wells accounted for 86% of the irrigated area in 2012-13.
- » **Tank Irrigation** is resorted to mostly in Telangana, Andhra Pradesh, Tamil Nadu, and parts of West Bengal and Bihar.
- A **tank** act as an irrigation storage system that is developed by constructing a small bund of earth or stones built across a stream.
 - Rivers of south don't flow all the year around. Therefore, tanks are constructed for storing water in rainy season which is subsequently used for irrigation purposes.
 - **Andhra Pradesh** (including Telangana) is the largest state of tank irrigation which has about 29% of tank irrigated area of India. The drainage system of Godavari and its tributaries have a large number of tanks.
 - **Advantages:**
 - Most of the tanks are natural and not expensive for their construction. Even an individual farmer has his own tank.
 - They are generally constructed on a rocky bed and has long life.
 - Fishing activities in some tanks adds to the food resources and income of the farmers.
 - **Limitations:**
 - They dry up during dry season and fail to provide the irrigation when it is needed the most.
 - Silting of the tank bed is a serious problem and it requires desilting of the tank at regular interval.
- » **Micro Irrigation** (including Sprinklers, Drip Irrigation Etc.) have emerged as the new efficient way of irrigation.
- **Various Initiatives** to promote increase irrigation cover in India:
1. **Accelerated Irrigation Benefit Program (AIBP)** was launched in 1996-97 to provide Central Loan Assistance to states for completion of large and medium irrigation project which have been stuck for long due to fund crunch. It has been now subsumed under PMKSY (PMKSY-AIBP)

2. **Pradhan Mantri Krishi Sinchai Yojana** (PMKSY) is operational since 2015 with the vision of extending the coverage of irrigation "Har Khet ko Pani" and Improving water use efficiency "More Crop Per Drop".
3. **Promoting water use efficiency:**
 - To promote micro-irrigation a **Micro Irrigation Fund (MIF)** with corpus of Rs 5,000 crore was created with NABARD during 2018-19. As of 1st Dec 2021, loans under MIF amounting to Rs 3,970.17 crores have been approved for 12.81 lakh ha of Micro Irrigation area.
 - Micro irrigation is also being promoted through the Per Drop More Crop component of PMKSY (PMKSY-PDMC) from 2015-16.
4. **Watershed Development Program** (now part of PMKSY) also focuses on improving irrigation situation in rain-fed area.

B) PRADHAN MANTRI KRISHI SICHAYI YOJNA

- **Introduction:**
 - » Pradhan Mantri Krishi Sinchayi Yojna (PMKSY) is a flagship scheme launched by Government of India in 2015. the main objective of the PMKSY is to:
 - i. Achieve convergence of investments in irrigation at the field level.
 - ii. Expand cultivable area under irrigation ("Har Khet ko Pani")
 - iii. Improve on-farm water use efficiency ("More Crop Per Drop") to reduce wastage of water, Enhance the adoption of precision irrigation and other water saving technologies (Per Drop More Crop)
 - iv. Enhance recharge of aquifers and introduce **sustainable water conservation** practices by exploring the feasibility of reusing treated municipal waste water for peri-urban agriculture and attract greater private investment in precision irrigation.
- **Key Features of the Scheme:**
 - » **Amalgamation of Ongoing Schemes:**
 - Accelerated Irrigation Benefit Program (AIBP) of Ministry of Water Resource, River Development & Ganga Rejuvenation (MoWR, RD&GR) (Now Ministry of Jal Shakti)
 - Integrated Watershed Management Program (IWMP) of Department of Land Resources (DoLR) - MoRD
 - On Farm Water Management (OFWM) of Department of Agriculture and Cooperation - Ministry of Agriculture and Farmer Welfare
 - » **Decentralized State-Level Planning and Execution:** States will draw their own irrigation development plan based on district irrigation plans and state irrigation plans.
 - » It serves as a convergence platform for all water sector activities including drinking water and sanitation, MGNREGA, application and S&T through comprehensive plan.
 - » **Focused on "Protective Irrigation"** by sustainably water conservation by harnessing rain water at micro level through 'Jal Sanchay' and 'Jal Sinchan'
 - » **Special Focus on Micro-Irrigation** to increase water use efficiency.
 - » **Other objectives** include enhancing recharge of acquifers and introducing sustainable water conservation practice by exploring the feasibility of reusing municipal waste water and peri-urban agriculture and attract greater private investment in precision agriculture.

- The program has now been extended for another five years till Dec 2026. Three components AIBP, Har Khet ko Pani and Watershed development has been extended.

C) ACCELERATED IRRIGATION BENEFIT PROGRAM

- **Need of AIBP**
 - » Irrigation a state subject -> states develop irrigation projects -> several **major and medium projects** were stuck due to inadequate provisions of funds locking the fund spent on these projects too.
 - » Keeping the above in view, Central government **in 1996-97**, launched an Accelerated Irrigation Benefit Program (AIBP) to provide **Central Loan Assistance (CLA)** to these projects so that development could be accelerated.
 - » Central assistance is released in the form of block loans and grants not tied to any sector of development or project.
- **Types of Projects chosen**
 - » Special emphasis was to be given to Pre-fifth and Fifth Plan Project.
 - » Priorities were also to be given to those projects which were benefitting Tribal and Drought Prone Areas.
 - » After the revision in 1999-2000 onwards, AIBP could also be extended to minor surface irrigation projects of special category states (N.E Stats & Hilly state of HP, Sikkim, J&K and Uttarakhand)
- **State's contribution (after relaxation in Dec 2006) [25% (10% in special category states, projects benefitting draught prone areas, tribal areas, and flood prone areas)]**
- **Progress as of Dec 2021**
 - » Out of 99 projects, 44 projects have been reported to be completed/almost completed.

D) LONG TERM IRRIGATION FUND (LTIF)

- It was established by NABARD in 2016 to fund central and state share of 99 prioritized irrigation projects under the PMKSY.
- It gives **loans to NWDA and State governments** for the irrigation projects and thus funds and fast tracks implementation of incomplete major and medium irrigation projects during 2016-2020.
- **99 Projects of AIBP** which have been identified:
 - » 23 Projects for completion in 2016-17 (Priority-1)
 - » 31 Projects for completion in 2017-18 (Priority-2)
 - » 45 projects for completion by Dec 2019. (Priority-3)
- It had an initial corpus of about Rs. 20,000 crore (which was later extended to **40,000 crores**)
 - » The corpus will come from budgetary allocation from GoI, extra-budgetary allocation through GoI fully serviced bonds to be raised by NABARD.

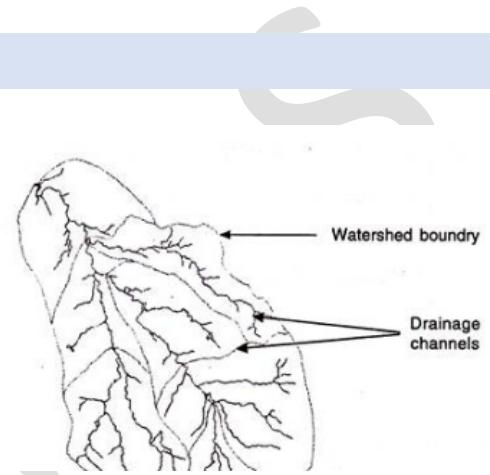
E) INSTITUTIONS: NATIONAL WATER DEVELOPMENT AGENCY (NWDA)

- NWDA was set up in 1982 as Autonomous society under the Societies Registration Act of 1860, to carry out the water balance and other studies on a scientific and realistic basis for optimum utilization of water resources of the Peninsular river system for preparation of feasibility report and thus to give concrete shape to **Peninsular River Development component of National Perspective Plan prepared by Central Water Commission.**

- Government subsequently modified the functions of NWDA to include the Himalayan Component of National Perspective for Water Resource Development.
- In 2006, it was also decided that NWDA will explore the feasibility of linking sub-basins of rivers in state like Bihar.
- It has also been tasked to prepare feasibility reports of intra-state links as proposed by the States

3) WATERSHED DEVELOPMENT PROGRAM

- **Introduction**
 - » **Watershed** is an area of land where surface water drains down to a single point (stream, lake or ocean).
 - » **Watershed development/management** is the treatment of the entire catchment area around the village to ensure conservation and regeneration of natural resources, especially water and its judicious use.
 - » Watershed development is all about making running water stop and standing water to sink inside. It is the only option for rainfed areas for water conservation and recharge and to prevent soil degradation.
- **How is watershed development done?**
 - » It is done from ridge to valley basis. Watershed development starts from the top-most point (ridge) and progresses downwards towards the valley.
 - Structures such as Water absorption trenches (WAT), Continuous contour trenches (CCT), stone bunds, check dams, percolation dams, ponds, and channels are built from the ridge to the valley.
 - » **Main objective is to slow the movement of water**
 - » **Note:** Earlier method of focusing only on water storage structures had limitations like washing away of top soil and silting of the water storage structure (reduction in the capacity to store water).
- **Watershed Development Programs in India: Key Programs**
 - a. Integrated Watershed Management Program (now a component of PMKSY)
 - b. National Watershed Development Project for Rainfed Areas (NWDPRA)
 - c. Watershed Development Project in Shifting Cultivation Area (WDPSCA)
 - d. Watershed Development Fund (WDF)
 - With the help of NABARD
 - Unified fund to help various watershed development programs in India.
- **How has watershed management programs contributed/ What are the objectives of these program?**



- » Water Conservation, Soil Conservation, Flood Control, Rehabilitation of Degraded Land, Better agri practices, better integration of non-agri activities, Increased farmer income, capacity building of farmers.

4) MICRO-IRRIGATION

- **Introduction**
 - » Water is a scarce natural resource and faces a huge demand supply gap all over the world. Situation is worse in India which accommodates 17% of the world's population with 4% of the water resources.
 - » In India, more than 80% of water is used for irrigation purposes. Therefore, optimal utilization of water in irrigation can play crucial role in ending the water scarcity that exists. Here, micro-irrigation can play a crucial role.
- **Micro Irrigation** is an innovative water saving technology in which water is directly supplied to crops with very less conveyance and evaporation losses. Main types of micro-irrigation system include:
 - Drip Irrigation:** It allows water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface.
 - In India, major crops cultivated under drip irrigation includes sugarcane, banana, cotton, lemon, grapes, oranges, mangoes, vegetables etc.
 - Sprinkler Irrigation:** It uses water sprinklers to irrigate agri-crops. The water is applied in a controlled manner in a method that is similar to rainfall.
 - In India, major crops cultivated under sprinkler irrigation include, wheat, mustard, millet, sorghum etc.
 - Micro-Sprinkler Irrigation** provide irrigation with very fine droplets. They are suitable for low volume irrigation in horticulture crops, fruit flowers, greenhouses, nurseries etc.
 - Porous Pipe System:** It is a system of sub-surface irrigation which can work on low pressure that can be provided by gravity (overhead tanks).
 - Water is dispensed gradually near the roots of the plant/tree.
 - Rain Gun**
 - Pressurized water through rain-guns are used to irrigate the crop.
- Drip Irrigation and Sprinkler Irrigation is the most common type of micro-irrigation system used in India.
- **Benefits of Micro Irrigation**
 - Better water use efficiency, better fertilizer use efficiency, energy efficiency, increased productivity, crop diversification, better quality of produce, more income for farmers etc.
- **Efforts towards promoting Micro-Irrigation in India**
 - National Mission on Micro Irrigation Program** which was later subsumed under **National Mission on Sustainable Agriculture**.
 - It is now being implemented as "Per Drop More Crop" component under Pradhan Mantri Krishi Sinchay Yojana (PMKSY) from 2015-16.
 - Under it various **Training and Awareness Programs, workshops, seminars and interactive meets** are conducted.

- **50% subsidy** is provided to farmers for installing micro-irrigation system (MIS). (40% Centre, 10% state)
- ii. **Micro-Irrigation Fund with NABARD under PMKSY**
 - It was set up in 2018 with the major objective of funding the states to facilitate them to mobilize resources which can be used to incentivize farmers towards micro-irrigation beyond the provisions available under PMKSY-PDMC.
 - Its initial corpus was Rs 5,000 crore which was increased to 10,000 crore in Budget 2020-21.

5) AGRI-INPUT: MECHANIZATION

- **Introduction**
 - Farm/Agri mechanization is the process of replacing human and animal labour with machines in agriculture sector. The use of tractors, threshers, harvesters, pump sets etc. are all steps towards farm mechanization.
- **Advantages of Farm Mechanization-**
 - Increased Productivity - Reduced time and labor - Reduced Cost - Increased soil fertility - reduced water use - Reduced post-harvest losses - no labor bottlenecks - create skilled jobs - Overall increased income for farmers.

A) INITIATIVES FOR AGRI-MECHANIZATION

1. **Sub-Mission on Agriculture Mechanization (SMAM)**
 - Launched in 2014-15
 - Ministry: MoA&FW
 - Objective
 - » To promote agricultural mechanization among small and marginal farmers.
 - Under the scheme, assistance is provided to state governments to:
 - » Impart training and demonstration of agriculture machinery;
 - » Provide assistance to farmers for procurement of various agri-machineries and equipment and;
 - » For setting up of Custom Hiring Centers.
 - Progress:
 - » As of Dec 2022, 21628 CHCs and 467 Hi-tech hubs and 18306 farm machinery banks have been established.
2. **The Scheme for CRM (Crop Residue Management): 'Promotion of Agriculture Mechanization for In-situ management of Crop Residue in the State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi'**
 - Initiated in 2018
 - **Ministry:** MoA&FW, Central Sector
 - Farmers are provided machinery for in-situ management of crop residue through establishments of **Custom Hiring Centers**. **80% subsidy** is provided for establishment of CHCs.
 - **Individual farmers** are provided subsidy (50%) for procurement of machinery.

- In Budget 2020-21 a total allocation of Rs 600 crore has been provided of which Rs 548.20 crore has already been released.
3. Multilingual Mobile App - "CHC - Farm Machinery"
- It connects farmers with CHCs situated in the locality.
 - It facilitates agri-mechanization in the country by encouraging small and marginal farmers to take machines on rental basis for agri-practices.
 - The app has been further modified and now has been given the acronym of "FARMS-App" (Farm Machinery Solutions - App). This version is more user friendly, and the scope of the app has been enhanced.
4. Other Schemes of the ministry such as RKVY, NFSM, NHM, NMOOP etc also promote farm mechanization.
5. Other steps
- Government has decided to enhance farm power availability from 2.02 KW per ha (2016-17) to 4.0 kW per ha by the end of 2030.

B) REPORT: THE STANDING COMMITTEE ON AGRICULTURE, ANIMAL HUSBANDRY, AND FOOD PROCESSING (CHAIR: MR. P.C. GADDIGOUARD) PRESENTED ITS REPORT ON "RESEARCH AND DEVELOPMENT IN FARM MECHANIZATION FOR SMALL AND MARGINAL FARMERS IN THE COUNTRY" ON JULY 21, 2023

- Status of Farm Mechanization: As of Aug 2022, 47% of agricultural activities are mechanized in India. This is lower than other developing countries like Brazil (75%) and China (60%).
 - Mechanization level in different crops:
- | Crop | Rice | Wheat | Pulses | Sugarcane | Overall |
|-------|------|-------|--------|-----------|---------|
| Level | 53% | 69% | 41% | 35% | 47% |
- Small Holdings: Unless machines appropriate for small holdings are made available or substantial farm land consolidation takes place, small farmers will find it difficult to purchase their own machinery.
 - It will take country 25 years to achieve 75-80% mechanization. It is recommended that government should take steps to do it in less than 25 years.
 - Key recommendations:
 - » Government should publicize initiatives like Custom Hiring Centres etc.
 - » Design Standardization should be achieved to ensure interchangeability.
 - » Under Sub-Mission on Agri Mechanization - Government should promote low cost equipment - to increase the reach to small and marginal farmers.
 - » Increase the availability of farm power to 4 KW per hectare (from current 2 Kw per hectare)
 - » Study to assess farm mechanization - The committee has recommended that Department of Agriculture and Farmers' Welfare prepare a plan for such study

6) AGRI-INPUT: CROP INSURANCE

- Background: Why didn't Farmers participate in agri-insurance Schemes?

- » NSSO report 573 (2012-13) identified following as the main reason for farmers not insuring their crops - **Non awareness, not interested, non-availability, lack of resources, complex process and Delays** in claim payments
- **Problems with Crop Insurance Scheme before PMFBY** -> Partial Risk Coverage; Available only for notified crops; High Premium Rates; Complex system -> lack of uniformity; Delays in claims settlement; very less focus on awareness generation.

A) PRADHAN MANTRI FASAL BEEMA YOJANA (PMFBY)

- **Introduction**
 - » In a bid to protect farmers against losses incurred because of frequent changes in weather patterns, the PMFBY was launched in Feb 2016 and was implemented from Kharif 2016 (June 2016). It replaced the NAIS and MNAIS. However, WBCIS and Coconut Palm Insurance Scheme have continued to operate. Premium paid under WBCIS has been brought on par with PMFBY.
- **Key Improvements:**
 - » **Higher losses coverage** (pre harvest to post harvest losses)
 - Provision of claims upto 25% of sum insured for prevented sowing.
 - It covers post-harvest losses also.
 - It expands the definition of disaster to include aspects like flooding of crops and damage after harvest.
 - Provision of individual farm level assessment for Post-harvest losses against the cyclonic & unseasonal rains for the crops kept in the field for drying upto a period of 14 days, throughout the country.
 - » **Full Coverage:** No upper limit on government subsidy -> Doesn't cap premium rates, so that farmers can get full sum assured.
 - » **Uniform low premium rates for farmers**

Crop	Premium charged
Kharif	2.0% of sum assured
Rabi	1.5% of sum assured
Annual Commercial and horticulture crops	5% of sum assured

- » **Uniformity in implementation:** Districts are allotted to insurance companies on cluster basis for a longer duration to ensure uniformity in implementation of the scheme.
- » **'Area Approach Basis' and 'Individual Insured farm'**
 - The scheme is implemented on an 'Area approach basis'.
 - Admissible claims are worked out and paid directly to the insured farmer's account by the insurance companies on the yield data based on the requisite number of CCE's per unit area furnished to the concerned insurance company.
 - **Individual Insured Farm approach:**
 - Losses due to localized calamities like hailstorms, landslides, inundations etc. are calculated on an individual-insured farm basis.
- » **Subsidy shared between center and state**

- » **Provisions for quick settlement of claims**
 - **Note:** Operational guidelines under PMFBY require state governments to carry out at least four CCEs in every village panchayat for every notified crop and submitted the yield data to insurance companies within a month of the date of harvest. The companies have to settle the claims within three weeks of receiving CCE data.
 - » **Increased Use of Technology:** The use of technology will be promoted to greatest extent possible. Remote sensing, smart phones and drones will be used for quick estimation of the crop losses and early settlement of claims.
 - » The scheme is implemented through **empaneled general insurance companies**.
 - » The Scheme covers all Food & Oilseed crops and Annual/Horticulture Crops for which past yield data is available and for which requisite number of CCEs are being conducted under the General Crop Estimation Survey.
- **The scheme PMFBY and Restructured Weather Based Crop Insurance Scheme were made voluntary for all farmers**, post its revamp in Feb 2020.
- Further, the states have been provided flexibility to rationalize the sum insured so that adequate benefits can be availed by farmers.
- **Other steps to improve the implementation of schemes:**
- **National Crop Insurance Portal** has been developed to handle all grievances from end to end. This portal is equipped with the necessary features, such as complaint/Query capturing through multiple modes, farmer authentication etc.
 - A provision of Stratified Redressal Mechanism, viz., District Level Grievance Redressal Committee (DGRC), State Level Redressal Committee (SGRC) has been made.
- **The scheme wants to support sustainable production of Agriculture sector by way of financial support; stabilizing income; promoting adoption of innovative and modern practices; ensuring flow of credit to agri-sector.**
- **Progress So far:**
 - As per ESI 2022-23, PMFBY is the largest crop insurance scheme in the world in terms of farmer enrolments, averaging 5.5 crore applications every year and the third largest in terms of premium received.
 - During the last six years of its implementation, farmers paid a premium of Rs 25,186 crore and received claim accounting to Rs 1.2 lakh crore (as of Oct 2022)
 - The acceptability of the scheme among farmers can be ascertained from the fact that the share of non-loanee, marginalized, and small farmers have increased by 282% since the scheme's inception in 2016.

7) AGRI-INPUT: AGRI-CREDIT

- Agriculture credit as a percentage of Agriculture GDP increased form **2% percent in 1970s to 47% by 2019-20**, portraying significant progress made in lending to agriculture.

- In the Union Budget for FY24, the Union government has set the Agri Credit Target to 20 lakh crore. This indicates an increased focus of government on agri-credit sector as there is an one-one-one correspondence between growth of agri-credit and agri-production
- **Key steps to promote Agri-Credit:**
 - i. **Nationalization of Commercial Banks** in 1969, Establishment of **Regional Rural Banks** in 1976 and setting up of **NABARD** in 1982 have been some of the biggest steps towards increasing farm credit.
 - ii. **Priority Sector Lending (PSL)** norms initiated in 1974, mandates all domestic commercial banks (and foreign banks with 20 or more branches) to earmark 18% of loans for farm credit.
 - iii. **Kisan Credit Card (KCC)** introduced in 1998 are aimed at providing adequate and timely short term credit needs for farmers and has now been extended to fishery and animal husbandry sector also.

Kisan Credit Card (KCC) scheme was introduced by NDA government in Aug **1998** with an aim to provide adequate and timely short term credit needs for farmers during the cropping season.

- » NABARD has prepared a Model Kisan Credit Card Scheme in consultation with major banks on the basis of **R V Gupta Committee** recommendations.
- » **Objective and Rationale** -> adequate, timely and cost effective credit; simple process; protect from usurious money lenders.

- iv. **Modified Interest Subvention Scheme**, operational since 2006-07, provides short term agri credit of upto Rs 3 lakh at a subsidized interest rate of 7% per annum to farmers engaged in agriculture and allied activities.
 - An additional 3% subvention (Prompt repayment incentive) is also given to farmers for prompt and timely repayment of loans.

8) AGRI-INPUT: FERTILIZERS

- **Why in news?**
 - » CACP recommends Centre to bring urea under NBS regime to check overuse (June 2023)
- **Introduction:**
 - » A fertilizer is any organic or inorganic, natural or synthetic material added to soil to supply one or more plant nutrients essentially to the growth of plants.
 - » These fertilizers provide **six macro nutrients** and **8 micro-nutrients** to plants for well balanced growth:
 - i. **6 macronutrients:** nitrogen(N), phosphorus(P), potassium(K), Calcium (Ca), magnesium (Mg), and sulphur(S). They are consumed by plants in larger quantities and make the bulk of fertilizers.
 - ii. **8 Micronutrients:** Boron (B), Chlorine (Cl), Copper (Cu), iron (Fe), manganese (Mn), Molybdenum(Mo), Zinc (Zn) and Nickel (Ni).
 - » Fertilizer are an important input for agriculture and have played a major role in increasing farm productivity since green revolution.
 - » But Indian farmers have often faced difficulties due to shortage of fertilizers in past. So, the government, giving high priority to farmer's welfare, has taken a number of initiatives to ensure supply of fertilizers around the year.

- » **Scale of Fertilizer Subsidy:**
 - » 2021-22: Rs 1.62 lakh crore
 - » 2022-23: Rs 2.55 lakh crore
 - » 2023-24: Rs 1.75 lakh crores (Budgetary Allocation)
- » The two main important fertilizer subsidy schemes are Nutrient Based Subsidy Scheme and Urea Subsidy Scheme

A) NUTRIENT BASED SUBSIDY (NBS) SCHEME

- **Key provisions of NBS**
 - » **Fixed subsidy based on nutrient:**
 - Government provides a fixed amount of subsidy based on the nutrient content (both macro and micro (boron, zinc etc.)) (per kg) of fertilizers (unlike the earlier product-based subsidy scheme) to the fertilizer companies.
 - For e.g. for RABI 2022 (from 01/10/2022 to 31/03/2023) - Subsidy rate was decided as follows:
 - N (Rs 98.02/kg) P (Rs 66.93/Kg), K (**Rs 23.65/Kg**) and S (Rs 6.12/kg)
 - » **MRP to be fixed by fertilizer companies** on the basis of demand and supply but after incorporating the subsidy element.
 - » Rate of subsidy is determined by various factors such as international prices, exchange rate, inventory levels etc.
 - » The NBS scheme currently covers 21 grades of different phosphatic and potassic (P&K) fertilizers including DAP (diammonium phosphate), MOP (Murate of Potash) and other NPK complex fertilizers.
 - » **UREA has been kept outside the coverage of the NBS scheme.**
- **Key Aim** -> Reduced Subsidy Burden; New specialized variety of fertilizers; Balanced application; Improved farm output; promote indigenous fertilizer industry.
- **Hasn't been as affective** -> Government's subsidy burden still very high -> UREA kept out of NBS, so farmers shifted to UREA -> Balanced Nutrient Goal also missed.
- Subsidy burden remained very high.

B) UREA SUBSIDY SCHEME

- **Introduction:**
 - To ensure affordable access to fertilizers to farmers, UREA is made available at **statutorily controlled price**, which at present is Rs 5378 per MT (exclusive of Central/State Tax and other charges towards neem coating).
 - The difference between the delivered cost of fertilizers at farm gate and MRP payable by farmers is given as subsidy to the fertilizer manufacturer/importer by GoI.
 - **Urea Subsidy Scheme** is a part of Central Sector Scheme of Department of Fertilizers
 - It also includes imported urea subsidy which is directed towards import to bridge the gap between assessed demand and indigenous production of Urea in the country. It also includes freight subsidy for movement of across the country.

- **Issue of Diversion**
 - Being super-subsidized, urea is always prone to diversion for non-agricultural use - as a binder by plywood/particle board makers, cheap protein source for animal feed manufacturers or adulterant by milk vendors - apart from being smuggled to Nepal and Bangladesh.
 - From 2018, the government announced the **implementation of DBT** for disbursement of fertilizer subsidy.
 - Now the subsidy transfer only happens after the actual sales to farmers by retailers. Retailers have a point of sale (PoS) machine linked to e-Urvarak DBT Portal. Fertilizer buyers (farmers) are required to furnish Aadhar or KCC number.
 - **Advantages**
 - Prevents diversion and plug the leakages (because Aadhar is used)
 - Timely payment of Urea subsidy to urea manufacturing companies.
 - Adequate availability of UREA to farmers at adequate prices.
 - But the **diversion still continues at the retail level**.
 - **Various steps being proposed to deal with this problem:**
 - **Plans for Direct Cash Transfer to Farmers:**
 - **Plans to cap the total number of subsidized fertilizer bags that any person can buy during an entire Kharif and Rabi Cropping season:**
 - This is expected to end even retail-level diversion and purchases by large buyers masquerading as farmers.

C) SOME STEP WHICH HAVE BEEN TAKEN TO MAKE UREA SECTOR EFFICIENT

- i. **GAS Price Pooling**
 - » Earlier, different urea plants got gas at different prices, so their cost of production differed.
 - » Therefore, in 2015 government has approved a major policy intervention. Under this policy the domestic gas is pooled with imported LNG gas to provide uniform natural gas to all the Urea manufacturing plants for the production of Urea.
 - Cost of UREA at pooled price will be less than the price of imported urea. This will help in increasing the production. This will augment indigenous production capacity.
- ii. **Neem Coating of UREA**
 - Reduces rate of dissolution in soil -> slowly absorbed by plants
 - Reduces diversion to industry
 - Neem has other advantages for crops -> insecticidal and pesticidal properties
 - UREA can't be used in synthetic milk now
- iii. **New Urea Policy** to increase the productivity, efficiency and indigenous production
- iv. **Introduction of 45 kg Urea Bag** (from earlier 50 kg) -> aimed at cutting demand
- vi. **Nano Urea**
 - Government has notified the specification of Nano nitrogen under Fertilizer Control Order, 1985.
- vii. **One Nation One Fertilizer Scheme**

- It aims to ensure timely supply of fertilizers as well as eliminate the dilemma of farmers in choosing one of the many brands available in the market.
- **By Ministry of Chemicals and Fertilizers**
- It aims at marketing fertilizers in India under 'Bharat' brand name.
 - i. Under this scheme, all subsidized fertilizers - including UREA, Di-ammonium Phosphate (DAP), Muriate of Potash (MoP), and NPK will be marketed under Single Band Name.
 - ii. It aims to ensure timely supply of fertilizers as well as eliminate the dilemma of farmers in choosing one of the many brands available in the market.
- The scheme has also outlined the specifications of the new packaging for companies:
 - i. 2/3rd of the front will be covered by 'Bharat' brand and PMBJP Logo. 1/3rd of the space will be left for manufacturing brands.
- It will reduce the logistic cost involved in the transportation of fertilizers. It will stop crisscross movement of fertilizers for longer distance.

viii. **Pradhan Mantri Krishi Samriddhi Kendra (PMKSK)**

- It has been decided to convert the existing village/block/sub-district/taluk and district level fertilizer retail shop into **Model Fertilizer Retail Shops**. These shops will act as "**One Stop Shop**" for all the agriculture related inputs and services.

ix. **PM PRANAM (Proposed)**

- Aimed at reducing the use of chemical fertilizers and thus reducing the subsidy burden.
- **What is the need of this scheme? Drastic increase in overall expenditure of government on fertilizer subsidy**.
- The scheme will not have a separate budget and will be financed by the "savings of existing fertilizer subsidy" under the schemes run by the Department of fertilizers. Further, 50% subsidy savings will be passed on to the states that save the money as Grant. 70% of the grant provided under the scheme can be used for asset creation related to technological adoption of alternative fertilizers and alternate fertilizer production units at village, block and district levels.

D) SOIL HEALTH CARDS (SHCS)

- **About the scheme**

- » The international year of soils was celebrated in 2015 the same year India's unique program of soil health card was launched on 19th Feb to assess the nutrient status of every farm holding in the country.
- » It is a scheme administered by **Department of Agriculture & Cooperation** under the MoA&FW. It is being implemented through the Department of Agriculture of all the states and UT governments.
- » **The objective** of the scheme is to issue soil health cards to farmers every 2 years so as to provide a basis to address nutritional deficiencies in fertilization practices.
- » The SHCs carry crop-wise recommendations of nutrients and fertilizers required for the individual farms to help farmers improve the productivity through judicious use of input.
- » All Soil samples are to be tested in soil testing labs across the country.

- **Other Unique Features of SHC**

- Collecting soil samples at a grid of 2.5 ha in irrigated area and 10 ha in un-irrigated areas.
- Uniform approach in soil testing adopted for 12 parameters viz. primary nutrients (NPK); secondary nutrient (S); micronutrients (B, Zn, Mn, Fe & Cu); and other (pH, Electrical Conductivity & Organic Carbon) for comprehensiveness.
- GPS enabled soil sampling to create a systematic database and allow monitoring of changes in the soil health over the years.

5. CHEMICAL FREE AND NATURAL FARMING

1) ZERO BUDGET NATURAL FARMING

- **Definition: What is ZBNF?**
 - ZBNF is a method of **chemical-free agriculture drawing from traditional Indian practices**. It is a set of agricultural methods which doesn't involve any credit, doesn't spend any money on purchased inputs (**zero budget**), uses very less water (10%), doesn't use any synthetic chemical fertilizer or pesticide (thus natural) and believes in natural growth of crops using inputs which are locally available.
- **Subhash Palekar**, the original promoter of ZBNF, **identifies four important Pillars of ZBNF**.
 - a. **Beejamrita/beejamrutha** is the seed treatment using local cow dung, cow urine, lime and soil. This protects young roots from fungus and soil borne or seed borne diseases.
 - b. **Jivamrita/Jivamrutha** is a fermented microbial culture which is used as a base fertilizer. It is a fermented mixture of water, cow dung, cow urine, jaggery, pulse flour and a handful of soil from the bund of the farm. It provides basic nutrient, acts as catalytic agent to promote the activity of micro-organisms, and reduces fungal and bacterial infections.
 - c. **Acchadana - Mulching** activities to ensure favourable microclimate in the soil. Three kinds of mulching has been suggested: **Soil Mulch**, Straw Mulch and Live Mulch (symbiotic intercrops and mixed crops)
 - d. **Whapasa - Moisture:**
 - Palekar questions the idea that plant roots need a lot of water and therefore criticizes over reliance on irrigation in green revolution. According to Palekar, root needs water vapours.
 - **Whapasa is a condition where there is both air molecule and water molecule present in the soil** and thus Palekar encourages reducing irrigation, irrigating only at noon, and in alternate furrows.
 - **In addition**, ZBNF includes three methods of insect and pest management: Agniasthra, Brahmastra, and Neemastra (all different preparation using cow urine, cow dung, tobacco, fruits, green chilli, garlic and neem).
 - **ZBNF - a movement at grassroot level**
 - It has emerged as a grassroot peasant movement and has spread to various states in India, especially becoming very successful in southern states. This movement could be running among millions of farmers according to ZBNF leaders. This success have been achieved without any



formal movement organization, paid staff or even bank accounts. ZBNF has inspired a spirit of volunteerism among its peasant, who are the main protagonist of the movement.

- **Benefits of ZBNF**

- ZBNF has not only worked in agronomic terms. But, it has brought about a variety of social and economic benefits.
 - **Reduced Cost: Reduces Resource Utilization -> Higher income for farmers**
 - **Sustainability:**
 - **Seed Diversity:** Rather than standard GM crops, it promotes local variety of seeds, their conservation and reuse.
 - **Water Conservation**
 - **Biodiversity Conservation:** ZBNF encourages the planting of diverse crops, inter cropping, and maintaining natural habitats on the farm. This promotes biodiversity, preserves native species, and supports the ecosystem balance.
 - **Reduced Pollution and GHG emissions:** By avoiding synthetic chemicals in agriculture, ZBNF promotes soil conservation, reduces water pollution and also controls global warming.
 - **Food Safety** due to less chemical use
 - **Household Food Autonomy**, not dependent on MNCs for seeds and fertilizers
 - **Reduced Import Dependence** as India is a net importer of fertilizers
 - **Reduced Subsidy burden for government** -> More spending on other socio-economic sectors
- **Some Limitations:** Unscientific – fertility reducing in long run

2) ORGANIC FARMING SITUATION IN INDIA

- As per ESI 2022-23, India has 44.3 lakh organic farmers, the highest in the world, and about 59.1 lakh ha area was brought under organic farming by 2021-22.
- **Area wise** Madhya Pradesh has the highest area under organic farming in India, followed by MHA and RAJ.
- Sikkim voluntarily adopted going organic, and the process of getting total cultivable land of 58,168 hectares under organic farming commenced at ground level in 2010.
 - It has become the first state in the world to be become fully organic.
- States like Tripura and Uttarakhand have also set up similar targets.

3) PARAMPARAGAT KRISHI VIKAS YOJANA (PKVY)

- **Introduction**
 - PKVY has been launched by Gol to support and promote organic farming and thereby improving soil health.
 - Encourage farmers to adopt eco-friendly concept of cultivation and reduce their dependence on fertilizers and agricultural chemicals to improve yield.
- **Clustered Approach:** The PKVY supports organic farming via cluster approach.
 - 50 or more farmers form a cluster having 50 acre land to take organic farming.

- Each farmer would be provided 20,000 Rs per acre in three years for seed to harvesting crops and to transport them to market.
 - Out of this 61% is provided directly through DBT for inputs bio fertilizers, bio-pesticides, organic manure, compost, vermi-compost, botanical extracts etc.

A) BHARTIYA PRAKRITIK KRISHI PADHATI (BPKP)

- BPKP is introduced as a sub-scheme of Paramparagat Krishi Vikas Yojna (PKVY) since 2020-21 for the promotion of traditional indigenous practices for encouraging all forms of ecological farming, including zero-budget natural farming.
 - The scheme focuses upon capacity building, training, handholding, and on-field demonstration of natural farming through champion farmers.
- The scheme mostly emphasizes on exclusion of all synthetic chemical inputs and promotes on-farm biomass recycling with major stress on Biomass mulching; use of cow-dung formulations; plant-based preparations and time to time working of soil for aeration.
- Under BPKP, financial assistance of Rs 12,200/ha is provided for 3 years for cluster formation, capacity building and continuous handholding by trained personnel, certification and residue analysis.
- So far, 4.09 lakh ha of land have been brought under natural farming in 8 states.

4) MISSION ORGANIC VALUE CHAIN DEVELOPMENT FOR NORTHEASTERN REGION (MOVCD – NER)

- It is a central sector scheme and a submission under National Mission for Sustainable Agriculture. It was launched by MoA&FW in the north-eastern states (including Sikkim) in 2015.
- Farmers are given assistance of Rs 25,000/ha/3 years for, organic inputs including organic manure and bio-fertilizers etc.
- The scheme also provides an end-to-end support to the farmers from farm to fork including quality production, effective postharvest management, value addition through processing and direct marketing linkages to national and international markets.
- It is also aimed at developing certified organic products.
- **Impact:**
 - During last five years, the scheme has covered 74,880 ha area.
 - Government now targets 1.0 lakh ha area under 200 new FPOs over a period of 3-year period. (2021-2024)

Note: North-eastern region is not part of PKVY, since a dedicated scheme, MOVCD-NER was launched.

5) ALLELOPATHY

- **Introduction**
 - » Allelopathy is a biological phenomenon by which an organism produces one or more biochemicals that influence germination, growth, survival, and reproduction of other organisms. These biochemicals are known as allelochemicals and can be released in air, water or soil. These may have beneficial or detrimental effects on target organisms and the community.

- It can play significant role in major cropping systems of irrigated agriculture:
 - » Increase nutrient availability which can improve crop yield.
 - For e.g. wheatgrass can produce allelochemicals that can improve the quality of crops.
 - » Sustainable Agriculture: Allelopathy can contribute to sustainable agriculture by reducing the need for chemical inputs (like herbicides) and enhancing biodiversity.
 - Controlling Weeds: For e.g. crop residue of rye when used as a cover crop in a no-till system, it releases allelochemicals and prevent growth of weeds.
 - Pest and Disease Control: For e.g. Marigolds produce several allelochemicals in their roots and leaves. They are often planted in gardens and agricultural fields to deter various pests.
 - » Making Crop Rotation and Intercropping better: Better understanding of allelopathy can help us understand which crops will benefit each other in case of crop rotation or inter-cropping.
 - » Soil Health: Allelochemicals can influence the soil microbial community, affecting nutrient cycling, and soil fertility. They may either enhance or reduce soil health, depending on the type of allelochemicals involved.
- However, it has to be understood that lack of understanding of allelopathy can lead to several negative impacts. For e.g. Negative allelopathy can reduce crop yield if crops are grown in sequence or in combination with plants that produce inhibitory chemicals. They may inhibit germination, growth or reproduction.
 - » For e.g.
 - Mustard produces a chemical called allyl isothiocyanate, which can inhibit the growth of some plants, such as tomatoes.
 - Peanuts produce a chemical called gossypol, which can inhibit the growth of plants like corn.

6. IMPORTANT FOOD CROPS AND PLANTATION CROPS

1) TEA

- **Introduction**
 - » Tea is the dried leaf of a bush. It contains theine (caffeine) and when added to boiling water along with sugar and milk, gives a stimulating drink. It is the most important beverage crop of India.
- **Institutional Arrangements**
 - » **Tea Board of India**
 - The Tea Board of India is a state agency of GoI established to promote cultivation, processing, and domestic trade as well as export of tea from India. It was established by the enactment of the Tea Act, 1953 with its headquarters in Kolkata.
 - Functions
 - Responsible for assignment of certification numbers to exports of certain tea merchants. This certification is intended to ensure the tea's origin, which in turn

would reduce the amount of fraudulent labelling of rare tea such as ones harvested in Darjeeling.

- Endorsement of diverse production and productivity of Tea
- Financial support to research organizations
- Monitoring of advances in Tea packaging as it relates to health beneficial aspects
- Ensuring technical support for tea trade in global industry by coordinating with research institutes, tea trade and government bodies.

- **Tea Cultivation**

» **Requirements for Tea Cultivation**

- **Climate:**
 - » Tropical and subtropical climate endowed with deep and fertile well drained soil, rich in humus and organic matter.
 - A moderately hot and humid climate, which is preferred for better yield, crop distribution and quality.
 - » Frequent showers evenly distributed over the years ensure continuous growth of tender leaves.
- **Temperature:** An ambient temperature within 13 degree Celsius and 28-32 degree C is conducive for growth of tea. Maximum ambient temperature above 32 degree C is unfavorable for optimum photosynthesis. Heat is synergically disastrous for the crop if it is accompanied by low humidity.
- **Winter Dormancy:** At temperature below 12 degree C, there is hardly any growth during this period. Flushing in the tea plant starts from March, with the rise in temperature.
- **Soil**
 - » Acidic soil with around 4.5-5.5 pH. Suitable soil for tea cultivation is well drained, deep, friable loamy soil. **The best soil for tea cultivation is forest soils rich in humus and iron content.**
- **Other Requirements**
 - Cheap and efficient labour as tea is almost exclusively hand picked.
 - Tea grows better when planted along the shady tree.

- **India's major Tea producing areas**

- The main tea growing regions are in Northeast India (including Assam) and in North Bengal (Darjeeling district and the Dooar region). Tea is also grown on large scale in Nilgiris in South India.
- **Assam:** Darrang, Goalpara, Kamrup, Lakhimpur, Dibrugarh, Nowgong, Sibsagar, Cachar, Karbi Anlong, North Cachar.
- **West Bengal:** Darjeeling, Terai (west Dinajpur), Doors (cooch bihar)
- **Tamil Nadu:** Kanyakumari, Tirunelveli, Madurai, Coimbatore, Nilgiris.
- **Kerala:** Cannanore, Palghat, Kozhikode, Malappuram, Trichur, Trivandrum, Quilon, Kottayam, Ernakulam, Idukki, Wayanad.
- **Karnataka:** Chikkamagaluru, Coorg, Hassan.
- **Himachal, Uttarakhand, Meghalaya, Andhra Pradesh, and Tripura** are also tea producing states in the country.

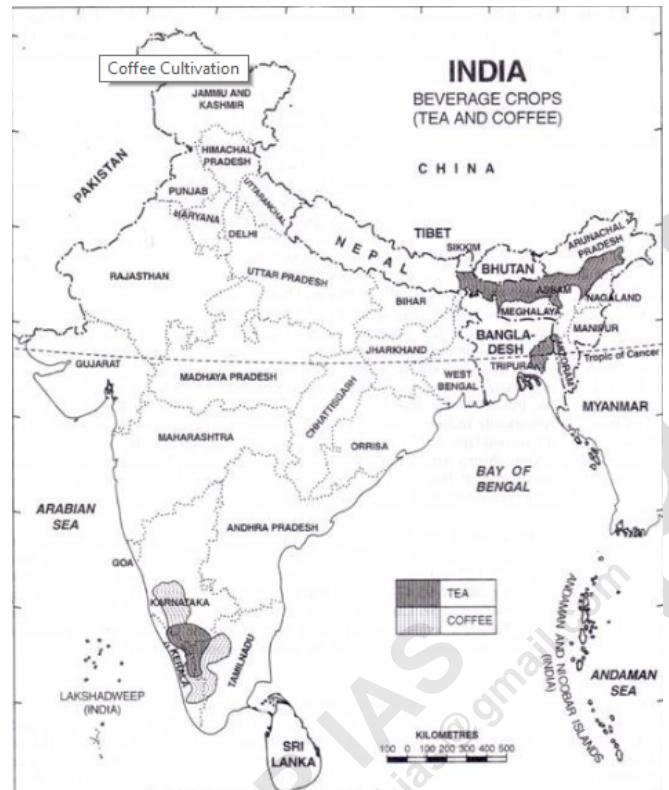
- **Tea Consumption in the country**

- India is also one of the largest tea consumers in the world, without about 3/4th of the total production consumed in the country itself.
- **Exports**
 - India exports CTC (crush-tear-curl) grade mainly to Egypt, Pakistan and the UK, and the orthodox variety to Iraq, Iran and Russia.
- **Key problems faced by the Organized Tea Industry in the country**
 - **Scarcity of labor and its cost** (65% of the cost) in the organized industry
 - **Prices have not increased in tandem with inflation.**
 - **Emergence of the small tea growers** as a dominant force in the industry
 - Lately, the organized sector's production has shown a declining trend and small tea growers now have a larger share of the pie.
 - **Deteriorating quality due to aging tea bushes** in this centuries-old industry.
 - Till Sep 2019, around 3,325.7 hectares have been uprooted and replanted during the government's medium term framework (MTF-2017-20)

2) COFFEE

- **Introduction**
 - » Coffee is a tropical plantation crop. Its seeds are roasted, ground and are used for preparing beverage. In India, it is the second most important beverage crop, next only to tea.
 - » It is indigenous to Ethiopia. In India, Coffee plantations started in 18th century. Over the years, we have earned a distinct identity for our coffee. India is the only country in the world where coffees are grown under a 'well-defined two-tier shade canopy' of evergreen leguminous trees.
 - » There are three varieties of coffee i.e. arabica, Robusta and liberica. India mostly grows the superior quality coffee, arabica, which is also in great demand in the international market.
 - » India is one of the top 10 coffee producers in the world (generally ranked 5th or 6th) -> After Brazil, Vietnam, Columbia and Indonesia. We produce around 5% of the world coffee.
- **Total Production and Exports**
 - » India's coffee production is estimated in 2022-23 at 393,400 tonnes.
 - » India exports 80% of its production to more than 40 countries.
 - The exports reversed a COVID-induced slide to record a 42% year on year jump in 2021-22, exceed the \$1 billion mark for the first time.
- **State wise production.**
 - » Coffee plant was grown for the first time on Baba Budan Hills (Karnataka) in India.
 - » The three southern states account for almost all of the coffee production in the country with Karnataka (71%) being the largest producer followed by Kerala (21%) and Tamil Nadu (5%).
 - » In Karnataka, the Kodagu and Chikkamagaluru district account for over 80% of the state's total output.
- **Climatic Condition Requirements**
 - » Since coffee is a **tropical plantation**, it requires **hot and humid** climate with temperature varying between 15 degrees Celsius to 28 degree Celsius and a rainfall between 150-250 cm.

- » It grows on the hilly slopes at the height of 900-1800 m. These conditions are prevalent in the hill areas of Nilgiris where the coffee plantations are mostly confined.
- » **Dry weather** is necessary at the time of ripening of the berries.
- » It doesn't tolerate frost, snowfall, high temperature above 30 degree Celsius and strong sun shine and is generally grown under shady trees.
- » **Cheap and skilled labor force** is another requirement for coffee cultivation which is required in sowing, transplanting, pruning, drying, grading and packing of coffee.



3) PULSES

- **Intro**
 - » Pulses are the important source of proteins, vitamins and minerals and are popularly known as "Poor man's meat".
- **Advantages Positives about Pulses**
 - » Nutritional Security
 - » Suitable for Marginal Environment
 - » Increase fertility of Land
 - » Low food wastage footprint
- **Various pulses and production in India.**
 - India is the **largest producer** (25% of global production), **consumer** (27% of world consumption) and **importer (14%)** of pulses in the world.

- They account for 20% of India's total area under cultivation and provide 7-10% of the total food grains in the country.
- **The overall pulse production in India** has gone up from 8.4 million tonnes in 1950-51 to 27 million tonnes in 2022-23.
 - » In fact, in the last decade, India's production has increased by 50% (from 18 million tonnes to 27 million tonnes)
 - » But pulse production has not increased in step with the population growth, per capita availability of pulses have declined from 22.1 kg per person in 1951 to 16.4 kg per person in 2022.
 - » Though there is surplus production of Chana, the imperfect substitution among pulses and limited international availability put pressure on the prices of some pulses.
- **Main Crops:**
 - » **Bengal Gram** (Desi Chick Pea/ Desi Channa), **Pigeon Peas** (Arhar/ Toor/ Red Gram), **Green Beans** (Moong Beans), **Chick Peas** (Kabuli Chana), **Black Matpe** (Urad / Mah / Black Gram), **Red Kidney Beans** (Rajma), **Black eyed Peas** (Lobiya), **Lentils** (Masoor), **White Peas** (Matar) are major pulses grown and consumed in India.
 - » **Rabi Crops (60% Production Share)**: Gram, Peas, lentil (masur), and black gram
 - » **Kharif Crops (40% Production Share)**: Arhar(tur), Moong and Urad etc.
 - » **Gram** (with 50% share) is the most dominant pulse produced and consumed in India. it is followed by **Tur/Arhar (15-20%)** and **Urad & Moong (8-10%)**.
 - **Note:** Experts say that Tur's consumption in meals as dal is much more than that of Chana. Chana is used more on account of its use in packaged food.
 - » **Gram** is the crop of subtropical areas. It is a rainfed crop.
- **Major Pulse Producing States:**
 - Madhya Pradesh, Maharashtra, Rajasthan, UP, and Karnataka.
- Primary reasons for domestic shortage of pulses and reduction in per capita availability of Pulses in India are:
 - A. The increase in area under cultivation, production and productivity of pulses has been extremely slow.
 - B. Low Yield, increased irrigation facilities and Blue Bulls trouble
 - C. Open ended procurement of wheat and rice under MSP -> Lack of assured price for pulse
 - D. Very less R&D on pulses globally (due to very less consumption in advanced western countries)
- Steps which have been taken to increase pulse production.
 - A. Measures to incentivize Pulse Production under National Food Security Mission (NFSM), Minimum Support Price Programs and by Increase production.
 - For e.g. PM AASHA's prize support scheme specifically focused on increasing the procurement of pulses on MSP.
 - B. **Crop Diversification Program** (a sub scheme of RKVY) is being implemented in original green revolution states viz. Punjab, Haryana, and in Western Uttar Pradesh to diversify paddy areas towards less water requiring crops like oil seeds, pulses, coarse cereals, agro forestry etc.

4) MILLETS

- **International Year of Millet (IYM):** The United Nations General Assembly has declared the year 2023 'International Year of Millets'. It will help in creating awareness throughout the world about the significant role of millets in sustainable agriculture and its benefits as a smart food and superfood.
- IYM 2023 aims to contribute to the UN 2030 Agenda for Sustainable Development, particularly SDG 2 (Zero Hunger), SDG 3 (Good health and well-being), SDG 8 (Decent work and economic growth), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate action) and SDG 15 (Life on Land)



- **Definitions:**
 - Millets include Jowar, Bajra, Ragi, little millets including Kutki, Kodo, Sawa, Kangni and Cheena.
- **Cropping:**
 - They are generally cultivated in low-fertile land, mountains, tribal and rain-fed areas.
 - These areas include Andhra, Chhattisgarh, Gujarat, Haryana, MP, Rajasthan, MHA, KAR, UP, TN and Telangana.
 - India is the **largest producer and second largest exporter of millet** and in 2022 India produced around 50.9 million tonnes. This accounts for 80% of Asia's and 20% of global production. India is followed by African countries like Nigeria and Niger in production.
- **Decreased Production over the years:**
 - In pre green revolution era (1965-66), millets were cultivated in 36.90 million hectares of the country. In 2016-17, the area reduced to 14.72 million hectares.
 - **Why?**
 - **Green Revolution** increased the productivity of wheat and rice.
 - Expansion in irrigation.
 - MSP Policy
 - **Changes in consumption pattern, dietary habits etc**: Socio-economic dynamics resulting from the hardy nature of the crop, relegated them to be the grain of the poor.
- **But recent studies have highlighted various significance of millets for healthy life and sustainable economic development:**
 - » **Agri-Sustainability:**

- **Climate Resilience:** Millets are tolerant to droughts, intensive to excess sunlight etc.
- **Water Efficient:** Millets can survive in less water conditions and can solve the problem of over-extraction of water resources.
 - A new study published in the journal ***Nature Water*** in Oct 2023 highlights that shifting to millets increases groundwater recharge more than drip irrigation in India's northern plains.
- » **Better Health:**
 - **Food Security:** In arid areas, millets are often the only crops that can be harvested in the dry regions and are a crucial part of household food basket.
 - **Nutrition:** Millets are smart food which are rich in nutrients like protein, vitamin-A, iron, calcium, iodine etc.
 - For e.g., just 100 gm of daily cereals (rice) intake with finger millets (ragi) will increase the daily iron intake by 50% and calcium by 350%.
- **Government Initiatives to promote Nutri-Cereals:**
 - » **Union Budget for FY24** announced an initiative focused on 'Making India a Global Hub for Millets' (Shree Anna).
 - The Indian Institute of Millet Research, Hyderabad, will be supported as the Centre of Excellence for sharing the best practices, research and technologies at the international level.
 - » **MAHARISHI Initiative** i.e. Millets and Other Ancient Grains International ReSeArch initiative. This international initiative will focus on research and awareness via agro-biodiversity, food security and nutrition aligning with the International Year of Millets.
 - » **India had declared year 2018 as the Year of Millets:**
 - Spreading awareness about nutritional benefits of nutrients which will help in increasing the demand resulting in remunerative prices for poor and marginal farmers.
 - » Under the **Sub Mission on National Food Security Mission (NFSM) - Nutri Cereals** is creating awareness among farmers for Nutri Cereals (Millets).
 - NFSM - Coarse Cereals are divided into two components
 - NFSM (Makka and Jau)
 - Sub Mission on Nutri-Cereals covering Jowar, Bajra, Ragi and little millets like Kutki, Kodo, Sawa, Kangni and Cheena

5) OILSEEDS – NEXT CLASS



TARGET PRELIMS 2024

BOOKLET-22; ECONOMY-3

AGRICULTURE AND RELATED ISSUES-2

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LevelUpIAS

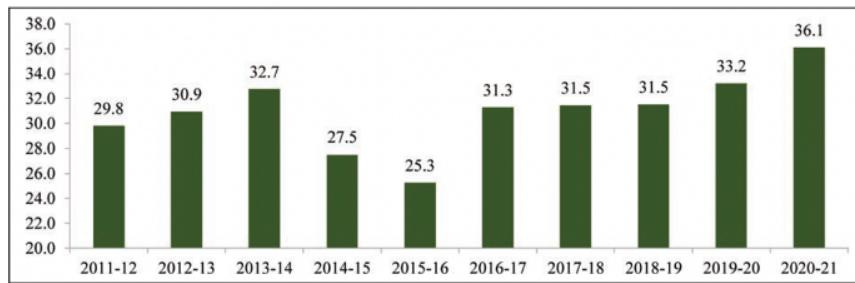
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2. OILSEEDS

- Area under Oilseeds cultivation has increased from 10.7 million hectares in 1950-51 to 28.8 million hectares in 2020-21. The production of Oilseeds has also increased to 36.1 million tonnes in 2020-21. But, even now, India imports majority of its edible oil consumption.

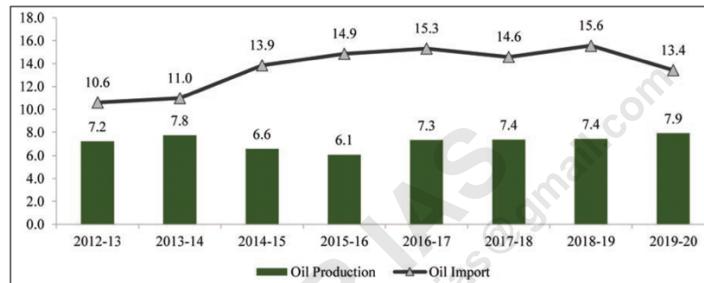
- » As of 2019-20, India produced 7.9 million tonnes of oil and imported 13.4 million tonnes of oil. This makes India the largest importer and second largest consumer of edible oil in the world.
 - India is one of the major oilseeds growing country in the world. The production was fluctuating earlier, but since 2016-17 it has continuously grown. The production has increased to **36.1 million tonnes in 2020-21** which is 43% higher than the 2015-16 production.

Figure 7: Trend in Production of Oilseeds (Million Tonnes)



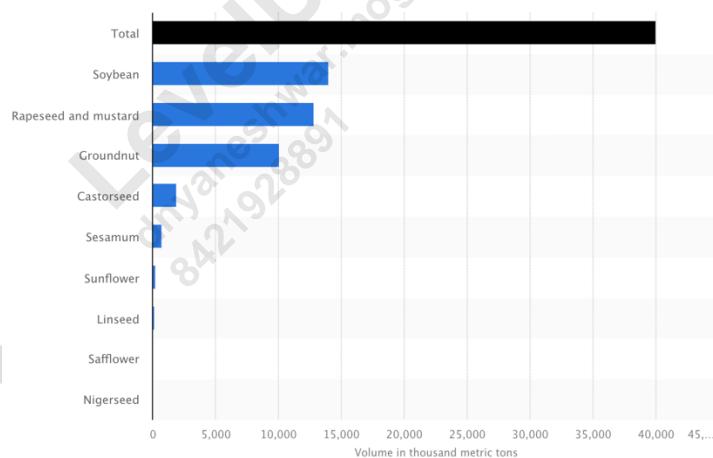
Source: Based on data of 4th Advanced Estimates as on Directorate of Economics & Statistics Website.

Figure 8: Production & Import of Oil (Million Tonnes).



Source: Based on data of Agricultural Statistics at Glance, 2020.

- **Production of oilseeds in India in 2023 (in 1,000 tones)**



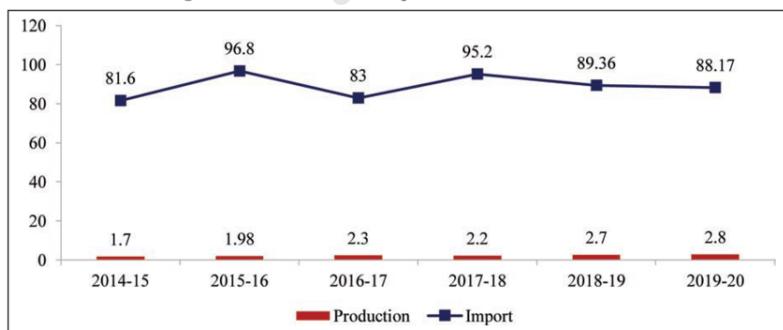
- Reasons for Low Oil Seeds Production in India:

- » **More Focus on Wheat and Rice:** Green Revolution, MSP Regime, High Yielding Varieties etc.
- » **Productivity and yield of oilseeds crop is low.**

- Palm oil which has high productivity hasn't grown in India
 - Lack of access to improved variety of seeds (for e.g. GM varieties like DMH-11 are still not allowed to be grown commercially.
 - Specialized inputs like specific fertilizers, pesticides etc. are not easily available.
- » **Poor Infrastructure:** Inadequate irrigation facilities
- **Government Initiatives** to reduce the import dependency has been focused on increasing the production and productivity of oilseeds:
1. **Improving the Seed Varieties: National Food Security Mission – Oil Seeds (NFSM-Oilseeds)**
 - » A centrally sponsored scheme
 - » Focused on production of foundation and certified seeds and distribution of certified seeds and seeds mini kits of latest high yielding varieties.
 - » Under NFSM-Oilseeds, government of India has set up 36 oilseeds seed hubs during 2018-19 and 2019-20 with an objective to increase the availability of high yielding quality seed.
 2. **Incentivization of oilseeds through MSP regime.**
 3. **National Mission on Edible Oils – Oil Palm (NMEO-OP)** aimed at increasing availability of edible oil in the country by harnessing area expansion and through price incentives.
 4. **Asian Palm Oil Alliance (APOA): 5 Major Palm Oil Importers from Asia form alliance (Sep 2022)**
 - » The apex edible oil industry associations from five major palm oil importing countries of Asia - India, Pakistan, Sri Lanka, BD, and Nepal - have come together to form the Asian Palm Oil Alliance (APOA), at the instance of Solidaridad Network, a specialist in sustainable agriculture. The purpose is to safeguard the economic and business interests of the palm-oil consuming countries.
 5. **Atmanirbhar Oil Seed Abhiyan** (announced in Budget 2024-25)
 - » Under this a strategy will be formulated to achieve 'Atmanirbharta' for oil seeds such as mustard, groundnut, sesame, soybean, and sunflower. The initiative will focus on research for high-yielding varieties, widespread adoption of modern farming techniques, market linkages, procurement, value addition, and crop insurance.
 6. Other steps like Pradhan Mantri Krishi Sinchayi Yojna, MSP for Oil seeds, subsidies for inputs such as fertilizers and pesticides, Training and extension programs for farmers etc. also help oil seed sector.

1) ABOUT PALM OIL

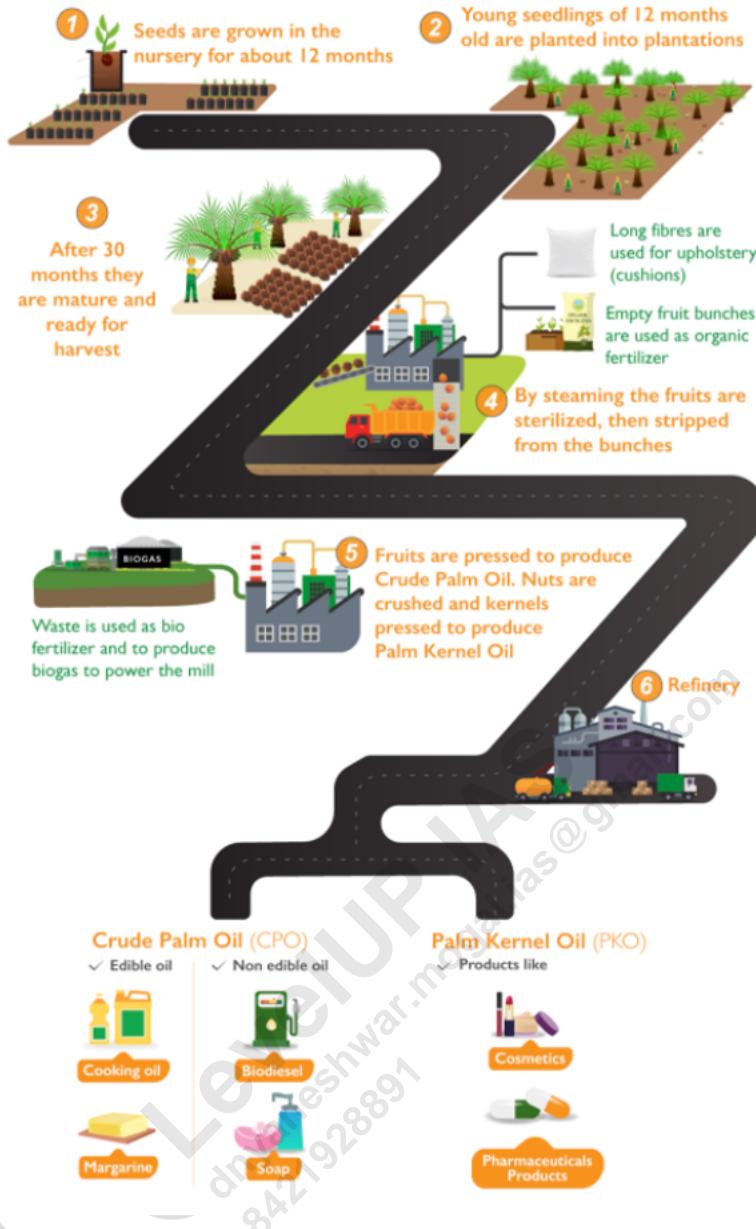
Figure 9: Production and Import of Palm Oil (Lakh Ton)



Source: Based on data of Agriculture Statistics at Glance, 2020 and DAFW.



HOW PALM OIL IS MADE



- Oil Palm Cultivation in India has significant potential due to following reasons:

1. **Increasing Demand of vegetable Oil**
2. **Agro-Climatic Conditions:** Oil Palm can be grown in tropical and subtropical climates of India. Regions like Tamil Nadu, Kerala, Karnataka, and North-eastern India are well suited for palm oil cultivation.
3. **Potential to reduce India's import dependency:** Of all the vegetable oils imported in India, Palm oil constitute around 60%.

4. **High Yield of palm oil:** It produces 10 to 46 times more oil per hectare compared to other oilseed crops.
 5. **Other value-added products** - Other than cooking oil, Palm Kernel oil is used in cosmetics and pharmaceutical products.
 6. **Increased economic opportunities and Jobs**
- **However**, introduction of largescale oil palm cultivation has also been associated with some challenges:
1. **Deforestation and biodiversity loss:** Indonesia has seen large scale deforestation and biodiversity loss to expand oil-palm cultivation.
 2. **High Initial Cost:** The oil palm tree takes 3-4 years to mature and start producing oil palm. This can be barrier for most Indian farmers.
 3. **Price Fluctuation** is also a major concern which limits the scope of
 4. **High Irrigation requirement** is another challenge
 5. **Shortage of planting material.**

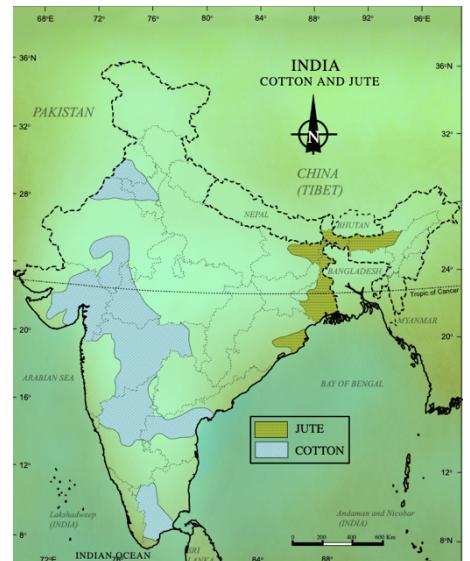
2) NATIONAL MISON ON EDIBLE OIL - OIL PALM (NMEO-OP) AIMS TO REDUCE SOME OF THE ABOVE CHALLENGES.

- » Launched as part of Atmanirbhar Bharat Scheme, it aims to expand India's oil palm cultivation from around 3.5 lakh hectares to 10 lakh hectares in a phased manner. It also targets to increase crude oil production to 11.2 lakh tones by 2025-26 and upto 28 lakh tonnes by 2029-30.
- » **Budgetary allocation** - Rs 11,040 crores (of which Rs 21,96 crore will come from states)
- » **To tackle High Initial cost**, a substantial increase in assistance for inputs/interventions has been made:
 - For Planting Materials for oil palms, a substantial increase from Rs 12,000/ha to Rs 29,000/ha has been made.
 - Substantial increase has been made for maintenance and intercropping interventions -> A special assistance @Rs 250 per plant is being given to replant old gardens for rejuvenation of old gardens.
- » **To tackle price fluctuation**, government is also providing price assurance to palm oil farmers for the fresh fruit bunches. This is called **viability price**. It will protect farmers from price fluctuations in international market.
 - The VP will be annual average CPO price of the last five years adjusted to WPI Index, multiplied by 14.3%.
 - There is a sunset clause for the scheme which is 1st Nov 2037.
 - The Scheme will have special focus on north-east region and the Andaman and Nicobar Islands.
 - To give impetus to the NE region and Andaman, the government will additionally bear a cost of 2% of the CPO price to ensure that the farmers are paid at par with the rest of India.
- » To address the issue of shortage of Planting Material in the country, seed gardens will be provided assistance upto Rs 80 lakhs for 15 ha in rest of India and Rs 100 lakhs per ha in NE India and Andaman region.

- » **For Environment sustainability** NMEO advocates responsible cultivation practices that align with India's National Biodiversity Action Plan. It also has provisions for investment in R&D for the development of drought resistance varieties.

3. COTTON PRODUCTION

- Cotton is one of the principal commercial crops of India and India accounts for around 25% of the total global cotton production. It plays a major role in sustaining the livelihood of an estimated 6 million cotton farmers and 40-50 million people engaged in related activity such as cotton processing & trade.
 - » Due to its economic significance, in India, it is also termed as "**White Gold**".
 - » **India is the largest producer and consumer of Cotton** in the world. Adoption of Bt Cotton in 2000s enabled significant increase in cotton production from 10 million bales in 2001-02 to 34.3 million bales in 2022-23.
 - » It is an indigenous crop which is sown as Kharif Crop in semi-arid region of the country. It takes 6-8 months to mature.
- **Suitable Climate Condition for Cotton**
 - » Cotton is a crop of tropical and subtropical areas and requires uniformly high temperatures between **21 degrees and 30 degrees C**. The growth is negatively impacted if the temperature falls below 20-degree C. **Frost** is harmful for the crop.
 - » The crop has modest water requirement (average annual rainfall of **50-100 cm**) and can be grown in areas with lower rainfall with the help of irrigation.
 - » **Good sunshine** is a must at the time of flowering and moist weather or heavy rainfall at the time of ball opening and picking are detrimental to the crop.
- **Other requirements**
 - » Cheap and skilled labor force at the time of picking of cotton. Normally the picking season is spread over a period of 3 month.
- **Traditionally**, it is cultivated on the **lava plateau of Deccan** and therefore the soil here is called the **Black Cotton soil**.
- In **Tamil Nadu**, it can be grown both in Kharif and Rabi season as there is no threat of frost which is dangerous for the cotton production.
- **Total Production and Distribution of Cotton Cultivation in India:**
 - » India has the world's highest area under cotton cultivation which accounts for around **6% of the net sown area**.
 - » India also produces **51%** of the total organic cotton production of the world, which demonstrates India's effort towards sustainability
 - » There are **three major cotton producing regions** in India:
 - Northern Zone:** Southeast Punjab, Western Haryana, and Northern Rajasthan
 - Central Zone:** Gujarat, Maharashtra, Western Madhya Pradesh and neighboring Southern Rajasthan in Western India
 - Southern Zone:** Telangana, Andhra Pradesh, North Karnataka and Tamil Nadu



- **Initiatives:**
 - » **Budget 2023-24:**
 - To enhance productivity of extra-long staple cotton, we will adopt **a cluster based and value chain approach through Public Private Partnerships (PPP).**
This will mean collaboration between farmers, state and industry for input supplies, extension services, and market linkages
- **Various types of cotton grown in India:** Three broad types of cotton are generally recognized on the basis of length, strength, and structure of the fiber.
 - a. **Long Staple Cotton**
 - Cotton with longest fiber (24 to 27 mm)
 - Fine and shining quality, used for superior quality of clothes.
 - About 50% of the cotton produced in the country is long stable type.
 - b. **Medium Staple Cotton**
 - Length of the fiber (20 to 24 mm)
 - c. **Short staple cotton**
 - Inferior cotton with less than 20 mm length. Used for making inferior cloth and fetches less price.

1) PROBLEM OF DEVELOPMENT OF RESISTANCE IN PESTS SUCH AS PINK BOLL WORM (PBW)

- **Background:** Indian farmers have faced consistent loss of Bt Cotton crops due to pink bollworm attacks since the mid-2000s, when scientists found that the insect had became resistant to the genetically modified variety of cotton.
 - » **About PBW:**
 - PBW is a worm that destroys parts of the developing cotton fruit, such as the square (flower bud) and the boll (rounded sac of seeds with cotton fibres).
 - Adult worms are thin grey moths that lay eggs on buds, flowers, and bolls. The larvae hatch from the eggs and burrow into the bolls to feed on the seeds. It cuts through the lint and stains it in the process, resulting in a loss of quality
 - » Bt Cotton was encoded with Cry1Ac toxin which protected it from all three species of bollworms (American, spotted, and pink bollworm)
 - Later, Cry2Ab gene was also added in Bt Cotton to improve protection against the American Bollworm.
 - » But, in 2008, scientists in India found unusual survival of Pink bollworm in Amreli district of Gujarat, indicating of Pest's resistant to Bt cotton.
 - By 2014, it was clear that Pink Bollworm had become resistant to both Cry1Ac toxin as well as Cry2Ab toxin.
 - **PBW** is more dangerous than American Bollworm as it feeds from inside the bolls and thus remains elusive in the initial stages and is seen in harvest stages when the damage is already done. As it feeds from inside, no amount of pesticide help control it.
- **How was resistance developed by PBW: Key Factors:**

- » **Early Sowing and Late Sowing:** The ideal time for sowing cotton is April 15 to May 15. But many farmers in the northern belt of Haryana, Rajasthan and Punjab have started sowing from March end or the first week of April and extend it up to June end, which is an increase from 45 days to 80 days.
 - The early sowing season coincide with the time the PBW comes out of hibernation or the diapause stage in the winter months. The pest survives in this stage between two cotton seeds or cotton crop residue.
 - The cotton plants are at bud or flowering stage, during which the PBW searches for food and begins feeding on bolls during the larval stage, which continues for 14-17 days. It eventually starts laying eggs.
 - The issue worsens for farmers who sow late. The process enables worms to access food for longer periods and increasing generations.
- » The longer duration of cotton varieties in the south and central India, which lasted upto 150-160 days, helped the pest develop resistance to the genetically modified varieties.
- » **Not Planting other varieties against Advice:** Farmers were repeatedly advised to plant indigenous, hybrid varieties of cotton alongside Bt to prevent developing resistant. "The crossbreeding of pests from different varieties of plants would have prevented developing tolerance for longer years". But farmers haven't followed the advice.

- **Cotton Crops across the North-Indian States,** Punjab, Haryana, and Rajasthan, are reporting a severe pink bollworm attack and even Bt-Cotton is falling prey to the pest it was created to resist. (Oct 2023)
- **Impact:**
 - **Damage to crops:** Damage in 2023, is the highest since 2001 - both according to government and farmers.
 - **Note:** Before 2001, the American bollworm created havoc and ruined lives of farmers.
 - **Difficult to find laborers:** As laborers refuse to pick leftover crop as yield is too low
 - **Difficult to find buyers** as traders refuse to buy citing poor quality.
 - **Farmer Suicide:** In Sep 2023, Sri Ganganagar district saw first farmer suicide in over a decade. It was due to the fact that farmer had a lot of debt accumulated due to loss of cotton crop consecutively for 3 years.
 - **Farmers giving up cotton cultivation** in the northern belt (for e.g. the production of cotton in Punjab has almost halved in the past decade).

4. HORTICULTURE

1) TOTAL PRODUCTION

- Horticulture sectors comprise a wide array of crops from fruits and vegetables to nuts, spices, medicinal plants, flowers, and plantation crops, provides many opportunities for income generation.

Total Horticulture	2021-22 (Final)	2022-23 (First Adv. Est.)	2022-23 (Second Adv. Est.)
Area (in million hectares)	28.04	28.28	28.12
Production (in million tonnes)	347.18	350.87	351.92

- **Globally**

- » India is the **2nd largest producer of fruits and vegetables**. China is the largest vegetable producer, but it produces four times that of India. It shows that India has a long way to go in terms of vegetable production.
- » India is the **largest producer of mango, banana, coconut, cashew, papaya and Pomegranate**.
- » India is also **largest producer and exporter** of spices.

A) SCHEME: HORTICULTURE CLUSTER DEVELOPMENT PROGRAM (CDP)

- It is a central sector program implemented by the National Horticulture Board (NHB) of the Ministry of Agriculture and Farmers' Welfare.
- It aims at growing and developing horticulture clusters to make them globally competitive.
 - Total **53 clusters** have been identified for the program, but initially in pilot phase, the CDP would be implemented in 12 clusters. Later, based on learning from the pilot phase, the program would be extended to all 53 clusters.
- The program is designed to leverage the geographical specialization and promote integrated and market led development of horticulture clusters.
- It will address all major issues related to Indian horticulture sector including pre-production; production; post-harvest management; logistics; marketing and branding.
- **Expected benefits:**
 - » Benefit 10 lakh farmers; improve exports of targeted crops by at least 20%; create a cluster specific brand for better recognition and competitiveness of cluster crops; attract investment of around 10,000 crores when implemented in all 53 clusters.
 - » The **Clusters of the pilot phase** include Shopian (J&K) and Kinnaur (H.P) for Apple; Lucknow (UP), Kutch (Gujarat) and Mahbubnagar (Telangana) for Mango; Anantapur (A.P.) and Theni (T.N.) for Banana, Nasik (Maharashtra) for Grapes, Siphajijala (Tripura) for Pineapples, Solapur (Maharashtra) and Chitradurga (Karnataka) for Pomegranate and West Jaintia Hills (Meghalaya) for Turmeric.
 - » These clusters will be implemented through Cluster Development Agencies (CDAs) which are appointed on the recommendations of the respective State/UT Government.
- The program will converge with other initiative of the Government such as the Agriculture Infrastructure Fund (AIF) which is a medium - long term financing facility for investment in projects for post-harvest management of infrastructure and community farming assets and will leverage the central sector schemes of the Ministry for Formation and Promotion of 10,000 Farmers Producer Organizations (FPOs).

B) MISSION FOR INTEGRATED DEVELOPMENT OF HORTICULTURE (MIDH)

- All erstwhile schemes (National Horticulture Mission (NHM), Horticulture Mission for North East and Himalayas (HMNEH), National Horticulture Board [NHB], Coconut Development Board [CDB], Central Institute for Horticulture, and National Bamboo Mission [NBM]) have been subsumed under MIDH during the 12th Plan.
- MIDH was introduced in 2014-15.
 - » The interventions include introducing improved varieties and quality seeds, incentives for plantation crops, cluster development, and post-harvest management.

- » According to third advance estimates (2021-22), a record production of 342.3 million tonnes in an area of 28.0 million hectares was achieved.
- » The government has identified **55 horticulture clusters**, of which 12 have been selected for the Cluster Development Programme (CDP) pilot phase. This programme is designed to leverage the geographical specialisation of horticulture clusters and promote integrated and market-led development of pre-production, production and post-harvest activities, including the entire supply chain.
- **Capacity Building of Farmers** by organizing them in **farmer producer Organization [FPO]/ Farmer Producer Companies [FPC]** is an added feature of MIDH.

C) PROJECT CHAMAN (COORDINATED HORTICULTURE ASSESSMENT AND MANAGEMENT USING GEO-INFORMATICS)

- Launched in 2014 under MIDH.
- Here remote sensing technology is used for generating action plan and strategic development of horticulture sector as also to increase the farmer's income.
- It is being implemented by the Delhi based Mahalanobis National Crop Forecast Centre (MNCFC).
 - » It helps in identifying right crop for right weather conditions; methods for calculating reliable estimates; creating digital inventory; identifying areas of high post harvest losses etc.
 - » It helps in managing inflation by giving correct estimates of agri-products.

D) ATMANIRBHAR HORTICULTURE CLEAN PLANT PROGRAM

In order to promote the availability of disease free, quality planting material of high value horticultural crops, Government has initiated "Atma Nirbhar Clean Plant Programme" at an estimated cost of Rs.2200 crore for a period of 7 years (2024-30) with 50% assistance from Asian Development Bank (ADB).

The objectives of Atma Nirbhar Clean Plant Programme are:

- i. To enhance yield of horticulture crops by providing disease free planting material, dissemination and adoption of climate resilient varieties.
- ii. To protect ecosystem through proactive virus and disease control measures by establishing Clean Plant Centres (CPCs).
- iii. To enhance stakeholder capacities for the adoption and operation of clean plant production, maintenance, and distribution.
- iv. To improve the knowledge network among research institutes, universities, knowledge centers, national and state agencies for sustainable operation of clean plant centers and nursery certification programs.

2) SOME INDIVIDUAL CROPS

A) ONION

- India is the second largest producer of onion (19.9% of world production) after China.
- In India, Maharashtra(around 32%) is the largest producer of onion followed by Karnataka, Madhya Pradesh and Gujarat.

- The district of Nasik (around 40% of MHA production) of Maharashtra is famous for production of onion.
- India has three onion crops a year
 - Early kharif: (onion comes to market between October and December)
 - Late Kharif (rangda): Crop arrive between Jan and March
 - Rabi Crop: available for sale from April to May

B) TOMATO

- **Introduction**
 - » Among the vegetables consumed in India, Tomato ranks 3 after potato and Onion, but globally it is the 2nd most consumed vegetable after Potato.
 - Note: Botanically, tomatoes fit the definition of fruit as they form from a flower and contain seeds.
 - » In terms of area under tomato cultivation and in terms of total production, India ranks 2nd in the world.
 - The major tomato producing countries in the world are China, India, USA, Turkey and Egypt.
- **About Tomato production in India**
 - » **India's total tomato production** is around 20 million tonnes. It peaked in 2019-20 at 21.187 million tonnes and has been **declining since**. The production in 2021-22 dropped to 20.69 MT and 20.62 MT in 2022-23.
 - » It is typically a 90-100 day crop that starts yielding fruits 60-70 days after transplantation.
 - The seeds are first sown in nursery beds to raise seedlings that are transplanted in fields after around 25 days.
 - Production happen in flushes.
 - » There are two major crops of tomato annually - Kharif and Rabi.
 - » There are two main crops of tomato grown in the country.
 1. The first one transplanted from around mid-June in Central and South India (places such as Shivpuri, Sagar in MP, Nasik In MHA, Madanapalle in AP, Kolar and Mysore in Karnataka and Dindigul in TN) and mid-July to Aug in North India (Jhalawar and Jaipur-chomu belt in Rajasthan; Sonabhadra, Varanasi, Lucknow, Bareilly and Agra in Uttar Pradesh) and stretching to end of Sep in Eastern India (Purulia in West Bengal, Buxar in Bihar and Ranchi in Jharkhand)
 - The autumn to late kharif crop supplies the market from Sep onwards. This along with a smaller rabi crop transplanted during October-November, contributes to the familiar low tomato prices through the winter.
 2. The second main crop is transplanted during January-February. This is a longer duration crop typically taking 130-150 days, yielding an average of 25 tonnes per acres.
 - This is the **summer tomato** as it is harvested during May-July is grown mostly in regions where maximum temperature don't go beyond the mid-to-late thirties range during the flowering and fruiting season.

- » Such conditions are mostly found in relatively cool or hilly areas such as Madanapalle, Mysore, Kolar in Karnataka; Sangamner and Narayangaon in Maharashtra, or **Solan and Mandi in Himachal Pradesh.**
- **Why increase in Prices:**
 - » **Dip in overall tomato production due to:**
 - i. **Lower acreage of tomato**
 - ii. **Extreme Weather Conditions**
 - i. **Heatwaves and High temperatures** in April and May along with delayed Monsoon showers in southern India and Maharashtra led to attack on tomato crops.
 - Farmers in Maharashtra have said their tomato crop was impacted by attacks of the Cucumber Mosaic Virus (CMV) and growers in Karnataka ad other South Indian States have blamed the Tomato Mosaic virus (ToMV) for crop loss.
 - ii. Later, incessant rains in tomato-growing regions further affected the new crop and also made transportation to non-growing regions difficult.
 - iii. **Low commercial realization of the crop for farmers** in the months of June as well as the last year.
 - iv. **Seasonal Fluctuation:** July and August are the lean tomato production.
 - **Other general challenges:**
 - » Perishability of tomato is much higher than Onion and Potato.
 - » Supply chain issues in transporting the vegetable from areas where it is grown to regions where it is not compounds the problem.

C) CUCUMBER MOSAIC VIRUSE AND TOMATO MOSAIC VIRUS (JULY 2023)

- Farmers in Maharashtra have said their tomato crop was impacted by attacks of the Cucumber Mosaic Virus (CMV) and growers in Karnataka ad other South Indian States have blamed the Tomato Mosaic virus (ToMV) for crop loss.
- The two plant pathogens have similar names and cause similar damage to crops, but they belong to different viral families, and spread differently.
- **About Tomato Mosaic Virus (ToMV):**
 - » It belongs to the Virgaviridae family and is closely related to the Tobacco Mosaic Virus (TMV).
 - » **Hosts:** ToMV hosts include tomato, tobacco, peppers, and certain ornamental plants.
 - » **Spreading mechanism:** It mainly spreads through infected seeds, saplings, agricultural tools and often, through the hands of nursery workers who have failed to sanitize themselves before entering the field. It would require only few infected saplings for virus to take over an entire field in matter of days.
 - » **In the present case,** farmers have blamed seed manufacturers and nurseries.
- **About Cucumber Mosaic Virus (CMV)**
 - » It was first identified in cucumber in 1934, which gave the virus its name.

- » **Hosts:** It has much larger host pool that include cucumber, melon, eggplant, tomato, carrot, lettuce, celery, cucurbits (member of gourd family, including squash, pumpkin, zucchini, some gourds, etc.) and some ornamentals.
 - » **Spreading mechanism:** They spread by aphids, which are sap-sucking insects. CMV too can spread through human touch, but the chances of that are extremely low.
- **Impact of these viruses:**
- Both viruses can cause almost 100% crop loss unless properly treated on time.
 - The foliage of plants infected by ToMV shows alternating yellowish and dark green areas, which often appears as blisters on the leaves. Distortion of leaves and twisting of younger leaves are also symptoms. The fruit develops necrotic spots, which leads to overripening. Younger plants are dwarfed, and fruit setting is affected.
 - CMV too causes distortion of leaves, but the pattern is different. Often leaves at the top and bottom are distorted while those in the middle remain blemish free. Overall, it causes stunting and lower production.
- **Controlling these viruses:**
- Following biosafety standards in nurseries, and compulsory seed treatment to stop spread of ToMV.
 - Awareness among farmers: Farmers who buy trays of saplings should check before planting and discard any visible infected material. They should also look for signs of infection during cropping cycle and remove any infected plants without allowing it to touch the healthy ones.
 - Any eye must be kept on aphid migration so that measures can be taken while planting the crop.

3) SPICES

A) SPICE BOARD OF INDIA

- Spices Board (Ministry of Commerce and Industry, Government of India) is the flagship organization for the development and worldwide promotion of Indian spices.
 - » The Board is an international link between the Indian exporters and the importers abroad.
 - » The Board has been spearheading activities for excellence of Indian spices, involving every segment of the industry.
 - » The Board has made quality and hygiene the corner stones for its development and promotional strategies.
- It was established in 1987 under Spices Board Act, 1986 with the responsibility of production/development of cardamom and export promotion of 52 spices.
- **Key activities:**
 - » Spice export promotion.
 - » Quality control
 - » Guiding farmers to get better yield.
 - » Provisions for financial and material support to farmers.
- **Headquarter: Kochi**
 - » Regional laboratories in Mumbai, Chennai, Delhi, Tuticorin etc.

B) TURMERIC AND TURMERIC BOARD

- Turmeric (*Curcuma longa*) is used as condiment, dye, drug and cosmetic in addition to its use in religious purpose.
- India is not only the leading producer and consumer but also the largest exporter of turmeric in the world.
 - » In the year 2022-23, a total of 3.24 lakh hectare was under turmeric cultivation with a production of 11.61 lakh tonnes (over 75% of the global production)
 - » **More than 30 varieties** of the turmeric are grown in India in more than 20 states.
 - » **Telangana (+Andhra Pradesh)** alone has 35.0% of the turmeric area and 47.0% of production.
 - Telangana (28.09%)
 - Andhra Pradesh (6%)
 - » **Maharashtra** (22.04%) of production comes second.
 - » **Odisha, Karnataka, WB, Gujarat, Meghalaya, Assam**, etc. are some other major turmeric producing states.
- **Climate and Soil:**
 - » Turmeric can be grown in diverse tropical conditions from sea level to 1500 m above sea level, at a temperature range of 20-35°C with an annual rainfall of 1500 mm or more, under rained or irrigated conditions. Though it can be grown on different types of soils, it thrives best in well-drained sandy or clay loam soils with a pH range of 4.5-7.5 with good organic status.

NATIONAL TURMERIC BOARD (NOTIFIED IN OCT 2023)

- **GoI** notifies establishment of National Turmeric Board.
 - » The board will work towards development and growth of turmeric and turmeric products in the country.
 - » It will provide leadership in turmeric related matters, augment the efforts, and facilitate greater coordination with Spice Board, and other government agencies in the development and growth of turmeric sector.
 - » The board will also work towards usefully extracting turmeric's full potential for humanity.
- **Under Ministry of Commerce and Industry**

4) LOTUS – NAMOH 108

- **News:** Science Minister Jitender Singh unveiled a variety of lotus called 'Namoh 108' at a function in the CSIR-National Botanical Research Institute, Lucknow. He described it as a "grand gift to the relentless zeal and innate beauty of Shri Narendra Modi, coming as it does in the 10th year of his tenure as the Prime Minister."
- **About the lotus:**
 - » It has 108 petals and was discovered several years ago in Manipur. It was kept at the National Botanical Research Institute (NBRI) as part of its collection of flowers and plants, on which the institute conducts research. However, it wasn't until four years ago that one of the scientists discovered that it had 108 petals. This number has religious significance in Hinduism.

- » Other features of the flower on initial inspection was ordinary. It's fibre quality was less and it bloomed only in one season.
- » Recently, it has become the first (and only) lotus variety whose gene has been sequenced. The only other lotus variety to be sequenced in the world was from China and it was completely different.
- **Scientists have also worked on its germplasm** and modified its characteristics in a way that it could be cultivated relatively easily outside the Manipur.
- **Note:** At the launch of Namoh 108, minister also launched several fibres and perfumes made from NAMOH 108.
- **CSIR: NBRI** would be soon initiating a 'Lotus Mission' as part of larger ongoing horticulture mission to have more of the 108 Namoh flowers grown in other part of India.

5. FARMER PRODUCER ORGANIZATION (FPOS)

- **Introduction:**
 - » FPOs are collectivization of primary producers (farmers, dairy farmers, fishermen, weavers etc.), especially small and marginal farmers, to collectively address their key challenges and ensure economies of scale viz improved access to investment, technology, input and markets.
 - » While FPOs work under the principle of cooperative societies, their registrations under Company's Act provides more accountability and professionalism.
 - » Small Farmers Agri-business consortium (SFAC) has been mandated by Ministry of Agriculture, to support state governments in the formation of FPOs.
- **Aims behind FPOs/ Advantages of FPOs**
 - » Enhance bargaining power of farmers.
 - » Increase farmers competitiveness and their profits in emerging market economies.
 - » FPOs enable farmers to enhance productivity through efficient cost-effective and sustainable resource use and realize higher returns of their produce.
 - » FPO's also enable integration of small farmers to the value chain, generating higher incomes and employments.
- **Steps taken to promote FPOs/FPCs**
 - » **Central Sector Scheme** titled '**Formation and Promotion of 10,000 FPOs'**
 - Launched in Feb 2020 at Chitrakoot (Uttar Pradesh) with a budgetary provision of Rs 6865 crores.
 - Under the scheme, formation of 10,000 FPOs across the country is targeted in five years till 2023-24, while providing adequate handholding to each FPO for five years from the formation, for which the support will continue till 2027-28.
 - » **Budget 2018-19: Exemption from Income Tax** for FPOs with a turnover of upto Rs 100 crore.

6. SPECIAL AGRICULTURE PRACTICES AND ADVANTAGES

1) CROP DIVERSIFICATION

- **Introduction**
 - Crops diversification refers to shift in cropping pattern from one or a few crops to other crops which are more profitable, sustainable or less resource intensive.
- **Advantages:**
 - **Risk Mitigation:** Farmers growing multiple crops are less vulnerable to adverse weather conditions, pests, diseases, or market fluctuations affecting a particular crop.
 - **Sustainability:**
 - **Improved Soil Health**
 - **Reduce use of water and chemical fertilizers.**
 - **Planting diverse crops disrupts pest, weed and disease cycle.**
 - For e.g. Certain crops have allelopathic properties or growth habits that suppress weeds. By including such crops in a diversified cropping system, weed growth can be effectively controlled without heavy reliance on herbicide.
 - Improves the availability of fodder for livestock animals.
 - **Fighting the challenges of Monoculture:**
 - **Supports biodiversity:** By providing habitats for beneficial insects, birds, and pollinators.
 - **Resilience to climate change** as different crops will have varying level of tolerance to changing climatic conditions.
 - **Food Security and Nutrition** - Crop diversification will promote healthier diets and reduce risk of nutritional deficiency.
 - **Increased income for farmers** - By diversifying to high value horticulture crops.
- **Steps taken to promote diversification.**
 - **Crops Diversification Program** (a sub scheme under RKVY) is being implemented by government in original green revolution states viz. Punjab, Haryana, and in Western Uttar Pradesh to diversify paddy areas towards less water requiring crops like oil seeds, pulses, coarse cereals, agro-forestry, and shifting of tobacco farmers to alternative cropping system in tobacco growing states viz. Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Odisha, TN, Telangana, Uttar Pradesh and West Bengal wef from 2015-16.
 - Under CDP, assistance if provided to states for conducting cluster demonstration on alternate crops, promotion of water saving technologies, distribution of farm machineries, setting up of value addition facilities, awareness through training etc.
 - **Crop Diversification through Price Policy** -> Increasing MSP for crops which need to be promoted.
- **Status in India**
 - India has tremendous potential for crop diversification and to make farming a sustainable and profitable economic activity.
 - **The Index of Crop Diversification** (used by ESI 2017-18) analysis shows:
 - i. **Declining inter-temporal behaviour** in crop diversification for the states like Chattisgarh, Haryana, MP, Odisha, Punjab and Uttar Pradesh. The decline has been sharp in Odisha (from 0.74 in 1994-1995 to 0.34 in 2014-15).
 - ii. **Two states - Himachal and Jharkhand** have seen increasing crop diversification.
 - iii. **For India as a whole** the crop diversification scenario appears to be stable throughout the period.
- **Factors behind decreasing crop diversification in some states**
 - **Minimum Support Price**
 - **Lack of awareness among farmers.**
 - **Limited Input Availability:**
 - **Risk Perception and Market Volatility**

2) INTEGRATED FARMING SYSTEM

- **Introduction**
 - » Integrated Farming System (IFS) is a comprehensive farming approach that combines multiple agricultural activities and components within farming system to optimize resource utilization, increase productivity, and improve sustainability. It involves the integration of crops, livestock, fisheries, agroforestry, and other allied enterprises (renewable energy - biogas generation) in a synergistic manner.
- **IFS is helpful in sustaining agricultural production in the following ways:**
 - i. **Resource Optimization and Enhanced Productivity:** Integration of various components like crops and livestocks can make efficient use of resources and minimize waste.
 - **For example**, crop residues and agricultural by-products can be utilized as livestock feed, while animal waste can be recycled as organic fertilizer for crops.
 - ii. **Nutrient Cycling and Soil health:**
 - Livestock manure and crop residues serve as organic fertilizers, improving soil fertility and nutrient availability.
 - The integration of leguminous crops in crop rotations adds nitrogen to the soil through biological nitrogen fixation.
 - Soil Conservation Practices like contour ploughing and agroforestry, help prevent erosion and maintain soil health.
 - iii. **Pest and Disease management:**
 - i. Diversity of crops and livestock reduces the risk of pest and disease outbreaks.
 - ii. Crop rotation, inter-cropping, and mixed cropping help disrupt pest life cycles and reduce pest pressure.
 - iv. **Climate Resilience:**
 - The integration of trees and agro-forestry practices help mitigate climate risks by providing shade, reducing wind speed, improving water filtration, and sequestering carbon.
 - Diverse Crop pattern is also more adaptable to climate variability.
 - v. **Economic security through income diversification:** IFS offers multiple income stream (crops, livestock, etc.) which reduces income risk associated with single crop.
 - vi. **Environmental Sustainability:**
 - **Reduced Pollution and land degradation:** IFS reduces the need for synthetic fertilizers, mitigates nutrient runoff and pollution, and enhances soil health and long-term sustainability.
 - **Biodiversity Protection:** The integration of diverse components helps conserve biodiversity, protect natural habitats, and provide ecological niche for beneficial organisms.

3) PRECISION AGRICULTURE

- **About Precision Agriculture**
 - » Precision Agriculture is a technique of agriculture which uses technology to determine the exact amount of input (water, fertilizers, pesticides etc.) required to ensure crops and soil receive exactly what they need for optimum health and productivity.

- » This kind of agriculture is highly dependent on technology - Specialized equipment, software and IT.
 - It requires accessing real time data about the conditions of crops, soil and ambient air. It also needs hyper local weather predictions, labor costs, and equipment availability.
 - **Sensors** in the field measure the moisture content and temperature of the soil and surrounding air.
 - **Satellites and Robotic drones** provide real time images of individual farmers.
- **Advantages**
 - » **Economic Benefits**
 - Increase agri-productivity.
 - Improve the quality and reduce the cost of production
 - Improved socio-economic condition of farmers
 - » **Improve Sustainability of Agriculture**
 - Prevent Soil Degradation
 - Reduce Chemical application.
 - Efficient resource use (water, fertilizers etc.)
 - E.g. Drip Irrigation used with PA technology can reduce the amount of water used in crops.
 - » **PA enables Climate-Smart Agriculture**

4) MULTILAYERED FARMING

- It comprises of growing compatible plants of different heights on the same field at the same time. It is mostly practiced in orchards and plantation crops for maximum use of solar energy even under high planting density.
- **Advantages**
 - » **Efficient Land Use**
 - » **Diversification and Risk Reduction**
 - By growing variety of crops, farmers can diversify their produce, accessing different markets, and reducing price risks.
 - **Better Income:** The sale of high value crops, such as fruits, vegetables, herbs, and spices can generate higher returns compared to traditional mono-cropping.
 - » **Resource Efficiency:**
 - For e.g. different layers of crops create micro-climates that reduce water evaporation and help retain soil moisture.
 - The **crops complement each other** - for e.g. by providing shade canopy, litter, increasing moisture holding capacity of soil while nurturing microflora.
 - » **Nutrient Cycling and Soil Health:** it promotes the recycling of nutrients within the system, enhancing soil fertility and reducing the need of synthetic fertilizers
 - » **Biodiversity Conservation:** MLF creates diverse and complex habitats, supporting a range of beneficial organisms, including pollinators, beneficial insects and natural predators. Multiple crops and flowering plants provide food and shelter for a variety of beneficial organisms.
 - » **Income generation and livelihood improvement:**

- E.g.
 - **Coconut based multilayered farming** (Coconut, pepper, nutmeg, banana, cinnamon, turmeric, ginger) is more remunerative than traditional systems.
- **Steps being taken in India to promote Multi-Layered Farming**
 - » The Indian Institute of Farming Systems Research, Modipuram, Meerut, is undertaking research (on-station) and technology validation through farmer's participatory research (on-farm research) on Integrated Farming Systems and Cropping systems in 24 states.
 - » **Multi-layer Farming Models on high-value vegetable cultivation** under a three-tier system was introduced in the backward districts of Bihar by ICAR and farmers were able to grow three different vegetables on the same piece of land at a time.

7. NEXT CA BOOKLET

- Storage Issues
- MSP and Subsidy Issues
- Income Support: PM-KISAN
- Food Security
- FCI and its function
- PDS System
- Agri-market Reforms
- E-Technology
- Agri-Exports
- Animal Husbandry, Fishery etc.



TARGET PRELIMS 2024

BOOKLET-23; ECONOMY-4

AGRICULTURE AND RELATED ISSUES-3

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2. FOOD GRAIN STORAGE ISSUES

- The Food Corporation of India is the main agency for procurement, storage and distribution of food grains.
- **The requirement of Storage Capacity** in Food Corporation of India (FCI) depends upon the level of procurement, requirement of buffer norms, and Public Distribution System (PDS) operations for rice and wheat mainly.
- **Objectives:**
 - » Feed TPDS and other welfare schemes.
 - » Ensure food security during production shortfalls.
 - » Stabilize price.
- **FCI** continuously assesses and monitors the storage capacity and based on the storage gap assessment, storage capacity is created/hired through following schemes:
 - i. **Hiring of godowns** from Central Warehousing Corporation (CWC)/ State Warehousing Corporation (SWCs)/ State agencies.
 - ii. **Hiring of godowns** through Private Warehousing Scheme (PWS)
 - iii. **Central Sector Scheme (CSS):**
 - Government is implementing a central sector scheme for construction of godowns with focus on augmenting storage capacity in the States of the NE region and a few other states.
 - iv. **Construction of SILOs under PPP mode**
 - v. **Private Entrepreneurship Guarantee (PEG) Scheme**
- This is used for storage of food grains procured for central pool by the government agencies.
- **Current Storage Capacity (Feb 2024)**
 - » As per the latest data (Feb 2024), the total storage capacity with FCI is 361.62 lakh tonnes. Of this 146.86 lakh tones is owned by FCI and remaining 214.76 lakh tonnes is hired.
 - » The storage capacity with state government agencies is another 400.74 lakh tonnes.
 - » Together it adds up to 762.36 lakh tonnes. (76 million tonnes)
 - » In addition, a capacity of around 15 million tonnes have been created by Private Entrepreneurs Guarantee Scheme.

1) IMPORTANT SCHEMES

B) WORLD'S LARGEST AGRI-STORAGE PLAN (FEB 2024)

- **Need of such initiative:**
 - » **Low food grain storage capacity in India:** Currently India has a storage capacity of 47% of its total food grains production. In states like UP and Bihar this storage capacity is below 50%. But other countries like **China, USA, Brazil, Russia, Argentina, Ukraine, France** etc have storage capacity higher than the food grain production.

- » **Multiple agencies involved in food grain management** including the Food Corporation of India (FCI), Central Warehouse Corporation, Warehouse Development Regulatory Authority, Railways, and the civil supply departments of states.
- In Feb 2024, PM Modi has announced a plan to set up the "World's largest grain storage plan in the cooperative sector".
- » **Pilot project** is being undertaken in 11 Primary Agriculture Credit Societies (PACS) in 11 states.
 - **What will an integrated facility look like?**
 - The facility built at a cost of Rs 2.25 crore. The integrated modular PACs will have a custom hiring centre, a multi-purpose hall - procurement centers, primary processing units for cleaning and winnowing - a storage shed, and container storage and silos.
- » Eventually the aim is to cover more PACs.

What are PACS?

Primary Agricultural Credit Societies (PACS) are grassroots-level institutions and their membership encompasses individual farmers, artisans, and members of other weaker sections of the society as shareholders. They form the **lowest tier of the federated short-term cooperative credit structure** with District Cooperative Banks (DCCBs) and/or State Cooperative Banks (StCBs) in their upper tiers.

They are involved in short term lending - or what is known as crop loans.

- **What is the plan expected to do?**
 - » **Set up storage infrastructure of 70 million tonnes** over the next five years at a cost of Rs 1.25 lakh crore.
 - The scheme will work on Hub and Spoke model.
 - Of the 63,000 PACS across the country, 55,767 will function as spoke and will have a grain storage capacity of 1,000 metric tonnes each, while the remaining 7,233 PACS, which will function as hubs, will have a storage capacity of 2,000 metric tonnes each. Thus, all the 63,000 PACs will have a combined grain storage capacity of 70 million tonnes.
 - » This will enable farmers to store their produce and sell it at the right time and right price. These efforts should reduce post harvest losses; bring down food grain handling and transportation costs;
 - » This will also enable farmers to get loan from banks.
 - » The scheme will also enable PACS to undertake various other activities like Functioning as Procurement centres for State Agencies/ Food Corporation of India (FCI); Serving as Fair Price Shops (FPS); Setting up custom hiring centers; Setting up common processing units, including assaying, sorting, grading units for agricultural produce, etc.
- **Note:** Earlier in June 2023, the Union Cabinet has approved the constitution of an Inter-Ministerial Committee (IMC) to facilitate the world's largest grain storage plan in the cooperative sector. It was

chaired by Amit Shah. The IMC modified guidelines/ implementation methodologies of the schemes of respective ministries.

- **Budgetary Allocation:** The plan doesn't have a separate allocation; it will be implemented by the convergence of **8 Schemes**:
 - » **4 schemes under MoA&FW:** Agriculture Infrastructure Fund (AIF), Agricultural Marketing Infrastructure Scheme (AMI), Mission for Integrated Development of Horticulture (MIDH), and Sub Mission on Agricultural Mechanisation (SMAM)
 - » **2 Schemes under Ministry of Food Processing Industries:** Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme (PMFME), and Pradhan Mantri Kisan Sampada Yojana (PMKSY).
 - » **2 Schemes under Ministry of Consumer Affairs, Food and Public Distribution:** Allocation of food grains under the National Food Security Act, and Procurement operations at MSP.

C) PRIVATE ENTREPRENEURSHIP GUARANTEE (PEG) SCHEME

- Launched in 2008
- **Aims:** Augmenting the covered storage capacity in the country.
- **Details:**
 - » Under the scheme godowns are constructed in PPP mode and the land and construction cost is borne by selected partners.
 - » FCI on its part **guarantees 10 year usage of storage capacities to the private investors** and **9 years to CWC and SWCs**.
 - » Locations for construction of godowns are identified by FCI on the basis of recommendations of state level committees to cover the gaps in the storage.

3. MSP, SUBSIDY AND RELATED ISSUES

1) MINIMUM SUPPORT PRICE (MSP)

- **Introduction**
 - » **What is MSP:** It is the minimum price set by the Government at which farmers can expect to sell their produce for the season. When market prices fall below the announced MSPs, procurement agencies step in to procure the crop and 'support' the prices.
 - » **Beginning:** The Minimum Support Prices (MSP) were announced by the Government of India for the first time in **1966-67 for Wheat** in the wake of the Green Revolution and extended harvest, to save the farmers from depleting profits.
- **How is MSP decided and Who takes final decision.**
 - » The Cabinet Committee of Economic Affairs (CCEA) announces MSP for various crops at the beginning of each sowing season based on the recommendations of the Commission for Agricultural Costs and Prices (CACP).
 - » The CACP takes into account demand and supply, the cost of production (A2 + FL method) and price trends in the market, inter-crop parity, implication for MSP on consumers, a minimum of 50% as the margin over cost of production; etc.

- » The CACP calculates **three types of costs — A2, A2+FL and C2** — for each mandated crop for different states. The lowest of these costs is A2, which is the actual paid-out cost incurred by a farmer. Next is A2+FL, the actual paid-out cost plus imputed value of family labour. The highest of the three costs is C2, defined as ‘Comprehensive Cost including Rental Value of Own Land (net of land revenue and interest on value of own fixed capital assets (excluding land))
 - MSP is announced for 22 mandated crops and FRP is announced for sugarcane (**total 23 crops**)
 - » **Crops Covered under MSP:**
 - MSP is announced for **22 mandated crops** and **FRP** for Sugarcane. (**Total 23 crops**)
 - **Mandated Crops are:** 14 crops for Kharif season, 6 Rabi crops (except Toria) and 2 crash crops (Copra and Raw Jute).
 - In addition MSP for Toria and De husked coconut are fixed on the basis of MSP for rapeseed/mustard and Copra.
 - **Note:** Coffee, tea etc are not covered under MSP.
 - **7 Cereals, 8 oilseeds**, 5 pulses, 5 cash crops - Copra, Raw cotton, Raw Jute, Virginia Flu cured (VFC) tobacco, Sugarcane.
 - **Note:** For Sugarcane Fair and Remunerative Prices (FRP) is announced that has to be paid by sugar mill owners.
- | Kharif Crops | Rabi Crops |
|---------------------|--|
| 1. Paddy | 15. Wheat |
| 2. Jowar | 16. Barley |
| 3. Bajra | 17. Gram |
| 4. Maize | 18. Masur/lentil |
| 5. Ragi | 19. Rapeseed/mustard |
| 6. Arhar (Tur) | 20. Safflower |
| 7. Moong | 21. Toria (an oilseed similar to rapeseed) |
| 8. Urad | Other Crops |
| 9. Cotton | 22. Copra / Dehusked Cotton |
| 10. Groundnut | 23. VFC Tobacco |
| 11. Sunflower seed | 24. Raw Jute |
| 12. Soyabean black | 25. Sugarcane(FRP) |
| 13. Sesamum | |
| 14. Nigerseed | |
- **Need of MSP/ Rationale Behind MSP**
 - Protecting farmers from price volatility

- Incentivizing farmers to grow crops in short supply
- MSP also ensures easy procurement for food security schemes

- **From FY19 the MSP has been pegged at more than 50% of cost of production for most of the Kharif and Rabi crops.** This is another step towards ensuring **income inclusiveness**.
 - » Accordingly, the Government has been increasing the MSP for all 22 Kharif, Rabi and Commercial crops with a margin of at least 50% over the all-India weighted average cost of production since the agricultural year 2018-19.
 - » Swaminathan Commission had recommended this way back in 2006.

- **Various Mechanisms under MSP to procure crops and ensure remunerative prices for farmers (Before PM-AASHA)**
 1. **For wheat and paddy -> Open Ended Procurement by FCI**
 2. **Coarse Grains -> Purchased by state government with permission of central government, upto the extent it is required in their Target Public Distribution System (TPDS).**
 3. **Price Support Scheme (PSS) - for oil seeds, pulses and cotton** - at the request of concerned states
 4. **Market Intervention Scheme (MIS)** for perishable horticulture commodities - at the request of states - when there is excess supply or low prices.

- **Some shortcomings in MSP Procurement Program**
 - » **Procurement is limited to few crops, few geographies and few farmers** -> only wheat and rice under open procurement -> Punjab, Haryana, Coastal Andhra benefitted a lot -> mostly big farmer benefitted
 - » There has been delays in establishment of procurement centre.
 - » Lack of awareness about MSP among large section of farmers. This leads to they getting exploited at the hands of commission agent.
 - » **Inadequate MSP** (MSP calculation is not based on A2 + FL + C2 which was recommended by MS Swaminathan committee). It uses A2 + FL method.

- **Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA):**
 - » The scheme is aimed at increasing the MSP procurement of pulses, oilseeds, COPRA etc. This is expected to ensure remunerative price to farmers.
 - » **Three components of PM AASHA - Price Support Scheme; Price Deficiency and Payment Scheme; and Private Procurement & Stockist Scheme**
 - Note: For Oilseeds, the states will be allowed to choose between the PSS or two other schemes.

- **Note: AASHA is complementing (not replacing) complementing other schemes**
 - » Other existing schemes of Department of Food and Public Distribution (DFPD) for procurement of paddy, wheat and nutri-cereals/coarse grains and of Ministry of Textile for Cotton and Jute will be continued for providing MSP to farmers to these crops.

- **What was expected out of PM-AASHA:**
 - » Better remuneration for farmers; reduced storage and procurement requirement for government; increased private participation -> more investment in storage etc; improved food security

- **But, PM-AASHA has also not been able to increase MSP procurement a lot due to following reasons:**
 - » Budgetary support for PM-AASHA has been too minimal (around Rs 15,000 crore in the first year)
 - » A number of factors preventing PM-AASHA to be inclusive:
 - Agri-Marketing reforms are incomplete
 - Poor infrastructure: This has led to farmers remaining out of MSP regime, remaining out of MSP regime.
 - Further, ineffective supply chain management, has rendered the whole scheme trivial.
 - For e.g. NAFED has a stock of 4 million tonnes of pulse and oilseeds, but their distribution policy is non-existent.
 - » State Financial condition may not be strong enough for the program.
- **Other Criticism of MSP mechanism in general**
 - » MSPs causes market distortion
 - » Cropping pattern is affected and farmers tend to grow high MSP crops rather than the most suitable crop for the region.
 - Excess fertilizer and water guzzling crops makes agriculture unsustainable.
 - » Higher inflation
 - » Cost Plus Pricing is risky as it ignores the demand side, i.e. demand-supply, domestic and international price trends, terms of trade, inter-crop price parity etc.
 - » Leads to less focus on non-price factors like technology, inputs, services, institutions and infrastructure
 - High fiscal burden on government
 - » Bigger stock exceeds the stock holding norms of FCI
 - » WTO's AOA issues (discussed with WTO issues separately)

2) FARMER'S PROTEST: A LAW GUARANTEEING PROCUREMENT AT MSP: IS IT VIABLE

- **Background:**
 - » According to Shanta Kumar Committee report, only 6% of the farm households sell wheat and rice to the government at MSP rates.
- **What are the different ways in which MSP guarantee can be ensured?**
 - » Force traders to buy at MSP: Any buying of agri-produce (be it by private traders), would be on MSP (something similar happens in case of sugarcane).
 - » Something like this happens in case of sugarcane farmers.
 - » But there are implementation hurdles - delay and arrear in price payment; distortion of market;
 - » Government can make MSP procurement itself.
 - » Criticism: If government buys all produce this will be unsustainable - both physically and fiscally.
 - » Government can go for price deficiency payment mechanism.
 - » Something similar was implemented in Madhya Pradesh (Bhavantar Bhugtan Yojna) during the 2017-18 Kharif season for eight crops: urad (black gram), soyabean, maize,

Arhar (pigeon pea), Moong (green gram), groundnut, sesame, and nigerseed. But scheme couldn't be continued due to lack of support from central government.

- » Haryana is implementing Bhavantar Bharpai Yojna (BBY) mainly for Bajra (pearl millet), mustard, and sunflower seeds. Technically it also covers groundnut, chana, moong, and 16 vegetables and 3 fruit crop.

- The scheme operates on the Haryana Government's 'Meri Fasal, Mera Byaura portal' in which farmers have to register themselves along with details of their land (village name, khasra plot no, holding size tc) and area sown under different crop.

- » and Haryana (Bhavantar Bharpai Yojna).

- **Need of guaranteeing MSP:**

- » It would improve opportunities of fair prices by farmers. It would encourage farmers to invest more in agriculture and increase productivity.
 - **Note:** As per census and National accounts data, the percentage of farmers benefitting from MSP is 5.6% and the value of agri-produce benefitting from the MSP regime is a paltry 2.2%.
- » **Promote crop diversity** as under guaranteed MSP, other crops would also fetch the MSP.
- » **Other advantages of MSP**

- **Is it feasible?**

- » Various estimates show that government will have to bear an additional 5 lakh crore rupee of fiscal burden. This will be a logistical nightmare at best, and fiscal disaster at worst.
- » **FCI stocking operations** is full of flaws and losses -> Wastage, corruption,
- » **Discourage market forces**
- » **Other problems associated with MSP** (discussed in the above topics)

A) DEMANDS FOR WHICH FARMERS ARE PROTESTING

1. Full debt waiver for farmers and labourers;
2. Implementation of the Land Acquisition Act of 2013, with provisions for written consent from farmers before acquisition, and compensation at four times the collector rate;
3. Punishment for the perpetrators of the October 2021 Lakhimpur Kheri killings;
4. India should withdraw from the World Trade Organization (WTO) and freeze all free trade agreements;
5. Pensions for farmers and farm labourers;
6. Compensation for farmers who died during the Delhi protest, including a job for one family member;
7. Electricity Amendment Bill 2020 should be scrapped;
8. 200 (instead of 100) days' employment under MGNREGA per year, daily wage of Rs 700, and scheme should be linked with farming;
9. Strict penalties and fines on companies producing fake seeds, pesticides, fertilisers; improvements in seed quality;
10. National commission for spices such as chili and turmeric;
11. Ensure rights of indigenous peoples over water, forests, and land

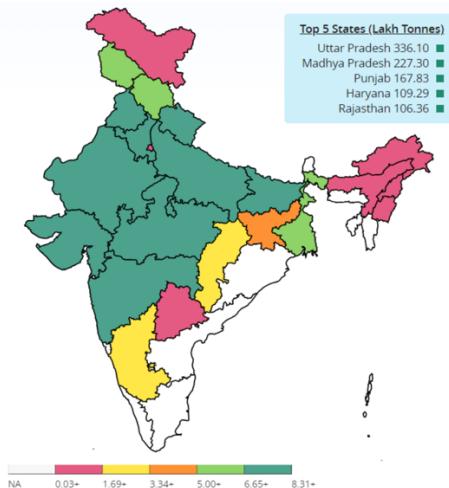
1) FOOD SUBSIDY BURDEN OF GOVERNMENT

- **FY25 (BE)** Food subsidy bill 2.05 lakh crore (less than Rs 2.12 lakh crore in FY24)
- For FY23, government had spent Rs 5,32,446 crore on subsidy.
 - » This includes Food Subsidy (Rs 2.8 lakh crores), Fertilizer Subsidy (Rs 2.1 lakh crores), and Petroleum subsidy (Rs 30,756 crore).
 - » It was the 2nd highest ever after the 7.06 lakh crores of FY 2021.

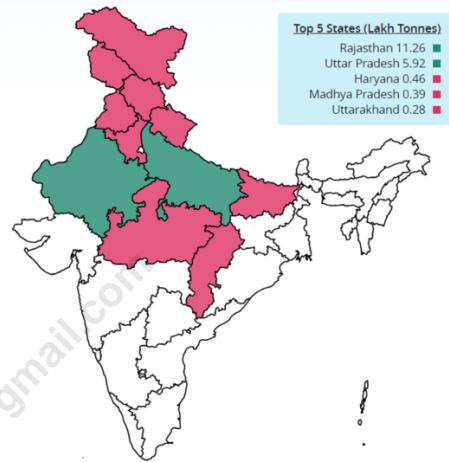
2) MSP ANNOUNCED FOR VARIOUS RABI CROPS (OCT 2023)

- **Crop (MSP per quintal, Increase from last year):** Wheat (2275, 150), Barley (1850, 115), Mustard & Rapeseed (5440, 105), Safflower (5,800; 150); Gram (5,440; 105) and Lentil (masur) (6,425; 425)

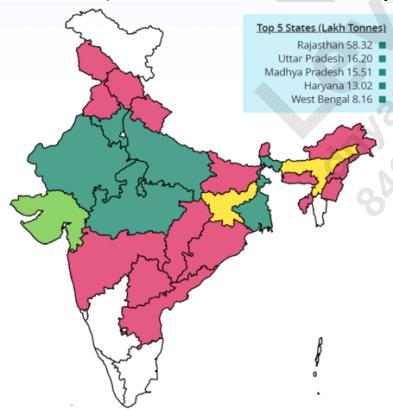
Wheat Production, 2022-23 (Final Estimate): UP> MP> Punjab> Haryana>Rajasthan



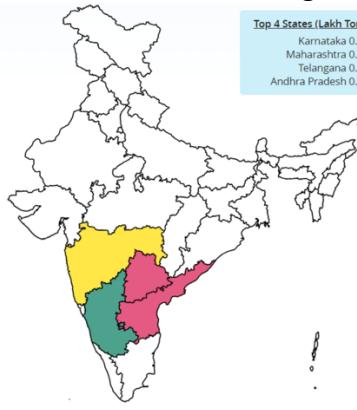
Barley Production, Final Estimate, 2022-23: Final Estimate 2022-23: Raj> UP> Haryana> Madhya Pradesh> Uttarakhand



Mustard & Rapeseed Production Final Estimate (2022-23): RAJ> UP > MP> Haryana > WB

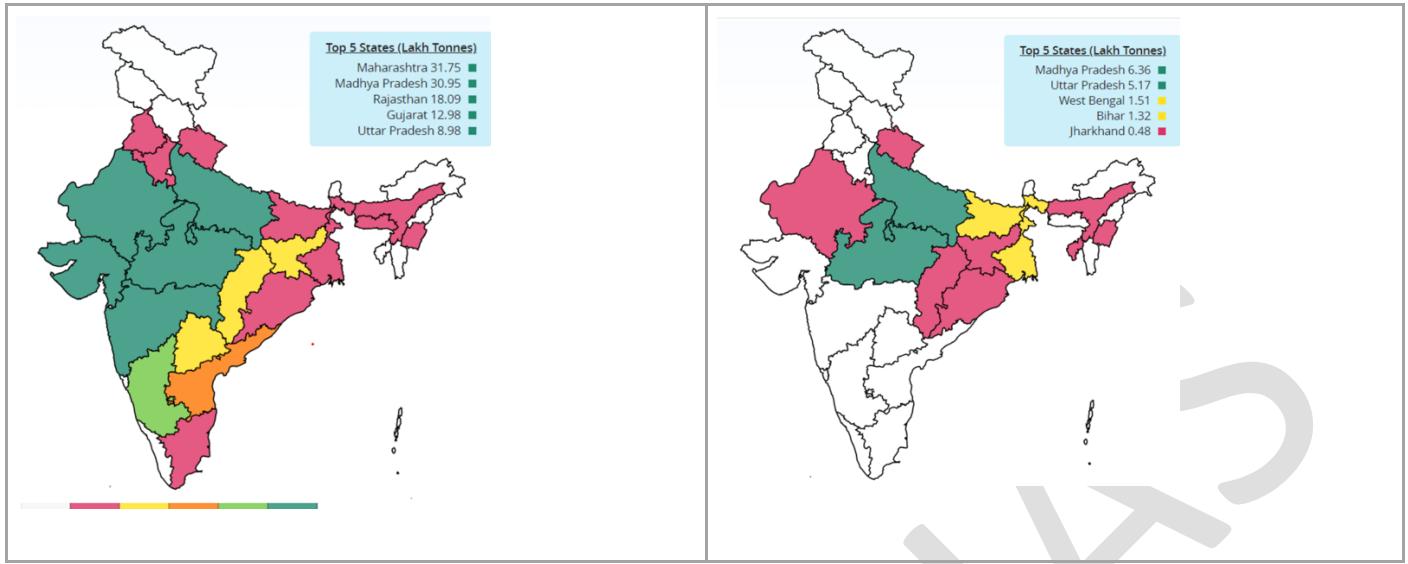


Safflower Production 2022-23 (Final Estimate): Karnataka> MHA> Telangana> Andhra Pradesh



Gram Production Final Estimate (2022-23): MHA> MP > Rajasthan> Gujarat > Uttar Pradesh

Lentil Production 2022-23 (Final Estimate): MP> UP> WB > Bihar> Jharkhand



3) COMMISSION FOR AGRICULTURE COST AND PRICES (CACP)

- The commission for Agricultural Cost & Prices (CACP since 1985, earlier named as Agricultural Prices Commission) was formed in 1965 and is an attached office to Ministry of Agriculture and Farmers Welfare, Gol. It is also a statutory body.
- **Structure:**
 - » Chairperson
 - » Member Secretary
 - » One Member (official)
 - » Two Members (non-official) - representatives of farming community
- It is mandated to recommend minimum support prices (MSPs) to incentivize the cultivators to adopt modern technology, and raise productivity and overall grain production in line with the emerging demand patterns in the country.
- As of now CACP recommends MSP for 22 crops and FRP for Sugarcane:
- **Note:** the final decision for MSP of a crop is taken by Cabinet Committee on Economic Affairs (CCEA).

4) FAIR AND REMUNERATIVE PRICES (FRP)

- **FRP** is the minimum price sugar mills have to pay to farmers for sugarcane.
 - » In 2009, Sugarcane (Control) Order, 1966 was amended to replace statutory minimum price (SMP) of sugarcane with FRP.
 - » FRP is decided by Cabinet Committee on Economic Affairs on the recommendations of Commission for Agriculture Costs and Prices (CACP) and in consultation with state governments and industry.
 - » There is also a threat of action by cane commissioners, in case of failure to clear FRP dues within 14 days of the cane being sold to farmers. Non-clearance can also lead to attachment of mill properties as arrears of land revenue.

- **State Advised Price (SAP):** Some states like Haryana, Uttar Pradesh, and Punjab offer higher prices for sugarcane under state advised price (SAP), which mills in those states must abide by.
- **Why FRP for sugars (and MSP for other 22 crops)**
 - » Sugarcane has very small shelf life and thus farmers are forced to sell immediately, which may bring prices very low.
 - » Further, other crops can be sold at prices higher than MSP, but this is very less likely for sugar as all the sugarcane is sold right after harvesting and thus market prices would be very low.
- Cabinet approves 'Fair and Remunerative Price' (FRP) of sugarcane payable by sugar factories for sugar season 2024-25 (Oct-Sep) [Feb 2024: Source PIB]
 - » FRP = Rs 340/ Quintal at sugar recovery rate of 10.25%.
 - » This is about 8% higher than FRP of sugarcane in current season (2023-24). The revised FRP will be applicable w.e.f. 1st Oct 2024.
 - » It is also 107% higher than A2 + FL cost.
 - » **Note:** India is already paying highest price to sugarcane farmers in the world and at the same time ensuring cheapest sugar for Indians.
 - » Note: The new FRP will kick in from 1st Oct 2024.
- **Minimum Selling Price (MSP) for Sugar:**
 - » The central government had introduced Minimum Selling Price (MSP) for sugar in 2018.
 - It was fixed at Rs 2,850 per quintal which was subsequently raised to Rs 3,100 per quintal. This was part of the measures announced to arrest the constant slide of sugar and to keep the demand and supply ratio to a safe limit.
 - The Centre had also fixed mill-wise sales quota. Mills which breached either of the conditions were liable for action under the Essential Commodities Act, 1955 which would include a fine as well as a jail term (ranging from 3 months to 7 years) or both.

5) PM KISAN (PRADHAN MANTRI KISAN SAMMAN NIDHI)

- **Why in news?**
 - » Interim Budget 2024-24 Speech: 11.8 crore farmers receive financial assistance
- **PM KISAN** is a central sector scheme to supplement the financial needs of landholding farmers. It was announced in the Budget 2019-20.
- **Purpose**
 - » Income Support to help declining income of farmers, supplement financial needs for input procurement etc;
- **Provisions of the Scheme**
 - » Under the scheme financial benefit of Rs 6,000 per year is transferred into the bank accounts of farmer families through DBT in three equal instalments of Rs 2,000 each.
 - » The scheme covers all 14.5 crore landholder farmer families in the country.
 - » **Exclusions**
 - All institutional landholders
 - Farmer families where one or more of its members belong to following categories

- Constitutional post holders, ministers, Member of Parliament, MLAs, MLCs, Mayor of Municipal Corporation, Chairpersons of District Panchayats (in past or presently)
 - Serving or retired officers of Central/State governments (excluding Multi-Tasking staff/ Class IV/ Group D employees)
 - All superannuated retired personnel whose monthly pension is Rs 10,000 or more (excluding Multi-Tasking staff/ Class IV/ Group D employees)
 - Professionals like Doctors, Engineers, Lawyers, CAs, and Architects registered with professional bodies and carrying out profession by undertaking practices.
- **State/UT government** will be responsible for **identifying the eligible families**. List is published at village level to ensure transparency.
- **Progress So far:** Around 11.8 crore farmers were covered under the scheme in Jan 2024.
- **Analysis: Positives**
 1. Reduce Agri-Distress
 2. Boost Productivity
- **Key Concerns/ Limitations**
 1. Funds - Fiscal burden.
 2. Small impact on farmer's income
 3. Withdrawing the scheme will be challenging considering the political economy that comes into play

A) PM KISAN MOBILE APP WITH FACE AUTHENTICATION FEATURE (JUNE 2023: SOURCE - PIB)

- The PM-KISAN mobile app was launched in Feb 2020. The provision for e-KYC through face authentication introduced in June 2023.
- It will enable farmers to complete their e-KYCs effortlessly from their mobile devices. Farmer can also assist upto 100 other farmers in their vicinity with their e-KYCs. Additionally, state government officials, including district, block, and village level-nodal officers, can perform e-KYC for 500 farmers using their registered mobile number.
 - It will also resolve difficulties related to Aadhar verification and updating bank account details on PM KISAN portal through effective use of digital public goods.
- Note: The PM KISAN Scheme's services are also accessible through more than 4.0 lakh CSCs across the country.

1) INCOME SUPPORT TO FARMERS: STATE LEVEL SCHEMES

1. **Rajiv Gandhi Kisan Nyaya Yojna**
 - It is a income support scheme for farmers, Launched by Chhattisgarh government in May 2020.
2. **YSR Rythu Bharosa Scheme: Rs 13,500 for Farmers** (launched in 2019)
 - **Details about Rythu Bharosa**
 - The program is available for five years.
 - Every year, before the start of the Kharif season, an input assistance of Rs 7,500 will be provided to each farmer. Another Rs 4,000 will be provided at the time of

harvesting, just before the start of Rabi season. And the last instalment of Rs 2,000 would be provided at the time of farmers' festival of Sankranti.

- 54 lakh farmers have been identified for the scheme (including tenant farmers).
- Note: Rs 6,000 per head in the scheme comes from PM-Kisan Samman yojna

3. Ryuthu Bandhu scheme of the neighbouring Telangana.

- In Telangana the support was based on the size of land ownership (**Rs 4,000 per acre**). However, in AP every beneficiary will be given same amount, whereas in

4. KALIA (Krushak Assistance for Livelihood and Income Augmentation) of Odisha government

- Covers 75 lakh farmers, including 25 lakh landless agricultural households.
- It entitles each one of them Rs 10,000 per year payment for two crops (Kharif and Rabi)

5. Krishak Bandhu Yojana of West Bengal

- Provides Rs 5,000 in two instalments to the state's estimated 72 lakh farmers and sharecroppers cultivating one acre or less.

6. Mukhyamantri Krishi Ashirwad Yojna of Jharkhand provides Rs 5,000 per acre (maximum Rs 25,000) annually to estimated 22.76 farmers owning up to five acres in land.

7. Mukhyamantri Parivara Samman Nidhi Yojna of Haryana limits the annual financial assistance at flat Rs 5,000 for agricultural families (including landless labourers) with less than five acres and also monthly income below Rs 15,000.

4. PM KISAN MANDHAN – PENSION SCHEME FOR FARMERS

- It is a government scheme meant for old age protection and social security of Small and Marginal Farmers (SMF).

» Eligibility:

- All SMF in the age group of 18-40 years, and whose name appears in the land records of the state as of 1st Aug 2019.

» Benefits:

- Minimum assured pension of Rs 3,000/- pm after attaining the age of 60 and 50% of the pension amount to spouse after the death of the farmer. (Family pension is applicable only to spouse)

» Other features to note:

- It is a voluntary and contributory pension scheme (monthly contribution between Rs 55 to Rs 200 per month till the age of 60)
- Matching contribution will be made by the government.
- LIC will be the pension fund manager of the scheme.

» Synergy with PM-KISAAN -> Farmer can ask for withdrawal form PM-KISAAN for this scheme

» Exceptions

- SMFs already covered under any other social security schemes like NPS, ESIC, EPFO etc.
- Who opted for Shram Yogi Maandhan Yojana or Vyapari Maandhan administered by Ministry of Labour and Employment.
- Other exceptions similar to PM-KISAN

» Should Possess

- Aadhaar
- Saving Account/PM-KISAAN Account

- **Need:**

- » 90% of Indian workforce not covered under old age pension initiative

5. FOOD SECURITY

- **What is Food Security?**
 - As per the Committee on World Food Security, the food security exists when all people, at all times, have **physical, social and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences** for an active and healthy life.
 - The **Four Pillars** of food security are availability, access, utilization, and stability (both price and supply).
- **Key Initiatives to Promote Food Security in India:**
 - » **National Food Security Act, 2013:** It seeks to provide subsidized food grains to approximately 2/3rd of India's population.
 - Other than this, Mid-Day Meal Scheme, Integrated Child Development Program, and the PDS system are focused on ensuring nutritional security.
 - » **Various initiatives at state level include:**
 - '**Indira Canteen**' initiative by the state of Karnataka, which serves breakfast, lunch and dinner at very low prices.
 - '**Amma Unavagam**' (Mother's Canteen) is an initiative by TN.
 - » **Government also takes** several initiatives to control food inflation:
 - **Maintaining Buffer stocks**
 - **Controlling Exports** in case of scarcity
 - **Using MSP mechanism** to encourage farmers to grow crops which are in shortage.

2) NATIONAL FOOD SECURITY ACT, 2013

- **Introduction:**
 - The NFSA, 2013 seeks to provide for food and nutritional security in human lifecycle approach, by ensuring adequate quantity and quality of food at affordable prices to people to live a life with dignity and for matters connected therewith and incidental thereto.
- **Salient Features of the Act are:**
 - It gives legal entitlement to 75% rural and 50% of the urban population (which come to 2/3rd of country's population) for subsidized grains under TPDS.
 - It moves from '**household food entitlement**' to '**individual food entitlement**'. Every individual is entitled to 5 kg of rice, wheat, or coarse cereals a month at Rs 3, Rs 2 and Rs 1 per kg. The beneficiary is identified by the state government based on the parameters decided by centre.
 - The entitlement for Antyodaya Anna Yojna (AAY) will remain at Rs 35 kg per household.
 - **For pregnant and lactating mothers**, the act provides for free meal at the local anganwadi (during pregnancy and upto six months after child birth) as well as maternity benefits of Rs 6,000 in instalments.
 - **For Children:**
 - Below 6 months: 'Exclusive breast feeding shall be promoted)

- **Six month to six years:** The age guarantees an age appropriate meal, free of charge, through the local anganwadis.
- **Six years to 14 years:** One free mid-day meal, shall be provided everyday (except on school holidays) in all school run by local bodies, government and government aided schools, upto Class VIII.
- The act also provides for the Creation of State Food Commissions which will monitor and evaluate the implementation of the act, give advice to state governments and will enquire into violations of entitlement.
- **Food Security Allowance** in case of non-supply of the entitled quantities of foodgrains or meals to entitled persons under the act.
- **Schedule 3 of the act** also lists various provisions for advancing food security, under three broad categories:
 - Revitalization of Agriculture; reforming procurement, storage and movement; other provisions like drinking water, sanitation, health care, adequate pensions for senior citizens, persons with disability and single women.

- **Progress:**
 - » NFSA has been implemented in all 36 states/Uts covering more than 80 crore persons.
 - » Direct Benefit Transfer: In Chandigarh, Puducherry, and Urban areas of Dadra and Nagar Haveli, the act is being implemented in the cash transfer mode.
- **How has it contributed in reducing Hunger:**
 - Increased food availability for weaker section. It is visible in increased government food subsidy burden.
 - By taking a lifecycle approach, it has ensured the right from the time women get pregnant to the death of a person, if the person is vulnerable, she would get food security support.
 - With improved used of technology, like Aadhar based authentication, leakage has reduced.
 - **One Nation One Ration Card (ONORC)** will also ensure that migrants are able to enjoy the benefits of NFSA.
- **Challenges:**
 - Fiscal Burden; Leakages and Siphoning; Identification of Beneficiaries issues; Infrastructural issues; Aadhar Related Issues; Social and Cultural Factors;

6. PUBLIC DISTRIBUTION SYSTEM AND ASSOCIATED ISSUES

- **Introduction**
 - The Public distribution system (PDS) evolved as a system of management of scarcity and for distribution of food grains at affordable prices. Over the years, PDS has become an important part of Government's policy for management of food economy in the country.
 - **Note:** PDS is supplemental in nature
 - **Responsibility:** PDS is operated under the joint responsibility of the Central and the State Government.
 - » **Central Government**, through Food Corporation of India (FCI), has assumed the responsibility of procurement, storage, transportation and bulk allocation of food grains to the state governments.

- » **State government** own the operational responsibilities including allocation within state, identification of eligible families, issue of Ration Cards and supervision of the functioning of the fair price shops (FPSs).
- **Commodities:**
 - » Under the PDS, presently the commodities namely **wheat, rice, sugar and Kerosene** are being allocated to the States and UTs for distribution.
 - » **State governments** also distribute additional items of mass consumption through the PDS outlets such as pulses, edible oils, iodized salts, spices etc.
- **Evolution of PDS**
 - » Emanated in critical food shortages of 1960s. Initially began with focus on urban scarcity area. It contributed to containment of price rise and ensured access to food grain to urban consumers.
 - » With increase in food production, primarily due to green revolution, the outreach of PDS was extended to tribal blocks and high poverty incidence areas in 1970s and 1980s.
 - » Till 1992, it remained a general entitlement.
 - » In 1992, **Revamped PDS** was launched in 1775 blocks throughout the country - where a substantial number of poor lived.
 - » **Targeted PDS (TPDS)** was started in 1997 with focus on the poor.
 - **Three core TPDS categories:** Under the TPDS, households are classified in accordance with a set of socio-economic parameters and provided with a ration card on this basis. Across India, the **three core PDS card categories** are above poverty line (APL), below poverty line (BPL) and Antyodaya (poorest of the poor) (AAY was started in 2000).
 - » **Antyodaya Anna Yojana (AAY)**
 - In order to take TPDS more focused and targeted this category of population, the AAY was launched in December 2000 for 1 crore poorest of the poor families among the number of BPL families covered under TPDS within the states and providing them food grains at highly subsidized rate of Rs 2 per Kg for wheat, Rs 3 per Kg for rice. The states/UTs are required to bear the distribution cost, including margin to dealers and retailers as well as the transportation cost.
 - **The scale of issue** was initially **25 Kg per family per month** and was increased to 35 Kg per family per month with effect from April 1 2002.
 - » **TPDS under National Food Security Act, 2013**
 - NFSA, 2013 was notified on 10th Sep 2013.
 - It covers 2/3rd of the entire population (75% of rural population and 50% of the urban population) under two categories of beneficiaries: 1) **Antyodaya Anna Yojana (AAY)** and 2) **Priority Households (PHH)**.

- Under the NFSA, 2013, the **priority households** are entitled to receive food grains **@5 Kg per person per month** at the issue price of Rs. 3.00, Rs. 2.00 and Rs. 1.00 **per Kg** for rice, wheat and coarse grains respectively. **The existing AAY households**, however, continue to receive 35 Kg of food grains per household per month.
- **Pradhan Mantri Garib Kalyan Anna Yojna**
 - A Part of **Atmanirbhar Bharat Abhiyan**.
 - It was launched to provide **additional allocation of foodgrains from the Central Pool** at the rate of 5 kg per person per month **free of cost** for all the beneficiaries covered under TPDS (AAY & PHH) including those covered under DBT for a period of 3 months i.e. April - June 2020.
 - It has **continued to be extended since then**.
 - In **Nov 2023**, the government has declared the **extension of PMGKAY** for an **additional five years till 2028**. The implementation of this extension **began from 1st Jan 2024**.
- **Key Challenges faced by the PDS system**
 1. **Corruption and Leakage; Inaccurate targeting of beneficiaries; Heavy losses in storage and transportation; Later and Irregular arrival of grains in fair price shops; WTO's Agreement on Agriculture; Nutritional challenges due to lack of focus on food diversity; Digitization of PDS**
- **REVAMPING PDS**
 - » **Steps being Taken.**
 - a. **Decentralization of Procurement Process**
 - b. **Integrated Management of Public Distribution System** - (IM-PDS): Integrate PDS system/portals of states/UTs with Central Systems/portals with and aim to **introduction of national portability, and de-duplication of ration cards/beneficiary etc.**
 - c. **One Nation One Ration Card (ONORC)** - To ensure that even migrant workers are able to enjoy the benefit of Public Distribution system.

3) ONE NATION ONE RATION CARD (ONORC)

- **What is a Ration Card?**
 - » PDS families are **issued Ration Cards** to access this benefit. Currently, **around 23 crore ration cards** have been issued in all states and UTs.
 - » **Before the ONORC system**, a ration card could be used to access subsidized grains from the **fair price shop assigned in the locality**. **A migrant was not able to access subsidized grains in new locality.**
- **One Nation, One Ration Card (ONORC)**
 - ONORC is being **implemented under NFSA, 2013**. it allows beneficiary to **buy subsidized food grains from any FPS shop in the country**, by using the same ration card after **biometric/Aadhar authentication** on electronic Point of Sale (ePOS) devices.

- **How does ONORC work?**
 - » Integrated Management of Public Distribution System (IM-PDS) portal, provide the technical platform for the inter-state portability of ration cards.
 - » Biometric authentication on ePOS devices enable beneficiary to purchase the entitled food grains under the NFSA.
 - » Annavitran.nic.in hosts the data of distribution of foodgrains through E-PoS devices within a state.
 - It allows availing of PDS benefit outside the district but within the home state.
 - » **Standard Format of ration cards** which ensures an unique ID of each customer.
- **How much foodgrains can be procured?**
 - Only the migrants' entitlement, the rest of the grains would be procured by the family back home.
- **Steps being taken**
 - **Seeding of Ration Cards** with Aadhaar numbers, **Installation of ePOS devices** at all FPS
 - Once 100% target of both these are reached, the all-India portability of ration cards will become a reality.
- **Needs/Advantages of One Ration Card**
 - **Right to Food:** Enable **migrant families to access PDS benefits** from any Fair Price Shop in the country.
 - **End Discrimination and Improve the quality of service**
 - **Aadhaar seeding** would also **weed out duplicate ration cards**
 - It could be highly crucial for emergencies like the COVID-19 crisis.

7. AGRI-MARKETING REFORM

- **Efficient Agri-marketing is crucial for:**
 1. **Ensuring proper prices for farmers; Lower prices for consumers; Stimulating agro-based and food processing industrial growth.**
 2. **Reduced subsidy burden for government.**
- However, the Agri development in India has ignored the potential of marketing and has continued to follow its old trajectory. Since, agri-marketing is a state subject, it is stuck in a tussle between Centre and states.
- **How has the system functioned so far? -> The APMC System and its issues**
 - The Agri markets in India are mainly regulated by the state Agriculture Produce Marketing Committee (APMC) laws. These laws enable state governments to regulated wholesale markets and marketing practices. APMC Acts make it mandatory for farmers to sell their produce only to licensed merchants (can also be called government approved merchants) at Mandis set up by State Agriculture Market Boards.
- **What was the need of APMC Laws / Regulated Markets (Mandis)**

- In the absence of any market regulations, the farmers were being exploited by traders and intermediaries.
 - The regulated Mandis prevented the exploitation by ensuring **fair prices through bidding process** at these regulated markets.
- **Current Situation**
- India currently has around 2500 principle regulated primary agricultural markets in the country which are governed by state APMC Acts and administered by a separate Agricultural Produce Marketing Committee.
 - APMCs regulate the trade of farmers by
 - Providing **licenses** to buyers, commission agents, and private markets.
 - Levy **market fees** or any other charges on such trade.
 - Provide **necessary infrastructure** within their market to facilitate trade.
 - Trade is allowed within the APMC mandis or between two APMC mandis situated in the same state.
- **How these Mandis have served farmers:** These APMCs have ensured that fruits of Green Revolution reach farmers.
- **Reduction in exploitation by intermediaries** - not allowed to sell products outside the mandi
 - **Good Price: Sale through auction** -> best possible prices available.
- **But, present APMC structure has led to many challenges/limitations**
- **Price Fixing, Cartelization** by licensed traders;
 - **Information asymmetry** and opaque process for price discovery.
 - **Undue deduction** in the form of commission charges and market fees.
 - **Fragmentation of agri-market**
 - **Hindered private investment in agri-marketing** -> **Poor Infrastructure and low use of technology**
 - As according to APMC acts, only state governments could set up these Mandis.
- **To remove the above limitations, the central government has taken many steps:**
1. **Model APMC Acts**
 2. **Bihar** has completely done away with APMC act and **Kerala** had never implemented it. **Maharashtra** is also trying to liberalize the state APMC law.
 3. Promotion of **e-NAM** by central government for promotion of unification of markets both at state and national level.
 4. Development primary markets / submarkets as **GrAMs** (Gramin Agriculture Markets) with improved infrastructure
 5. Creation of **Agri Market Infrastructure Fund (AMIF)** for development and upgradation of Gramin Agriculture Markets.
- **The three farm laws and their repeal [2020 and 2021]**
1. **The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020 [FPTC]**
 - It sought to create an ecosystem where farmers and traders enjoy the freedom of choice to sale and purchase of farmer's produce. The law granted freedom to farmers and buyers to transact in agriculture commodities even outside APMC mandis ensuring

competitive alternative trading channels to promote efficient, transparent, and barrier free inter-state and intra-state trade.

- It also allowed electronic trading and abolished market fees, cess or levy.
- It allowed electronic trading and e-trading platform could be set up by companies, partnership firms, or registered companies.

2. The Farmers' (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act [FAPAFS], 2020

- The act provided for national framework for contract farming which protects and empowers the farmers in their engagement with agri-business firms, whole sellers, processors etc.
- The act regulated the farming agreement and ensured a guaranteed price and mechanism for determining the guaranteed price.
- It had also established a well-defined, fast tracked, dispute settlement system with SDM as adjudication authority and DM as the appellate authority.

3. the Essential Commodities (Amendment) Act, 2020 [ECA]

- It sought to remove commodities like cereals, pulses, oilseeds, edible oils, onion and potatoes from the list of essential commodities. The amendment was aimed at ending the era of frequent imposition of stock-holding limits except under extraordinary circumstances.
 - As per this law stock limit could be imposed only if there was huge price fluctuations (100% price rise for horticulture crops or 50% increase in retail price on non-perishable agri-good).

- **Some committees/reports which had recommended similar changes in the APMC system.**

- Expert Committee on Strengthening and Development of Agriculture Marketing - Chairman: **Shri Shakerlal Guru** (June 2011)
- Report on Task Force on Employment Opportunities - Chairman: **Shri Montek Singh Ahluwalia** (2001)
- Model Act on Agriculture Marketing Reforms - Chairman: **Shri R.C.A Jain** (July 2001)
- Model Act on Agriculture Marketing (Sep 2003)
- Serving Farmers and Saving Farmers - First Report - **National Commission on Farmers** - Chairman: **Dr. M.S. Swaminathan** (2004)
- Final Report of Committee of State Ministers, in-charge of Agriculture Marketing to Promote Reforms
- Budget 2017-18
- **Standing Committee on Agriculture**, Ministry of Agriculture and Farmers Welfare : Agriculture Marketing and Role of Weekly Graamin Haats (2018-19)
- **Several Economic Surveys**

- **Why farmers protested?**

- **Doubts about MSP regime weakening** due to private markets and players
- **Unregulated markets may be problematic for farmers.**

- **Lack of Focus on Marketing Infrastructure** -> APMC Mandi infra may deteriorate -> the changes may have resulted in gradual erosion of the quality of trading infrastructure as was seen in case of Bihar after APMC Act was repealed in 2006.
- **In Contract Farming** it had been seen that small and marginal farmers are generally on the losing side with highly one-sided contracts, delayed payments, undue rejections and outright cheating besides poor enforcement of contracts. Further, the adjudication of dispute was left in the hands of executive.
- There was a **gross communication failure** on the part of the Central government to explain to farmers what these laws are, and how they are intended to benefit them.

4) E-NAM

- **Introduction: e-NAM**
 - » e-NAM is a pan India electronic trading portal for farm produce which creates a unified national market for agricultural commodities by integrating existing APMC markets and other market yards. It was launched in **April 2016**.
 - » The Small Farmers' Agribusiness Consortium (SFAC) acts as the leading implementing agency of e-NAM. It operates and maintains the platform with the help of a strategic partner, NFCL
 - » This portal provides a single window service for all APMC related services and information, such as commodity arrivals and prices, provision of responding to trade offers, buy and sell trade offers, among other services.
 - » Under e-NAM, the Government provides free software and one time assistance of Rs 75 lakh per mandi for computer hardware and IT infrastructure.
 - The hardware includes quality assaying equipment and creation of infrastructure for cleaning, grading, sorting, packaging and compost unit, etc.
- **Salient Features**
 - » It provides for a national e-market platform for transparent sale transaction.
 - » It **enables farmers to showcase their produce** through their nearby markets and **facilitate traders from anywhere to quote price**.
 - » **Liberal licensing** of traders / buyers and commission agents by state authorities.
 - » There are no preconditions for physical presence or possession of shop/premises in the market yard.
 - » One license for the trader would be valid all across the country.
 - » **Single point levy of the market fee**, i.e. on the first wholesale purchase from the farmer
 - » Harmonizing the quality standards of agricultural produce and infrastructure for quality testing is made available in every market to enable informed bidding by buyers. At present, Common tradeable parameters have been developed in 25 commodities.
 - » **States desirous to join** has to accordingly **enact suitable provisions in their APMC Act**.
 - The amendments include a single point levy of mandi fee, unified trade license valid across all mandis of the state, and provision for e-auction facilities.

- » States can have their own electronic platform and can decide to link them to NAM.

Budget 2024-25: About E-NAM: There has been an integration of 1,361 mandis under e-nam, supporting trading volume of around 3 lakh crores.

5) GRAMIN AGRICULTURE MARKETS (GRAMS)

- **About GrAMs (According to Budget 2018-19)**
 - » Existing 22,000 rural haats will be upgraded to **Gramin Agriculture Markets (GrAMs)**.
 - In these GrAMs physical infrastructure will be strengthened using MGNREGA and other government schemes.
 - These GrAMs will be electronically linked to e-NAM and exempted from regulations of APMCs. This will provide farmers with facilities to make direct sale to consumers and bulk purchasers.
 - An **Agri-Infrastructure Fund** with a corpus of Rs 2000 crore will be set up for developing and upgrading the agricultural market infrastructure in the 22000 Grameen Agricultural Markets (GrAMs) and 585 APMCs.
 - Prime Minister Gram Sadak Yojana Phase - III will ensure these GrAMs are connected to major link roads.
- **How will it benefit farmers?**
 - » GrAMs will serve as multi-purpose platforms for assembly, aggregation and local retail; It will enable flow of market intelligence and thus better price realization for farmers; even small and marginal farmers will benefit from E-NAM; improved infrastructure;
 - » Thus, GrAMs will provide systematic linkage access points to realize the vision of Unified National Market by bringing primary post production activities to farmers at village level.

6) AGRI-INFRASTRUCTURE FUND

- It is a central sector scheme which provide a medium to long term loans for investment in viable projects for post-harvest management infrastructure and community farming assets.
 - » Loans to be disbursed for only 6 years (2020-21 to 2025-26)
 - » Interest subvention and credit guarantee assistance will be given until 2032-33.
- **Intended beneficiaries:** Rs 1 lakh crore to be provided by banks and financial institutions to:
 - » Primary Agriculture Credit Societies (PACS), Marketing Cooperatives Societies, FPOs, SHGs, Farmers, Joint Liability Groups, Agri-entrepreneurs, Startups, Central/State Agency or Local Body Sponsored PPP Projects.
- **Benefits**
 - » **Interest subvention** of 3% per annum upto a limit of 2 crore. This subvention will be available for a max period of 7 years.
 - » Further, **Credit Guarantee Coverage** will be available for eligible borrowers from this financing facility under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme for a loan of upto Rs 2 crore.

- FPOs created under FPO promotion scheme of Department of Agriculture, Cooperation, & Farmer Welfare (DACFW) will also get Credit Guarantee
 - » The Fee for this coverage will be paid by the government.
 - » **Moratorium** for repayment under this financing facility may vary subject to minimum of 6 months and a maximum of 2 years.
- **The implication** of government will not be of more than Rs 5,000 crore in the form of Interest Subvention subsidies.
- Budget 2021-22 have announced that APMCs can get access to Agriculture Infrastructure Funds for augmenting Infrastructure Facilities.

7) KRISHI UDAN 2.0

- **Introduction:**
 - » The **integration of Agriculture and aviation** is possible **in three ways:**
 - Evolutionary possible use of biofuel for aircraft in future
 - Use of drones in agriculture sector
 - Greater integration and value realization of agricultural products through schemes like Krishi UDAN. Krishi UDAN 2.0 is focused on this third way.
- **Agri-UDAN 2.0:**
 - » Krishi UDAN 2.0 lays out a **vision of improving value realization** by optimizing and integrating agri-harvesting and **air transportation**. This would contribute to agri-value chain sustainability and resilience under different and dynamic conditions.
 - » It is focused on facilitating and incentivizing movement of Agri-produce by air transportation.
 - » It would be **implemented at 53 airports** across the country mostly focusing on NE, tribal regions and Hilly region and is likely to benefit farmers, agri forwarders and Airlines.
 - » **A pilot version** would run for 6 months and later changes would be implemented as per the learning.
 - » **Key Highlights:**
 - **Promoting movement of agri-produce by air transportation** -> Waiver of landing, parking and some other charges on selected airports of AAI.
 - **Strengthening Cargo related infrastructure** at airports and off airports: Focus is on developing a hub and spoke model and a freight grid. Airside transit and trans-shipment infrastructure will be created at Bagdogra and Guwahati airports, and at Leh, Srinagar, Nagpur, Nashik, Ranchi and Raipur as part of the focus on NER, Tribal and Hilly districts.
 - **Other Concessions** have been sought: States have been requested to reduce Sales Tax to 1% on ATF for freighters/ P2C aircraft as extended in UDAN flights.
 - **Resources-Pooling** have been planned. It includes collaboration with other government departments and regulatory bodies to provide incentives and concessions to enhance air-transportation of Agri-Product.
 - **Technological Convergence:** Development of **E-KUSHAL** (Krishi UDAN for Sustainable Holistic Agri-Logistics) platform to promote information dissemination to all stakeholders. This will also help in coordination, evaluation and monitoring of the scheme. Furthermore, integration of E-Kaushal with e-NAM has also been proposed.
 - **The strategic selection of airports** is primarily focused on northeast region.

- Airports have been selected keeping in mind the whole country.

8. FOOD PROCESSING SECTOR – THE SUNRISE SECTOR

1. Infrastructure Improvement

a. **Pradhan Mantri Kisan SAMPADA Yojana** (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) - a central sector scheme with an allocation of Rs 6,000 crore for the period 2016-20 for creation of modern infrastructure with efficient supply chain in the food processing sector.

- It has incorporated other schemes related to food processing under it including Mega Food Parks, Integrated Cold Chain and Value Addition Infrastructure, Creation/Expansion of Food Processing/Preservation Capacities, Infrastructure for Agro-Processing Clusters, Creation of Backward and Forward Linkages, Food Safety and Quality Assurance Infrastructure, and Human Resource and Institutions.

b. **Mega Food Park Scheme, 2008**

- It focuses on establishing mega food clusters for creating major infrastructure facilities in India to add value and reduce wastage at each stage of the supply chain (from farm to market). MoFPI provides a assistance of 50% of the project cost (excluding land), subject to a maximum of Rs 50 crore.

c. **Modernization of Abattoirs Scheme:**

- Enhance processing and preservation capacities to improve quality and reduce wastage.

2. Production Linked Incentive Scheme for Food Processing Sector (PLISFPS)

- A central sector scheme for implementation during 2021-22 to 2026-27 with an outlay of Rs 10,900 crore.
- Aimed at increasing the production capacity and improved international branding for the Food Processing Sector in India.

3. One of the priority sector under Make in India initiatives

4. Steps to ensure Credit Availability

- The government has set up a **Special Fund of Rs 2,000 crore in NABARD** to make available affordable credit at concessional rate of interest to designated food parks and agro-processing units.
- Food and Agro Processing Units and Cold Chain infra have been brought under the ambit of **Priority Sector Lending**
- Subsidized credit through PM FME**

5. Pradhan Mantri Formalization of Micro Food Processing Enterprise (PM FME) provides credit linked subsidies to individuals/SHGs/FPOs etc. for food processing infra development. It also helps in development of common infrastructure like labs, warehouses etc.; support for marketing and branding; training; product development; packaging etc. it is based on **One District One Product (ODOP)** approach.

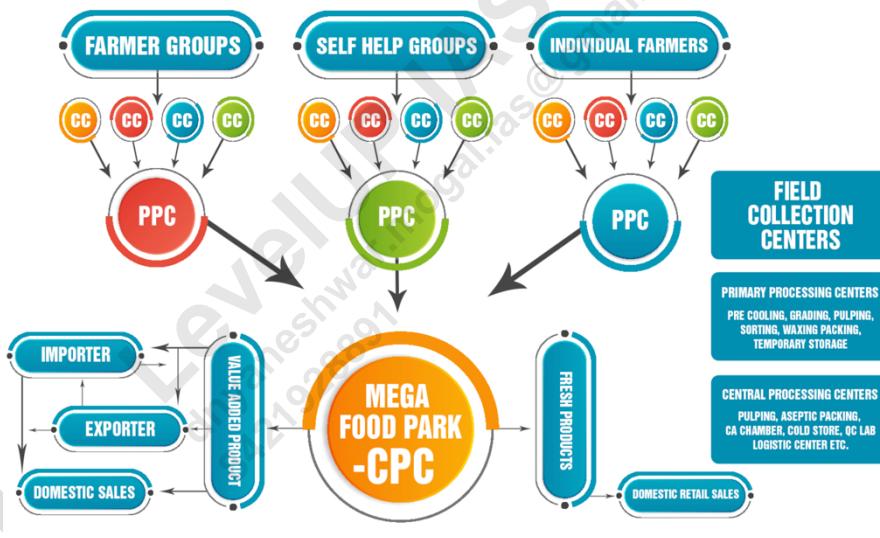
6. Other steps for Attracting Investment in the sector:

- 100% FDI is permitted under the automatic route for food processing sector.
 - For e-commerce in respect of food products manufactured and/or produced in India, 100% FDI through approval route is allowed.
- MoFPI, Govt have signed MoU with Japan, Italy, Vietnam and Taiwan for promotion of investment in the Food Processing Sector. (July 2022)

8) MEGA FOOD PARK SCHEME

- **Ministry:** MoFPI
- This scheme is now a component of Pradhan Mantri Kisan Sampada Yojana (PMKSY).
- It focuses on **establishing mega food clusters** for creating major infrastructure facilities in India to add value and reduce wastage at each stage of the supply chain (from farm to market). MoFPI **provides a assistance of 50% [75% in NE and Hilly states] of the project cost** (excluding land), subject to a maximum of Rs 50 crore.
- The park is developed on **Hub and Spoke Model**, where Central Processing Centre acts as Hub and **PPCs** and **CCs** act as Spokes.
 - Facilities for **primary processing and storage** is created near the farm in the form of **Primary Processing Centre (PPC)** and **Collection Centre (CC)**.
 - Common facilities and enabling infrastructure for providing **secondary and tertiary infrastructure and processing services** is created and **Central Processing Centre (CPC)**.

MEGA FOOD PARK MODEL



- Under the scheme government has sanctioned setting up of 42 Mega Food Parks in the country.
 - Of this final approval to 38 MFP have been given. Out of these, as of Aug 2021, 22 Mega Food Parks are operational.
- **Advantages**
 - Contributes to reduction of food wastage, increased income of farmers, better value addition etc.

- Gives boost to food processing sector (hence to export and employment opportunities) by creation of high quality infrastructure.
- Capacity building of producers and processors and creation of efficient supply chain along with significant direct and indirect employment generations.

9) PLISFPI (PRODUCTION LINKED INCENTIVE SCHEME FOR FOOD PROCESSING INDUSTRY)

- PLISFPI has been formulated based on the PLI Scheme for NITI Aayog under '**Aatmanirbhar Bharat Abhiyan for Enhancing India's Manufacturing Capabilities and Enhancing Exports**'.
- It is a Central Sector Scheme for implementation during 2021-22 to 2026-27 with an outlay of Rs 10,900 crore.
- **Objectives of the scheme:**
 - Support FPIs with stipulated minimum sales and willing to make minimum stipulated investments for expansion of processing capacity and branding abroad to incentivize emergence of strong Indian brands:
 - Support creation of Global Manufacturing Champions.
 - Strengthen select Indian Brand of food products for global visibility and wider acceptance in the international markets
 - Increase employment opportunities in off-farm jobs.
 - Ensuring remunerative prices of farm produce and higher income to farmers.
- MoFPI invited applications for availing sales based incentives and grants for undertaking Branding & Marketing activities abroad under the scheme from three categories of applicants:
 - **Category 1:** Applicants are large entities who apply for Incentives based on Sales and Investment Criteria. Applicant under this category could undertake branding & marketing activities abroad also and apply for grant under the scheme with a common application.
 - **Category 2:** SMEs applicants manufacturing innovative/ organic products who apply for PLI incentive based on sales.
 - **Category 3:** Applicants applying solely for grant for undertaking Branding & Marketing activities abroad.

10) PM FORMALIZATION OF MICRO FOOD PROCESSING ENTERPRISES (PM FME)

- **Ministry:** MoFPI
- Launched in June 2020 as part of "AtmaNirbhar Bharat Abhiyan".
- It is a **centrally sponsored [60:40 (90:10 for SCS)]** scheme which will be implemented over a period of five years 2020-21 to 2024-25 with an outlay of **Rs 10,000 crores**.
- The scheme is expected to benefit 2 lakh micro food processing units through credit linked subsidy.
- **Key Steps Planned:**
 - **Credit Linked Subsidy @35%** of the eligible project cost with a maximum ceiling of Rs. 10 lakh per unit would be provided **existing individual micro-food processing enterprises**.

- **Seed capital @Rs 40,000 per SHG member** would be provided for working capital and purchase of small tools.
 - **FPOs/SHGs/ Producer Cooperatives** would be provided credit linked grant of 35% for capital investment along the value chain.
 - **Support for development of Common infrastructure** - through credit linked grant @35% for development of common infrastructure including common processing facility, lab, warehouse, cold storage, packaging and incubation centre through FPOs/SHGs/ cooperatives or state owned agencies or private enterprises to use by micro units in the cluster.
 - **Support for marketing and branding** would be provided to develop brands for micro units and groups with 50% grant at State or regional level which could benefit large number of micro units in clusters.
 - **Special focus on Capacity Building and Research**
 - NIFTEM and IIFPT, the two academic institutions under MoFPI along with state level technical institutions selected by state would be provided support for training of units, product development, appropriate packaging and machinery for micro units.
- The scheme adopts **one district one product approach (ODOP)** to reap **benefit of scale** in terms of procurement of inputs, availing common services, and marketing of products.
- The state will identify the food product for a district keeping in view the existing clusters and availability of raw material.
 - ODOP product could be cereal based, perishable or a food product widely produced in a district and their allied sector. E.g. mango, potato, litchi, bhujia, petha, papad, fisheries, poultry, meat, animal feed etc.
 - Preference would be given to ODOP product but other units would also be supported.
 - But support of common infrastructure, branding, marketing etc. would be available for ODOP only.
 - The scheme also places focus on waste to wealth products, minor forest products and Aspirational districts

9. PENDING TOPICS

- Agri-Exports
- Animal Husbandry, Fishery etc.

TARGET PRELIMS 2024

BOOKLET-24; ECONOMY-5

AGRICULTURE-4: ANIMAL REARING

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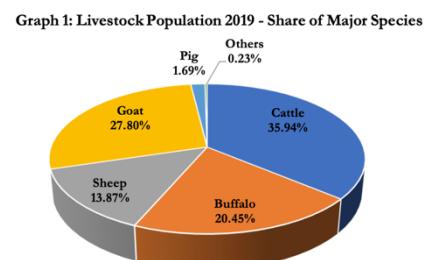
2. IMPORTANT STATS

1) BASIC ANIMAL HUSBANDRY STATISTICS, 2023

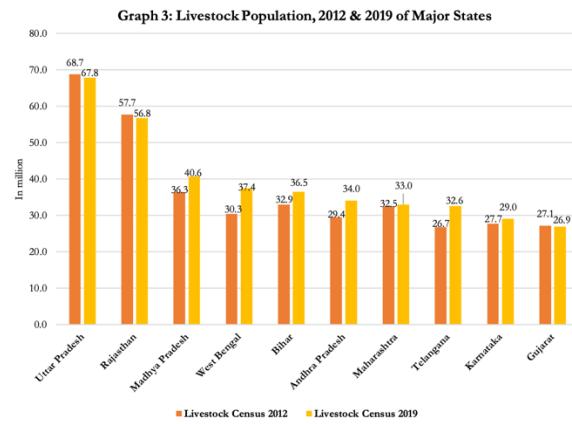
- Released by Ministry of Fishery, Animal Husbandry & Dairying in Nov 2023. It is based on Animal Integrated Sample Survey (March 2022-Feb 2023). This ISS is conducted across the country in three seasons i.e., Summer (March-June), Rainy (July-Oct) and Winter (Nov - Feb).
- **Key Highlights:**
 - i. **Milk Production:**
 - 230 million tonnes (a growth of 22.81% over past five years which was 187.75 million tonnes in 2018-19).
 - Highest Milk Producing States: UP (15.72%); Rajasthan (14.44%); Madhya Pradesh (8.73%); Gujarat (7.49%) and Andhra Pradesh (6.70%)
 - ii. **Egg Production:**
 - 138.38 billion (33% growth over five years as compared to estimates of 103.83 billion in 2018-19)
 - **Highest Egg Producing States:** Andhra Pradesh (20.13%); TN (15.58%); Telangana (12.77%); West Bengal (9.94%) and Karnataka (6.51%);
 - iii. **Meat Production:**
 - 9.77 million tonnes (20.39% increase in five years - 8.11 million tonnes in 2018-19)
 - **Highest Meat Producing State** (Uttar Pradesh (12.20%); West Bengal (11.93%); Maharashtra (11.50%); Andhra Pradesh (11.20%); Telangana (11.06%))
 - iv. **Wool Production:**
 - 33.61 million Kgs (**negative growth** (-16.84% over the past five years as compared to the estimates of 40.42 million kg during 2018-19))
 - **Highest Wool Producing States:** Rajasthan (47.08%); J&K (22.55%); Gujarat (6.01%); Maharashtra (4.73%); Himachal Pradesh (4.72%)

2) 20TH LIVESTOCK CENSUS

- **Background:**
 - » The livestock census is conducted periodically [**every five years**] in the country since 1919. It usually covers all domesticated animals.
- **Key highlights of 20th Livestock census** (launched in Oct 2018)
 - » **Total livestock population: 535.78 million** (showing an increase of 4.6% over the livestock census 2012)
 - » **The Bovine population** (Cattle, Buffalo, Mithun and Yak) is 302.79 million in 2019 and shows an increase of 1% over the previous census.
 - **Cattle - 192.49 million** (+0.8%)
 - **Buffaloes - 109.85 [+1%]**
 - **Total milch animals** (in milk + dry) in cows and buffaloes - **125.34 million** (+0.6%)
 - » **Total Goat - 148.88 million** (+10.1%)



- » **Total Sheep** - 74.26 million (+14.1%)
- » **Pigs** - 9.06 million (-12.03%)
- » **Other livestock** (Mithun, Yak, Horses, Ponies, Mule, Donkeys, camel - 0.23% of the total livestock: **1.24 million**.
- » **State wise distribution.**



3. DAIRY SECTOR IN INDIA

- India is the **world's largest producer (20% of the world's production)** and **consumer of milk** and has the world's largest dairy herd comprised of water buffaloes and indigenous and crossbred cattle.
- **Currently** India produces more than 230 million tonnes of milk. It is an important secondary source of income for 80 million rural households engaged in dairying and for 70% of the workforce that comprised women. It contributes to a fifth of India's farm output and is important source of nutrition in average Indian diet.
- **Net Exporter:** Since the early 2000s, India is a net exporter of the dairy products which primarily include the milk powder.
- **Key Challenges:** Dairy sector in India is characterized by low input -> low output.
 - For e.g. in India annual milk yield per cow is 1642.9 kg, which is only 2/3rd of the global average of 2430.2 kg. The average for USA is 10,457.4 kg.

1) IMPORTANT SCHEMES/ INITIATIVES FOR LIVESTOCK SECTOR

A) RASHTRIYA GOKUL MISSION:

- » To undertake breed improvement program for Indigenous breeds so as to improve the genetic makeup and increase the stock.

B) E PASHU HAAT PORTAL:

- » The portal has been developed under National Mission on Bovine Productivity. It connects breeders and farmers regarding availability of quality bovine germplasm. Through the portal, breeders/farmers can sell or purchase their breeding stock. Information about all forms of germplasm including semen, embryos and live animals with all the agencies and stakeholders in the country has been uploaded on the portal.

C) NATIONAL LIVESTOCK MISSION:

- » It ensures intensive development of livestock, especially small livestock (sheep/goat, poultry rearing etc.) along with adequate availability of quality feed and fodder.
- » The scheme has been restructured for 2021-22 to 2025-26. It focuses on entrepreneurship development and breeds improvement in poultry, sheep, goat, and piggery, including feed and fodder development.

D) LIVESTOCK HEALTH AND DISEASE CONTROL SCHEME:

- » It provides assistance for prevention and control of animal disease like Foot and Mouth Disease (FMD), Peste des Petits Ruminants (PPR), Brucellosis, Classical Swine Fever etc.
- » It is being implemented to supplement the state/UT governments' efforts towards preventing, controlling, and containing, animal disease of economic and zoonotic importance by vaccination.

E) DAIRY DEVELOPMENT:

Government is making efforts for strengthening infrastructure for production, processing and marketing of quality milk and milk products through following schemes:

- National Program for Dairy Development
- National Dairy Plan (Phase-1)
- Dairy Entrepreneurship Development Scheme
- Dairy Processing and Infrastructure Development Fund (DIDF)

F) RS 15,000 CRORE FOR ANIMAL HUSBANDRY INFRASTRUCTURE DEVELOPMENT FUND (AHIDF)

- » Launched as part of ANBA 1.0
- » Aimed at incentivizing investments by individual entrepreneurs, private companies including MSME, FPOs, and Section 8 of Companies to establish (i) dairy processing and value addition infrastructure (ii) meat processing and value addition infrastructure, and (iii) animal feed plant.
- » Government will provide a 3% interest subvention to eligible beneficiaries. There will be a 2 year moratorium period for the principal loan amount and 6 years repayment period thereafter.
- » Loan of upto 90% of the project cost from Scheduled Bank, National Cooperative Development Cooperation.
- » The government would also set up a Credit Guarantee Fund of Rs 750 crore to be managed by NABARD.
 - Credit guarantee would cover those sanctioned projects which are covered under MSME defined ceilings.
 - Guarantee coverage would be upto 25% of the credit facility of the borrowers.
- » To ease out the process an online portal 'ahidf.udayamimitra.in' has been developed by SIDBI through which applicants can apply online to avail loans under the scheme.

G) FIRST EVER CREDIT GUARANTEE SCHEME FOR LIVESTOCK SECTOR LAUNCHED (JULY 2023)

- » Under AHIDF.
- » The scheme facilitates access to finance for unserved and underserved livestock sector, making availability of financial assistance from lenders to mainly first-generation entrepreneurs and underprivileged section of society, who lack collateral security for supporting their ventures. It thus ensures smooth flow of credit to MSME engaged in livestock sector without hassles of collateral security.

- » For operationalizing the scheme, DAHD has established a **Credit Guarantee Fund Trust** of Rs 750 crores, which will provide credit guarantee coverage of upto 25% of the credit facility extended to the MSMEs by the eligible lending institutions.
- » The fund trust incentivizes investments by individual entrepreneurs, private companies, MSMEs, FPOs to establish.
 1. the dairy processing and value addition infrastructure,
 2. meat processing and value addition infrastructure,
 3. Animal Feed Plant,
 4. Breed Improvement technology and Breed Multiplication Farm
 5. Animal Waste to Wealth Management (Agri Waste Management) and;
 6. Setting up of Veterinary Vaccine and Drugs Manufacturing facilities

H) KISAN CREDIT CARD (KCC) FOR ANIMAL HUSBANDRY & DAIRYING FARMERS

I) E-GOPALA APP - INAUGURATED IN SEP 2020

- » It is a comprehensive breed improvement marketplace and information portal for direct farmer use.
 - It gives farmers the freedom from middlemen and provide **all information related to productivity, health and diet for cattle**. It will make it easy for farmers to choose advanced stock.

J) SUTRA PIC (SCIENTIFIC UTILIZATION THROUGH RESEARCH AUGMENTATION

- » Prime Products From Indigenous Cows) (**Feb 2020**) - Under this initiative academic organizations and capable NGOs are provided funds to do research on indigenous cows, its products and application in health, medicine, agriculture, food, nutrition etc.

K) RASHTRIYA KAMDHENU AAYOG WAS APPROVED BY CABINET IN FEB 2019.

- » The Government of India has constituted the “Rashtriya Kamdhenu Aayog” to organize animal husbandry on modern and scientific lines and to take steps for preserving and improving breeds, and prohibiting the slaughter, of cows and calves and other milch and draught cattle
- » It is a high powered permanent body which will formulate policy and issue directions for scaling up sustainable genetic upgradation of bovine resources and also look after implementation of laws and welfare schemes for cows.

2) DAIRY BREEDS IN INDIA

- » Indian breeds have lower milk yield when compared to advanced economies but many of them are capable of improved yields. Further they also carry some beneficial traits like disease resistance, survival on low quality forage which is native to India etc.
- » **Indian Buffalo Breeds**

- The Indian breeds are well adapted to heat and humidity of the region and can consume both green and dry fodder. Most of these water buffaloes are characterized as non-descript or mixed, but there are some well-known breeds including:

Breed	State(s)	Yield (Kg)
Bhadawari	UP	800-1220
Murrah	Punjab and Haryana	1500-2500
Pandharpuri	MHA	1500
Mehsana	Gujarat	1200-1500

» Indigenous Cattle

- India has been bestowed with large number of cattle breeds. Some breeds specialize in milk production, while the others for draught purposes. There are many mixed, non-descript breeds too found in India. Some of the high yielding breeds include:

Breed	State(s)	Yield (Kg)
Sahiwal	Punjab and Rajasthan	1400-2500 kg
Red Sindhi	Odisha, TN, and Kerala	1250-1800 kg
Tharparkar	Rajasthan, Gujarat	1,800-2600 kg
Rathi/Rath	Rajasthan	
Gir	Gujarat	1200 - 1800 kg

» Cross-bred Cattle

- 1960s saw the beginning of programs for inter-breeding through Artificial Insemination of imported exotic breeds with indigenous breeds.
 - Cross-breeds can provide 30 to 50% more milk than indigenous animals under general management.
- The best exotic breeds for India tends to be Holstein, Brown Swiss, Red Dane, and Jersey.
- The most prevalent cross-bred combination includes:

Cross-Bred	Original cattle	Yield
Karan Swiss	American Brown Swiss with Sahiwal or Red Sindhi	3,257 kg
Karan Fries	Holstein-Friesen with Tharparkar	3,700 kg
Frieswal	Friesian with Sahiwal	27,00 kg

3) LUMPY SKIN DISEASE

- About Lumpy Skin Disease:
 - It is a contagious viral disease that affects cattle.

- » The disease is characterized by fever, enlarged superficial lymph nodes and multiple nodules (measuring 2 to 5 cms in diameter) on the skin and mucous membranes (including those of the respiratory and gastrointestinal tracts).
 - » **Negative Economic Implications:** Mortality (1-2%) of cattles; permanent damage on skin lowers the value of hide; the disease may also create reduction in milk production; poor growth; infertility; abortion, and sometimes death.
- **About the Lumpy Skin Disease Virus:** It is a virus of the family Poxviridae, and genus Capripoxvirus also known as Neethling virus.
- **Transmission:**
- » **Vectors:** The disease is transmitted by blood feeding insects, such as certain species of flies and mosquitoes, or ticks.
 - » **Direct Transmissions:** Though LSD is primarily a vector borne disease, it can also spread through direct contact with the mucus of the infected cattle.
- **Extent of Spread in the world:**
- » LSD was first seen as an epidemic in Zambia in 1929. It has also spread to Middle East and Europe.
 - » **Indian Subcontinent:**
 - LSD was first reported to the Bangladesh Department of Livestock Services in July 2019. India too saw the first case of the disease in the same year in WB and Odisha.
 - In 2022, LSD was reported in Gujarat, and it has spread to eight states/UT now.
- **Why is being done to control LSD?**
- » The process of giving goat pox vaccine to healthy cattle has been started.
 - » States are putting temporary ban on cattle transport and cattle fairs.



4) SMALL RUMINANT SECTOR

- **Introduction**
- » Small ruminants (sheep and goat) are widely distributed across various agro-ecological zones of India, playing an important role in socio-economic development of resource poor farmers in rural India. Around 15% of the households in rural India rear sheep/goat and around 70% of the sheep goat are reared by small and marginal farmers.
 - » The total population of goat and sheep in India stands at 200 million (40% of the livestock population in India).
- **Advantage/Significance of Sheep and Goat rearing:**
- » **Alternate Source of income**
 - » **Advantage over ruminant dairy sector.**
 - Low capital investment and production input.
 - Low Feed and management needs
 - Less Space and Feeding requirements

- **Highly Adaptable to drought/Climate Change etc** (high survival rate; high reproductive rates)
- » **Main source of meat production in India**
- » They are also important source of **wool and leather products** along with small amount of milk production.

4. FISHERY SECTOR

- India is the third largest producer of fish in the world (17.4 million tonnes) in 2022-23. India contributes to 8% of the total fish production in the world.
 - **Note:** In 2019-20, India was the 2nd largest fish producer in the world with 14.6 million tonnes.
- **Inland fishery** has a major share in India's fish output with a total production of 16.1 million tonnes (Budget 2024-25 speech).
- Fish has the potential of a fast-growing sector. Keeping this in mind, government created a separate Department of Fisheries in Feb 2019.

1) REGULATION OF THE SECTOR

- Fishery is a **state subject**, thus fishing in the IW and TS come within the purview of the states concerned.
 - » Other activities in the TS and activities, including fishing beyond the TS upto the limit of EEZ, are in the Union List
 - » The Respective **State Marine Fishing Regulation Acts** (MFRA) protect and regulate the fishery resources in the territorial waters (i.e. upto 12 nautical miles from the baseline)
- **Maritime Zones of India** (Regulation and Fishing of Foreign Vessels) Act, 1981, or MZI Act, regulates fishing by foreign fishing vessels in the maritime zones.

2) SCHEMES

A) PRADHAN MANTRI MATSYA SAMPADA YOJANA (PMMSY) LAUNCHED IN 2020

- It is a flagship scheme for focused and sustainable development of fisheries sector in India.
- **Targets:**
 - » **Enhance fish production to 220 lakh metric tons by 2024-25** at an average growth rate of 9%. This result will also lead to doubling export earning to Rs 1,00,000 crores and generate direct and indirect export employment opportunities of about 55 lakhs in the fisheries sector over next five years.
- **Aims and Objectives:**
 - » **Harnessing fishing potential** in a sustainable, inclusive and equitable manner
 - » **Enhancing of fish production** (
 - » **Modernization and Strengthening of Value Chain** - post harvest management and quality improvement.
 - » **Doubling income** of fishermen and fish farmers and **generating employment**
 - » **Ensuring social, physical and economic security** of fishers and fish farmers

- » Robust fishery management and regulatory framework.
- The scheme envisages an **investment of Rs 20 thousand crores in five years** [Centre-9407 crore, States - 4880 crores, Beneficiaries - 5763 crores].
 - » Under this scheme, **Rs 11,000 crore will be spent on activities in Marine, Inland fisheries and Aquaculture** and **Rs 9,000 crore will be spent for developing infrastructure** (such as fishing harbours, cold chain, markets)
- It will be implemented over a period of five years from FY 2020-21 to FY 2024-25 in all states/UTs.

B) BUDGET 2024-25: PMMSY WILL BE STEPPED UP:

- Aquaculture productivity will be enhanced to 3 to 5 tons per hectare.
- **Double exports** to Rs 1 lakh crores
- Generate 55 lakh employment opportunities in near future.

C) NATIONAL GENETIC IMPROVEMENT FACILITY FOR SHRIMP BREEDING

- This facility has been created under PMMSY.

D) SAGAR PARIKRAMA

- **Why in news?**
 - » Union Minister for Fisheries, Animal Husbandry and Dairying (FAH&D) launched Sagar Parikrama Phase-9 on 7th Oct 2023 at Thondi, Tamil Nadu.
- **Sagar Parikrama** is an outreach program intended to reach out fishermen community across the entire coastal belt of the country. It has been launched to understand the issues, experiences and aspirations of fisherfolks and also to create awareness of various schemes and programs including PMMSY and KCC of the Government available to fishermen in coastal areas.
- The **first eight phases of Sagar Parikrama** have covered 4,115 km in 8 Coastal states/UTs including Gujarat, Diu & Daman, Maharashtra, Goa, Karnataka, Kerala, Puducherry, and Andaman & Nicobar.

E) KCC SCHEME EXTENDED TO ANIMAL HUSBANDRY AND FISHERY SECTOR BY BUDGET 2018-19

5. INLAND FISHERIES

- **What are Inland Fisheries and Aquaculture?**
 - » **Inland fishery** is any activity conducted to extract fish and other aquatic organisms from inland waters
 - » **Aquaculture** is the breeding, rearing and harvesting of fish, shellfish, plants, algae, and other organisms in all types of water environments. Aquaculture can be marine or Freshwater.
- **Current Situation:**

- » The inland fish production in the country has witnessed a healthy growth in last five years with production reaching 131.13 lakh tonnes 2022-23. The details of year-wise inland fish production during last five years is given as under:

S.No.	Year	Fish Production (in Lakh Tonnes)	Annual Growth Rate (%)
1	2018-19	97.2	8.62
2	2019-20	104.37	7.37
3	2020-21	112.49	7.8
4	2021-22	121.21	7.76
5	2022-23	131.13	8.18



TARGET PRELIMS 2024

BOOKLET-25; ECONOMY-6

RBI, BANKING AND FINANCIAL SECTOR

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2. RBI'S SURPLUS TRANSFER TO GOVERNMENT

- **Background:**
 - » **Where does RBI get its Revenue from?**
 - **Foreign exchange transactions** (RBI buys when dollar is cheap and sells when it is expensive (i.e. high in demand))
 - **Interest Income** (from government bonds, Liquidity Adjustment Facilities etc.)
 - It also earns a **management commission** on handling the borrowing of state governments and the central government.
 - » **Where does RBI spend money?**
 - Most of the RBI's expenditure is on printing of currency notes, and on staff, besides the commission it gives to banks for undertaking transactions on behalf of the government across the country and to primary dealers, including banks, for underwriting some of these borrowings.
- The **Surplus (Revenue - Expenditure)** is used for transfers to government and increasing the RBI reserves.
 - **Section 47 of the RBI Act, 1934:** "After making provision for bad and doubtful debts, depreciation in assets, contributions to staff and superannuation fund [and for all other matters for which] provision is to be made by or under this Act or which are usually provided for by bankers, the balance, of the profits shall be paid to the Central Government"
 - **Section 48 of the RBI Act, 1934** exempts the bank from paying any income tax, wealth tax or super tax.
- **RBI's Reserves:**
 - The RBI has three mains funds that together comprise its reserves. These are:
 - » **Currency and Gold Revaluation Account (CGRA)** (basically the Economic Capital Buffer)
 - It is maintained by RBI to take care of currency risk, interest rate risk and movement in gold prices risk.
 - Unrealized gains or losses on valuation of foreign currency assets (FCA) and gold are not taken to the income account but instead accounted for in the CGRA. Net balance in CGRA therefore varies as per the size of the asset base, its valuation and movement in the exchange rate and price of gold.
 - When CGRA is not sufficient to fully meet exchange losses, it is replenished from the CF.
 - It is by far the **largest** reserve account of RBI and makes up the significant bulk of RBI's reserve.
 - » **Contingency Fund (CF):**
 - It is a provision meant to meet unexpected and unforeseen contingencies, including depreciation in the value of securities, risks arising out of

monetary/exchange rate operations, systematic risks and any risk arising on account of the special responsibilities enjoined upon the Reserve Bank.

- The CF is the **second biggest fund** of RBI after the CGRA

- » **Asset Development Fund (ADF)**

- It makes up a much smaller share of reserves and is also focused on contingent times.

- **Other RBI Accounts**

- **Investment Revaluation Account - Foreign Securities (IRA-FS)**: The unrealized gains or losses on revaluation of foreign dated securities are recorded in the IRA-FS.

- **Investment Revaluation Account - Rupees Securities (IRA-RS)**: The unrealized gains or losses on revaluation of Rupee securities (IRA-RS) is accounted for in Investment Revaluation Account - Rupee Securities (IRA-RS).

- In 2018, there was a difference between RBI and Finance Ministry on the amount of reserve RBI should keep.

- Following this, **RBI in consultation with the Central Government**, had constituted a **committee chaired by former RBI governor Bimal Jalan to review the Extant Economic Capital Framework (ECF) for the RBI**.

- **Key Recommendations of the Revised Economic Capital Framework (ECF) for the RBI**:

- » Make a distinction in the economic capital of the RBI between 'revaluation reserves' and 'realized equity'.

- Revaluation Reserves are risk buffer against market risks and not available for transfers.

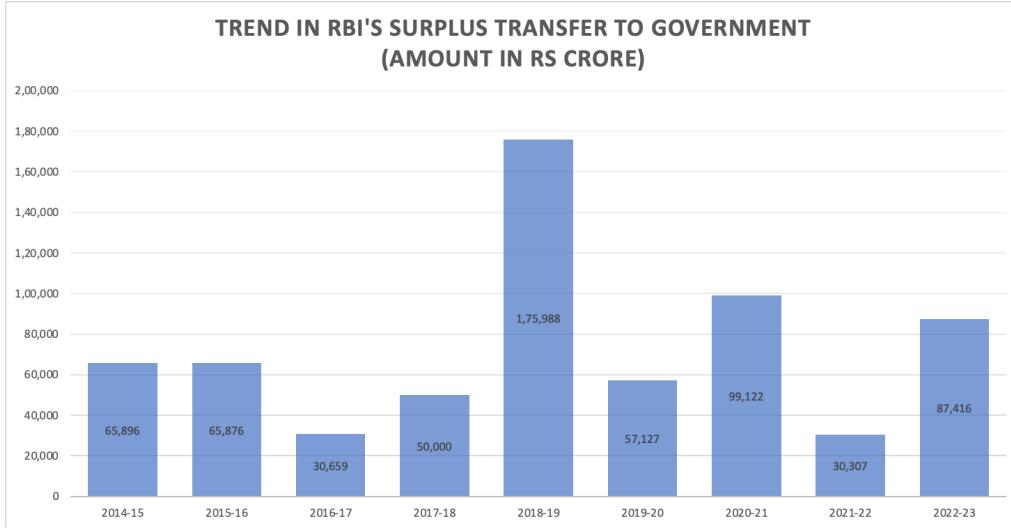
- » **Economic Capital Levels** (basically CGRA) should be in the range of 20-24.5% of the balance sheet.

- » **RBI should maintain a Contingent Risk Buffer** - which mostly comes from CF - of between 5.5-6.5% of the Central Bank's Balance Sheet. **The excess amount** should be transferred to government.

- » A transfer of surplus from the RBI to the government in a phased manner in accordance with the existing practice

- **The committee's recommendations** were based on the consideration of the role of central banks' financial resilience, cross-country practices, statutory provisions and the impact of RBI's public policy mandate and operating environment on its balance sheet and the risk involved.

- In Aug 2019, **RBI board accepted all the above recommendations of the Bimal Jalan Panel committee to transfer Rs 1.76 lakh crore of surplus to government**.



- **RBI's Central Board** approves the transfer of surplus (i.e dividend) to the Union government for every accounting year.
- **Analysis: Positives**
 - i. **As RBI's only shareholder** government has rights over the profits of RBI.
 - ii. **Further, RBI is amongst the most capitalized central banks** in the world, so reduction of excess capital shouldn't be a bad idea.
 - iii. **More productive utilization of RBI's Cash**
 - iv. **Helps government deal with economic slowdown.**

3. CURRENT SITUATION: FINANCIAL STABILITY REPORT (2023)

- **RBI** released 28th issue of Financial Stability Report (FSR) in Dec 2023. Key highlights include:
 - » The Indian economy and the domestic financial system remain resilient, supported by strong macroeconomic fundamentals, healthy balance sheets of financial institutions, moderating inflations, improving external sector positions and continuing fiscal consolidation.
 - » **Capital to Risk Weighted Asset Ratio (CRAR)** and the Common Equity Ratio (CET1) ratio of scheduled commercial banks (SCBs) stood at 16.8% and 13.7%, respectively in Sep 2023.
 - » **SCB's gross NPAs ratio continued to decline to a multi-year low of 3.2%** and the net Non-Performing Asset (NNPA) ratio to 0.8% in Sep 2023.
 - » **Macro stress tests for credit risk reveal that SCBs would be able to comply with minimum capital requirements** and the system-level CRAR in Sep 2024 projected at 14.8%, 13.5% and 12.2%, respectively, under baseline, medium and severe stress scenarios.
 - » The resilience of the NBFCs sector improved with CRAR at 27.6%, GNPA ratio at 4.6% and return on assets (RoA) to 2.9%, respectively in Sep 2023.

4. REGULATION OF BANKING SECTOR

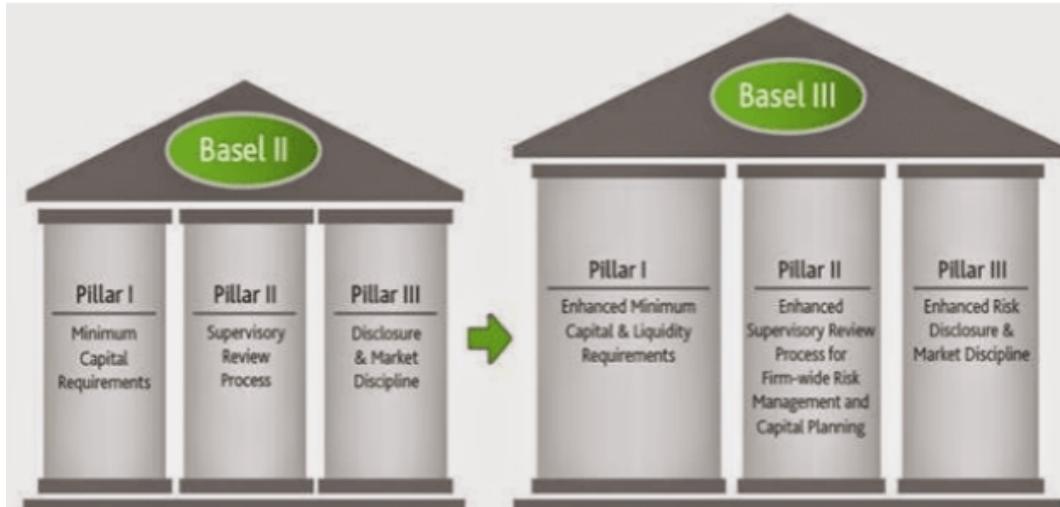
1) BASEL NORMS AND SITUATION IN INDIA

- **What?**
 - » Basel norms/standards are **global, voluntary, regulatory framework on bank Capital Adequacy, Stress Testing and Market Liquidity risks**. It is formulated by the **Basel Committee on Banking Supervision (BCBS)**.
 - BCBS aims to enhance the understanding of key supervisory issues and improve the quality of banking supervision worldwide. The committee's **secretariat** is located at the **Bank of International Settlement (BIS) in Basel, Switzerland**.
 - » **About Bank of International Settlement (BIS), Basel**
 - BIS, situated at Basel, Switzerland, is a promoter of Central Banks' cooperation in an effort to ensure global monetary and financial stability. It was established in 1930 and is the oldest global financial institution and operates under international law. It is owned by 60 central banks.
 - » **Need?**
 - **Ensuring Risk preparedness**
 - **Uniform standards** ensure better understandability of banking system's stability. This helps investors and agencies to better decide their investment opportunities across the world.
 - **Global Village** -> vulnerability in one country affects other countries (e.g. the 2007-08 crisis). Therefore, the banking system should be stable throughout the world.
- **Basic Terms**
 - » **Risk Weighted Assets:**
 - **Risk weighted assets** of a bank are its assets weighted by their degree of credit risk.
 - For e.g. in India, according to RBI Regulations loans issued to government are weighted at 0.0%, while those given for housing purposes is given a weight of 50%.
 - Risk weighted assets are used to determine the minimum amount of capital that must be held by banks and other institutions to reduce the risk of insolvency.
 - **The financial crisis of 2007-08** was driven by financial institutions investing in subprime home mortgage loans that had a far higher risk of default.
 - **To avoid the problem** moving forward, regulators now insist that each bank must group its assets together by risk category so that the amount of required capital is matched with the risk of each asset.
 - » **Capital to Risk Weighted Asset Ratio (CRAR) / Capital Adequacy Ratio (CAR)**
 - CAR is a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposure. It is used to protect depositors and promote the stability and efficiency of financial systems around the world.
 - It is calculated by adding a bank's Tier 1 Capital and Tier 2 Capital and dividing the total by its total risk-weighted assets.

The Formula for CAR:

$$CAR = \frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk Weighted Assets}}$$

- $CAR = (\text{Tier 1 Capital} + \text{Tier 2 Capital}) / \text{Risk Weighted Assets}$
- **Tier 1 Capital**
 - It is bank's **core capital**, which is used when it needs to absorb losses without ceasing its operation.
 - It consists of Paid up Capital, capital reserves out of sale of assets, Balance in P&L account.
 - **Additional Tier-1 capital** are perpetual bonds which carry a fixed coupon payable annually from past or present profits of the bank.
- **Tier 2 Capital**
 - It is bank's **supplementary capital** used to absorb losses if a bank is winding up its assets. This provides a lesser degree of protection to depositors.
 - They include revaluation reserves, general provisions, subordinated term debt, and hybrid capital instruments.
- **Significance of CAR**
 - Minimum CAR is critical to make sure that banks have enough cushion to absorb a reasonable amount of losses before they become insolvent and consequently loss depositor's funds.
- **Basel 1 and Basel 2**
 - » In **1988**, BCBS introduced capital measurement system called Basel Capital Accord, also called **Basel 1**. It focused entirely on credit risk. Here minimum CAR was kept at 8%.
 - » **BASEL II**
 - These were introduced in 2004 by BCBS and were considered a refined and reformed version of Basel-I accord.
 - It expanded the scope of regulation to include operational risk and introduced more sophisticated risk assessment methods.
 - **In India** Basel-II was implemented from 2009.
 - » **Basel 3**
 - They were released in Dec 2010. These guidelines were a response to the 2007-08 financial crisis where the banking system realized that the BASEL-II guidelines were not enough to protect bank depositors. It was realized that banks were under-capitalized, over-leveraged, and had a greater reliance on short-term funding.
- **Basel II -> Basel III**



- » **Pillar -1: Enhanced Minimum Capital & Liquidity Requirements:** It sets out minimum amount of capital that banks must hold to cover their credit, market and operational risks. They are also required to hold a capital conservation buffer to absorb losses during period of stress.
- » **Pillar -2: Supervisory Review Process:** Regulators are required to conduct a regular supervisory review of a bank's risk management practices and capital adequacy.
- » **Pillar-3: Market Discipline:** It requires banks to disclose information about their risk profile, capital adequacy, and risk management practices.

- Objectives

- » Improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source
- » Improve risk management and governance.
- » Strengthen bank's transparency and disclosure.

- Major Changes in the Basel Norm for Banking

- » **Better Capital Quality: Minimum Common Equity and Tier 1 Capital Requirements:**
 - The minimum requirement of common equity, the highest form of loss-absorbing capital, has been raised under Basel-III from 2% to 4.5% of total risk-weighted assets.
 - **The Overall Tier 1 Capital Requirement**, consisting of not only common equity but also other qualifying financial instruments, will also increase from the current minimum 4% to 6%.
 - Although the minimum total capital requirement will remain at the current 8%, yet the required total capital will increase to 10.5% when combined with conservation buffer.
- » **Capital Conservation Buffer**
 - Now banks are required to hold a capital conservation buffer of 2.5%. The **aim** of asking to build capital conservation buffer is to ensure that banks maintain a cushion of capital that can be used to absorb losses during period of financial and economic stress.
- » **Counter cyclical Capital Buffer (CCCB)** is another key element of Basel-III norms.
 - Objective is to increase capital requirements in good times and decrease them in bad times.
 - It will slow banking activities when it overheats and will encourage lending when times are tough.

- The buffer will range from 0% - 2.5% consisting of common equity or other full loss-absorbing capital and will be stored with Central Bank.

» **Leverage Ratio**

- A leverage ratio is a relative amount of capital to total assets (not risk-weighted). The aim is to put a cap on swelling of leverage in the banking sector on a global basis.
 - $LR = (\text{Tier1 Capital}) / (\text{Total Assets})$
- Banks are expected to maintain a leverage ratio of 3% under BASEL-III norms.

» **Liquidity Ratio**

- A new **Liquidity Coverage Ratio** (LCR) and **Net Stable Funding Ratio** (NSFR) got introduced in 2015 and 2018 respectively.
- **Liquidity Coverage Ratio** refers to proportion of highly liquid assets held by financial institutions, to ensure their ongoing ability to meet short-term obligations. Banks are required to hold an amount of high-quality liquid assets that's enough to fund cash outflow for 30 days. This is aimed to ensure that financial institutions possess suitable capital preservation, to ride out any short-term liquidity disruptions, that may plague the market.
 - LCR is calculated by dividing a bank's high quality liquid assets by its total net cash flows, over a 30-day stress period.
 - **Note: Urjit Patel Committee** has recommended that India should move onto LCR and do away with Statutory Liquidity Ratio (SLR) mechanism. This will make our system aligned with international mechanism. India is still using SLR.

» **Net Stable Funding Requirement (NSFR)**

- Introduced by BASEL-III it is a liquidity standard requiring banks to hold enough stable funding to cover the duration of their long term assets. Banks must maintain a ratio of 100% to satisfy the requirement.
 - It is defined as the amount of available stable funding (ASF) in relation to the amount of required stable funding.
- The ratio ensures that banks do not undertake excessive maturity transformation, which is the practice of using short-term funding to meet the long-term liability.

» **Systematically Important Financial Institutions (SIFI):** As part of the macro-prudential framework, systematically important banks will be expected to have a loss absorbing capability beyond the Basel-III requirements.

- Also called G-SIBs (Globally Systematically important banks)
- **No Indian bank** has been listed in this.

2) CAR NORMS IN INDIA BY RBI

- Norms/guidelines regarding the capital required to be maintained by banks in India including the Basel III capital regulations, are issued by RBI.
- RBI had envisaged implementation of BASEL-III in March 2019. But it was pushed to March 2020. Due to COVID-19 pandemic it was again shifted by 6 months.

- **Capital Adequacy Ratio:** 11.5% (stricter than Basel-III norm of 10.5%)
 - Indian banks need to maintain a minimum capital adequacy ratio (CAR) of 9%, in addition to a capital conservation buffer, which would be in the form of common equity at 2.5% of the risk weighted assets.
 - Indian banks as per RBI directions are required to maintain 5.5% of Common Equity Tier 1 (CET1) as against 4.5% required under the BASEL-III framework.
 - **Note:** CAR requirements applied by RBI is stricter than the BASEL-III norms.
 - **Note2:** In case of SFB and PB, the CAR requirement is that of 15% from 1st March 2019.
- **Countercyclical Buffer:**
 - The RBI introduced a countercyclical buffer (CCB) for Indian banks, which ranges from 0% - 2.5% of risk weighted assets depending on macro-economic conditions.
- **Leverage Ratio:**
 - The RBI introduced a leverage ratio requirement for Indian banks, which measures leverage ratio (LR) = (Tier1 Capital)/ (Total Assets).
 - The minimum requirement was set at 4.5%, with a buffer of 2.5%.
- **LCR** requires banks to hold a minimum amount high-quality liquid assets (HQLA) to meet the short term liquidity needs.
 - In India LCR was introduced in a phased manner with a minimum requirement of 60% in 2015, increasing to 100% by Jan 2019.
- **NSFR of at least 100%** has been mandated by RBI
 - Individual banks may have to adopt stricter standards to reflect funding risks and compliance.
 - Date of applicability will be announced later.
- **Disclosure requirements** (under Pillar-3) have also been introduced.
- **RBI has also revised regulation on the implementation of leverage ratio for banks in India** under the BASEL-III capital regulation. (July 2019)
 - RBI has decided that the minimum leverage ratio shall be **4% for D-SIBS** and **3.5% for other banks**.
 - These guidelines shall be effective from the quarter commencing Oct 01, 2019.
- **RBI extends Basel-III capital framework to AIFIs (All India Financial Institutions)** (Oct 2021)
 - **All India Financial Institutions** include EXIM Bank, NABARD, NHB, SIDBI.
 - The AIFIs are increasingly being seen as key institutions to promote the flow of direct or indirect credit to the economic sectors they cater to.
 - **As per the draft Master Direction on Prudential Regulation or AIFIs**, AIFIs will implement all the three pillars of BASEL-III capital regulations - Pillar 1 covering capital, risk coverage, and containing leverage, pillar 2 covering risk management and supervision and pillar 3 covering market discipline.
 - The RBI wants AIFIs to achieve **minimum total capital of 9% and capital conservation buffer of 2.5%**, with the minimum total capital and CCB adding to 11.5% by 1st April 2022.

- For NHB, since the financial year is July-June, the implementation shall commence on 1st July 2022.
- **Current Situation in India:** ESI 2022-23:
 - The **Provisioning Coverage Ratio (PCR)** has been increasing steadily since March 2021 and reached 71.6% in Sep 2022.
 - The **CRAR** of SCBs has been rising sequentially in the post-asset quality review period.
 - It remains well-above the minimum capital requirement, including Capital Conservation Buffer (CCB) requirements of 11.5%.

3) ADDITIONAL TIER-1 CAPITAL

- **Why in news?**
 - » In Nov 2023, Swiss banking giant UBS sold additional tier-1 (AT-1) bonds for the first time and after taking over beleaguered banking peer Credit Suisse in March 2023.
 - Earlier, it was decided to write-off around \$17 billion in AT-1 bonds issued by Credit Suisse. This had invoked fury from investors.
- **What are AT-1 Bonds:**
 - » AT-1 bonds are perpetual debt instruments issued by banks to raise money and build up their core equity capital. There is no maturity date, implying that the issuer doesn't pay the principal amount back to investors but makes periodical interest payments throughout the life of the bond.
 - » 'Call Option': In practice, AT-1 bonds typically come with a 'call option', which means that the bank issuing these instruments can redeem them or repay investors after a specified period.
 - » These bonds were introduced according to Basel banking norms made after the Global Financial Crisis. These are a form of "contingent convertible (cocos)" bonds which were created to prevent the need for government-funded bail-outs of precarious banks.
- **Why the risks for investors?**
 - » Some features of AT-1 Bonds make them riskier than several other bonds.
 - AT-1 Bonds have equity like characteristics (quasi-Equity instruments), which permit banks to absorb losses.
 - If the bank faces financial stress, with capital requirement dropping below a specific levels, the covenants of AT-1 bonds typically permit the lender to hold off on interest payments or pay a lower amount. The bonds may also be converted into equity, helping to preserve the capital.
 - Some provisions allow the banks to write-off AT-1 bonds in case of severe financial crisis.
 - Further, AT-1 bond investor (unlike other bond investors) are not at the top of pecking order when it comes to receiving pay-outs from a bank facing financial stress. In fact, details sometimes put equity investors above than the bond investors.

- **How are AT-1 bonds triggered?**
 - These have different trigger mechanisms:
 - For e.g. if the Bank's capitalization level falls below a preset threshold, the bond may be converted to shares, which eliminates bank's liabilities on the AT-1.
 - To compensate for these risks, banks pay investors a higher rate of interest for AT-1 bonds than other debt instruments or deposits.

4) AT-1 BOND IN INDIA:

- **How much are the AT-1 bond holdings of Indian Banks?**
 - » Indian Banks don't depend on AT-1 bonds much.
 - In a study, brokerage firm Macquarie said that while India's PSU banks have an exposure of 1-2 percent to AT-1 bonds, private sector banks only have an exposure of 0-1 percent.
- The Indian market for AT-1 bond was upended in March 2020 following the crisis in Yes Bank.
 - » Following severe financial stress, RBI and Yes Bank had decided to write-off additional tier-1 (AT-1) bonds worth Rs **8,415 crores**. Mutual funds were amongst the biggest sufferers.
 - This was challenged in the court, and Bombay High Court in Jan 2023 ordered quashing of the write-off. But in Sep 2023, Finance Ministry has moved to the Supreme Court against the order.
- **In 2021, SEBI amended valuation rule for perpetual bonds.**
 - » Residual maturity of Basel-III AT-1 bonds will be 10 years until 31st March 2022.
 - » It will be 20 and 30 years for subsequent six months.
 - » From 1st April 2023, the residual maturity of AT-1 bonds will become 100 years from the date of issuance of the bond.
- **SEBI** then provided a phased timeline for mutual funds to value AT-1 bonds as 100-year instruments.
 - » The -100-year valuation kicked in from 1st April, 2023.
 - » Before this, AT-1 bonds were valued according to the call options on the papers - generally 5 to 10 years.
 - » **Impact: Huge decline in mutual fund investments in AT-1 bonds** as a 100 year valuation lead to very sharp movements in market yields of such papers.
- **Note:**
 - » AT-1 bonds are subordinate to Tier-2 bonds.
 - » Tier-2 Bonds are subordinate to unsecured creditors, banks depositors, and senior bonds. They are not perpetual instruments. They have a maturity period of minimum 5 years.

5) DSIBS

- Why in news?
 - » RBI releases 2023 list of DSIBs (Dec 2023)
- Introduction
 - » D-SIBs means the bank is too big to fail i.e. their failure would be significant disruption to the essential services they provide to the banking system and the overall economy.
 - » According to RBI, these banks have become systematically important due to their size, cross jurisdictional activities, complexity and lack of substitution and inter-connection. Banks whose assets exceed **2% of the GDP** are considered part of this group.
 - » **An additional common equity requirement** has to be applied to DSIBs.
 - » Too big to fail indicates that in case of distress government is expected to support these banks. Due to this perception, they enjoy certain advantages in funding/investment.
- Beginning of DSIB-Framework:
 - » The RBI issued the framework for dealing with D-SIBs in July 2014.
 - » SBI was included in the list in 2015, HDFC in 2016 and ICICI in 2017. But they are placed in different list.
- The list of D-SIBs is as follows (as on Dec 2023)
 - » SBI, HDFC, and ICICI continue to be identified as DSIBs.
 - » While ICICI continues to be in Bucket-1; Both HDFC (from Bucket-1 to Bucket-2) and SBI (from Bucket-3 to Bucket-4) have been shifted to higher bucket.
 - » So, starting 1st of April 2025, both SBI and HDFC will have to fulfill higher buffer requirements of the higher bucket.
 - Till 31st March 2025, surcharge applicable will be 0.60% for SBI and 0.20% for HDFC Bank.

Bucket	Banks	Additional Common Equity Tier 1 requirement as a percentage of Risk Weighted Assets (RWAs)
5	-	1%
4	State Bank of India*	0.80%
» 3	-	0.60%
2	HDFC Bank*	0.40%
1	ICICI Bank	0.20%

* The higher D-SIB surcharge for SBI and HDFC Bank will be applicable from April 1, 2025. Hence, up to March 31, 2025, the D-SIB surcharge applicable to SBI and HDFC Bank will be 0.60% and 0.20% respectively.

- Note: Global SIBS:
 - » The **Basel - Switzerland based** Financial Stability Board (FSB), an initiative of G20 nations, has identified, in consultation with the Basel Committee on Banking Supervision (BCBS), a list of G-SIBS.
 - There are 30 G-SIBs currently (no Indian Bank), including JP Morgan, Citibank, HSBC, Bank of America, Bank of China, Barclays, BNP Paribas, Deutsche Bank, and Goldman Sachs.

6) DEPOSIT INSURANCE

- **Introduction: Deposit Insurance Situation in India**
 - » The deposit insurance provisions in India were introduced through the Deposit Insurance Corporation Act, 1962.
 - This insurance cover is provided by **Deposit Insurance and Credit Guarantee Corporation (DICGC)**, a fully owned **subsidiary of RBI**. The banks pay deposit insurance premium (0.1% per annum i.e. 10 paisa for Rs 100 insured), which is held by the DICGC and in turn is used to pay deposits if needed.
 - Under the act, the Corporation is liable to pay the insured deposit to depositors of an insured bank. Such liability may arise when an insured bank undergoes:
 - i. **Liquidation** (sale of assets or closing down of the bank)
 - ii. **Reconstruction or any other arrangement under the scheme**
 - iii. **Merger or acquisition by another bank**
 - **Note:**
 - Deposit Insurance and Credit Guarantee Corporation (DICGC) came into existence in 1978 with the merger of Deposit Insurance Corporation (DIC) and Credit Guarantee Corporation of India Ltd. (CGCI).
 - It is a fully owned subsidiary of RBI.
- This insurance cover is available to:
 - » **Commercial banks**, including small financial banks, Payment Banks, and Indian branches of foreign banks.
 - » Regional rural banks, Local Area Banks (LABs), and Cooperative Banks
 - » **All bank deposits** - savings, fixed, current and recurring - payable in India are covered. However, deposits of central/state/foreign governments, inter-bank deposits, deposits of the state land development banks with the state cooperative banks etc. are not covered.
- **Budget 2020-21 increased the deposit insurance to Rs 5 lakh.**
 - » This is the first time since 1993 that the deposit insurance cover has been raised. In 1993 the insurance cover was revised from Rs 30,000 to Rs 1,00,000.
 - » The raised cover will address 98.3% of all deposit accounts by number, and 50.9% of deposits by value.
 - Globally, deposit insurance coverage is only 80 per cent globally and it covers only 20-30 per cent of deposit value.
- **Note-1:** If the funds are in different types of ownership or are deposited into separate banks they would then be separately insured.
- **Key Features of the 2021 amendment**

- **Introduced interim payments:** Interim payment will now be made by DICGC to depositors of those banks for whom any restrictions/ moratorium have been imposed by RBI under the Banking Regulation Act resulting in restrictions on depositors from accessing their own savings.
- **Timeline for interim payments:** Clear-cut timeline of maximum of 90 days has been fixed for providing interim payment to depositors.
- **Repayment by banks to DICGC:** Deferment of repayments: DICGC may defer repayments due to it from an insured bank after insurance pay out, on terms decided by DICGC's Board. It is in spirit with the rationale of interim payments, i.e., to help depositors while also enabling rescue efforts for the bank
- **Timely repayment by the bank to DICGC:** To establish the priority of repayment to DICGC (both interest and principal amount), a provision for penal interest in case of delay has been put in the act.
- **No ceiling on premium:** The earlier act earlier had a ceiling of 15 paise on premium, which has been removed. Now, the ceiling on premium will be notified by DICGC, with the prior approval of RBI.

7) RBI'S FRAMEWORK ON GREEN DEPOSITS

- In April 2023, RBI came up with a framework for banks to accept green deposits from customers. Under this framework, banks that accept green deposits will have to disclose more information on how they invest these deposits.
- **What are Green Deposits?**
 - The deposits which are earmarked green deposits are used only towards environment friendly projects. (e.g. financing renewable energy).
 - As per the RBI framework, depositors, both retail and institutional, will have the option to convert their fixed deposits into "green" deposits.
- **RBI's Framework for the acceptance of green deposits lays down certain conditions that banks must fulfill to accept green deposits from customers:**
 - i. Bank need to come up with certain rules/policies approved by their respective boards that need to be followed while investing green deposits from customers. These rules have to be available in public domain, on the website of the bank.
 - ii. Banks will have to disclose regular information about the amount of green deposits received, how these deposits were allocated towards various projects and the impact of such investment to environment. A third party will verify the claims made by banks regarding the projects in which the banks invest their green deposits as well as the sustainability credentials of these business projects.
 - iii. RBI has also come up with list of sectors that can be classified as sustainable and thus eligible to receive green deposits. They include renewable energy, waste management, clean transportation, energy efficiency and afforestation. Banks will be barred from investing green deposits in business projects involving fossil fuels, nuclear power, tobacco, renewable energy projects generating energy from biomass using feedstock originating in protected areas. etc.

- The rules are aimed at preventing Greenwashing, which refers to making misleading claims about the positive environmental impact of an activity.
- **Note:** the framework is applicable from 1st June 2023.
- **Applicability:** The framework is applicable on all scheduled commercial banks including SFBs (excluding RRBs, Local Area Banks, and Payment Banks) and all deposit taking NBFCs including Housing Finance Companies (HFCs).
- In Jan 2024, RBI released a document giving detailed replies to a set of queries investors may have with regard to green deposits:
 - **Can Green deposits be parked in liquid instruments?**
 - Yes, unallocated proceeds of green deposits can be temporarily parked in liquid instruments for a maximum maturity of one year. But this can be done till the money is invested in green activities/projects and has to be specified under the financing framework.
 - **Green Projects first or deposit first?**
 - The banks can't finance green activities/ projects first and raise green deposits later. Besides the framework is applicable for green deposits raised by banks on or after June 1, 2023.
 - **Are premature withdrawals allowed?**
 - Yes (other than being invested only in green projects, it is like other deposit only).
 - **Are investments made in sovereign green bonds covered under the framework?**
 - Yes (since the activities listed in the framework for green deposits are the same as given in sovereign green bonds)
 - **Can the green deposits be denominated in foreign currency?**
 - No, the framework doesn't permit green deposits to be denominated in any foreign currency.
 - **Are the deposits covered by DICGC?**
 - Yes.
 - **Voluntary Compliance:** it is not mandatory for regulated entity to raise green deposits. But, if REs intend to raise green deposits from their customers they should follow the framework prescribed therein.
- **Will Green deposits help depositors/investors and the environment?**
 - **Depositors** -> Satisfaction of putting money in green projects
 - **Critics** say that this is a "feel good scam" that enriches only consultants.
 - Secondly, in a complex world where an action involves second order effects that are difficult to see, it can be extremely hard to know whether a project is really environment friendly.
 - **Businesses** -> Will get easier access to green loans, preferably with improved terms and conditions.
- **Way Forward: How to further promote green deposits:**

- Higher Interest Rates
- Build capacity in financial institutions to identify and appraise viable green projects.

8) DIGITAL PLATFORM FOR FRICTIONLESS LOANS (AUG 2023)

- **Background:** Need of such platform:
 - » Availing formal credit takes a lot of time and involves cumbersome process of document verification and evaluation of credit worthiness of borrowers.
 - For e.g. RBI survey indicated that processing of farm loan took 2-3 weeks and cost about 6% of loan's total value.
- Therefore, the RBI has announced a pilot program for 'Public Tech Platform for Frictionless Credit' which would strive to deliver frictionless credit by 'facilitating seamless flow of required digital information to lender'
- **Details:**
 - » RBI observed that data required for the entire process (information from borrowers and lenders; measurement of exposure risk; assessment of default risk) rest with different entities like central and state governments, account aggregators, banks, credit information companies, and digital identity authorities. This creates hindrances in timely delivery of service.
 - » **How will the new platform solve the problem?**
 - In 2022, RBI instituted a pilot project of digitalization of KCC loans of less than Rs 1.6 lakhs. This pilot tested "end to end digitalization of the lending process in the paperless hassle free manner". The pilot is currently undergoing in some states and provides for "doorstep disbursement of loans in assisted or self-service mode without any paperwork". The initial results were encouraging.
 - A similar pilot is being carried out for dairy loans based on milk pouring data with Amul in Gujarat.
 - » **Eventually the platform** will learn from all these pilots and the scope will be expanded to all types of digital loans. This platform will be developed by and wholly owned by RBI's subsidiary - the Reserve Bank Innovation Hub (RBIH). It will have an open architecture, open application programming interface and standards, to which all financial sector players will be able to connect seamlessly in a 'plug and play' model.
 - » It is expected to linkage with services like - Aadhar e-KYC, Aadhar e-signing, land records from onboarded state governments, satellite data, pan validation, account aggregation by account aggregators, milk pouring data from select dairy co-operatives, house/property search data etc. Thus it would cover all aspects of farming operations.
- **Advantages that the platform will bring?**
 - » Reduction of costs
 - » Quicker disbursements
 - » Scalability

9) MONETARY POLICY COMMITTEE (MPC) AND ASSOCIATED ISSUES

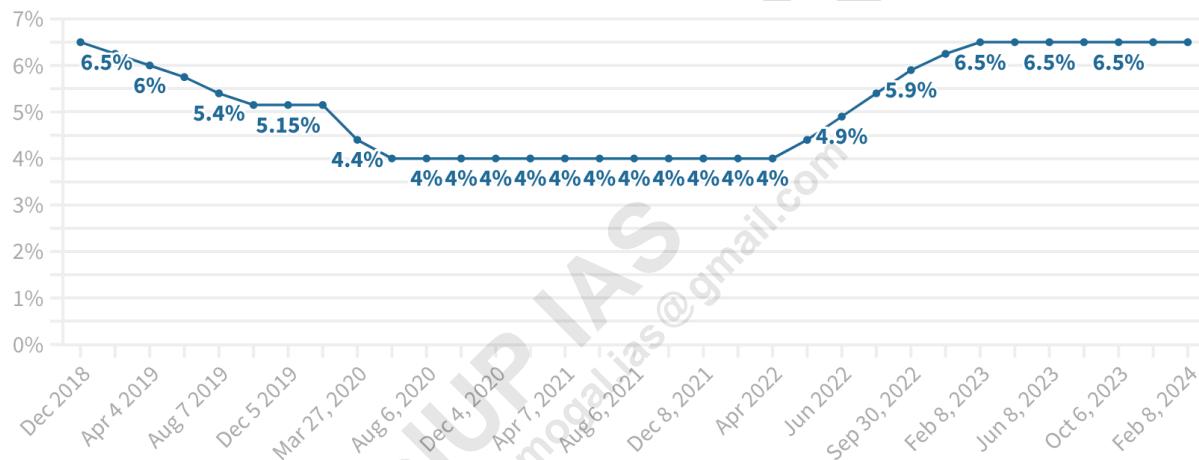
- Introduction

- » The Monetary policy is generally focused on regulating supply of money in an economy by the monetary authority of the country for achieving GDP growth, stable business cycle, price stability, and exchange rate stability. Like fiscal policy, it is an integral arm of public policy. It cools down the economy when it overheats (through contractionary monetary policy) and boosts the economy during depressed financial activity (through expansionary policy).
 - **Expansionary** monetary policy is achieved by lowering Repo Rate, Reverse Repo Rate, CRR, SLR etc. i.e. by increasing the availability of money in the economy.

- India's Current Monetary Policy

- » In the past, RBI had pursued a multiple indicator approach i.e. it tried to control multiple outcomes - inflation, growth, exchange rate, and even balance of payment - through monetary policy.
- » But **RBI Act, 1934** was amended in 2016 to introduce the framework of **Flexible Inflation Targeting (FIT)**.
 - Under FIT, the primary objective of the Monetary Policy is to ensure price stability (i.e. ensure inflation in a particular range). Inflation is measured in terms of **Consumer Price Index (CPI)**, thus making monetary policy contributes to welfare of people.
 - Further, it also promotes transparency as lay person can easily judge if the monetary policy is working for the betterment of the people of India.
 - The amendment provides that inflation target would be set by Central government, after discussing with the Reserve Bank, once in every five years.
 - For 2016-2021, the central government had set a target of 4% inflation rate with a tolerance of +/- 2%. Again for 2021-26, the centre has decided to retain the inflation target of 4%, with a tolerance band of +/- 2 percentage points for the MPC of RBI.
 - This tolerance band has been provided to deal with supply shocks like vagaries of Monsoon, crude price changes etc.
 - In case of continuous deviation of actual inflation from the target's tolerance bands for three consecutive quarters, the **RBI has to write a letter** to the GoI explaining the reasons for deviations and the time it will take to return inflation to its target. It thus promotes Accountability.
- » **Section 45ZB** of the RBI Act, 1934 also provides for a **six member Monetary Policy Committee (MPC)** to be formed by government for inflation targeting. MPC consists of:
 - a. Governor of RBI - Chairperson of MPC - ex officio
 - b. Deputy Governor of the RBI, in charge of Monetary Policy – Member, ex officio.
 - c. One officer of the RBI to be nominated by the Central Board – Member, ex officio.

- d. 3 external members nominated by GoI.
- » The **decision is taken by majority** with the Chairperson having the casting vote. MPC conducts meetings at least four times a year (atleast every quarter) and monetary Policy is published after every meeting with each member explaining her opinion.
 - Before MPC, all the interest rate related decisions were taken by Governor of RBI.
 - Thus, the **MPC system replace individualistic decision-making by a collegial process** that brings in variety of experience, expertise and independence while avoiding groupthink and free-riding.
- **Current Rates:**
 - » In Feb 2024, in the bi-monthly monetary policy announcement, RBI has decided to keep the repo rate unchanged at 6.5%. This is the sixth monetary policy on the trot when the MPC has kept the repo rate unchanged. Last time it was in Feb 2023 when the rates were changed.
 - **Why?**
 - The retail inflation continues to remain above 4% target of RBI. It was 5.69% in Dec 2023 and even for FY25 RBI forecasts a 4.5% retail inflation.



- The central bank also retained the stance of the monetary policy as 'withdrawal of accommodation' in a 5:1 majority decision.
 - However, Jayanth Verma, member of MPC, differed with other members and voted for 25 basis point reduction in repo rate and changing the policy stance to 'neutral' from 'withdrawal of accommodation'.
- The MPC in Feb 2024, after detailed assessment decided to keep the policy repo rate under LAF unchanged at 6.5%. (note the last raise was made in Feb 2023)

10) CRR

- Under **RBI Act, 1934** - Scheduled Banks are required to keep a % of their net time and demand deposits (i.e. total deposits of customers) in the form of cash deposits with RBI.
- **Objectives of CRR:**

- Since a part of total deposits in bank is available in the form of cash, it can be used to readily make money available to customers when they demand it.
- Further, RBI also controls the amount of money in market and thus inflation through CRR.

- **Note:**

- Banks don't get any interest for this money deposited with RBI.
- CRR has to be maintained in cash only.

A) INCREMENTAL CRR

In Aug 2023, RBI introduced Incremental CRR to absorb the surplus liquidity created in the system due to multiple factors, including the return of Rs 2,000 notes.

- » It was decided that wef from the fortnight beginning Aug 12, 2023, scheduled banks shall maintain an I-CRR of 10% on the increase in their net demand and time liabilities (NDTL) between May 19, 2023 and July 28, 2023.
- » This was purely a temporary measure for managing the liquidity overhang.
- » Existing CRR remained unchanged at 4.5%.
- » **Impact:**
 - Reduce the supply of money and thus curtail inflation.

In Sep 2023, RBI announced that it will discontinue the I-CRR in a phased manner.

- » **Why release in phased manner?**
 - So that system liquidity is not subjected to sudden shocks and money markets function in a orderly fashion.
- » RBI released 25% of I-CRR on 9th, Sep; 25% on 23rd Sep and remaining 50% of the I-CRR on 7th October 2023.

B) REDUCING CRR ON GREEN DEPOSITS

SBI in talks with RBI to lower CRR requirement on Green Deposits (Feb 2024)

- In Jan 2024, SBI announced a green deposit scheme, a first in the domestic banking, to attract long term retail deposits to be used only to fund green transition projects or climate friendly projects.
 - The bank has said that such deposits will be priced 10 basis points lower than normal deposit rates.
- SBI is engaging with RBI for a reduction in CRR for green deposits and, if at all as a policy, it can be incorporated in the regulator policy mechanism.

5. PUBLIC SECTOR BANKS

1) EFFORTS TO IMPROVE THEIR FUNCTIONS

A) FINANCIAL SERVICES INSTITUTIONS BUREAU (FSIB)

- **Background: Why was Bank Board Bureau Needed?**

- » **To Improve the governance of PSBs:** Committee to Review Governance of Boards of Banks in India (Chaired by Dr. P J Nayak) recommended setting up of Bank Board Bureau (BBB).
- » Bank Board Bureau (BBB) was constituted in 2016 and started functioning from 1st April 2016 as a body of eminent professionals and officials to make recommendations for appointment of whole-time-directors as well as non-executive chairpersons of PSBs and State owned financial institutions.
 - This was earlier done by the Board of Appointment.
 - Central government notified the amendment to the Nationalized Banks (Management and Miscellaneous Provisions) Scheme, 1980 providing the legal framework for the composition of BBB.
- » It was also entrusted with the task of engaging with the board of directors of all PSBs to formulate appropriate strategies for their own growth.
- » In 2019, Scope of Bureau functions was extended to cover appointments of Chairman, MD & CMD and other board positions of Public Sector Insurance companies.

- **What was the need of the change in BBB?**

- » The Change was needed after the 2021 Delhi High Court verdict which had said that the BBB was not a competent body to select the general managers and directors of state owned general insurers. This has led to at least 6 newly appointed directors of non-life insurers vacating their positions.

- **Changes?**

- » The Appointments Committee of the Cabinet (ACC) has asked the Department of Financial Services to carry out necessary modifications in the Nationalized Banks (Management and Miscellaneous Provisions) Scheme of 1970/1980 with the approval of Finance Minister and then notify the government resolution for establishing FSIB as a single entity for making recommendations for appointments of whole time directors and non-executive chairman of banks and financial institutions.

- **Financial Services Institutions Bureau (FSIB)**

- » FSIB has been constituted effective from 1st July 2022 by Central Government for the purpose of recommending persons for appointment as whole-time directors and non-executive chairpersons on the Boards of financial service institutions and for advising on certain other matters relating to personnel management of these institutions. Guidelines for selection of general managers and directors of public sector general insurance companies have been made part of FSIB
- » **Mission:** To promote excellence in Corporate Governance in Public Sector Financial Institutions
- » **How is it different from BBB?**
 - **Broader Scope:** While BBB was primarily focused on PSBs, FSIB will focus on wider range of financial institutions.

- **Stronger Legal Foundation:** Addresses concerns raised by the Delhi High Court regarding BBB's selection process.

B) AN AUTOMATED SEARCH PORTAL (FEB 2024)

- **Background:**
 - » Under the framework for timely detection, reporting, investigation relating to large value bank frauds, the Department of Financial Services under the Ministry of Finance has mandated all the PSBs to seek a report from the Central Economic Intelligence Bureau (CEIB) before sanctioning loans exceeding Rs 50 crores in the case of new borrowers and if the existing borrower's accounts into NPAs.
- **To fast-track** this mandatory intelligence clearance process, the Bureau, in tandem with SBI, has developed an "automated search portal" which is a digital platform which will help PSBs to obtain mandatory intelligence clearance from the CEIB in a prompt manner. PSBs will be able to check antecedents of large borrowers and ascertain the existence of any non performing assets against their name at the click of a button
- **Significance:**
 - » Expedite lending process
 - » Prevent loans to defaulters

6. INSURANCE SECTOR

- **Insurance Sector and its significance:**
 - » Insurance is an integral part of financial sector. It plays a significant role in economic development. Apart from protection against mortality, property, and casualty risks and providing a safety net, the insurance sector encourages savings and provide long term funds for infrastructure development.

1) INSURANCE REGULATORY DEVELOPMENT AUTHORITY OF INDIA

- **IRDAI** is an autonomous and statutory body formed under an act of Parliament (i.e. IRDAI Act, 1999). It is responsible for managing and regulating insurance and reinsurance sector in India. It is also responsible for supervision and development of insurance sector in the country.
- **Key objective** of the IRDAI is to promote competition so as to enhance customer satisfaction through increased customer choices and fair premiums, while ensuring the financial security of the insurance market.
- **Composition**
 - As per the section 4 of the IRDAI Act, 1999 the composition of the authority is:
 1. Chairman
 2. Five whole-time members

- 3. Four part-time members
(Appointed by government of India)
- IRDAI is headquartered in Hyderabad.
- **Entities regulated by IRDAI**
 - » **Life Insurance companies:**
 - Insures life of a person. This kind of insurance may also have an insurance component.
 - » **General Insurance companies**
 - Insures health, property, car etc.
 - » **Re-insurance companies**
 - **Note:** Reinsurance companies provide insurance to insurance companies. For e.g. during a huge disaster, an insurance companies may face a large number of claims. In this scenario, a reinsurance company helps them spread the risk by sharing the cost of those claims.
 - » **Agency Channel**
 - » **Intermediaries**
 - Corporate agents
 - Brokers
 - Etc.

2) SITUATION OF INDIA'S INSURANCE SECTOR: ESI 2022-23

- Potential and Performance of insurance sector are generally assessed based on **2 parameters**,
 - **Insurance penetration** which refers to the ratio of total insurance premiums to GDP in a year and;
 - **Insurance density** which refers to ratio of insurance premium to population that is insurance premium per capita and is measured in U.S. dollar as they reflect the level of development of insurance sector in a country.
- **India poised to emerge as one of the fastest growing insurance markets in the coming decade**
 - Insurance Penetration in India has steadily increased from 2.7% around the turn of millennium to 4.2% in 2020.
 - » Life insurance penetration in India was 3.2% in 2021, almost twice more than the emerging markets and slightly above the global average
 - » However most life insurance products sold in India are saving linked with just a small protection component. Therefore households remain exposed to a significant financing gap in the event of premature death of the primary breadwinner.
- **Insurance Density in India has increased from US \$11.1 in 2001 to US \$91 in 2021.**

3) IMPORTANT INSURANCE RELATED INITIATIVES

A) BIMA VISTAAR:

- The IRDAI is planning to launch a unique all-in-one insurance product called **Bima Vistaar** in first quarter of FY2025.
- Bima Vistaar will provide life, health and property coverage in a single affordable policy. It will be a valuable tool for retirement planning as it eliminates the need to purchase separate policies for life, health and property coverage, providing affordability and convenience.
- Bima Vistaar is a critical component part of IRDAI's "Insurance Trinity" initiative that also comprise **Bima Sugam** ((a one stop digital platform)) and **Bima Vaahak** (a women led distribution channel) aimed at ensuring insurance for all by 2047 by bridging the gap in product design, pricing and distribution.

B) BIMA VAAHAK SCHEME:

- **Bima Vaahaks** are registered individuals or legal entities providing services as outlined in the guidelines. The goal is to establish a dedicated distribution channel to enhance insurance inclusion and raise awareness in every village and gram panchayat.
 - » The main objective is to establish women centric dedicated distribution channel that is focused on enhancing inclusion and creating awareness in every village/gram Panchayat, and thus improving accessibility and availability of insurance in every nook and corner of the country.
 - » They will be involved in various activities - completing the proposal forms, fulfilling KYC requirements using handheld electronic communication devices, issuing insurance policies, and providing support for policy and claims related services.
- The 2023 guidelines for the women centric insurance distribution channel will be implemented concurrently with Bima Vistaar, which is in the final stages of development. In Oct 2023, IRDAI had said that the guidelines will be effective from the date of launch of BIMA Vistaar.
- **Bima Vaahaks** will be deployed in each gram panchayat by Dec 31, 2024.

C) BIMA SUGAM:

- The plan is to develop relatively small platform to launch Bima Vistaar and Bima Vaahak effectively before integrating them into a larger platform.

D) OTHER PAST INITIATIVES

- To facilitate penetration of insurance to the lower income segments of the population the IRDAI issued IRDAI micro insurance regulations 2015 which provide a platform for distributing insurance products that are affordable for rural and urban poor and promote financial inclusion.
- Further, the IRDAI obligation of insurance to rural and social sector regulations 2015 stipulate obligation for insurers in rural and social sector and has contributed to developing and promoting micro insurance products in India.

E) VARIOUS GOVERNMENT INSURANCE SCHEME

- **AB-Jan Arogya Yojna** (Health Insurance)
- **Pradhan Mantri Suraksha Bima Yojana:**
 - » Under the scheme, risk coverage of Rs 2 lakh for accidental death and complete disability and Rs 1 lakh for partial disability is given to beneficiary.
- **Pradhan Mantri Jeevan Jyoti Bima Yojana:**
 - » Risk coverage of Rs 2 lakh is credited to the savings bank account of the holder in case of the death of the insured.
- **Pradhan Mantri Vaya Vandan Yojna:**
 - » Old age income security is provided to senior citizens through the provision of an assured pension/return linked to the subscription amount based on a government guarantee to LIC.
- **Pradhan Mantri Fasal Bima Yojna** (already covered in agriculture sector)

7. NEXT BOOKLET

Nationalization, Consolidation of Banks, Privatization of PSBs, IBC, NPA, Financial inclusion, digital payment, types of banks, NFBCs, Fintech, Pension sector



TARGET PRELIMS 2024

BOOKLET-26; ECONOMY-7

CA OF RBI, BANKING AND FINANCIAL SECTOR-2

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2. RBI'S FUNCTIONS

1) WITHDRAWAL OF RS 2,000 BANK NOTES

- Why?
 - » The Rs 2,000 denomination banknotes was introduced in Nov 2016 under section 24(1) of the Reserve Bank of India Act, 1934. This was done to meet the currency requirement of the economy in expeditious manner after withdrawal of Rs 5,00 and Rs 1,000 notes. Once enough new 5,00-rupee notes were in circulation, printing of Rs 2,000 banknotes was stopped in 2018-19.
 - » So, a majority of the Rs 2,000 banknotes were issued prior to March 2017 and were at the end of their estimated lifespan of 4-5 years.
 - » It was also noticed that this denomination was not commonly used for transactions.
 - » Further, the stock of banknotes of other denominations continues to be adequate to meet the currency requirement of the public.
 - » In view of the above, and in pursuance of the clean note policy of the RBI, it was decided to withdraw Rs 2,000 denomination banknote from circulation.
- What is Clean Note Policy?
 - » Under this policy RBI ensure availability of Good Quality Bank notes to members of the public.
- The Rs 2,000 Bank notes could be deposited/ exchanged till Sep 30, 2023. It was later extended till 7th Oct 2023.
- After 7th October, the Rs 2,000 banknotes could continue to be exchanged by individuals/ entities at the 19 RBI Issue Offices up to a limit of Rs 20,000 at a time. Individual/Entities can also tender Rs 2,000 banknotes at the 19 RBI Issue offices for credit to their bank account in India for any amount.
- Impact:
 - » The growth in currency in circulation decelerated to 3.7% for the week ending 9th Feb 2024 from 8.2% a year ago.
 - **Note:** Currency in Circulation (CiC) refers to notes and coins in circulation, while currency with the public comprises notes and coins in circulation minus cash with banks.
- Some Rs 2,000 notes still in circulation (Dec 2023)
 - » About 2.7% of withdrawn note are still in circulation.
 - On 19th May 2023, around Rs 3.56 lakh crore banknotes of Rs 2,000 were still in circulation. This has declined to Rs 9,760 crores (2.7%) on 30th Nov 2023.
- **Note:** Rs 2,000 banknotes continue to remain legal tender.

2) RBI'S REPORT ON CURRENCY AND FINANCE 2022-23: TOWARDS A GREENER AND CLEANER INDIA (MAY 2023)

- The report is one of the most comprehensive attempts by central regulator to discuss the responsibility of banking and finance sector to the plethora of challenges posed by climate emergency.
- **Theme:** Towards a Greener and Cleaner India
- The report claims that fiscal policy has a prominent role in driving the green transition, from fossil fuels to renewables, and highlight the urgent need for a green taxonomy, a classification system that determines whether an investment is sustainable or not.
- The three areas where RBI sees a role for itself:
 - i. **Mandatory disclosure requirements** pertaining to climate related risks of banks
 - ii. **Mandating financial institutions** to incorporate environmental risk factors in their risk management process
 - iii. **Green Asset Ratio (GAR)**, i.e., the proportion of total assets invested in sustainable projects or economic activities - prescribing financial institutions to maintain threshold level.

3. FINANCIAL INCLUSION

- **What is financial inclusion?**
 - » Financial inclusion is defined as the process of ensuring access to adequate financial services (Banking, Credit, Investment, Insurance) in a cost effective and timely manner for vulnerable and low income groups.
- **Advantages:** Economic growth; Social Benefits; Reducing Inequalities; efficiency in implementation of government schemes; protects low-income households (from money lenders, Ponzi schemes) etc.
- **Key steps taken so far to promote financial inclusion**
 - **Nationalization of Banks** in 1969 and 1980 was **Region-focused** on ensuring that the banking services reach rural areas.
 - **Promotion of alternatives** Rural Banks, Cooperatives, etc. have also contributed to Financial inclusion.
 - **Lead Bank Scheme** - RBI assigns a district to a particular bank. The bank is responsible for promoting banking services and financial literacy in that district.
 - **Pradhan Mantri Jan Dhan Yojana (PMJDY)**, under which 43 crore accounts have been opened by Aug 2021.
 - **Niche Banking:** Setting up of Small Financial Banks and Payments Banks.
 - Launch of India Post Payment Bank in Sep 2018 is particularly significant in bridging the gap in last mile connectivity.
 - **Priority Sector Lending** initiative of RBI
 - **Various saving schemes under post office**
 - **Various Insurance and Pension initiatives**
 - Schemes such as the **Pradhan Mantri Suraksha Bima Yojana** to provide accidental death or disability cover and **Atal Pension Yojana** to provide pension cover to subscribing bank account holders.

1) PMJDY

- **Introduction**
 - » Financial inclusion is a crucial component of inclusive growth. But, even in the year 2014, more than 40% of the households in the country didn't have a bank account. In the absence of an account, they mostly depended on local money lenders for credit purposes at very high interest rates. Further, a very small percentage of bank loans used to go to rural area.
 - » To remedy these problems, PM Modi announced PMJDY in his independence day speech on 15th Aug 2014 and the scheme was launched on 28th Aug 2014.
- **Objectives:**
 - » Ensure access of **financial products & services** at an affordable cost.
 - » Use of technology to lower cost and widen reach.
- The scheme is aimed at providing key financial inclusion services like banking facilities, financial literacy, insurance cover etc. to all the **households (adult individuals)** in the country. Further, the government also envisaged channeling all government benefits (Central, state and local government) to the beneficiary's accounts and promoting government's DBT initiative.
- **Eligibility**
 - » Any person who is Indian citizen above the age of 10 and does not have a bank account can open an account with zero balance. It also provides for a relaxed KYC norm.
- **Six Pillars of PMJDY (National Mission on Financial Inclusion)**
 - i. **Banking Service in every 5 kilo meters**
 - The country has been divided into a number of Sub Service Areas (SSA), each with 1000-1500 households. One banking outlet (branch or BC) have been established within a distance of five km from every SSA.
 - ii. **Account for each family Individual**
 - Bank account for each adult individual with accident insurance of Rs 1,00,000-2,00,000 for Rupay debit card holders and overdraft facility of Rs 5,000, **Rs 10,000**.
 - iii. **Financial Literacy**
 - iv. **Credit Guarantee Funds** to cover potential defaults in overdrafts;
 - v. **Micro Insurance:**
 - Accidental insurance cover on RuPay cards holders has been increased from Rs 1 Lakh to Rs 2 Lakh for PMJDY accounts opened from 28.8.2018.
 - vi. **Pension Transfers:** Pension payments under the Swavalamban Yojana scheme for workers in the unorganized sector is being paid through bank accounts.
- **Other Features**
 - » Zero balance accounts etc.

4. INITIATIVES FOR CASHLESS ECONOMY

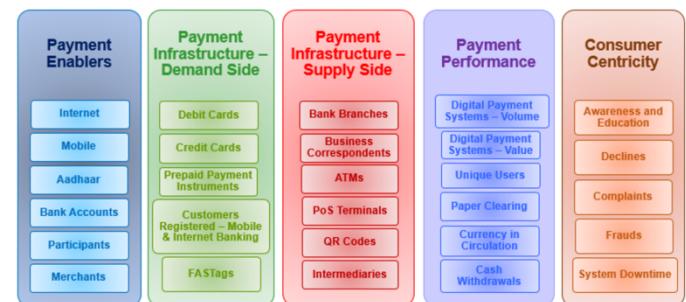
1) DIGITAL BANKING (PROMOTING LESS CASH ECONOMY)

- **What is less cash / cashless economy?**

- » Cashless economy refers to a scenario when monetary transaction in an economy happens mostly electronically and use of cash is absent or negligible.
- **Advantages:**
 - » **Cash economy is expensive**
 - » **Fighting Corruption through transparency in money flow.**
 - » **Increased tax compliance and thus tax revenue**
 - » **Financial inclusion** -> A cashless economy would mean everyone is having a bank account and thus financial inclusion is a pre-requisite for cashless economy.
 - » **Reduced chances of petty crimes** like theft, snatching etc.
 - » **Environment Friendly:** Reduced use of paper money can contribute to environmental benefits as well by reducing the need of trees to be cut.
- **Evolution of Digital Payment in India**
 - » Digital Payments system in India has been steered by the Reserve Bank of India (RBI). It first published the *Payment Systems in India*, in 1998.
 - » **RTGS - Real Time Gross Settlement System** was launched by RBI in 2004. **NEFT (National Electronic Funds Transfer)** was introduced in 2005.
 - » **NPCI** functions under the Payment and Settlement Systems Act, 2007 in order to create a robust payments and settlement infrastructure for India. It is a not-for-profit organization set up under the section 8 of the Companies Act, 2013.
 - Several of its initiatives like IMPS, UPI, Rupay, e-RUPI etc. have played a crucial role in promoting cashless economy in India.
- **Steps taken in India.**
 - » **Key Policy Measures**
 - **Demonetization** has nudged citizens towards digital payments.
 - **PMJDY** has ensured bank accounts and Rupay Debit cards with almost all households in the country, increasing the scope of cashless economy.
 - **Various initiatives for digital literacy like PMDISHA**
 - Further, RBI has also announced that all charges for NEFT and RTGS collected from banks will be waived off from 1st July 2019, and have asked banks to pass on the benefits to customers.
 - **No MDR payment charges on payment via RUPAY, UPI from 1st Jan 2020** (Dec 2019)
 - **E-RUPI**
 - **CBDC**
- **Technological Measures:**
 - » **Increasing penetration of internet and smart phones**
 - » **Fintech Revolution** -> coming up of large number of fintech companies and facilities like PayTm Google Pay etc.
 - » Various initiatives by NPCI - IMPS, UPI, BHIM, RuPay, AEPS, e-RUPI etc.
 - » In Dec 2019, RBI operationalized round-the-clock **(24X7) availability of the National Electronic Fund Transfer (NEFT)** and asked the **banks not to levy any charge on NEFT transfer from saving bank account holders**.

- Deepening of Payment revolution in India is a result of political will (PMJDY), a proactive central bank and use of technology.
- **Nandan Nilekani Panel recommendations for strengthening of the digital payment industry (June 2019)**
- The **Digital Payments Index of RBI** captures the extent of digitization of payments across the country.
 - The index captures (i) Payment Enablers (weight 25%), (ii) Payment Infrastructure – Demand-side factors (10%), (iii) Payment Infrastructure – Supply-side factors (15%), (iv) Payment Performance (45%) and (v) Consumer Centricity (5%).
 - The RBI-DPI has been **constructed with March 2018 as the base period**, i.e. DPI score for March 2018 is set at 100.
 - The DPI for March 2019 and March 2020 work out to 153.47 and 207.84 respectively, indicating appreciable growth.
 - The Digital Payments Index **increased from 100 in March 2018 (base period) to 304.06 in September 2021**

RBI-Digital Payments Index – Parameters and Sub-parameters



2) UPI AND RELATED UPDATES

- **Why in news?**
 - » RBI has raised the limits on UPI payment transactions for educational and healthcare purposes (Dec 2023)
- **Introduction**
 - » UPI is a real time payment system that allows money transfer between any two bank accounts by using a mobile device. It was developed by NPCI and is controlled by RBI and IBA (Indian Bank Association).
 - » UPI has been build using IMPS payment architecture system and hence transactions are very fast.
 - » It was launched in April 2016.
 - UPI allows a customer to pay directly from a bank account to different merchants, both online and offline, without the hassle of typing credit card details, IFSC code or net banking/wallet password.
- **How Safe is UPI**
 - » The UPI is as much secure as internet banking or mobile banking.
 - » A two-step authentication is used
 - To open the UPI app, you have to give a pin
 - To transfer the money, again you have to enter the MPIN (Mobile Banking Personal Identification Number) or UPI PIN

- » It is safe as customers only share a Virtual Payment Address (VPA) and provide no other sensitive information. Receiver won't get your bank account details.
 - » Only while connecting your bank account to UPI, you have to authenticate it through the card details and OTP.
- **Transaction limit**
- » The transaction limit for UPI is capped at Rs 1 lakh, except a few categories like capital market (AMC, Broking, Mutual Funds etc.), Collections (Credit Card Payments, Loan Repayments, EMI), Insurance etc, where the transaction limit is 2 lakh.
 - » In Dec 2021, transaction limit for UPI payments for Retail Direct Scheme and for IPO subscriptions was increased to Rs 5 lakhs.
 - » In Dec 2023, To encourage the use of UPI for medical and educational services, it is proposed to enhance the limit for payments to hospitals and educational institutions from ₹1 lakh to ₹5 lakh per transaction
- **Benefits of UPI**
- » UPI is revolutionary. It had made the banking transaction a breeze. Former RBI governor Rajan considered the launch of UPI as the Whatsapp moment.
 - i. **24X7 Immediate transfer**
 - No restriction of holiday or working hours. The bank strikes also doesn't affect UPI
 - No need to wait for 24 hours to send money to new recipient
 - ii. **Simple:** No need of bank account number and IFSC code of the recipient
 - iii. **Less costly:** A transaction through UPI is much cheaper than the other methods.
 - iv. **Many bank accounts can be connected to one VPA:** However, the BHIM app only links one account at a time
 - v. **Enabled many apps:** PhonePe, BharatPay, PayTM etc. .
 - vi. **Benefits of UPI over IMPS:** No need of bank account details and IFSC code (both required in IMPS)
 - vii. **Benefits over other mobile wallets**
 - No need of transfer of money into wallet, so always getting interest on the money.
 - Mobile wallets generally allow transfer between wallets, here the transfer can be between different banks.
- **Other key terms associated with UPI**
- » **Virtual Payment Address (VPA)**
 - The UPI system does not use the bank account details of the recipient. But, there should be an accurate identification of the money recipient. Ultimately, all this convenience is fruitful if the money goes in right hands.
 - So, every user of the UPI app must have a unique ID. This unique ID is called the Virtual Payment Address (VPA).
 - This VPA would be something similar to sanket@icici, anshu@bob etc. So very easy to remember.

- The app provider bank would allot the VPA to each user. You can choose the VPA similar to the mail address.
- You can give this VPA to anyone to receive money. This app would itself keep storing the VPAs of the person to whom you have transferred the money. It is like saving contact in Gmail.

A) KEY CHANGES MADE IN DEC 2023:

- In Dec 2023, RBI increased the limits for UPI Transactions for payments made to hospitals and educational institutes to Rs 5 lakh per transaction
- E-Mandate limit has also been increased from Rs 15,000 to Rs 1 lakh.
 - **Background:** The framework for processing of e-mandates for recurring transactions was introduced in Aug 2019 to balance the safety and security of digital transactions with customer convenience. UPI Mandate can be used in scenario where money is to be transferred later by providing commitment at present. It is used for recurring payments to buy mutual funds, pay insurance premiums and credit card repayments. The limits for execution of e-mandates without Additional Factor Authentication (AFA) currently stands at Rs 15,000.
 - **Need of increase:** In categories such as subscription to mutual funds, payments to insurance premium and credit card bill payments, where the transaction size is more than Rs 15,000, a need to enhance the limit has been expressed.
 - **RBI** has therefore, proposed to exempt the requirement of AFA for transactions upto Rs 1 lakh for the following categories viz. subscription to mutual funds, payment of insurance premium and payment of credit card bills.
 - This change in limit is expected to increase the usage of e-mandate.
- **Other Related Changes:**
 - RBI has proposed to set up a fintech repository to keep track of increasing linkages among banks, NBFCs and fintech.
 - For better understanding of the developments in the FinTech ecosystem with an objective to appropriately support the sector, it is proposed to set-up a Repository for capturing essential information about Fintechs, encompassing their activities, products, technology stack, financial information etc.
 - This fintech repository will be set up by Reserve Bank Innovation Hub by April 2024.
 - **Establishment of Cloud Facility for the Financial Sector in India:**
 - **Banks and financial entities** are maintaining an ever-increasing volume of data. Many of them are utilizing various public and private cloud facilities for this purpose.
 - **RBI** is working on establishing a cloud facility for the financial sector in India. This proposed facility will enhance security, integrity and privacy of the financial sector data.
 - The cloud facility will be set up and initially operated by Indian Financial Technology & Allied Services (IFTAS), a wholly owned subsidiary of RBI. Eventually, this cloud facility will be transferred to a separate entity owned by the financial sector participants.
 - **Regulatory Framework for Web-Aggregation of Loan Products:**
 - **Background:** The RBI had accepted the recommendation of the Working Group on Digital Lending (Chairman: Shri Jayant Kumar Dash) to come up with regulatory framework for web-

aggregators of loan products (WALP). WALP entails aggregation of loan offers from multiple lending of an electronic platform which enables the borrowers to compare and choose the best available option to avail loan from one of the available lenders.

- Based on this recommendation, RBI has decided to bring such loan aggregation services offered by the Lending Service Providers (LSPs) under a comprehensive regulatory framework.

1) CENTRAL BANK DIGITAL CURRENCY (CBDC) (DIGITAL RUPEE OR E-RUPEE)

- **Why in news?**
 - » The RBI has set no-specific timeline for the 'full-fledged' launch of its Central Bank Digital Currency (CBDC) or the e-Rupee (March 2024)
 - RBI Governor Shaktinath Das said that they are in no great hurry to launch the digital currency because they want to be absolutely sure about the safety, robustness, and the integrity of digital currency.
- **Basics:**
 - » First announced in Budget 2022-23
 - » In 2022, the RBI introduced India's own Central Bank Digital Currency (CBDC) which is a digital representation of sovereign currency.
 - » RBI defines CBDC as the legal tender issued by Central Bank in digital form. It is akin to sovereign paper currency but takes a different form, exchangeable at par with the existing currency and shall be acceptable as a medium of payment, legal tender, and a safe store of value. It would also appear as liability on a Central Bank's balance sheet.
- **Key Motivations behind CBDC:**
 - » Reduce Operational Cost involved in physical cost management
 - » Foster Financial inclusion
 - » Efficiency and Innovation in payment system
 - » Adding efficiency to settlement system
 - » Boosting innovation in cross border payments.
 - » Countering Private Crypto Currencies
- Thus, it has all the advantages which any private virtual currency has.
- **How secure is RBI's CBDC?**
 - » It operates on the robust foundation of blockchain technology, employing encryption and decentralized ledgers to safeguard financial transactions.
- **How does Digital Rupee work?**
 - » The RBI will create tokens, and issue them to financial entities called Token Service Providers (TSPs), which are the banks selected for the Digital Rupee Program. The TSPs will then distribute the tokens to interested parties/customers. The digital rupee tokens will work in the same way as bank notes/coins, and you can use them in lieu of cash.
 - » e₹ will work in the same way as bank notes and coins – if you possess them, you can use them in lieu of cash. You may store e₹ in your bank's e₹ app. The digital wallet works in the same way as your cash wallet, except these transactions will be entirely paperless. You can either conduct e₹ transactions anonymously, simply by obtaining the sender/receiver's phone number or QR code, or you can opt for account-based e₹ transactions.

- How is e-rupee different from UPI or other fund transfer modes?
 - » UPI/NEFT/RTGS/IMPS are all forms of digital payments. e₹ is a digital form of currency and is a legal tender provided by RBI that is similar to physical cash, but in a digital form.
- How is CBDC different from Bitcoin and other private cryptocurrency?
 - » RBI takes responsibility for ensuring the transactions are settled. In bitcoin, the transaction between parties are settled by a pool of users.
 - » Stability: E-Rupee enjoys the same stability in value as the rupee while cryptocurrencies can be very volatile.
- Types of CBDC:
 - » RBI released two versions of the Digital Rupee - CBDC-Wholesale (CBDC-W) and CBDC-Retail (CBDC-R).
 - **CBDC-W** is designed for limited access and is primarily intended for selected financial institutions. It is used for settlement of inter-bank transfers and related wholesale transactions.
 - **CBDC-R** is available for broader audience, including private sector entities, non-financial consumers, and business of all sizes. It is basically an electronic version of cash primarily meant for retail transactions.
 - The CBDC-R pilot currently enables person-to-person (P2P) and Person to Merchant (P2M) transactions using Digital Rupee wallets provided by pilot banks.
- Important Proposed features of e-rupee
 1. Enabling digital transaction even when customers are offline.
 - CBDC-R will soon support offline transactions in areas with limited or no internet connection. Various offline solutions (proximity and non-proximity based) across hilly areas, rural and urban locations will be tested for this purpose.
 2. Integrating the e-rupee with India's widely used UPI.
 - RBI is actively encouraging banks to make the e-rupee interoperable with UPI through QR code system. Some banks like SBI have already implemented the inter-operability feature.
 3. **Programmability**: It will permit users like, for instance, government agencies to ensure that payments are made for defined benefits.
 - It will also permit corporates to program specified expenditures like business travel for their employees.
 - **Additional features like validity period or geographical areas** within CBDC may be used and can be programmed.
 - The above functionalities will be introduced in pilot in gradual manner.
- What are the denominations of retail e-rupee?
 - The retail e-rupee is available in various denominations, including 50 paise, 1, 2, 5, 10, 20, 50, 200, 500, and 2000. In contrast, the wholesale e-rupee doesn't specify any specific denomination.

- **Progress so far:**
 - RBI has launched pilots of CBDC in both wholesale and retail segments.
 - **The pilot in wholesale segment**, known as the **Digital Rupee - Wholesale (e₹ -W)**, was launched on Nov 1, 2022, with use case being limited to the settlement of secondary market transactions in government securities.
 - **The pilot in retail segment**, known as **digital Rupee - Retail (e₹-R)**, was launched on Dec 01, 2022, within a closed user group (CUG) comprising participating customers and merchants.
 - **The e₹-R** is in the form of digital token that represents legal tender. It is being issued in the same denominations as the paper currency and coins. It is being distributed through financial intermediaries, i.e., the banks.
 - **Users** will be able to transact with e₹-R through a digital wallet offered by the participating banks. Transactions can be both person to person (P2P) or Person to Merchant (P2M).
 - It offers features of physical cash like trust, safety and settlement finality. Like cash, the CBDC will not earn any interest and can be converted to other forms of money, like deposits with banks.
 - **As of March 2024**, the size of the pilot project is very large. India currently has about **4.3 million retail users of CBDC**. An additional 40,000 merchants are also using the e-rupee.

2) E-RUPI

- **Why in news?**
 - » RBI expands the scope of e-RUPI digital voucher: Non-banking prepaid payment instrument companies can now issue vouchers (June 2023)
- **Details**
 - » E-RUPI is a one time, cashless and contactless instrument for digital payment. It is a QR code or SMS string-based e-Voucher, which is delivered to the mobile of beneficiaries. The beneficiary can go and redeem it at any centre that accepts it. It is a person specific, even purpose specific digital voucher.
 - It connects the sponsors of the services with the beneficiaries and service providers in a digital manner without any physical interface. It also ensures that payment to the service provider is made only after transaction is complete.
 - » It is pre-paid in nature and thus ensures timely payment to the service provider without involvement of any intermediary.
 - » It will contribute in leak-proof delivery of welfare services and thus would make DBT more effective.
 - The user will be able to redeem the voucher without a card, digital payment app or internet banking access, at the service provider.
 - **Where all can it be used?**



- » It can also be used for delivering services under schemes meant for providing drugs and nutritional support under Mother and Child Nutrition Scheme, TB Eradication Program, drugs & diagnostics under schemes like AB-PMJAY, fertilizer subsidy etc.
- » Even the private players can leverage these vouchers as part of their employee welfare and CSR programs.
- **It has been developed by NPCI on its UPI Platform**, in collaboration with the Department of Financial Services, MoH&FW and National Health Authority.
- **Which banks can issue e-RUPI?**
 - » **NPCI has partnered with 11 banks for e-RUPI transactions.** They are Axis Bank, Bank of Baroda, Canara Bank, HDFC Bank, ICICI Bank, India Bank, Indusland Bank, Kotak Mahindra Bank, Punjab National Bank, SBI and Union Bank of India.
 - » The acquiring apps are Bharat Pe, BHIM Baroda Merchant Pay, Pine Labs, PNB Merchant Pay and YoNo SBI Merchant Pay. More banks are expected to join the e-RUPI initiative soon.
- **Advantages for Consumers:** No need of bank account (which is needed in other forms of digital payments); Easy, contactless two-step process that doesn't require sharing of personal details; it can also operate on basic phones and without internet.
- **Advantages for Sponsors:** Strengthen DBT and make it more transparent;
- **Advantages for service providers:** since these are pre-paid vouchers, it would ensure real time payment to the service providers.
- **Are there global examples of a voucher-based welfare system?**
 - » School voucher systems in USA, Colombia, Chile, Sweden, Hong Kong, etc.
 - » In the US, there is a system of education vouchers or school vouchers, which is certificate of government funding for students selected for state-funded education to create a targeted delivery system. These are essentially subsidies given directly to parents of students for the specific purpose of educating their children.
- **Updates: June 2023**
 - » At present, purpose-specific e-vouchers are issued by banks of central and state governments to a limited extent on behalf of the corporates.
 - » Now, RBI has proposed to expand the scope and reach of e-RUPI vouchers by (a) permitting non-bank Prepaid Payment Instrument (PPI) issuers to issue e-RUPI vouchers and (b) enabling issuance of e-RUPI vouchers on behalf of individuals.

5. NON-PERFORMING ASSETS (NPAS)

1) NON-PERFORMING ASSETS - BASICS

- » Assets in a banking system comprises of loans given and investments (in bonds etc.) made by banks as these earn interest/profit for banks.
- » If the interest/ principal instalment of a loan is not paid until due date, it is called **bad loan**.
- » An asset including a leased asset, becomes non-performing when it ceases to generate income for the bank.
- » According to RBI **A Non-Performing Asset** is a loan or advance where instalment/interest is due for more than 90 days in case of a term loan or overdraft account/ credit account. Similarly in case of

agriculture loans an account becomes an NPA if the instalment/interest remains overdue for two crop season for a short duration crop, or one crop season for a long duration crop.

- » **Stressed Assets** refers to all NPAs plus restructured assets plus written off assets.
- » **NPA Classifications:** Banks are required to classify NPAs into one of the following three categories.
 - **A substandard asset** is an asset classified as an NPA or less than 12 months.
 - **A doubtful asset** is an asset that has been non-performing for more than 12 months.
 - **Loss assets** are loans with losses identified by the bank, auditor, or inspector that need to be fully written off.

2) WHY NPAS INCREASED SO MUCH IN LAST DECADE?

- I. **Credit Boom in mid 2000s and then the global financial crisis:** In Mid 2000s large corporates were granted loans based on extrapolation of their recent growth and performance. But with stagnating economic growth due to Global financial crisis, their loan returning capabilities decreased.
- II. **Indian creditors used the strategy of "Giving time to time" and hoped that economic revival will reduce NPAs -> this only led to evergreening of NPAs.**
- III. **Poor Recognition:** Banks were initially reluctant to recognize NPAs. The true extent of NPA problem only started becoming clear once the RBI initiated the Asset Quality Review in 2015.
- IV. **Poor Governance and Regulation of Banks - Crony Capitalism - Poor Recovery**
- V. **Lack of specialization of banks in recovering bad loans / NPAs**
- VI. **Other Factors which negatively impacted businesses**
 - » **Key Judicial Decisions**
 - Judicial decisions like abrupt cancellation of coal mines and spectrum allocation led to reallocation through expensive auctioning procedure and thus proved to be a fatal burden on respective business models of power, steel and telecom.
 - » **Land Acquisition and environmental clearance issues** also blocked a number of projects and contributed towards increasing NPAs.
- VII. **Insolvency and Bankruptcy Procedure** had not proved very effective yet.
- VIII. **Absence of strict action against bank frauds of high magnitude**
 - » This is because of absence of a strong law against wilful defaulters and fraudsters

3) IMPACT OF HIGH NPAS

- **On Banking Sector:** Decreased income; downgrading of credit rating; negatively impacts achievement of capital adequacy; reduced competitiveness of PSBs to private banks.
- **Hinders Economic Growth:** Reduction in bank credit; higher interest rates.
- **On Government:** Increased fiscal burden due to the need of recapitalizing PSBs.
- **On Individuals/ Society**
 - » **Relatively expensive loans** and decreased interest on deposits.

- » Less budget/credit available for social welfare programs.
- » Eventually its common man's money in the form of deposits which have been lend by banks and is put at risk in case the bank fails.

4) BALANCESHEET SYNDROME WITH INDIAN CHARACTERISTICS

- High NPAs (TBS problem) have derailed growth in other countries. But huge NPAs have not had as huge an impact as in case of other countries. This is being considered 'Balance Sheet Syndrome with Indian Characteristics.'
 - » This is because the NPA's are concentrated in public sector banks which not only hold their own capital but are ultimately backed by the government who would eventually come to save these banks in case situation gets out of hand. Therefore, creditors have retained confidence in the banking system and there have been no bank runs, no stress in the inter-bank market etc.
 - » Mid 2000s boom had created enough infrastructure (in India's severe supply constraint economy), that there was ample room for the economy to grow after the GFC.

5) STEPS TO REDUCE NPA PROBLEM

4R Strategy: Recognition, Recapitalization, Resolution, Reform

- **Steps Taken So Far**
 1. **Know your customer (KYC)** norms have been strengthened.
 2. **Early identification and reporting of stress** - Special Mention Account (As per revised framework for resolution of stressed assets - Feb 2018)
 - Lenders are required to identify incipient stress in loan accounts, immediately on default, by classifying assets as Special Mention Account (SMA) as per the following categories.

SMA Subcategory	Basis for classification - principal or interest payment or any other amount wholly or partly overdue
SMA-0	1-30 days
SMA-1	31-60 days
SMA-2	61-90 days

 - This has to be reported to Central Repository of Information on Large Credit (CRLIC) on all borrowers' entities having aggregate exposure of Rs 5 crore and above with them.
 3. **Asset Quality Review by RBI**
 - To deal with the cases of divergences in identification of NPAs or addition provisioning across banks at the central office level
 4. **Indradhanush Scheme**
 - Improving 7 different areas of banks (including capitalization)
 5. **Insolvency and Bankruptcy Code (IBC-2016)**

6. **Fugitive Economic Offenders Act, 2018**, is also acting as a deterrent and may prevent future offenders from running to other countries.

7. Project Sashakt (July 2018)

- It is a five-pronged strategy to resolve bad loans outline - SME resolution approach, bank led resolution approach, AMC/AIF led resolution approach, NCLT/IBC approach and asset trading platform

8. Prompt Corrective Action (PCA) Framework

• What is PCA?

- It is a framework under which banks with weak financial matrices are put under watch by RBI.
- The framework uses **three parameters** to measure the weakness of a bank:
 - Capital Ratio**
 - Asset Quality**
 - Profitability**

• RBI's revised PCA framework for banks applicable from 1st Jan 2022.

- The framework would apply on all banks operating in India, including foreign banks operating through branches or subsidiaries based on breach of risk thresholds of identified indicators.
- Indicators to be tracked** for capital, asset quality and leverage would be CRAR/Common Equity Tier-1 Ratio, Net NPA Ratio, and Tier 1 Leverage Ratio.
- Breach of any risk threshold may result in invocation the PCA**.
- Entry:** A bank will generally be placed under PCA framework based on the Audited Annual Financial Results and the ongoing Supervisory Assessment made by RBI.

PCA matrix – Parameters, indicators and risk thresholds					
Parameter	Indicator	Risk Threshold 1	Risk Threshold 2	Risk Threshold 3	
(1)	(2)	(3)	(4)	(5)	
Capital (Breach of either CRAR or CET 1 ratio)	CRAR - Minimum regulatory prescription for Capital to Risk Assets Ratio + applicable Capital Conservation Buffer (CCB) and/or Regulatory Pre-Specified Trigger of Common Equity Tier 1 Ratio (CET 1 PSTR) + applicable Capital Conservation Buffer (CCB)	Upto 250 bps below the Indicator prescribed at column (2) Upto 162.50 bps below the Indicator prescribed at column (2)	More than 250 bps but not exceeding 400 bps below the Indicator prescribed at column (2) More than 162.50 bps below but not exceeding 312.50 bps below the Indicator prescribed at column (2)	In excess of 400 bps In excess of 312.50 bps	
	Breach of either CRAR or CET 1 ratio to trigger PCA				
Asset Quality	Net Non-Performing Advances (NNPA) ratio	>=6.0% but <9.0%	>=9.0% but < 12.0%	>=12.0%	
Leverage	Regulatory minimum Tier 1 Leverage Ratio	Upto 50 bps below the regulatory minimum	More than 50 bps but not exceeding 100 bps below the regulatory minimum	More than 100 bps below the regulatory minimum	

- RBI's corrective action plan based on risk threshold

- RBI can put **mandatory restrictions** on dividend distribution, branch expansion, and management compensation based on the risk threshold.

- In an extreme situation, breach of third threshold, would identify bank as likely candidate for resolution through amalgamation, reconstruction or winding up.
- Further there can be **discretionary restrictions** on bank's lending limit, special audit etc.
- RBI can supersede the bank's board, under the PCA.

10. Governance Reform in banks

- E.g. Separation of the post of CMD and Chairman

6) IMPACT OF THE ABOVE EFFORTS – CURRENT SITUATION

- As per RBI's Financial Stability report released in Dec 2023, **SCB's** gross NPAs ratio continued to decline to a multi-year low of 3.2% and the net Non-Performing Asset (NNPA) ratio to 0.8% in Sep 2023.
- **Why decrease:**
 - » Lower slippages and reduction in outstanding GNPs through recoveries, upgrades, and write offs led to this decrease.

6. DEVELOPMENTAL BANKS: NEED AND ANALYSIS

- What is a **DFI** (Developmental Financial Institution) or **DFC** (Developmental Finance Company)?
 - » Developmental Financial Institutions provide long-term credit for capital-intensive investments spread over a long period and yielding low rates of return, such as urban infrastructure, mining and heavy industry, and irrigation system.
 - » The role of a Development Financial Institution (DFI) is to take cognizance of the gaps in institutions and markets in the country's financial sector and to act as a gap filler.
- **Objectives of DFI:**
 - » Economic Development of the country via financing infrastructure
 - » They also provide technical assistance like Project Report and Consultancy Services.
 - » They provide credit enhancement for infrastructure and housing projects and help in improving debt flows towards infrastructure projects.
- **History of Development Banks in India**
 - » Industrial Finance Corporation of India (IFCI), set up in 1949, was perhaps India's first developmental bank.
 - » In 1955, the World Bank prompted the Industrial Credit and Investment Corporation of India (ICICI) - the parent of the largest private bank in India today - as a collaborative effort between the government with majority equity holding and India's leading industrialists with nominal equity ownership to finance modern and relatively large private corporate enterprises.
 - ICICI Bank limited was established in 1944 and in 2002 both were merged together making it the first universal bank of India.

- » In 1964, **IDBI** was set up as an apex body of all development finance institutions.
- **How were DFIs financed in India?**
 - » In 1950s and 60s, the saving rate was low, and the capital market was virtually absent. So, DFIs were mostly financed by:
 1. **Lines of credit from the Reserve Bank of India** (that is, some of its profits were channelled as long-term credit); and
 2. **Statutory Liquidity Ratio bonds**, into which commercial banks had to invest a proportion of their deposits.
 - » In other words, by sleight of government hand, short-term bank deposits got transformed into long-term resources for development banks. The missing capital market was made up by an administrative fiat
- **However these DFIs didn't perform well:**
 - » **Faced very high NPAs** -> due to politically motivated lending and inadequate professionalism in assessing the project.
 - » Therefore, after 1991, following the Narsimhan Committee recommendations on financial sector reforms, **the DFIs were disbanded and got converted into commercial banks**.
- **Result of disbanding these institutions**
 - » **Steep fall in long term credit** from a tenure of 10-15 years to five years. This has contributed to NPA crisis of Indian PSBs.
 - » Further, the development of debt market has failed to take off.
- **In China**, these developmental banks - the Agricultural Development Bank of China, China Development Bank, and the Export-Import Bank of China - have been at the forefront of financing its industrial prowess.
- **Advantages of DFIs**
 - » **Fill the gap in infra financing and long-term financing**: The commercial banks have been reluctant to provide long term loans for infra projects especially after the huge NPA crisis
 - » **Reducing future NPA burden on Banks**
 - » **Utilize today's developmental capital and stock markets more efficiently** through specialized activities.
- Therefore, Finance Minister **Nirmala Sitharaman** while presenting the Union Budget 2021-22 stated that, India's Infrastructure needs long term financing and informed that India will set up a new **DFI** called the **National Bank for Financing Infrastructure and Development (NBFID)**

1) DETAILS ABOUT NATIONAL BANK FOR FINANCING INFRASTRUCTURE AND DEVELOPMENT (NBFID)

- NBFID Bill, 2021 was passed in Parliament in 2021.

- It was operationalized in Q1FY23.
- NBFID will be set up as a **corporate body with authorised share capital of one lakh crore rupees.**
 - Shares of NBFID may be held by: (i) central government, (ii) multilateral institutions, (iii) sovereign wealth funds, (iv) pension funds, (v) insurers, (vi) financial institutions, (vii) banks, and (viii) any other institution prescribed by the central government.
 - Initially, the central government will own 100% shares of the institution which may subsequently be reduced up to 26%.
- **Functions:**
 - » It will have both financial and developmental objectives.
 - » **Financial Objective** will be to directly or indirectly lend, invest, or attract investment for infrastructure projects located entirely or partly in India. Central government will prescribe the sectors to be covered under the infrastructure domain.
 - » **Developmental Objectives** include facilitating the development of the market for bonds, loans, and derivatives for infrastructure financing.
 - » **Functions of NBFID include:**
 - i. extending loans and advances for infrastructure projects,
 - ii. taking over or refinancing such existing loans,
 - iii. attracting investment from private sector investors and institutional investors for infrastructure projects,
 - iv. organising and facilitating foreign participation in infrastructure projects,
 - v. facilitating negotiations with various government authorities for dispute resolution in the field of infrastructure financing, and
 - vi. providing consultancy services in infrastructure financing
- **Sources of Funds:**
 - NBFID will raise money in the form of loans or otherwise both in Indian Rupee and Foreign Currency, or secure money by the issue and sale of various financial instruments including bonds and debentures.
 - It will borrow money from: (i) Central Government (ii) Reserve Bank of India (iii) Schedule Commercial Banks (iv) Mutual Funds, and multilateral institutions such as WB and ADB.
- **Management of NBFID:**
 - It will be governed by **Board of Directors.** The members of Board include:
 - i. Chairperson appointed by the Central Government in consultation with RBI
 - ii. Managing Director
 - iii. Up to three deputy managing directors
 - iv. Two directors nominated by Central Government

v. A few independent directors

- **Support from central government:**

- **Government** will provide a grant of Rs 5,000 crores to NBFID.
- It will also provide guarantee at a concessional rate of upto 0.1% for borrowing from multilateral institutions, sovereign wealth funds, and other foreign funds.
- Upon request from NBFID, the government may guarantee the bonds, debentures, and loans issued by NBFID.

- **Other DFIs:**

- The Act also provides for any person to set up a DFI by applying to RBI. RBI may grant a license for DFI in consultation with the central government. RBI will also prescribe regulations for these DFIs.

- **How is NaBFID doing?**

- As of 2023, entire shareholding of the institutions held by Central Government, which has invested equity of Rs 20,000 crore and provided a grant of Rs 5,000 crores.
- **NaBFID** has raised Rs 10,000 crores via maiden issuance of listed bonds of 10 year duration at a coupon rate of 7.43%. It was oversubscribed by 4.7 times. (June 2023)
- In less than a year of operation, the institution has sanctioned 25,000 crore rupees loan. The aim is to reach Rs 1 lakh crore in terms of sanctioned amount by FY24. (July 2023)
- It is also moving very cautiously with a balanced portfolio of completed projects (refinancing route), brownfield expansion and greenfield projects as a lopsided focus on green field carry high risks.
- It is also exploring a larger role in the infrastructure segment and not in just financing, with the objective of playing a catalysing role in developing infrastructure and the entire ecosystem. For e.g. it is looking at a project advisory role in railways and transportation infra projects that are stuck, or that haven't moved at required pace.

7. INSOLVENCY AND BANKRUPTCY CODE (IBC)

- **Basic Definitions**

- » **Insolvency** refers to a situation where individual, entity or a company is unable to meet its financial obligations (i.e. unable to pay off debts)
- » **Bankruptcy** is the legal declaration of one's inability to pay off debts. When bankruptcy is filed, two ways of resolving insolvency is available.
 1. **Reorganization**: debtor restructure their repayment plans to make them more easily met.
 2. **Liquidation**: Debtors assets are sold to pay the creditors.

- **Problems with India's Insolvency and Bankruptcy Process (Before IBC, 2016)/Need of IBC**

- » **Delayed Process** (9 years, (1.7 years in OECD))
- » **High Cost of Process** (9% of total asset cost, (5% in OECD)) .

- » **Poor Recovery** (25.7% (72% in OECD))
 - » **Archaic laws**, some more than 100 years old, governed the Insolvency and Bankruptcy procedures.
 - » **Different acts for different entities created confusions.**
 - The **RDDB act, 1993 (Recovery of Debts due to Banks and Financial Institutions Act, 1993)** and the **SARFAESI Act, 2002 (Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest ACT, 2002)** act applied only to Indian Banks and specific NBFCs which deal with housing loans.
 - **SICA** (Sick Industrial Companies Act, 1985) applied to only Industrial companies which created a major problem as India is increasingly becoming a services-led economy.
 - **Joint Lenders Forum and Corporate Debt Restructuring** also apply to only regulated banks and NBFCs. They too don't address insolvency in systematic manner.
 - » **Creditors were relatively powerless** when faced with a default while promoters were, in the words of former RBI governor Raghuram Rajan, able to "insist on their divine right to stay in control".
- **Insolvency and Bankruptcy Code 2016 - passed by Parliament in May 2016**
- » IBC 2016 is considered one of the landmark economic reforms by the Modi Government. It is based on the recommendations of the **Bankruptcy Law Reform Committee** headed by **TK Viswanathan**.
 - » **Ministry:**
 - IBC was spearheaded in Parliament by Ministry of Finance.
 - However, the administration of the IBC, 2016 has been transferred to the Ministry of Corporate Affairs from July 2016
- **Objectives:**
- **Maximize the value of debtor's asset**
 - **Promote and encourage entrepreneurship**
 - **Ensure timely and effective resolution of IBC cases**
 - **Balance the interest of all stakeholders** including creditors, debtors and staff
 - **Facilitate the promotion of a competitive market and economy**
 - **Provide for a framework to deal with cross border insolvency**
- **Provisions:**
- i. **Unified Framework: Applicable to both Individuals and companies**
 - ii. **Clear Coherent and Speedy Process**
 - » Code lays down a clear, coherent and speedy process for early identification of financial distress and revival of the companies and limited liability entities if the underlying business is found to be viable.
 - » **Corporate debtors (LLPs and companies):**
 - **Corporate Insolvency Resolution Process (CIRP):**
 - Under this steps are taken for revival, selling the company to a suitable buyer, etc.
 - Resolution plan has to be approved by CoC (at least 66% of the creditors in CoC).

- **Time Bound Resolution:** Insolvency resolution - Max (180 + 90 Days) 330 days (including the liquidation process) (after the Aug 2019 Amendment)

- **Liquidation** - if the insolvency resolution fails. (Note: through the SC Judgment in the Essar Steel case, the 330 day deadline is no more mandatory).

▫ **Came into force on 1st Dec 2016).**

- It offers a paradigm shift from the existing 'Debtor in possession' to a 'Creditor in control' regime.

- Institutional Infrastructure for Insolvency and Bankruptcy Process under IBC**

- **Insolvency and Bankruptcy Board of India** -> Insolvency regulator, oversees the functioning of insolvency intermediaries (IPs, IPAs, IUs)
- **Insolvency Professionals and Insolvency Professional Agencies** -> private bodies -> specialized in helping sick companies -> license from IBBI required
- **Information Utilities**
 - Collate all information about debtors to prevent serial defaulters from misusing the system.
- **Adjudication** (Corporates: NCLT->NCLAT->SC; Individuals: DRT -> DRAT -> SC)

- Insolvency and Bankruptcy fund**

- For establishment and use by Insolvency and Bankruptcy Board of India and also for implementing various provisions of the act.

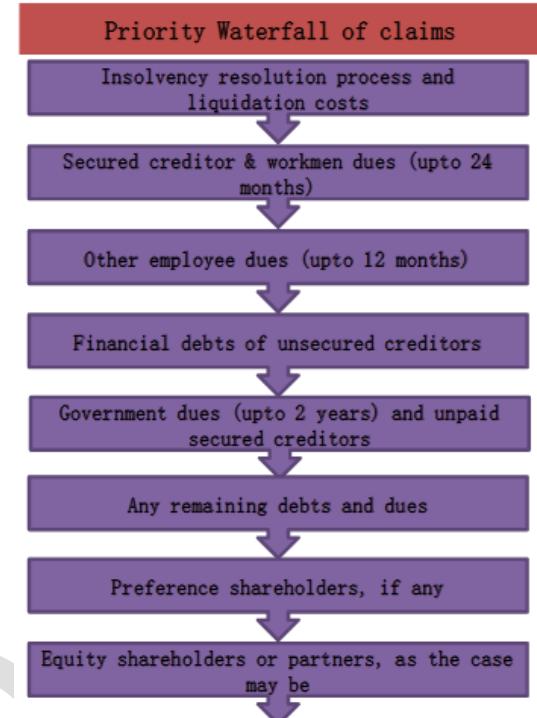
- Provisions to address cross border insolvency through bilateral agreements with other countries.**

- Protection of worker's interest**

- The code has provision to ensure that the money due to workers and employees from the provident fund, the pension fund and the gratuity fund shouldn't be included in the estate of the bankrupt company or individual.
- Further, worker's salaries for upto 24 months will get first priority in case of liquidation of assets of a company, ahead of secured creditors.
- It also enables workers to initiate the insolvency process and they will be first in line to get the proceeds of liquidations.

- Disqualification of bankrupt from holding public office**

- **During COVID-19 pandemic, the Insolvency and Bankruptcy (Amendment) Ordinance, 2020 was promulgated, which suspended initiation of CIRP of a corporate debtor (CD) for any default arising on**



or after 25th March 2020. This suspension of code was extended twice for 3 months each on 24th Sep 2020 and 22nd Dec 2020.

- **Current Situation:**

- » As per the Financial Stability Report (FSR) released by the RBI on 28th Dec 2023:
 - Since the inception of the IBC, a total of 2,808 Corporate Debtors (CDs) have been rescued (808 through RPs, 1053 through appeal and review settlements, 947 through withdrawals) and 2249 CDs have been referred for liquidation till Sep 2023. As many as 2,001 are pending (36 for seven years and 502 for six years)

- **Significance/Key Achievements of IBC:**

- » IBC has created a cohesive and comprehensive insolvency ecosystem.
- » It has made it easy for creditors to deal with default.
- » It has professionalized insolvency services by creation of two professions namely: the insolvency profession and the valuation profession.
- » It has fast tracked the insolvency and bankruptcy process and has resulted into higher recovery and thus has benefitted all the creditors including banks. As per ESI 2021-22:
 - In value terms 74% of distressed assets were rescued.
 - The average time for resolution (428 days) and liquidation (375 days) is a reduction over the pre-IBC times.
- » IBC has also ensured fast track closing of businesses enhancing a key component in India's Ease of Doing Business.
- » IBC has also led to Behavioural change.
 - Increased responsibility and accountability have been ensured among borrowers. This has ensured that business entities are paying upfront before being declared insolvent.
 - Further, in case of distress, thousands of debtors are resolving distress in the early stage of distress.

- **Concerns:**

- » **Little Realizable Value:** RBI's Financial Stability report in Dec 2023 mentions little realizable value to the creditors (16.9% in 2020-21; 22.4% in 2021-22; and 37.1% in 2022-23).
 - Also, according to the 32nd report on Parliamentary Standing Committee on Finance, submitted to Parliament on Aug 3, 2021: the recovery rates are low upto 5% with haircuts as much as 95%.
- » **Numerous issues with Resolution Professionals (RPs)** for which regulators IPA and IBBI have taken disciplinary action on 123 Insolvency Professionals (IPs) out of 203 inspections conducted till date (i.e. around 60% of IPs inspected were found to be indulging in malpractices).
- » **Capacity of NCLT:** Large number of pending cases

1) PRE-PACKAGED INSOLVENCY RESOLUTION PROCESS (PPIRP) FOR CORPORATE MSMES

- In April 2021, GoI amended the IBC Code, 2016 to introduced PPIRP for corporate MSME with defaults up to Rs 1 crore.
- **Key Features of PPIRP**
 - » **Voluntary Initiation:** It is initiated voluntarily by the debtor. The debtor and creditor mutually work on a resolution plan and approach NCLT for its approval.

- » **Expedited Resolution:** PPIRP is expected to be a faster process, with a maximum timeline of 120 days for the submission and approval of the pre-packaged plan.
- » It has rigour and discipline of the CIRP. At the same time, it is informal upto a point and formal thereafter.
- » **Minimal Disruption:** The management of the affairs of the CD shall continue to vest in the Board of Directors/ partners of the CD and the resolution professional conducts the process under the guidance and oversight of the creditors.
- » **Creditor's involvement** in the resolution plan make it more likely to be feasible and acceptable by them.
- » The informality in the beginning (pre-initiation phase) offers flexibility for the CD and its creditors to swiftly explore and negotiate the best way to resolve stress in the business.
- » The post-initiation stage drives value maximization and bestows the resolution plan with statutory protection.

- **Advantages:**

- » Time efficient resolution
- » Early revival of stressed assets
- » Improved business continuity
- » Enhanced stakeholder involvement
- » Reduction in cost in insolvency resolution process
- » Preserve asset value: Early resolution can help preserve the value of the debtor's assets, preventing further deterioration and maximizing creditor's recovery.

2) CROSS BORDER INSOLVENCY (INTERNATIONAL INSOLVENCY) LAW IN INDIA

- **Intro**

- » Cross border Insolvency mechanisms deals with financially distressed debtors who have assets or creditors in more than one country. Currently, the Cross Border Insolvency has no clear legal framework in India.

- **Why cross border insolvency process is important?**

- » **Increasing global footprint of corporates**
- » **Improving Ease of Doing Business**
- » **Preventing the misuse of bankruptcy law:** It will further help India in dealing with cases like that of Nirav Modi who has filed for Bankruptcy in USA.

- **Key components of Cross border insolvency:**

- i. Which **law** is applicable in case of cross border insolvency
- ii. Who has the **jurisdiction** to administer the insolvency process.
- iii. How are judgments asserting control on assets **enforced**.

A) THE UN COMMISSION ON INTERNATIONAL TRADE LAW (UNCITRAL) MODEL LAW

- This is a model law issued by UNCITRAL in 1997, to assist countries in regulating cross border insolvency. Over the years it has emerged as the most widely accepted legal framework to deal with cross-border insolvency issues.

- It is based on the principle of **Modified Universalism** (as opposed to Territorialism and Universalism).
- The law addresses the core issues of cross border insolvency cases with the help of **four main principles**:
 - i. **Access**: It allows foreign professionals and creditors direct access to domestic courts and enables them to participate in and commence domestic insolvency proceedings against a debtor
 - ii. **Recognition**: It allows recognition of foreign proceedings and enables courts to determine relief accordingly.
 - iii. **Cooperation**: It provides a framework for cooperation between insolvency professionals and court of countries.
 - iv. **Coordination**: It allows for coordination in the conduct of concurrent proceedings in different jurisdiction.
 - v. **Main Proceeding**: Principle for identifying where the insolvency proceeding (the main proceeding) should be initiated?
 - The law sets out the **Centre of Main Interests (COMI)** in deciding where the main proceedings should be commenced.
 - The law doesn't define COMI, but it is generally presumed to be debtor's registered office or location of its assets and its significant operations.
- **How many countries have adopted UNCITRAL?**
 - As of Oct 2023, around states have adopted the UNCITRAL Model Law (including USA, UK and Singapore). Some of them have set a reciprocity pre-condition.
- **Other Facts for Pre**
 - UNCITRAL, established in 1966, is a subsidiary body of the General Assembly of the UN.
 - It is mandated with harmonization and unification of the international trade law, as per the website.

B) CROSS BORDER INSOLVENCY IN INDIA

- India has not yet adopted UNCITRAL Model Law. (as of Oct 2023)
- Earlier, Justice V. Balakrishna Eradi Committee in 2000 and N.L. Mitra Committee had recommended the adoption of the model law.
- Under the current IBC, 2016, two sections deal with cross border insolvency.
 - Section 234 of the code empowers government to sign treaties to enable the provisions of the code.
 - Section 235 provides for a 'letter of request' by the liquidator for action on the assets of the company situated in other country. However, a reciprocal arrangement must exist there.
- India has not yet initiated the bilateral treaty mechanism to deal with cross border insolvency provisions.

C) THE REPORT OF INSOLVENCY LAW COMMITTEE (ILC) - CHAIRED BY CORPORATE AFFAIRS SECRETARY INJETI SRINIVAS (OCT 2018)

- **Key Findings**
 - Section 234 and 235 of the IBC, don't provide a comprehensive framework on cross-border insolvency.
- **Key recommendations: Adoption of the UNCITRAL Model Law** as it provides a comprehensive framework to deal with cross border insolvency issues.
 - **Some changes to ensure consistency with IBC:** India's adoption of model law should only include corporate debtors and not individuals.

3) BAD BANK: NATIONAL ASSET RECONSTRUCTION COMPANY LTD (NARCL) AND INDIA DEBT MANAGEMENT AGENCY (IDMA) – CLASS DISCUSSION

8. CREDIT RATING AND ASSOCIATED ISSUES

- **Intro**
 - » **Credit Rating** measures the ability of a person or organization to fulfill their financial commitments, based on previous dealings. It is the quantified assessment of the creditworthiness of a borrower in general terms or with respect to a particular debt or financial obligation.
 - A credit rating can be applied to any entity that seeks to borrow money - an individual, corporation, state or provincial authority, or sovereign government.
- **Credit Rating Agencies**
 - » A CRA is a **company that assigns credit ratings**, which rate a debtor's ability to pay back debt by making timely principal and interest payments and the likelihood of default.
- **Significance of Credit Ratings:**
 - » **Investor Guidance and protection:** Information which can help choose good investments.
 - » **CRAs help in strengthening of secondary market** and hence enhance investments and increase borrower pool.
 - » These ratings also bring **discipline amongst corporate borrowers** as they all want to have good ratings for their good image.
 - » **CRAs build trust between citizens and governments** by quantifying the risk associated with making investment in a country.
 - » Credit ratings **ensures precautionary measures** to be taken to prevent long term troubles.
- **Big Three Credit Rating Agencies**
 1. Moody's (headquartered in New York): It is the oldest of the CRAs and was established in 1900 and issued its first sovereign ratings just before WW-1.
 2. Standard and Poor's (S&P) (headquartered in New York): In the 1920s, Poor's Publishing and Standard Statistics (the predecessor of S&P), started rating government bonds.
 3. Fitch Group (dual headquartered in New York and London)
- **Domestic Rating Agencies**
 1. **CRISIL**
 - CRISIL (formerly Credit Rating Information Services of India Limited) is a global analytical company providing ratings, research and risk and policy advisory services.
 - CRISIL's majority shareholder is Standard's and Poor, a division of McGraw Hill Financial and provider of financial market intelligence.
 2. **ICRA Limited**

- It is an Indian independent and professional investment information and credit rating agency and was established in 1991 and was originally named Investment Information and Credit Rating Agency of India Limited (IICRA).
- It is a joint venture between Moody's and various Indian Commercial banks. The company went public in 2007 with a listing on BSE and NSE and also changed its name to ICRA.

3. CARE ratings.

- It is the second largest credit rating agency in India. It started in 1993.
- To enhance its scope of business CARE rating has been nurturing global opportunities and made forays in different forms: launched a new international credit rating agency 'ARC Ratings' with 4 partners from Brazil, Portugal, Malaysia and South Africa.

4. India Ratings and Research (Ind-Ra) is 100% owned by the Fitch Group.

5. Other Important domestic credit rating agencies

6. FITCH India, Brickwork Ratings and SMERA

- Regulation of Credit Rating Agencies in India

- » An efficient and simple regulatory mechanism for CRAs is required to protect investors and make the system more helpful for them.
- » **SEBI is the lead regulator** of CRAs in India. The **Securities and Exchange Board of India (Credit Rating Agencies) Regulations, 1999** empowers SEBI to do this.
 - In the CRA regulations, the SEBI has prescribed a code of conduct to be followed by the rating agencies in the CRA regulations.
 - SEBI provides a **disclosure-based regulatory regime**, where the agencies are required to disclose their rating criteria, methodology, default recognition policy, and guidelines for dealing with conflict of interest.
- » But SEBI regulates the functioning of CRAs with respect to their functioning in securities market only.
- » **In addition to SEBI, RBI, IRDA and PFRDA** are also involved in the regulation of the CRAs.

- Sovereign Credit Ratings:

- » Sovereign Credit Ratings are about the creditworthiness of governments. They provide marker for investors around the world about the ability and willingness of governments to pay back debt. It affects the ability to borrow money from global investors. Governments with good ratings can get cheaper loans and vice versa.
- » Sovereign ratings also impact businesses in the country. If government has low credit ratings, the businesses also end up paying higher interest rates to global creditors.

- Global Credit Rating Agencies and Major criticisms by GOI

» Criticisms by GOI:

- In Dec 2023, finance ministry released a document titled Re-examining Narratives: A collection of Essays. The first of the five essays seeks to flag issues with the methodology adopted by the three main CRAs, and to show, based on calculations by Finance Ministry, how these gaps affect India adversely.
- The first of the five essays in the document is a criticism of what the government calls the "opaque methodologies adopted by CRAs to arrive at sovereign ratings".
- **Three main criticisms of the rating agencies by GOI:**

- » They are **opaque** and appear to disadvantage developing economies.
 - For e.g. a situation of public owned banks is considered negative. But this discriminates against developing countries which mostly have banks in public sector.
 - » The experts generally consulted for the rating assessments are selected in a non-transparent manner, adding another layer of opaqueness to an already difficult-to-interpret methodology.
 - » The rating agencies don't clearly convey the assigned weights for each parameter considered. "While Fitch does lay out some numerical weights for each parameter, they do go on to state that the weights are for illustrative purposes only".
 - For e.g. Fitch uses four main pillars such as macroeconomic outlook, structural features etc. Each pillar is further divided into sub-components with sub-weights. But apart from quantitative variables, there is also a "Qualitative overlay" variable which adds to subjectivity.
 - The use of Composite Government Indicator (as a sub-component under Structural Features) is only based on World Bank's Worldwide Governance Indicator (WGI). The WGI uses a host of indices and reports such as WEF's Global Competitiveness Report, Economic Intelligence Unit, etc. to assess several aspects of a country that may not capture hard economic data. These include freedom of expression, freedom of media, rule of law, corruption etc. The government of India says that there is an excessive reliance on such subjective appraisals.
 - And the use of Qualitative overlay implies a subjective assessment.
 - Because of all this, to earn a credit upgrade, developing economies need to demonstrate progress along a set of several one-size fits all perception-based surveys.
- » **Other criticisms:**
- The three global credit rating agencies constitute a cartel and US companies often received superior ratings.

9. NEXT BOOKLET

Nationalization, Consolidation of Banks, Privatization of PSBs, types of banks, NFBCs, Fintech, Pension sector



TARGET PRELIMS 2024

BOOKLET-27; ECONOMY-8

EXTERNAL SECTOR

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2. BASICS OF EXTERNAL SECTOR

- External sector deals with import and export of goods and services, and financial capital between nations.
 - » The sector in which the domestic economy has an advantage over other countries, goods and services of these sectors are **exported**.
 - » The sector in which the domestic economy has a disadvantage over other countries, goods and services of these sectors are **imported**.
- Balance of Payments (BOP)
 - » BOP, also known as the **Balance of International Payments**, is a statement of all transactions between entities in one country and rest of the world over a defined period of time such as a quarter or a year.
 - » **Note:** Balance of payment thus summarizes all transactions that a country's individuals, companies, and government bodies complete with individuals, companies and government bodies outside the country.

1) BALANCE OF PAYMENT IN ONE TABLE

A. Current Account: (A.1 + A.2)		
	A.1: Merchandise Trade Balance	
		A.1(a): Merchandise Exports
		A.1(b): Merchandise Imports
	A.2: Invisibles	
		A.2(a): Services
		A.2(b): Transfers
		A.2(C): Income
B. Capital Account: B1+B2+B3+B4+B5		
	B.1) Foreign Investment	
		B.1.a) Foreign Direct Investment (FDI)
		B.1.b) Foreign Portfolio Investment (FPI)
	B.2) Loans	
		B.2.a) External Assistance
		B.2.b) Commercial Borrowings (MT & LT)

		B.2.c) Short term Credit to India
	B.3) Banking Capital	
	B.4) Rupee Debt Service	
	B.5) Other Capital Flow	
C. Errors and Omissions		
D. Overall, Balance (A + B + C)		
E. Reserve Change	-(A + B +C) (-) indicates increase and (+) indicates decrease	Explanation -> Positive Balance of payment would lead to <u>increase in a nation's net foreign asset</u> . And Negative Balance of Payment would mean <u>decrease in a nation's net foreign asset</u> .

Real Life Example (see below table from ESI 2021-22)

Year / Item (Net)	(US\$ Billion)									
	2019-20				2020-21				2021-22 (P)	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
A. Current Account	-15.0	-7.6	-2.6	0.6	19.1	15.3	-2.2	-8.2	6.5	-9.6
A 1 Merchandise Trade Balance	-46.8	-39.6	-36.0	-35.0	-11.0	-14.8	-34.6	-41.7	-30.7	-44.4
A 1a Merchandise Exports	82.7	80.0	81.2	76.5	52.2	75.6	77.2	91.3	97.4	104.8
A 1b Merchandise Imports	129.5	119.6	117.3	111.6	63.2	90.4	111.8	133.0	128.2	149.3
A 2. Invisibles	31.8	32.1	33.4	35.6	30.0	30.1	32.4	33.6	37.2	34.8
A 2.a) Services	20.1	20.9	21.9	22.0	20.8	21.1	23.2	23.5	25.8	25.6
A 2.b) Transfers	18.0	20.0	18.9	18.4	17.0	18.4	19.3	18.8	18.9	18.9
A 2.c) Income	-6.3	-8.8	-7.4	-4.8	-7.7	-9.4	-10.1	-8.7	-7.5	-9.7
B) Capital Account	28.6	13.6	23.6	17.4	1.4	15.9	34.1	12.3	25.5	40.1
B.1) Foreign Investment	18.8	9.8	17.6	-1.8	0.1	31.4	38.6	10.0	12.1	13.3
B.1.a) Foreign Direct Investment	14.0	7.3	9.7	12.0	-0.5	24.4	17.4	2.7	11.7	9.5
B.1.b) Foreign Portfolio Investment	4.8	2.5	7.8	-13.7	0.6	7.0	21.2	7.3	0.4	3.9
B.2) Loans	9.6	3.1	3.1	9.9	2.8	-3.9	0.3	7.7	2.8	7.6
B.2.a) External Assistance	1.5	0.4	1.3	0.6	4.1	1.9	1.2	4.0	0.3	1.1
B.2.b) Commercial Borrowings (MT & LT)	6.1	3.3	3.2	10.3	-1.2	-4.0	-1.1	6.1	0.6	4.1
B.2.c) Short Term Credit to India	2.0	-0.6	-1.4	-1.0	-0.2	-1.8	0.2	-2.3	1.9	2.4
B.3) Banking Capital	3.4	-1.8	-2.3	-4.6	2.2	-11.3	-7.6	-4.4	4.1	0.4
B.4) Rupee Debt Service	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0
B.5) Other Capital	-3.1	2.5	5.2	13.8	-3.7	-0.3	2.8	-1.0	6.6	18.8
C) Errors and Omissions	0.4	-0.9	0.6	0.9	-0.6	0.4	0.6	-0.7	-0.2	0.7
D) Overall Balance	14.0	5.1	21.6	18.8	19.8	31.6	32.5	3.4	31.9	31.2
E) Foreign Exchange Reserves (Increase - / Decrease +)	-14.0	-5.1	-21.6	-18.8	-19.8	-31.6	-32.5	-3.4	-31.9	-31.2

A) CURRENT ACCOUNT

- Current account records a nation's net trade in goods and services, its net earnings on cross border investments, and its net transfer payments over a defined period.
- **Current Account transactions** (like revenue receipt and revenue expenditure) are single time and one way transaction. It means that the transaction (like receipt of payment) happens once and transaction ends there. There is no future liability/asset created.
 - » For e.g., when Tata Motors export a car and receives money for that, the transaction comes to an end with respect to this car being exported.

TRADE BALANCE:

- **Export:**
 - » It includes export of merchandize goods to other countries and receipts against it.
 - » Please note that, while considering trade balance, export/import of services are not considered.
- **Import:**
 - » It includes import of merchandize goods from other countries and payments for it.
- **Trade Balance** is the difference between exports receipt and import payments.
 - » In case the trade balance is positive, it is called trade surplus or favorable trade balance.
 - » In case the trade balance is negative, it is called trade deficit or unfavorable trade balance.

INVISIBLES (NET)

- The invisible (net) is that part of balance of trade that refers to services and other products that doesn't result in transfer of physical assets.
- **Invisibles** may include Services, Income and transfer payments.

SERVICES

- I) Travel
- II) Transportation
- III) Insurance
- IV) Government not included elsewhere (GNIE)
- V) Miscellaneous Services
 - a. It encompasses communication service, construction services, financial services, software services, news agency services, royalties copyright and license fees and business services.

INCOME (I.E. INVESTMENT INCOME)

- This income may be from financial assets, labour and property.
- These transactions are in the form of interest, dividend, profit for servicing capital transactions.
- **Interest Payment** represent servicing of debt liabilities. E.g. interest earned (paid) from bank loans to foreign country.
- **Dividend or profit** represent servicing of non-debt (FDI, FPI) liabilities.

- Compensation of employees are also included in "income" category.

TRANSFERS

- They represent one sided transaction i.e. transaction that don't have quid-pro-quo, such as grants, gifts, migrants transfers by way of remittances for family maintenance, repatriation of savings, and transfer of financial and real resources linked to change in resident status of migrants.
- They may be private or official.
- E.g.
 - Grants, donations and other assistance received by government from bilateral and multilateral institutions.

CURRENT ACCOUNT BALANCE = TRADE BALANCE + NET INVISIBLES

- Positive (+) Current Account (Current Account Surplus) means that the country is a net exporter of goods and services.
- Negative (-) Current Account (Current Account Deficit) means that the country is a net importer of goods and services.
- For e.g.
 - » USA had the world's largest Current Account Deficit in 2020 at US\$ 616 billion.
 - » China had the world's largest Current Account Surplus in 2020 at US\$ 274 billion.

B) CAPITAL ACCOUNT

- Capital account transactions are two-way transactions. It means paid money can be recovered through periodical income and/or by disposal of the asset created. Similarly, the loan has to be repaid periodically and has to be settled finally by paying the full amount.
- It includes Loans, Banking Capital, Investments (FPIs, FDIs),

LOANS

External Assistance (official bilateral and multilateral loans), External Commercial Borrowing and Short-term debt.

- » **External Assistance (net)** means transaction of official (government) bilateral and multilateral loans.
- » **External Commercial Borrowings (ECBs):**
It means loan transaction by commercial enterprises.
 - » It includes commercial loans in the form of bank loans, buyers' credit, suppliers' credit, securitized instruments availed from non-resident lenders with a minimum average maturity of three years.
 - » ECB can be raised only for specific purposes, such as the import of capital goods, implementation of new projects, etc. These restrictions are called end use restrictions.

Extra Gyan:

Buyers Credit and **suppliers' credit** are called trade credits. Depending on the source of finance, such trade credits are classified as suppliers' Credit or Buyers' Credit.

- **Supplier's Credit** relates to credit for imports into India extended by the overseas supplier.