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WEEKLY CURRENT AFFAIRS

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Delhi Office

706 Ground Floor Dr. Mukherjee Nagar
Near Batra Cinema Delhi – 110009

Contact No. : +91 8595390705

Noida Office

Basement C-32 Noida Sector-2
Uttar Pradesh 201301

website : www.yojnaias.com

SEPTEMBER CURRENT AFFAIRS

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Food day as a reminder to 'leave no one behind'

Source: The Hindu

News: COVID-19 pandemic drastically undermined the food and nutrition security. Other factors such as climate change, spiralling food inflation, conflict, and inequality are also contributing towards severe hunger.

Factors Contributing towards food and nutrition insecurity:

- **Recent Climate shocks and extreme weather phenomena** raised concerns about India's wheat and rice production over the next year.
- **Unsustainable increase in population:** India's population is projected to reach 1.5 billion people by 2030 that will put extra burden on Agri-food systems.
- **Input-intensive agriculture** leading to degradation of soil and financial insecurity among farmers.
- **Declining nutritional value of food products** due to excessive chemical use and non-judicious water use.

India's contribution towards food security:

- India has achieved self-sufficiency and improved food production.
- India exported $49.6 billion in total agriculture exports during 2021-22,a 20% increase from 2020-21 and became one of the largest agricultural product exporters in the world.
- **Main agricultural exports of India:** Rice, sugar, and spices
- **Humanitarian food aid** to many countries such as Afghanisatn.
- India ensures food aid even during food supply shortages and disruptions during the Ukraine crisis.

- India contributed toward equity in food through food safety nets that cover over a billion people.
- Public procurement and buffer stock policy of the government provided food safety nets and inclusion during the global food crisis of 2008-12 global food crisis and COVID-19 pandemic fallout.
- **Importance of Pradhan Mantri Garib Kalyan Anna Yojana(PMGKAY) scheme introduced during COVID-19**: Paper by International Monetary Fund(IMF) on 'Pandemic, Poverty, and Inequality: Evidence from India' asserted that 'extreme poverty was maintained below 1% in 2020 due to PMGKAY.
- **India as a leader in reviving millet production:** India appealed to the United Nations General Assembly to declare 2023 as the International Year of Millets.
- India renewed attention towards Millets for good nutrition, health, and the planet.

Millets:

- Millets are climate-smart crops.
- Millets are drought -resistant crops as they grow in areas with low rain and in-fertile soil.
- Properties of Millets: Hardier than other cereals, more resilient to climate change, less water requirement for cultivation (70% less than rice),requires less energy to process (around 40% less than wheat).
- Millets can revive soil health as they need fewer inputs and are less extractive for the soil.
- India contributes around 41% of world's total millet production in 2020.

Initiatives of Government of India:

- **Paramparagat Krishi Vikas Yojana (PKVY)** for promotion of organic farming.
- **Pradhan Mantri Krishi Sinchayee Yojana(PMKSY)** for improved water use through focus on more crops per drop.
- **Soil Health Management** through Integrated Nutrient Management under the National Mission for Sustainable Agriculture.
- **Programmes for improving food access to vulnerable populations:** Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), the Pradhan Mantri Poshan Shakti Nirman Yojana (PM POSHAN Scheme), and take-home rations.
- **National Food Security Act (NFSA),2013** that led to Targeted Public Distribution System (TPDS).

- **PM POSHAN scheme** that was earlier known as the Mid-Day Meals scheme.
- **State and National governments along with the UN World Food Programme (WFP)** ensure efficiency and try to improve these programmes through digitisation and rice fortification, better health, and sanitation measures.
- National government is implementing a **Sub-Mission on Nutri-Cereals (Millets)** as part of the National Food Security Mission to enhance the area, production, and productivity of millets.

Way Ahead:

- **Climate adaptation and resilience building.**
- **Better production through promotion of sustainable practice**s in the areas of crops, livestock, fisheries, food security, and management of natural resources.
- **Inclusive, effective, and sustainable agri-food systems** through organic farming or Zero Budget Natural Farming etc.
- **Strengthen food security nets** to ensure access to essential nutrition for millions and promote livelihood for vulnerable communities.
- **Revive indigenous crops** such as millets for food and nutrition security through State-level missions.
- **More focus on climate smart or drought resistant crops.**
- **Preservation of agrobiodiversity** by ensuring genetic diversity in crops.
- **Incentivize investments and fair remuneration to producers** of climate smart crops for inclusive and equitable food systems.
- **Promotion of millet and agricultural biodiversity** on various multilateral fora such as G20.
- **Strengthening Millet value chains in India** for enhancing nutritional benefits and increasing farmers' incomes.
- **Strengthening transparency in the agricultural system** through promoting labelling, traceability, etc.

Conclusion: Food and nutrition security contributes towards collective peace and prosperity. India should lead the global discourse on food and nutrition security through the principle of leaving no one behind and home-grown solutions and best practices. It should work to make its food system more equitable, empowering, and inclusive.

Prelims Fact:

- Tejaswini Programme was launched by MP government with participation from International Fund for Agricultural Development (IFAD's)
- Data from the programme showed that growing millets led to nearly 10 times increase in income from ₹1,800 per month in 2013-14 to ₹16,277 in 2020-21.
- Millets were easier to grow and led to better outcomes. So, Women were key to villages adopting millets.

Article: The Hindu: Food day as a reminder to 'leave no one behind'(Konda Reddy Chavva,Ulac Demirag,Bishow Parajuli)

Sharad

Editorial: The bigger picture of intermediation, financial crises

Source: The Hindu

News: Nobel Prize in Economics for the year 2022 offers a deeper understanding of the genesis, the propagation, and the management of financial crises.

Role Played by banks in modern economies:

- Banks are the cornerstone of the financial system.
- Mobilize savings for investments.
- Create opportunities to pool risks.
- Improve allocative efficiencies.
- Banks Lower transaction costs between borrowers and lenders.

Risk associated with Banks:

- Banks are vulnerable to small shocks and market sentiments that may trigger a financial crisis or bank run.
- Rise in Non-Performing Assets may lead to severe economic consequences.
- **Risk associated with maturity transformation** where the bank has to turn short-term deposits into long-term lending.
- Bank Run due to mismatch of assets (loans) and liabilities (deposits) of banks.
- Small rumors of bank run could trigger belief among the depositors that their deposits are at risk and may trigger a financial crisis

Article: The bigger picture of intermediation, financial crises(Niloy Bose and Sudipta Sarangi)

Sharad

Editorial: Securing India's cyberspace

Source: The Indian Express

News: Indian Army has collaborated with industry and academia for development of cryptographic techniques for secure communications and cryptography applications.

Risks faced by India's cyberspace:

- **Chinese quantum advances:** India's digital infrastructure is facing a barrage of quantum cyberattacks from Chinese state-sponsored hackers.Indian cyberspace is facing additional vulnerability due to dependence on Chinese hardware.
- **Vulnerability of existing or traditional digital infrastructure models:** Current quantum cyber attacks can breach any hardened target protocols due to inefficiencies of RSA protocols.
- **Gap between India and advanced nations in quantum computing accentuated the cross border cyber risks.**Example: China hosts two of the world's fastest quantum computers and the U.S.A has allocated $1.2 billion for defence-related quantum technology research.
- **Inadequacy capability to withstand quantum cyberattacks:** As India does not have potential to develop advanced systems.

Researches and Investments for securing India's cyberspace:

- Defence Research and Development Organisation (DRDO) and IIT-Delhi team demonstrated Quantum key distribution(QKD) link between Prayagraj and Vindhyachal.
- Quantum technology is now "mission of national importance".
- National Mission on Quantum Technologies and Applications launched in the Union Budget 2020-21 with a budget outlay of Rs 8,000 crore.

Way forward:

- Deployment of **"quantum-resistant" systems** through upgradation of current encryption standards.
- Investments in **Hack proofing** cyber or quantum systems.
- Transition to **quantum-resistant algorithms** by India either through development of new algorithms for their cypher suite or through procurement of Suite B Cryptography Quantum-Resistant Suite as its official encryption mechanism.
- **Technical steps** to handle quantum computer attacks by emulating a series of encryption tools developed by the US's National Institute of Standards and Technology (NIST).
- National initiatives to develop quantum-resistant systems through open-source projects related to post-quantum cryptography.
- India should enthusiastically participate in the **Open Quantum Safe project.**
- Implementation and development of quantum-resistant communications capabilities in **critical strategic**

sectors.

- Priority should be given to **secure sensitive military communications** or to protect key intelligence from potential quantum cyberattacks.
- Protection of cyberspace from cross-border quantum cyber offensive by establishing nationwide communication networks integrated with quantum cryptographic systems.
- Diplomatic partnerships with **"techno-democracies"** to pool resources for mitigating emerging quantum cyber threats.

Conclusion: Focus on post-quantum cybersecurity

- As applications of quantum physics in strategic domains are becoming reality. India needs a holistic approach to tackle increasing cybersecurity challenges or risks.

Key terms

- **Open Quantum Safe project:** It is a global initiative for prototyping and integrating quantum-resistant cryptographic algorithms started in 2016.
- **"Techno-democracies"** as defined by Arjun Gargeyas and Sameer Patil are countries with top technology sectors, advanced economies, and a commitment to liberal democracy.

Article: Securing India's cyberspace(Arjun Gargeyas;Sameer Patil)

Sharad

India's first hydrogen fuel cell bus

Source: The Indian Express; PIB

News: Recently Union minister of state for Science and Technology Jitendra Singh unveiled a hydrogen fuel cell bus developed by KPIT-CSIR in Pune.

Image credit: PIB

Overview of hydrogen fuel cell technology:

- **According to the US Department of Energy,** the working mechanism of fuel cells is similar to conventional batteries found in electric vehicles.
- Fuel cells need not to be recharged with electricity as they do not run out of charge.
- As long as the supply of hydrogen is maintained fuel cells continue to produce electricity.
- **Similarity between fuel cells and conventional cells:** Fuel cells also consist of an anode (negative electrode) and cathode (positive electrode) sandwiched around an electrolyte similar to conventional cells.
- **Working Mechanism of fuel cells:** The anode is supplied with hydrogen, while the cathode is fed with air. The hydrogen molecules are split into protons and electrons at the anode by a catalyst, and both subatomic particles travel in separate directions to the cathode. Electric motors can be powered by the flow of electricity produced when the electrons pass through an external circuit. On the other hand, the protons move to cathode through the electrolyte. Once there, they combine with electrons and oxygen to produce heat and water.

- Battery-powered electric vehicles or Hydrogen fuel cell-powered vehicles produce emissions, but no tailpipe emissions.

Advantages of hydrogen fuel cell-powered vehicle:

- Hydrogen fuel cell electric vehicles **produce no tailpipe emissions,** unlike conventional vehicles with internal combustion engines (ICE) that produce direct emissions through the tailpipe.
- **Most environment friendly mode of transportation:** Hydrogen fuel cell-powered vehicles emit only water vapour and warm air. So, Fuel Cell vehicles have zero greenhouse gas emissions.
- **Efficiency** of hydrogen fuel cell-powered vehicles is **greater** than internal combustion engine vehicles.
- **Refueling time of Hydrogen fuel cell electric vehicles is as fast as an internal combustion engine**. Hence, making it more practical than battery-powered electric vehicles for public transportation purposes. Battery-powered electric buses take hours to charge, but hydrogen can be refilled in a matter of minutes in fuel cell vehicles.
- **Low operational costs of fuel cell trucks and buses** due to high energy density of hydrogen and high efficiency of fuel cell vehicles: Rupees per kilometre operational costs for fuel cell trucks and buses are lower than diesel powered vehicles.
- It can **eliminate on-road decentralised emissions** from diesel powered heavy commercial vehicles.
- It can **bring a freight revolution in India** along with inland waterways for freight and passenger transport.
- This technology will help **India to become a net exporter of clean hydrogen energy** from a net importer of fossil energy.
- **India can become a leader in hydrogen spac**e by becoming a large green hydrogen producer and supplier of equipment for green hydrogen.

Conclusion or Way forward: Sustainable production of hydrogen

- Currently the biggest source of hydrogen in the world is fossil fuels leading to a large number of emissions with their usage.So, in future collaborative effort is required between all the stakeholders to move towards renewable methods such as solar and wind energy for generating hydrogen just like we moved towards renewable sources of electricity.

Article:

1. India's first hydrogen fuel cell bus: What is hydrogen fuel cell technology, how will work?

2. PIB: Union Minister Dr Jitendra Singh unveils India's first truly indigenously developed Hydrogen Fuel Cell Bus developed by KPIT-CSIR in Pune; Says, the launch is in tune with PM Modi's National Green Hydrogen Mission

Sharad

Non-polluting tech in auto sector

Source: The Indian Express

News: Government data shows that electronic vehicles (EVs) adoption has seen a considerable rise since 2020.As per the data shared by the Minister of State for Heavy Industries Krishan Pal Gurjar with Parliament ,1.19 lakh EVs were sold in 2020, which increased to 3.11 lakh in 2021 and 4.19 lakh in 2022.

EV categories:

- n Plug-in hybrid vehicles or PHEVs: PHEV uses an IC engine in combination with an electric motor backed by rechargeable batteries. Electric motor is used for power and rechargeable batteries can be plugged into a power source.
- **n Fuel cell electric vehicles or FCEVs:** Combination of hydrogen and oxygen used to produce electricity for running the motor. FCEVs range and refuelling processes are comparable to conventional cars and trucks.But they are considered as Evs. **Examples:** Toyota's Mirai, Honda's Clarity and Hyundai's Nexo.
- **n Conventional hybrid electric vehicles or HEVs:** HEV is hybrid vehicle drivetrain due to combination of conventional internal combustion engine system and an electric propulsion system. HEVs substantially lowers fuel usage. Unlike PHEVs, HEVs do not have a plug-in option. When the IC engine is powering the drivetrain or by regenerative braking the onboard battery in a conventional hybrid is charged. Examples: Toyota Hyryder/ Maruti Grand Vitara models, Toyota Camry and Honda City e.
- **Flex fuel Vehicles:** Vehicles that can run on one or multiple fuel types. Example: Toyota sedan.
- **Examples of other hybrid models:** Honda City e,Toyota Urban Cruiser Hyryder,Maruti Suzuki Grand Vitara,Toyota Innova Hycross.
- **Battery Electric Vehicles (BEVs):** Tata Nexon EV, the Hyundai Kona or Mahindra eVerito.
- Recently Union minister of state for Science and Technology Jitendra Singh unveiled a hydrogen fuel cell bus developed by KPIT-CSIR in Pune.

Reasons for rise in the number of EVs and multiple hybrid platforms

- Sharp **rise** in prices of petroleum products.
- **Reduction** of Goods and Service Tax (GST) on EVs from 12 to 5 per cent.
- **Production Linked Incentive (PLI) scheme** for manufacturing of Advance

Chemistry Cell (ACC) to replace costly Lithium-based batteries.

- Central government asked states to waive road tax for EVs.
- Government is also mulling proposals for a **broader taxation incentive structure** for other clean technologies in the auto sector.
- **Constant efforts by Prime Minister Narendra Modi** to **reduce carbon intensity** of the Indian economy and proceed towards **net zero emission.** PM Modi in his address at the 26th United Nations Climate Change Conference (COP26) in Glasgow, said that India aims to reduce the carbon intensity of its economy to less than 45 per cent by 2030 and net zero emission by 2070.
- **Recent government policies** aim to shift the auto industry from Internal Combustion Engine (ICE) systems to multiple tech platforms apart from battery electric vehicles like conventional hybrids, flex fuels, fuel cells and even hydrogen ICE etc.
- **Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India(FAME)** programme of Ministry of Heavy Industries provides benefits to electric and hybrid Vehicles including Fuel cell vehicles.

Demands for EVs are rising still there are lot of problems faced by policy makers to push new non-polluting auto tech or platforms in the mass market:

- **Behavioural issues:** Despite so much push for EVs only 10 lakh EVs were sold in the country in the last four years against 6.3 crore non-electric vehicles as people become accustomed to petrol or diesel vehicles.
- **Logistic Challenges:** Due to unavailability of battery charging points and lithium ion batteries.
- **High Cost of EVs compared to non-electric vehicles** due to usage of lithium-ion battery that is the costliest component in the EV.
- **Issues in the existing auto taxation structure:** that offers incentives based on the type of powertrain instead of lower emissions or higher mileage to auto companies.
- **Excessive focus of the government on battery electric vehicles** neglecting other technologies like conventional hybrids, flex fuels, fuel cells and even hydrogen Internal Combustion Engine(ICE).
- **Divisions within the auto industry:** Auto companies without hybrid portfolios are opposing the proposal for lower tax on conventional hybrid vehicles.
- **Current taxation structure discourages hybrid vehicles:** Effective taxation on hybrid vehicles is 43 percent just 2 percentage points lower than the 45 percent levied on mid-sized passenger Internal Combustion Engine (ICE) vehicles.

- **High GST rate of hybrid passenger vehicles:** Battery Electric Vehicles (BEVs) are taxed at 5 percent GST rate,but GST rate is 28 percent on all passenger vehicles.
- Government policies are not able to keep pace with changing technology due to bureaucratic taxation structure.

Article:

1. India sees a rise in EV adoption since 2020: Govt data

2. Govt eyes tax breaks for more non-polluting tech in auto sector

Sharad

Goal of India's G20 Presidency is to tackle Climate Change

Source: The Indian Express

News: Emission of Greenhouse gas is a major global concern and it requires a coordinated approach to tackle it.

Greenhouse gases (GHG):

- After emission GHG remains in the atmosphere for a long time, while other pollutant gases have a relatively shorter life span.
- Major constituents of GHG i.e.carbon dioxide remain in the atmosphere for as long as a thousand years.
- **Distance traveled by GHG is far greater than other pollutant gases:** Carbon dioxide can travel up to thousands of kilometres while pollutant gases like sulphur dioxide at best travel up to a few hundred kilometres.
- **Greenhouse gases also impact far away climate from the source:** Excessive sulphur dioxide emissions cause acid rain (rainwater containing sulphuric acid) in areas near the emitting source, carbon dioxide impacts far away places.
- The 19th century Industrial Revolution and global Industrialisation exacerbated the volumes of GHG in the atmosphere.

Steps taken to address greenhouse gases induced climate change:

- Countries under the United Nations Framework Convention on Climate Change (UNFCCC) framework started International climate change negotiations in 1994.

Issues while addressing climate change:

- Reluctance on part of developed countries to help developing countries to help them adapt to and mitigate climate change.Despite the fact that developed countries owe debt to developing countries.
- Accounting issues associated with climate fund transfers: Many developed countries are trying to obfuscate the need for financial transfers.
- Ineffectiveness of International climate change negotiations as everybody wants to shed its responsibility.
- Poor and developing countries in Africa, South Asia and Latin America are disproportionately bearing the consequences of extreme climatic conditions like excessive hot weather, untimely and excessive rains, flooding.
- Developed countries are not honoring their own commitments and still hold devel-

oping countries responsible for emission inflows.

Way forward:

- Along with containing inflows of new GHG emissions, focus should be on reducing the already existing huge stock.
- **Principle of "common but differentiated responsibilities and respective capabilities" :** Developed countries who are major carbon emitters should bear the major burden of carbon emissions, they should provide funds to developing countries and facilitate technology transfers to address climate change.
- Climate change is known as the tragedy of the commons. So, every stakeholder should perform their allocated role honestly and with integrity.
- India should commit less in international forums on climate change negotiations, retain the domestic policy space, and deliver more than committed.

India and Climate Change:

- India hosts 30 percent of the world's cattle population, 2.4 percent of the world's surface area, 4 percent of the water resources and 55 percent of its energy needs are met by coal.
- India has shown its leadership position when it voluntarily declared ambitious NDCs in Paris followed by bold commitments in COPs.

Conclusion: India should put pressure on developed countries during the COP meetings on climate change or in other forums like G-20 to make developed countries pay for climate change.

Sharad

International Migration Outlook Report 2022

Source: The Indian Express

About International Migration Outlook 2022 Report

- Released by Organisation for Economic Co-operation and Development (OECD)
- It provides an overview of trends in international migration flows and policies up until 2021.
- Report puts a spotlight on origin countries and destination countries of students who signed up for academic degrees in OECD countries or developed countries.

Key findings of the report:

- **Largest share of foreign students in OECD countries are from China (22%) and India (10%)** since about a third of the world's population aged 20-29 live in China and India.
- According to the report Indian and Chinese students display "remarkably different" behaviours when it comes to staying on in their host countries by extending their study visas or by obtaining work permits.
- Compared to Chinese students, Indian students are likely to stay back on extended permits with highest chances of holding a work permit five years into their stay.
- Report shows different retention behaviours among Indian and Chinese students, **Indian students have higher stay rate than the overall international student population** while Chinese students have more diverse retention behaviour and overall larger shares of students from China leave after their education.
- Data of the stay rates of Indians and Chinese students shows that Indians have significantly higher retention rates than the Chinese in nearly every OECD country including Canada, Germany, Australia, New Zealand, the United Kingdom and Japan.
- **Indians have a faster transition rate from student visas to work permits than the Chinese.** Bulk of Indian students accounted for the direct transitions from a study permit to a temporary high-skilled permit (H-1B) in the United States.In Canada among the students admitted in 2015, compared to 18 percent Chinese 71 percent Indians held a work permit by 2020,
- Most of the enrollment of Indian students are at the masters or PhD level while students from China are enrolled at UG level.This explains the Indian students' "quicker transition to the labour market and shorter period on an education permit".

Conclusion: Trend captured by the OECD report shows "brain drain" from India. In recent years, the Centre is trying to reverse the trend of brain drain. Now, the Government is keen on converting "brain drain" into "brain gain" or retaining talent at home.

Article: Indian students abroad most likely to stay back in developed countries: Report

Sharad