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MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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PIB Dec 19

INDUSTRY 4.0
(Syllabus: GS Paper 3 – Economy)

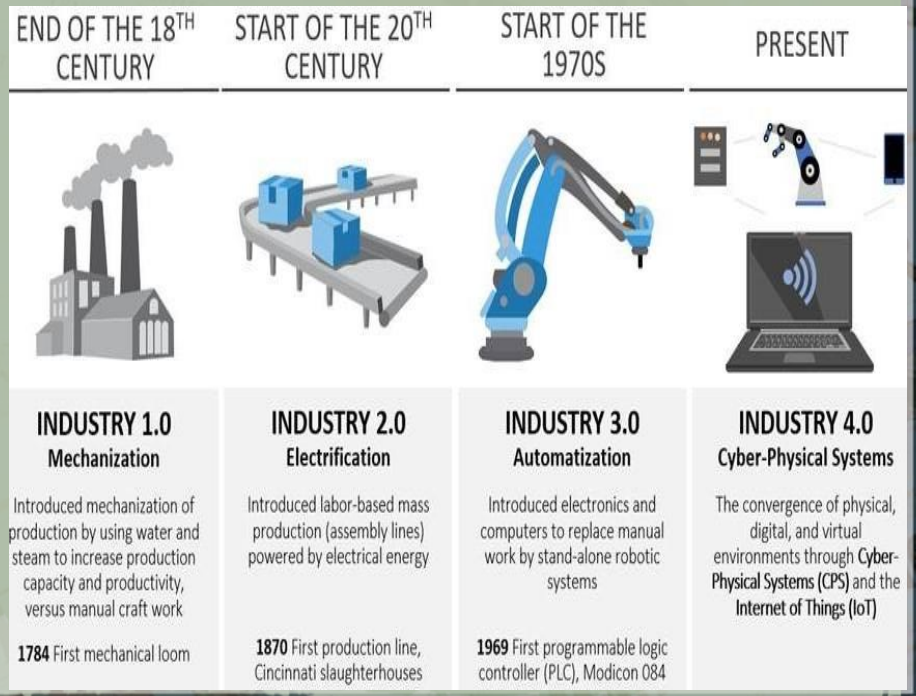
Awareness programmes about INDUSTRY 4.0

Posted On: 19 DEC 2023 2:48PM by PIB Delhi

Context: Under the scheme "Enhancement of Competitiveness in the Indian Capital Goods Sector", Ministry of Heavy Industries (MHI) is providing financial assistance to the Project Implementing Organizations (PIOs) and the Industry Associations for organization of seminars, training programmes and workshops to increase awareness about **Industry 4.0** amongst the Indian manufacturing industries.

Industry 4.0 (4IR):

- **Meaning:** Also known as **Globalisation 4.0**, it is formed by technologies such as **artificial intelligence (AI), machine learning (ML) and the internet of things (IoT)** according to the World Economic Forum (WEF).
  - It is revolutionizing the way companies manufacture, improve and distribute their products integrating these technologies.
- **Introduced by:** The term was first coined by the German government in 2011.
- **Stages of Industrial Revolution:**
  - **1st revolution (End of 18th C.):** Moving from manual to mechanical by harnessing steam and water power, replacing raw muscle. Ex.: - Steam Engine, Cotton gin, Power loom etc.
  - **2nd revolution (Start of 20th C.):** Took advantage of electricity and the assembly line to generate mass production.
  - **3rd revolution (Start of 1970s):** In this, digital and **applied electronics and information technology** to processes of production. Mass customisation and **additive manufacturing**, the so-called '3D printing'.
  - **4th revolution (Present):** It is the revolution in which the physical world, the digital world, and the virtual world are colliding together, creating smart products, procedures and processes, and smart factories. This is based on primarily **cyber-physical systems and the Internet of Things** to create a highly intelligent, integrated, and automated manufacturing ecosystem that spans far beyond the traditional "factory floor."



Times of India

Page 3

RED SEA

(Syllabus: GS Paper 1 – Geography)

US launches Red Sea force as ships reroute to avoid attacks by Houthis

UK, Bahrain, Canada, France, Italy, Netherlands, Norway, Seychelles, Spain Have Joined Security Mission: Def Secy

Manama (Bahrain): The US and a host of other nations are creating a new force to protect ships transiting the Red Sea that have come under attack by drones and ballistic missiles fired from Houthi-controlled areas of Yemen, defence secretary Lloyd Austin announced on Tuesday in Bahrain.

The seriousness of the attacks, several of which have damaged vessels, has led multiple shipping companies to order their ships to hold in place and not enter the Bab el-Mandeb Strait until the security situation can be addressed.

The US military's Central Command reported two more of the attacks on commercial vessels Monday. A strike by an attack drone and a ballistic missile hit a tanker off Yemen, at roughly the same time a cargo ship reported an explosive detonating in the water near them, the military said.

"This is an international challenge that demands collective action," defence secretary Lloyd Austin said in a statement released just after midnight in Bahrain. "Therefore today I am announcing the establishment of Operation Prosperity Guardian, an important new multinational security initiative."

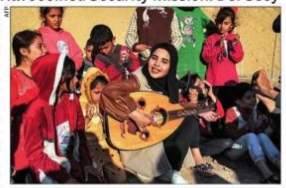
There are about 400 commercial vessels transiting the southern Red Sea, an area roughly the size of Washington D.C. to Boston, at any given time, a senior military official told reporters who are traveling with Austin in the region.

Under the new mission, the military ships will not necessarily escort a specific vessel, but will be positioned to provide umbrella protection to as many as possible at a given time, the official said.

Mohammed Abdel-Salam, the Houthis' chief negotiator and spokesman, challenged the US-led coalition on Tuesday, saying the Iranian-backed rebels would continue targeting Israel-linked vessels off Yemen. "The American-formed coalition is to protect Israel and militarise the sea without any justification, and will not stop Yemen from continuing its legitimate operations in support of Gaza," he wrote on X. He said the Houthis' attacks "are not a show of force nor a challenge to anyone," adding, "Whoever seeks to expand the conflict must bear the consequences of his actions."

On Tuesday the shipping company Maersk announced that for now, it had decided to re-route its ships that have been paused for days outside the strait and Red Sea, and send them around Africa through the Cape of Good Hope instead — a much longer and less efficient passage.

In the last four weeks, Houthi militants have attacked or seized commercial ships 12 times and still hold 25 members of the MV Galaxy Leader hostage in Yemen, Austin said in remarks on Tuesday in a ministerial meeting on the new maritime mission. The US is still actively seeking member countries to join the mission. The UK, Bahrain, Canada, France, Italy, Netherlands, Norway, Seychelles and Spain have joined the new maritime security mission, Austin said. Some of those countries will conduct joint patrols while others provide intelligence support in the southern Red Sea and the Gulf of Aden. One notably absent participant is China, which has warships in the region, but those ships have not responded to previous calls for assistance by commercial vessels, the military official said. Several other countries have also agreed to be involved in the operation but prefer not to be publicly named, a defence official said. AP



A girl plays Oud (or oriental lute) as Palestinian children participate in an activity aimed to support their mental health in Rafah, Gaza Strip

What crisis means for oil prices?

Energy companies like BP and shipping companies that transport crude oil have stopped sending some tankers through the Red Sea to avoid the threat of drone and missile attacks by the Iran-backed Houthi rebels in Yemen. Rerouting the vessels would add delays and extra costs to journeys, putting upward pressure on oil prices. Brent crude, the international oil bench mark, has risen about 8% since mid-December, to above $79 a barrel.

The Suez Canal and the Bab el-Mandeb Strait at either end of the Red Sea are major routes for energy shipping. Tankers coming from Persian Gulf countries like Iraq and Saudi Arabia travel through the Red Sea to reach Europe. These vessels have become even more important recently because the war in Ukraine and sanctions against Russia have made Europe more dependent on oil and refined products like diesel and gasoline from the Middle East and Asia. Russian oil flows southward to India and other Asian markets have also surged.

Goldman Sachs estimates that around 7 million barrels a day of oil and products, a sizable volume, flow through the Bab el-Mandeb Strait. The Suez Canal is also a crucial route for liquefied natural gas shipments from the United States to Asia, an increasingly important route. The main alternative to the Red Sea, a journey around Africa via the Cape of Good Hope, adds about two weeks to trips, increasing freight and insurance rates and raising the price of crude oil by up to $4 a barrel, Goldman estimates. NYT

Qatar-Israel hostage talks positive but deal not imminent: Report

A meeting between Qatar's PM Mohammed bin Abdulrahman Al Thani and the heads of Israel's Mossad spy agency David Barnea and the CIA William Burns in Warsaw on Monday about hostages held by Hamas was positive but there is no expectation of an imminent deal, according to a source briefed on the diplomatic efforts. The leaders met in Poland's capital to discuss a potential new deal to secure the release of Israeli hostages held by Hamas in Gaza. "The talks were positive with negotiators exploring and discussing different proposals in an attempt to progress on negotiations," the source said. REUTERS

PIO Congressman in US under attack from anti-Israel protesters

Indian-American Congressman Shri Thanedar was targeted by a group of anti-Israel protesters over the weekend blowing car horns and screaming for his "silence" on the deaths of Palestinians in Gaza. Thanedar, 68, has taken a staunchly supportive approach to Israel. "This is my home at 3 AM," Thanedar wrote in a post on X on Monday, including a video that showed cars lined in the street outside his home, an individual waving a cloth-like material, and others screaming through megaphones. "You are complicit in the bombing of Gaza... Your silence is violence... we will not let you sleep!" one protester shouted. PTI



Context: The United States has announced the launch of a multinational force to protect trade in the **Red Sea** after attacks by **Yemen's Houthi rebels** forced at least a dozen shipping lines to suspend operations

Red sea

- **About**: The Red Sea is an inlet of the Indian Ocean between Africa and Asia.
  - About 12 percent of global trade passes through the Red Sea, which connects to the Mediterranean Sea via the Suez Canal, including 30 percent of container traffic.
- **Bordering Countries**: Egypt, Saudi Arabia, Yemen, Sudan, Eritrea and Djibouti.
- **Salient features**: Part of African Rift Valley(Great Rift Valley).
- **Nearby important locations:**
  - **Bab el Mandeb strait** : It connects the Red Sea to the Gulf of Aden. (in the Indian ocean).
  - **Gulf of Aqaba**: A large gulf at the northern tip of the Red Sea, east of the Sinai Peninsula and west of the Arabian Peninsula. Its coastline is divided among four countries: Egypt, Israel, Jordan, and Saudi Arabia.
  - **Suez Canal: It** is an artificial sea-level waterway in Egypt, connecting the Mediterranean Sea to the Red Sea through the Isthmus of Suez and dividing Africa and Asia.

About Houthi:

- It is Yemen's Iran-backed rebels group.
- It is a Shia Islamist political and military organization.

HINDUSTAN TIMES

Page 2

VOLCANO

(Syllabus: GS Paper 1 – Geography)

Volcano erupts in Iceland, lava narrowly misses town



A volcano has erupted in southwestern Iceland, sending a flash of light into the evening sky and spewing semi-molten rock into the air in a spectacular show of the Earth's power. Lava spewing from the volcano appeared to be flowing away from the only nearby town and the intensity of the eruption was dropping, offering hope that homes would be safe even though seismic activity could last months, officials said on Tuesday. "The eruption does not present a threat to life," a government statement said. "There are no disruptions to flights to and from Iceland and international flight corridors remain open." Authorities last month evacuated the nearly 4,000 inhabitants of the fishing town of Grindavik about 40 km southwest of capital city Reykjavik, letting them in intermittently to check on homes put at risk by tremors. →P13

Context: A volcano that had rumbled for weeks erupted in southwestern Iceland.

Volcano

- **About:** A volcano is an opening in the Earth's crust through which molten rock, hot gases, and other materials erupt.
- **Causes:** Three predominate causes:
  - The buoyancy of the magma,
  - The pressure from the exsolved gases in the magma,
  - The injection of a new batch of magma into an already filled magma chamber.
- **Classification:**
  - Active volcanoes have a recent history of eruptions; they are likely to erupt again.
  - Dormant volcanoes have not erupted for a very long time but may erupt at a future time.
  - Extinct volcanoes are not expected to erupt in the future.
- **Main types of volcanoes:**
  - **Shield Volcanoes**: Low explosivity, basaltic flow. eg- Hawaii volcano
  - **Composite:** They are usually tall with steep even sides and are made out of repeating layers of lava flows. more viscous and cooler lava than basalt, sometimes called stratovolcanoes. eg: Mount Fuji in Japan.
  - **Caldera:** these are most explosive volcanoes, collapses when erupt.
- **Distribution Of Volcanoes:**
  - **Circum pacific ring of fire-** Most of the volcanoes of earth, active subduction of pacific, Nazca cocos, jaun-de-fuca plate.
  - **Mid Atlantic belt** - Along mid Atlantic ridge.
  - **Mid Continental belt-** It includes volcanoes of the Alpine mountains and Mediterranean sea.

BUSINESS STANDARD

Page 1

ALTERNATIVE INVESTMENT FUND

(Syllabus: GS Paper 3 – Economy)

RBI clamps down on evergreening via AIFs

KHUSHBOO TIWARI
Mumbai, 19 December

In the middle of concerns about the circumvention of regulations by alternative investment funds (AIFs), the Reserve Bank of India (RBI) issued an advisory on Tuesday to banks and financial companies to curb the evergreening of loans and misuse of the AIF route.

According to the RBI advisory, banks, non-banking financial companies (NBFCs), and other financial institutions like the National Bank for Agriculture and Rural Development and the Small Industries Development Bank of India (Sidbi) will not be able to make investments in any scheme of AIFs that has downstream investments directly or indirectly in a debtor company of the bank/NBFC.

This implies that if the bank or NBFC currently has exposure or had previously lent at any time during the preceding 12 months to a company, they cannot invest in an AIF scheme investing in the same company.

The RBI's advisory comes against the backdrop of the findings of the Securities and Exchange Board of India (Sebi), which said that the cases of circumvention amount to "tens and thousands of crores". Last month, a Sebi official stated that the market regulator had shared the data with RBI on AIFs being structured to enable the evergreening of financial sector assets to avoid non-performing asset (NPA) recognition.

"We have shared this data with RBI, and RBI agrees with our assessment. We have seen cases where AIFs have been used to circumvent Foreign Exchange Management Act regulations – where a particular entity not allowed to invest in another does so via an AIF," the Sebi official had said.

Turn to Page 6

DIRECTIVES & INDUSTRY CONCERNS

- **Banks, NBFCs will have to liquidate investments in the scheme within 30 days** if an AIF has any downstream investment
- **RBI directs institutions to make a 100% provision** on such investments if not liquidated within 30 days
- **RBI's advisory follows concerns raised by Sebi** regarding circumvention through AIFs
- **The AIF industry is concerned about exits** by financial institutions and growth prospects



Context: Reserve Bank of India (RBI) has issued an advisory on Tuesday to banks and financial companies to curb the evergreening of loans and misuse of they alternative investment funds AIF route

Alternative investment funds (AIF)

- **About:** Alternative Investment Fund or AIF is any fund established in India which is a privately pooled investment vehicle that collects funds from sophisticated investors, both Indian or foreign, for investing.
  - AIF does not include funds covered under Indian market regulator SEBI's mutual fund regulations.
- **Categorization:**
  - **Category I AIFs:** They include venture capital funds like angel funds, SME Funds, social venture funds, infrastructure funds and such other AIFs as may be specified.
  - **Category II AIFs** are those which are not classified under Category I or Category III. They do not undertake leverage or borrowing other than to meet day-to-day operational requirements and as permitted in the regulations
  - **Category III AIFs** are funds which employ complex or diverse trading strategies and may employ leverage including through investment in listed or unlisted derivatives hedge funds, PIPE Funds, etc.
- **Salient features:**
  - Category I and II AIFs are required to be close ended and have a minimum tenure of three years.
  - An AIF under the SEBI regulations can be incorporated in the form of a trust or a company or a limited liability partnership or a body corporate.
  - No scheme of an AIF, with the exception of angel funds, shall have more than 1000 investors.
  - Each scheme of an AIF shall have a corpus of at least twenty crore rupees. In case of an angel fund, it shall have a corpus of at least ten crore rupees.

INDIAN EXPRESS Page 06

LUMPY SKIN DISEASE

Syllabus GS Paper 3 - Sci & tech)

Gap in Lumpy Skin Disease data from dept: House panel

HARIKISHAN SHARMA
NEW DELHI, DECEMBER 19

A PARLIAMENTARY STANDING Committee said that there was a gap or mismatch in data furnished by the Department of Animal Husbandry and Dairying (DAHD) of the cattle affected by and deaths due to Lumpy Skin Disease and the ground reality.

The Standing Committee on Agriculture, Animal Husbandry and Food Processing said, "The Committee noted that the country faced a devastating outbreak of LSD among cattle in 2021–22 resulting in large scale death and emaciation of cattle. The Committee, however, express doubt on the data relating to death of cattle in the country as a result of the LSD and also noted with anguish that there was a gap/mismatch in data relating to number of cattle affected and died as furnished by the Department and the actual ground realities."

"The Department had apprised the Committee it is totally dependent on State Governments/UTs for data... and they (States/UTs) are following proper mechanism/system... ," it said in its report tabled in the Lok Sabha Tuesday.

Context:. Questioning the Union Animal Husbandry Ministry' data that more than two lakh cattle and buffaloe had died by lumpy skin disease in 2022 and 2023.

lumpy skin disease

- **About** Lumpy skin disease is a viral disease that affects cattle. It is **geneticall related** to the goatpox and sheeppox virus family.
- **Transmitted** by blood-feeding insects, such as certain species. of flies an mosquitoes, or ticks.
- **Causes:** fever, nodules on the skin and can also lead to death, especially i animals that that have not previously been exposed to the virus.
- **Symptoms:**
  - The incubation period for lumpy skin disease is between 14 day post-infection.
  - After an initial period of high fever (41°C) and swollen lymph glands, the animal may develop large, firm nodules that are up to 5 cm in diameter in the skin.
  - These can be found all over the body, but particularly on the: head.
- **Guidelines for prevention of Lumpy Skin Disease:**
  - **Preventive measures**: Control of animal movement, Restriction with affected animals and persons dealing with such animals, Vaccination.
  - **Bio-security measures**: Disinfection of premises at regular intervals, Immediate isolation of sick animal from the healthy animals.

THE HINDU

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HIGH FAT SUGAR SALT

(Syllabus: GS Paper 3 – Sci & technology)

Tax 'HFSS' foods, view it as a public health imperative



Rijo M. John

is an Adjunct Professor at the Rajagiri College of Social Sciences, Kochi, Kerala



SubbaRao M. Gavaravarapu

is Scientist F and Head, Nutrition Information, Communication and Health Education (NICHE) Division, Indian Council of Medical Research (ICMR)-National Institute of Nutrition, Hyderabad

Combined with nutrition literacy and effective food labelling, tax on High-Fat Sugar Salt (HFSS) foods can help improve health outcomes

The consumption of High Fat Sugar Salt (HFSS) foods is one of the major risk factors to a host of health issues that include obesity, diabetes and high blood pressure. According to a World Bank report of 2019, worldwide, 70% of all overweight and obese people live in Low- and Middle-Income Countries, with a 55% rise in rural areas across the globe, dispelling the perception that overweight/obesity is only a problem in high-income countries and urban and affluent communities. The Non-Communicable Diseases (NCDs) burden in India has skyrocketed from 38% in 1990 to 65% in 2019. The global burden of diseases study shows that annually, 1.2 million deaths in India can be attributed to dietary risks alone. The economic impact of overweight and obesity in India was estimated at $23 billion in 2017. If unattended, this is likely to rise to $480 billion by 2060.

India's shift in dietary habits

The ultra-processed food sector in India witnessed a compounded annual growth rate of 13.4% between 2011 and 2021. As the world's largest producer and consumer of sugar in 2022, the country has seen an alarming surge in consumption of HFSS foods. About 50%-60% of edible sugar, salt and fat produced in India is consumed by the processed food industry. Sales of snacks and soft drinks have tripled over the past decade, exceeding $30 billion last year, indicating a disturbing trend in dietary habits. This not only poses severe health risks but also impacts productivity and economic growth, necessitating urgent interventions to curtail the rising consumption of these products.

There is a global trend of utilising fiscal measures to combat obesity. Taxation is considered to be an effective means to reduce the consumption of these products as most consumers are price responsive towards them. While taxation on sugar-sweetened beverages (SSBs) is far more wide and used in more than 60 countries, taxation on HFSS food is less common, although rapidly increasing. Some 16 countries including Denmark, France, Hungary, Mexico, South Africa, the United Kingdom and the United States, among others, now have a dedicated tax on HFSS foods. Most recently, Colombia's "junk food law" introduced a gradually increasing levy on ultra-processed foods, providing a model for other nations. In India, Kerala had also introduced a 'fat tax' way back in 2016, which later got subsumed into India's Goods and Services Tax in 2017.

Case for high HFSS tax

The imperative for taxing HFSS arises from significant market failures associated with their consumption, contributing to negative externalities and internalities. Negative externalities manifest as societal costs in the form of increased health-care expenditures. For example, the escalation of diabetes and obesity due to increased HFSS consumption leads to external costs imposed on society, necessitating substantial health-care expenditures, borne through elevated taxes to finance public health insurance such as the Ayushman Bharat Yojana. Meanwhile, internalities, stemming from consumers' limited understanding, influenced by aggressive marketing, result in inadvertent harm to themselves. Taxes can offer a targeted and effective means to curb detrimental consumption habits, thereby reducing societal burdens. Implementing such taxes has shown promise in various countries, demonstrating a reduction in the purchase of unhealthy items.

Unlike the taxation of other sin goods such as tobacco and alcohol, the HFSS taxation need not be viewed as a means for raising revenue, but should be seen as a fiscal tool to incentivise the industry to reformulate the products more in favour of healthier alternatives and for people to reorganise their food consumption basket in favour of a healthier diet. If properly designed, HFSS food tax can be both non-regressive, and fiscally neutral. A recent study on South Africa's Health Promotion Levy showed that there were larger relative reductions in purchases of taxable beverages among lower socio-economic status (SES) households compared with reductions observed in higher SES households, making such taxes non-regressive. Tax rates need to be differentiated based on the nutritional quality of the food so as to incentivise product reformulations. For example, it is possible to have a GST system with HFSS foods in the highest rate structure while their healthier alternatives have either zero or minimal tax rates so that the net tax burden on a household's food consumption basket remains the same. This would create a level-playing field between HFSS and their healthier alternatives, making healthier food choices more affordable and accessible.

GST and nutritional content

Current GST rates on ultra-processed foods, such as salty snacks and SSBs, do not adequately align with nutritional content. For example, tax on SSBs with a 28% GST rate and 12% compensation cess, overlooks sugar content. All aerated beverages are taxed uniformly as well. Similarly, juices face a flat 12% rate, irrespective of their fruit and sugar content. Salty snacks are taxed at 12% regardless of their salt content. Such inconsistencies fail to consider the varying nutritional impact of these products and hence show limited impact on altering consumption baskets in favour healthier alternatives.

HFSS taxation in India should not be merely seen as an economic or fiscal policy concern but it deserves to be considered a public health imperative. Effectively designed taxes can reap multiple benefits – they can act as a deterrent to consuming HFSS; promote healthier food choices; prompt manufacturers to reformulate foods; improve public health outcomes; reduce the burden on the health-care system, and foster the nation's well-being. When combined with other measures such as promotion of nutrition literacy and effective food labelling, it can be a more potent tool to combat the rising epidemic of overweight and obesity by creating a more sustainable and equitable food system.

The views expressed are personal

Context:The consumption of High Fat Sugar Salt (HFSS) foods is one of the major risk factors to a host of health issues that include obesity, diabetes and high blood pressure

HIGH FAT SUGAR SALT (HFSS):

- **About**: Foods (any food or drink, packaged or nonpackaged) which contain low amounts of proteins, vitamins, phytochemicals, minerals and dietary fiber but are rich in fat (saturated fatty acids), salt and sugar and high in energy (calories) that are known to have negative impact on health if consumed regularly or in high amounts.
- **Causes**:
  - **The Convenience of Processed Food:** Regardless of the individual item, processed food and fast-food products are generally easy to grab and take with you.
  - **The Affordability of Processed Food:** Processed food is so accessible, affordable and convenient, it becomes easy to forgo nutritious food.

Health impact:

- Increased risk and incidence of certain diseases such as type 2 diabetes, cardiovascular disease, certain cancers as well as contributing to high levels of obesity both for children and adults.
- Affect immune status and recovery from infection and common deficiencies like anemia, children and young people are overweight or obese

Down to Earth

Dec 19

NOMA DISEASE

(Syllabus: GS Paper 3 – Sci & Tech)

What is 'noma', the latest addition to WHO's list of neglected tropical diseases

The severe gangrenous disease of mouth and face has 90% mortality rate and is associated with extreme poverty, malnutrition

Context: The World Health Organization (WHO) recently added one of the world's most underrecognized health challenges, **noma**, to its official list of **neglected tropical diseases (NTD).**

Noma Disease

- **About**: Also known as **cancrum oris or gangrenous stomatitis**, it is a severe gangrenous disease of the mouth and face with a mortality rate of approximately 90%. It is also associated with extreme poverty, malnutrition and poor access to sanitation and oral hygiene.
  - The disease is also **called the 'face of poverty',** as effective drugs like sulfonamides and penicillin and adequate surgical treatment for the effects remain inaccessible for many due to extreme poverty.
- **Affected group**: It mainly affects children aged 2-6 years old and is found most commonly among those living in poor communities. There is an extreme lack of awareness regarding the disease.
- **Spread**: While the disease is not contagious, it prefers to attack when the body's defences are weak.
- **Caused by**: The disease begins with gum inflammation and is thought to be caused by bacteria found in the mouth.

Neglected tropical diseases (NTDs)

- **About**: They are a diverse group of tropical infections that are common in low-income populations in developing regions of Africa, Asia, and the Americas.
- **Caused by**: A variety of pathogens, such as viruses, bacteria, protozoa, and parasitic worms (helminths).
- **World NTD Day**: January 30.
- **London Declaration on NTDs**: It was adopted on 30th January 2012 to recognize the global burden of NTDs.
- **Why called neglected**? Because they are almost absent from the global health agenda, have very limited resources and are almost ignored by global funding agencies. NTDs are diseases of neglected populations that perpetuate a cycle of poor educational outcomes and limited professional opportunities; in addition, are associated with stigma and social exclusion.

Deccan Herald

Dec 19

BLACK HOLE

(Syllabus: GS Paper 3 – Sci & Tech)

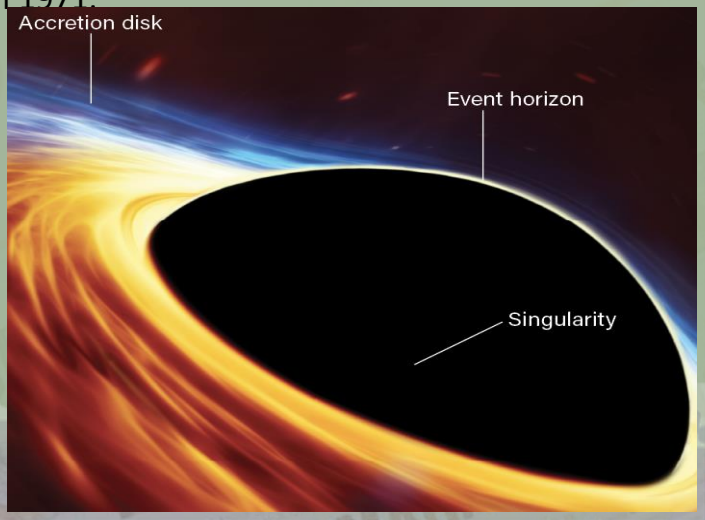
Explained | Why are some black holes bigger than others?

Black holes litter the universe. Some smaller black holes are sprinkled randomly throughout galaxies like our Milky Way. Other gigantic ones, called "supermassive" black holes, lie at the centers of galaxies.

Context: One of the NASA scientists recently explained in a study that why are some of the black hole are bigger than the others.

Black Hole:

- **Meaning:** It is a cosmic body of **extremely intense gravity** from which nothing, **not even light, can escape.**
  - A black hole can be **formed by the death of a massive star**.
  - When such a star has **exhausted the internal thermonuclear fuels in its core** at the end of its life, the core becomes unstable and gravitationally collapses inward upon itself, and the star's outer layers are blown away.
- **Background:**
  - **1st predicted by: Albert Einstein** in 1916, with his general theory of relativity.
  - **First interpretation of "black hole":** By **David Finkelstein** in 1958, as a region of space from which nothing can escape.
  - **The term "black hole" was coined**: In 1967 by American astronomer **John Wheeler.**
  - **Cygnus X-1:** The first black hole identified by several researchers independently in 1971.
- **Detection:** Because light cannot get out, black holes are invisible and can only be **tracked with the help of spatial telescopes and special tools.**
  - **The first image** of a black hole was captured in 2019 by **the Event Horizon Telescope (EHT)** collaboration.
- **Types: According to their mass** with respect to the mass of our sun. There are **four types of black holes**: stellar, intermediate, supermassive, and miniature.
- **Causes of different sizes of black holes**: Black holes come in many sizes and their size depends on how much material is in them (their mass).



PIB Dec 19

NATIONAL COOPERATIVE EXPORTS LIMITED

(Syllabus: GS Paper 3 – Economy)

Functioning of NCEL

Posted On: 19 DEC 2023 6:40PM by PIB Delhi

Context: The Ministry of Cooperation recently informed the Parliament about the functioning of **National Cooperative Exports Limited (NCEL).**

National Cooperative Exports Limited (NCEL)

- **Formation**: It is formed under the Multi-State Cooperative Societies (MSCS) Act, 2002.
- **Objective**: To provide a complete ecosystem for the promotion of exports mainly of agri commodities for the benefit of our farmers, in which India has a comparative advantage.
- **Membership**: All cooperative societies from the level of primary to apex, that are interested in exports, are eligible to become members. The NCEL has provision of two kinds of members, as per details given below:
  - **Ordinary Members**:
    - ✓ Any multi-state co-operative society or any co-operative society registered or deemed to be registered under any law relating to co-operative societies for the time being in force in any State or UT;
    - ✓ The National Co-operative Development Corporation (NCDC) established under the National Co-operative Development Corporation Act,1 962 (26 of 1962);
    - ✓ Such class or classes of persons or associations of persons as may be permitted by the Central Registrar having regard to the nature and activities of the Society.
    - ✓ No individual shall be eligible to become an ordinary member of the NCEL.
  - **Nominal or associate member**: The society may, in the interest of the promotion of its business, admit any person, including cooperative banks, as a nominal member or associate member in accordance with the provisions of the Multi-State Co-operative Societies Act on payment of a non-refundable fee of Rupees one lakh only.
- **Significance:**
  - It will provide **thrust to exports** from cooperative sector by **acting as an umbrella organization** for carrying out and promoting exports.
  - This will help in unlocking export potential of Indian cooperatives in global markets, help cooperatives in getting benefits of various export related schemes and policies of different ministries of Government of India in a focused manner through 'Whole of Government Approach.'
  - This will also help in achieving the goal of "Sahkar-se-Samriddhi" through the inclusive growth model of cooperatives.

FINANCIAL EXPRESS Dec 1

MINIMUM SUPPORT PRICE
(Syllabus: GS Paper 3 – Economy)

Govt's paddy purchase falls 13% as farmers hold on to stocks

SANDIP DAS
New Delhi, December 19

PADDY PROCUREMENT UNDER the minimum support price (MSP) scheme declined 13% on year to 36.54 million tonne (MT) so far in the current season with farmers in Chhattisgarh and Telangana holding on to stocks in anticipation of receiving bonus over MSP.

In the runup to the assembly elections, the BJP, which returned to power in Chhattisgarh, promised a procurement price of ₹3,100/quintal for paddy, including bonus, against MSP of ₹2,183. The Congress, which won in Telangana, also hinted at a bonus over paddy MSP.

Sources said the slowdown in procurement is mainly due to sharp fall in purchases by the Food Corporation of India (FCI) and state government agencies from farmers in Chhattisgarh and Telangana although purchases in Punjab and Haryana have been robust.

In Punjab and Haryana, where the procurement of paddy has been completed, total purchase from farmers have been 18.54 MT and 5.88 MT respectively, which is higher than previous year.

However, in Chhattisgarh, purchase by the agencies have dropped sharply by 40% to 3.18 MT so far against 5.29 MT reported a year ago.

"The farmers are awaiting purchase of grains by agencies at higher prices as the new government has just been formed," an official from Chhattisgarh said. The state in the 2022-23 season (October-September) procured 8.75 MT of paddy, which was 12% of the government's total purchase of 73.5 MT across major grain producing states.

In Telangana, only 3.56 MT of paddy has been purchased from farmers so far, a decline of 26% on year. The farmers are anticipating additional bonus on MSP from the new government and are thus holding on to their stocks, an official said.

However, the food ministry official said that the gap in paddy purchases this year will be bridged in coming months as kharif procurement continues till May next year.

Rice procurement is ongoing in several other states, including Odisha, Bihar, Andhra Pradesh and West Bengal, a significant contributor to central pool stocks.

This year's grain procurement is closely monitored due to uneven monsoon rainfall which may impact the rice output in 2023-24 crop year (July-June) despite higher area under paddy cultivation.

In August, the government had set a 52.1 MT rice (77.4 MT paddy) purchase target for the kharif season, compared to 49.5 MT procured in the previous season.

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PADDY PROCUREMENT

	% chg (y-o-y)	Million tonne
Punjab	▲ 2	18.54
Haryana	—	5.88
Telangana	▼ 24	3.55
Chhattisgarh	▼ 40	3.18
UP	▼ 13	2.11

Total* 36.48 ▼ 13

Source: Food ministry; procurement season: Oct-Sept, *data till Dec 16, 2023 (including other states)



- Slowdown in procurement has been attributed to **a sharp fall in MSP purchase from the farmers in Chhattisgarh and Telangana**
- An official said that the gap in paddy purchase this year will be bridged in coming months as kharif procurement continues till May next year
- During the 2022-23 season, FCI and state agencies procured over **56.94 MT** of rice in both kharif and rabi seasons

Context: Paddy procurement under the minimum support price (MSP) scheme declined 13% on year to 36.54 million tonne (MT) so far in the current season.

Minimum Support Price (MSP)

- **About**: MSP serves as a government-established rate at which crops are bought from farmers, providing them with protection against significant declines in agricultural prices.
- **Announced by:** The Commission for Agricultural Costs & Prices (CACP) recommends MSPs for **22 mandated crops and Fair and Remunerative Prices** (FRP) for sugarcane.
- **Origin of Concept**: MSP was initially **introduced in 1966**, drawing inspiration from the Green Revolution.
- **Crops covered**: **7 types of cereals** (paddy, wheat, maize, bajra, jowar, ragi and barley)
  - **5 types of pulses** (chana, arhar/tur, urad, moong and masoor)
  - **7 oilseeds** (rapeseed-mustard, groundnut, soybean, sunflower, sesamum, safflower, niger seed)
  - **4 commercial crops** (cotton, sugarcane, copra, raw jute).
- **Factors for Recommending the MSP:** Demand and supply, Cost of production, Price trends in the market, Both domestic and international, inter-crop price parity, Terms of trade between agriculture and non-agriculture, A minimum of 50 percent as the margin over the cost of production, Implications of MSP on consumers of that product.

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