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The World Drug Report 2021: UNODC

Why in News

Recently, the **United Nations Office on Drugs and Crime (UNODC)**, in its **World Drug Report 2021**, has highlighted that the lockdown restrictions during **Covid-19** have accelerated drug trafficking using the Internet.

> By drugs, the Report refers to substances controlled under international drug control conventions, and their non-medical use.
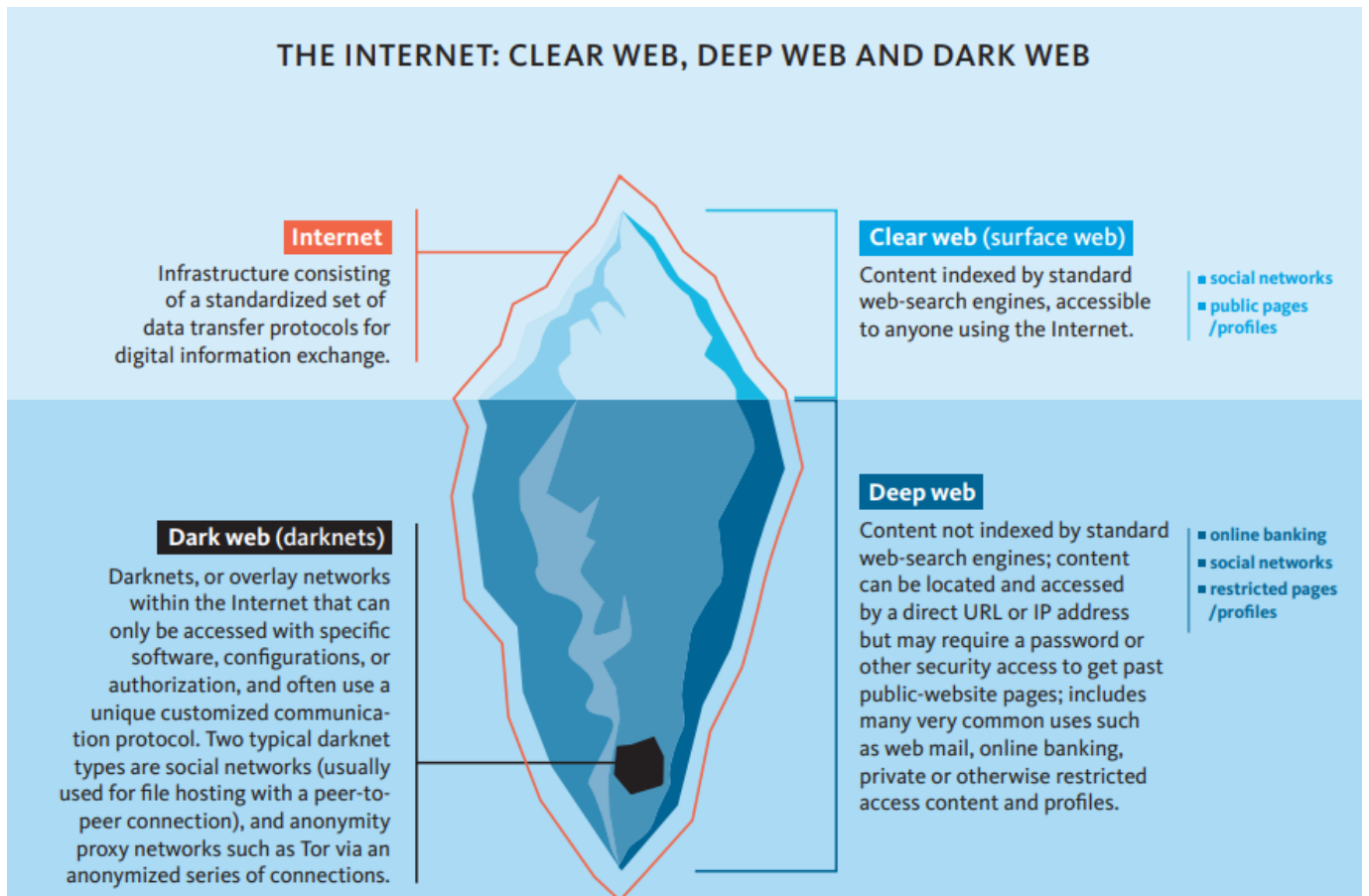
Key Points

- **Data Analysis:**
  - Between **2010-2019**, the number of **people using drugs increased by 22%**, owing in part to an increase in the global population.
  - Around **275 million people used drugs worldwide last year**, while **over 36 million people suffered from drug use disorders.**
  - **Opioids** continue to account for the **largest burden of disease attributed to drug use.**
  - A **rise in the non-medical use of pharmaceutical drugs** was also observed during the coronavirus pandemic.
- **Cannabis is More Potent but Fewer Young People See it as Harmful:**
  - In the last 24 years, **cannabis potency had increased** as much as four times in some parts, even as the **percentage of adolescents who perceived the drug as harmful fell by as much as 40%.**
    - The major psychoactive constituent in cannabis, Δ9-THC, is responsible for the development of mental health disorders, in the long-term.
  - **Reason: Aggressive marketing** of cannabis products and p**romotion through social-media channels.**

- **Rising Web-based Sales Could Transform Global Drug Use Patterns:**
  - **Access to drugs has also become simpler than ever with online sales**, and major **drug markets on the <u>dark web</u>** are now worth some $315 million annually.
  - In Asia, **China and India are mainly linked to shipment of drugs** sold on the 19 major darknet markets analysed over 2011-2020.
  - **Cannabis dominates drug transactions on Dark web** and on clear web involves sale of **<u>Narcotic Drugs and Psychotropic Substances (NDPS)</u>** and substances used in the manufacture of synthetic drugs.

THE INTERNET: CLEAR WEB, DEEP WEB AND DARK WEB

Internet
Infrastructure consisting of a standardized set of data transfer protocols for digital information exchange.

Clear web (surface web)
Content indexed by standard web-search engines, accessible to anyone using the Internet.
- social networks
- public pages /profiles

Dark web (darknets)
Darknets, or overlay networks within the Internet that can only be accessed with specific software, configurations, or authorization, and often use a unique customized communication protocol. Two typical darknet types are social networks (usually used for file hosting with a peer-to-peer connection), and anonymity proxy networks such as Tor via an anonymized series of connections.

Deep web
Content not indexed by standard web-search engines; content can be located and accessed by a direct URL or IP address but may require a password or other security access to get past public-website pages; includes many very common uses such as web mail, online banking, private or otherwise restricted access content and profiles.
- online banking
- social networks
- restricted pages /profiles

- **Impact of Covid-19:**
  - **Socio Economic impact:**
    - The Covid-19 crisis has pushed **more than 100 million people into extreme poverty**, and has greatly **exacerbated unemployment and inequalities**, as the world lost 255 million jobs in 2020.
    - **Mental health conditions** are also on the rise worldwide. Such **socioeconomic stressors** have likely **accelerated demand for the drugs.**
  - **Positive Trend:**
    - A **rise in the use of technology during the pandemic** has also triggered **innovation in drug prevention and treatment services**, through more flexible models of service delivery such as **telemedicine, enabling healthcare professionals** to reach and treat more patients.
    - The **number of new NDPS emerging on the global market fell** from 163 in 2013, to 71 in 2019.
    - The **pharmaceutical opioids** used to treat people with opioid use disorders have **become increasingly accessible**, as science-based treatment has become more broadly available.
- **Reasons for Increase in Drug Use:**
  - Drug traffickers have **quickly recovered** from initial setbacks caused by lockdown restrictions and are operating at pre-pandemic levels once again.
    It is driven in part by a **rise in the use of technology and <u>cryptocurrency</u> payments**, operating outside the regular financial system.
  - **Contactless drug transactions**, such as through the mail, are also on the rise, a trend possibly accelerated by the pandemic.
  - **Vendors play a cat-and-mouse game with law enforcement** by marketing their products as "research chemicals" or advertising "custom synthesis".
- **Suggestions:**
  - **Combating misinformation** on the impact of the use of cannabis products is crucial.
  - **Awareness-raising and communication efforts** that disseminate scientific information without stigmatizing people.
  - Increasing the **capacity of law enforcement agencies** to address drug trafficking over the darknet remains a priority.
  - **Joint responses by Governments and the private sector** can involve controlling and removing advertisements and listings of illegal drugs on the Internet.
  - Continuously **update scientific standards** to keep abreast of the acceleration of Internet-based services.

United Nations Office on Drugs and Crime

- It was established in 1997 and was named as a United Nations Office on Drugs and Crime (UNODC) in 2002.

- It acts as the Office for Drug Control and Crime Prevention by combining the United Nations International Drug Control Program (UNDCP) and the Crime Prevention and Criminal Justice Division of the United Nations Office at Vienna.

Relate International Initiatives

- **International Day Against Drug Abuse and Illicit Trafficking** is celebrated every year on 26th June.
- Single Convention on Narcotic Drugs, 1961.
- The Convention on Psychotropic Substances, 1971.
- The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988.

      India is a signatory to all three and has enacted the **Narcotics Drugs and Psychotropic Substances (NDPS) Act, 1985.**

Vulnerability of India

- India is vulnerable to the trafficking of narcotics as it is sandwiched between the **'Golden Crescent' and the 'Golden Triangle'**, the major opium production regions in the world.
- The Golden Crescent region of the South comprises Afghanistan, Iran and Pakistan. The Golden Triangle is the area where the borders of Thailand, and meet at the confluence of the Ruak and Mekong rivers.

Source:TH

FATF Retains Pakistan on Grey List

Why in News

The **Financial Action Task Force (FATF)** decided to retain Pakistan on **"increased monitoring list'.**

"Increased monitoring list" is another name for the **Grey List.**

Key Points

- **Background:**
    - The **FATF had issued the 27-point action plan after placing Pakistan on the 'Grey List' in June 2018.** The action plan pertains to **curbing money laundering and terror financing.**
    - During the **October-2020 Plenary**, due to the Covid-19 pandemic, Pakistan was given an extension for full compliance with the 27-point action plan till February 2021.
        - It had then not fully complied with 6 of the 27 directives.
    - **In February 2021**, FATF acknowledged Pakistan's significant progress in combating terrorism, however it was still to fully comply with **three of the 27-point action plan.**
        - The three points pertained to effective steps in terms of financial sanctions and penalties against the terror funding infrastructure and the entities involved.
- **About:**
    - The FATF said **Pakistan had failed to take appropriate action against UN-designated terrorists** such as 26/11 accused Hafiz Saeed and JeM chief Masood Azhar. However, **Pakistan has completed 26 of the 27 action items.**
    - The FATF **encourages Pakistan to continue to make progress to address as soon as possible the one remaining Countering Finance of Terrorism (CFT)-related item** by demonstrating that Terror Financing investigations and prosecutions target senior leaders and commanders of UN-designated terrorist groups.
    - In addition, the **FATF has handed down another 6-point list of tasks mainly on money laundering** actions to be completed as well.
        - Pakistan is expected to amend its Money-Laundering Act, crackdown on Designated Non-Financial Businesses and Professions (DNFBPs) like real estate agencies and gemstone traders, confiscate and freeze assets of money laundering entities and monitor businesses for proliferation financing, with sanctions for non-compliance.

- **Significance:**
    - In Pakistan's case, the **FATF has taken cognisance of the inaction against several banned organisations** involved in raising funds for terror activities and those linked to global terrorists like Jaish-e-Mohammed chief Masood Azhar and Lashkar-e-Taiba's Hafiz Saeed and its operations chief Zaki-Ur Rahman Lakhvi.
    - On several occasions, India has also raised the involvement of elements within Pakistan in a number of terror cases, **including the 26/11 Mumbai and Pulwama attacks.**
    - **Perpetual containment of Pakistan on the grey list** of FATF **would further pressurise Pakistan to take adequate measures** to prevent such terrorist attacks on India from its soil.
    - Unlike the next level "blacklist", **greylisting carries no legal sanctions, but it attracts economic strictures and restricts a country's access to international loans.**
        - Pakistan's Foreign Minister had estimated **a loss of $10 billion annually to the Pakistani economy** for every year Pakistan has been on the greylist.

Financial Action Task Force

- **About:**
    - It is an inter-governmental body established in 1989 during the **G7 Summit** in Paris.
    - The FATF assesses the strength of a country's anti-money laundering and anti-terror financing frameworks, however it does not go by individual cases.
- **Objectives:**
    To set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system.
- **Headquarters:**
    Its Secretariat is located at the **Organisation for Economic Cooperation and Development (OECD)** headquarters in Paris.
- **Member Countries:**
    The FATF currently has 39 members including two regional organisations — the European Commission and **Gulf Cooperation Council.** India is a member of the FATF.
- **Lists under FATF:**
    - **Grey List:**
        - Countries that are considered safe haven for supporting terror funding and money laundering are put in the FATF grey list.
        - This inclusion serves as a warning to the country that it may enter the blacklist.
    - **Black List:**
        - Countries known as Non-Cooperative Countries or Territories (NCCTs) are put in the blacklist.
        - These countries support terror funding and money laundering activities.
        - The FATF revises the blacklist regularly, adding or deleting entries.

- **Sessions:** The **FATF Plenary is the decision making body of the FATF.** It meets three times per year.

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6 Years of Transformative Urban Missions

Why in News

Recently, the **Ministry of Housing and Urban Affairs (MoHUA)** organised an online event to commemorate six years of the three transformative Urban Missions vis. **Smart Cities Mission (SCM)**, **Atal Mission for Urban Rejuvenation and Urban Transformation (AMRUT)** and **Pradhan Mantri Awas Yojana-Urban (PMAY-U).**

> The day also marked the 45 years of establishment of **National Institute of Urban Affairs,** an autonomous body of MoHUA, tasked to bridge the gap between research and practice on issues related to urbanization.

Key Points

- **Progress/Achievements:**
  - **PMAY-U:**
    - **1.12 crore houses sanctioned** and over 83 lakh houses grounded under PMAY-U.
    - 16 lakh families benefited from PMAY-U's **Credit Linked Subsidy Scheme (CLSS).**
    - Government investment under PMAY-U created around **689 crore person days of employment** translating into around **246 lakh jobs.**
    - **Affordable Rental Housing Complexes scheme** under PMAY-U for **urban migrants/poor** has elicited remarkable response on ground.
  - **AMRUT:**
    - So far, **1.05 crore household water tap connections** and 78 lakh sewer/sepatage connections provided under AMRUT Mission.
    - About 88 lakh **street lights were replaced with energy efficient LED lights** leading to energy savings.
    - 84.6 lakh tons **carbon footprint was reduced** through various initiatives **under AMRUT, as per The Energy and Resources Institute (TERI).**
  - **SCM:**
      70 cities have developed and operationalised **Integrated Command and Control Centres (ICCCs)** under Smart Cities Mission.

- **Important Launches/Releases During the Event:**
    - **India Smart Cities Awards 2020:**
        - The awards were given across the themes of Social Aspects, Governance, Culture, Urban Environment, Sanitation, Economy, Built Environment, Water, Urban Mobility.
        - Themes such as **Sustainable Business model of ICCC** and **Innovation award** especially in Covid-19 Management are added this year.
        - **Indore & Surat won the City Award jointly this year** for their overall development and **Uttar Pradesh won the State award.**
    - **Climate Smart Cities Assessment Framework 2.0:**
        - Launched in September, 2020 with an aim to provide an overarching roadmap to formulate, implement and monitor urban climate actions in India.
        - The **top 9 performing** cities which have been **awarded 4 star rating** are Surat, Indore, Ahmedabad, Pune, Vijayawada, Rajkot, Visakhapatnam, Pimpri-Chinchwad and Vadodara.
    - **ICT initiatives under Smart Cities**
        - **ICCC Maturity Assessment Framework (IMAF):**
            It is a self-assessment tool kit to help cities identify areas of improvement in their ICCCs to deliver better services to the citizens.
        - **Smart Cities ICT standards:**
            - These will **facilitate interoperability** between products in a multi-vendor, multi-network and multi-service environment that exists in a smart city.
            - Organised by **Bureau Of Indian Standards (BIS).**
        - **India Smart Cities Fellowship Program :**
            To promote youth leadership and usher vibrancy in the design of India's urban future.
        - **'TULIP-The Urban Learning Internship Program'** **Report:**
            It is a platform to connect graduates to Urban Local Bodies and Smart Cities to co-create new solutions for our cities.
        - **CITIIS - Knowledge Products:**
            - Launched **in partnership with the French Development Agency and the European Union** in 2018.
            - It has a novel approach of **developing demonstrative projects** and furthering the agenda of **sustainability and innovation in urban infrastructure.**

Smart City Mission

- **About:** It is an innovative initiative under the **Ministry of Housing and Urban Affairs,** to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.
- **Objective:** To promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of Smart Solutions.

- **Focus:** On sustainable and inclusive development and to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities.
- **Integrated Command and Control Centres (ICCCs)** equip cities to do more with less by graduating to real time data driven decision making with better situational awareness in an integrated manner. ICCCs are expected to deliver specific outcomes focusing on bringing positive impact on day-to-day life of the citizens.
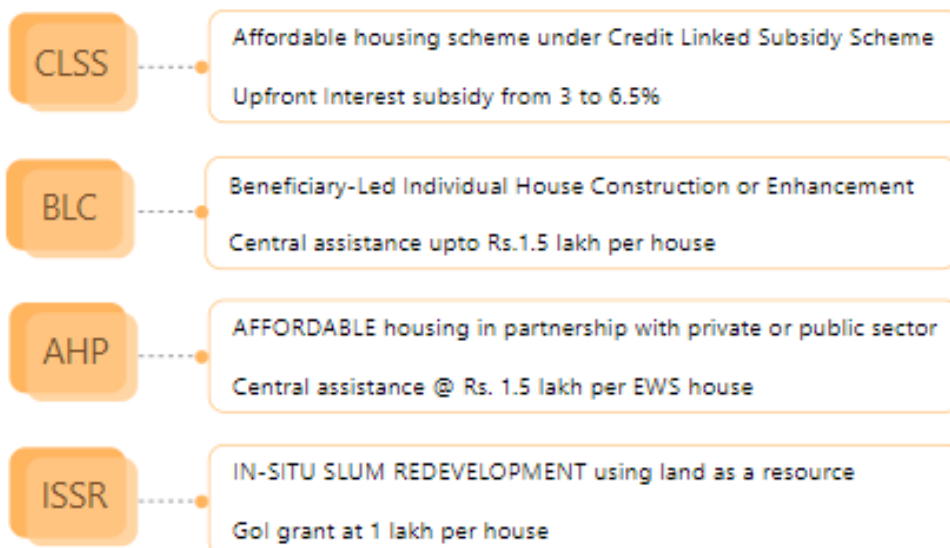
AMRUT Mission

- **Launch:** June 2015
- **Concerned Ministry:** Housing and Urban Affairs
- **Purpose:**
  - To ensure that every household has access to a tap with the assured supply of water and a sewerage connection.
  - To increase the amenity value of cities by developing greenery and well maintained open spaces (e.g. parks).
  - To reduce pollution by switching to public transport or constructing facilities for non-motorized transport (e.g. walking and cycling).

Pradhan Mantri Awas Yojana – Urban

- **Launch:** 25th June 2015, intends to provide housing for all in urban areas by year 2022.
- **Implemented by:** Ministry of Housing and Urban Affairs
- **Features:**
  - **Addresses Urban housing shortage among the Urban Poor** including the Slum Dwellers by ensuring a pucca house to eligible urban poor.
  - The Mission covers the **entire urban area** consisting of Statutory Towns, Notified Planning Areas, Development Authorities, Special Area Development Authorities, Industrial Development Authorities or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.

Components of PMAY(Urban)

CLSS	Affordable housing scheme under Credit Linked Subsidy Scheme
	Upfront Interest subsidy from 3 to 6.5%
BLC	Beneficiary-Led Individual House Construction or Enhancement
	Central assistance upto Rs.1.5 lakh per house
AHP	AFFORDABLE housing in partnership with private or public sector
	Central assistance @ Rs. 1.5 lakh per EWS house
ISSR	IN-SITU SLUM REDEVELOPMENT using land as a resource
	GoI grant at 1 lakh per house

Source: PIB

Agristack: The New Digital Push in Agriculture

Why in News

Recently, the **Ministry of Agriculture** has signed a **Memorandum of Understanding** with **Microsoft** to run a **pilot programme** for 100 villages in 6 states.

- The MoU requires **Microsoft** to create a **'Unified Farmer Service Interface'** through its cloud computing services.
- This comprises a major part of the ministry's plan of creating **'AgriStack' (a collection of technology-based interventions in agriculture)**, on which everything else will be built.

Key Points

- **About AgriStack:**
  - It is a **collection of technologies** and **digital databases** that focuses on **farmers and the agricultural sector.**
  - AgriStack will create a **unified platform** for farmers to provide them end to end services across the agriculture food value chain.
  - It is in line with the **Centre's Digital India programme**, aimed at providing a broader push to digitise data in India, from land titles to medical records.
    - The government is also implementing the **National Land Records Modernisation Programme (NRLMP).**
  - **Under the programme**, each farmer will have a **unique digital identification (farmers' ID)** that contains personal details, information about the land they farm, as well as production and financial details.
    - Each ID will be linked to the individual's **digital national ID Aadhaar.**
- **Need:**
  - At present, the **majority of farmers** across India are **small and marginal farmers** with limited access to advanced technologies or formal credit that can help improve output and fetch better prices.
  - Among the new proposed digital farming technologies and services under the programme include **sensors to monitor cattle, drones to analyse soil** and **apply pesticide**, may significantly **improve the farm yields and boost farmers' incomes.**
- **Potential Benefits:**
  - **Problems** such as inadequate access to **credit and information, pest infestation, crop wastage, poor price discovery and yield forecasting** can be sufficiently addressed by use of digital technology.
  - It will also **fuel innovation** and breed **investment** towards the agricultural sector and **augment research** towards more resilient crops.

- **Concerns:**
    - **Absence of a Data Protection Legislation:**
        In its absence, it might end up being an exercise where **private data processing entities** may know more about a farmer's land than the farmer himself and they would be able to exploit farmers' data to whatever extent they wish to.
    - **Commercialisation:**
        The formation of 'Agristack' will imply **commercialisation of agriculture extension activities** as they will **shift into a digital and private sphere.**
    - **Absence of Dispute Settlement:**
        The MoUs provide for **physical verification of the land data gathered** digitally, but there is **nothing** on what will be the **course of action if disputes arise**, especially when historical evidence suggests that land disputes take years to settle.
    - **Privacy and Exclusion Issues:**
        - Given that the proposed **farmer ID** will be **Aadhaar-seeded**, further issues of privacy and exclusion would emerge.
        - Several researchers have demonstrated the **vulnerability of the Aadhaar database to breaches and leaks**, while **Aadhaar-based exclusion** in **welfare delivery** has also been well documented in different contexts.
        - Also, making **land records the basis for farmer databases** would mean **excluding tenant farmers, sharecroppers and agricultural labourers.**
            Data shows that the **population of farm labourers** has outstripped that of farmers and cultivators.

Way Forward

- There is no denial that there is **potential in data and technology** in empowering farmers but only when the flow of information is balanced.
- The **private firms working on pilot projects** must **effectively cooperate with state governments t**o reconcile the differences over land ownership.
- The government should move ahead with the **project based on the results obtained from pilot trails.**

Source: DTE

African Swine Fever

Why in News

Nagaland has not reported fresh cases of **African Swine Flu** in the last two weeks.

- The disease was first reported in November-December, 2019 from the **areas of China bordering Arunachal Pradesh.**

- Earlier in April 2020, there were reported deaths of pigs due to the **Classical Swine Fever (CSF).**

African swine fever (ASF)

The virus is highly **resistant to low temperatures** and can survive for extended periods of time in the blood, feces and tissue of infected animals.

ASF is a **highly contagious,** transboundary viral disease (*Asfarviridae* family; *Asfivirus* genus).

It can affect both domestic and wild pigs (wild boars and peccaries). **it is harmless to humans.**

According to the OIE, **24%** of its member countries (48 out of 200) **have reported the disease** as present since 2016.

Typical clinical signs of ASF are similar to those of classical swine fever (which is endemic in several countries of the Americas); therefore, a **laboratory test** is required to distinguish them.

The **peracute** form of the virus causes sudden death with few signs.

African swine fever can be transmitted through **direct contact** between sick and healthy animals. It can also be transmitted **indirectly** through feed containing meat from infected animals (the virus can remain infectious for 3 to 6 months in uncooked pork products); **biological vectors** such as ticks of the genus *Ornithodoros*; and contaminated **inanimate objects** (fomites) that can transmit the virus.

Global alarms went off in August 2018, when an ASF outbreak was first reported in **China.** The disease swept through the entire Asian country and spread to **Mongolia, Vietnam, Cambodia and Hong Kong.**

China

According to official data for this period, more than **2.5 million domestic pigs** have died or been killed— 67.6% of them in Asia over the past 10 months.

Between 2016 and May 2019, there were a total of **10,211 outbreaks in Africa, Europe and Asia.**

Symptoms include **fever, loss of appetite,** low energy, abortion, internal hemorrhages, visible hemorrhages, and even death.

Key Points

- **About:**
  - It is a **highly contagious and fatal animal disease** that infects and leads to an acute form of hemorrhagic fever in domestic and wild pigs.
  - **Other manifestations of the disease include** high fever, depression, anorexia, loss of appetite, hemorrhages in the skin, vomiting and diarrhoea among others.
  - It was **first detected in Africa in the 1920s.**
    - Historically, outbreaks have been reported in **Africa and parts of Europe, South America, and the Caribbean.**
    - However, **more recently (since 2007),** the disease has been reported in **multiple countries across** Africa, Asia and Europe, in **both domestic and wild pigs.**
  - The **mortality is close to 100%** and since the **fever has no cure,** the only way to stop its spread is by culling the animals.
  - ASF is **not a threat to human beings** since it only spreads from animals to other animals.
  - ASF is a disease **listed in the World Organisation for Animal Health (OIE) Terrestrial Animal Health Code** and thus, reported to the OIE.

- **Classical Swine Fever:**
  - <u>CSF</u>, also known as **hog cholera,** is an important disease of pigs.
  - It is one of the most economically-damaging pandemic viral diseases of pigs in the world.
  - It is **caused by a virus of the genus Pestivirus of the family Flaviviridae,** which is closely related to the viruses that cause bovine viral diarrhoea in cattle and border disease in sheep.
  - Mortality is 100%.
  - Recently, the <u>ICAR</u>-IVRI developed a Cell Culture <u>CSF Vaccine</u> (live attenuated) using the **Lapinized Vaccine Virus** from foreign strain.
    - The new vaccine has been found to induce protective immunity from day 14 of the Vaccination till 18 Months.

World Organisation for Animal Health

- OIE is **an intergovernmental organisation responsible for improving animal health** worldwide.
- It has 182 Member Countries. **India is one of the member countries.**
- OIE **develops normative documents relating to rules that Member Countries can use to protect themselves** from the introduction of diseases and pathogens. One of them is the **Terrestrial Animal Health Code.**
- OIE standards are recognised by the **<u>World Trade Organization</u>** as reference international sanitary rules.
- It is headquartered **in Paris, France.**

<u>**Source: DTE**</u>

Link between Air Quality and Covid-19

Why in News

For the first time, a pan-India study has found a direct correlation between air pollution and Covid-19.

> The study found that areas with **poor air quality and higher emissions of <u>particulate matter (PM)</u> 2.5 are more likely to have <u>Covid-19</u> infections** and related deaths.

Particulate Matter (PM) 2.5

- It is **an atmospheric particulate matter of diameter of fewer than 2.5 micrometres,** which is around 3% the diameter of a human hair.
  - It is very small and can only be detected with the help of an electron microscope.
- It **causes respiratory problems** and also reduces visibility. It is **an endocrine disruptor** that can affect insulin secretion and insulin sensitivity, thus contributing to diabetes.

- These particles are formed as a **result of burning fuel and chemical reactions** that take place in the atmosphere. **Natural processes** such as forest fires also contribute to PM2.5 in the air.
- These particles are also the **primary reason for the occurrence of smog.**

Key Points

- **About:**
  - The study was conducted by scientists from various universities such as **Indian Institute of Tropical Meteorology (IITM)**, Pune, National Institute of Technology Rourkela; Indian Institute of Technology, Bhubaneswar.
  - It was **partially funded by the Ministry of Earth Sciences,** the Government of India.
- **Components:**
  The study involves three kinds of data sets—
    - **National Emission Inventory (NEI) of PM2.5 for 2019,** developed by the scientists;
    - **Number of Covid-19 positive cases** and corresponding death as of 5th November, 2020.
    - **Air quality index data** (in-situ observations).
- **Important Observations:**
  - The study titled **'Establishing a link between fine particulate matter (PM2.5) zones and Covid-19 over India based on anthropogenic emission sources and air quality data'** dealt with how people living in highly **polluted areas are more vulnerable** to coronavirus infections.
  - The **regions using huge amounts of fossil fuels** such as petrol, diesel and coal by combustion in transport and industrial activities also **experience a far higher number of Covid-19** cases.
    - For Example, the highest numbers of Covid-19 cases are found in States like **Maharashtra, Uttar Pradesh, Delhi and Gujarat,** where exposure to the prolonged high **concentration of PM2.5 is relatively high,** especially in the cities, due to overuse of fossil fuel.
    - **Mumbai and Pune** are **among hotspots** where high air pollution from the transport and industrial sectors is related to a higher number of Covid-19 cases and deaths.
  - There is also evidence that the **novel coronavirus sticks to fine particles** like PM2.5 allowing them to **move from one part to another** by making the airborne transmission of Covid-19 more effective.

- **Impact:**
    - When human-induced emissions are added combined with the **double impact of the Covid-19** virus, the **damage to lungs** will be much faster and worsen health conditions.
    - The study results **will help slow down the spread of the virus** by providing **more preventive steps** and resources in areas with high pollution levels for present situations as well as for future possibilities.
- **Solution:**
    There is a need to adopt **cleaner technology, better transport emission** norms like **Bharat Stage (BS) VI** at the earliest, and ensure **better coal technology** like **ultra-supercritical power plants to reduce particulate emissions.**

Air Quality Index (AQI)

- The AQI is an **index for reporting daily air quality.**
- It focuses on health effects one might experience within a few hours or days after breathing polluted air.
- AQI is calculated for **eight major air pollutants:**
    - Ground-level ozone,
    - PM10,
    - PM2.5,
    - Carbon monoxide,
    - Sulfur dioxide,
    - Nitrogen dioxide,
    - Ammonia,
    - Lead,
- **Ground-level ozone and airborne particles** are the two pollutants that pose the greatest threat to human health in India.

Source: TH

Ambergris

Why in News

Recently, the Mumbai Police has arrested five people and seized nearly 9 kg of **Ambergris.**

Key Points

- **About:**
  - Ambergris, French for **grey amber**, is generally **referred to as whale vomit.**
  - It is a solid waxy substance **originating in the intestine of the sperm whale.**
    - Ambergris is produced only by an estimated **1% of sperm whales.**
  - Chemically, ambergris contains **alkaloids, acids**, and a specific compound called **ambreine, which is similar to cholesterol.**
  - It **floats around the surface of the water body** and at times settles on the coast.
  - Because of its high value it is **referred to as floating gold. 1 kg of ambergris is worth Rs 1 crore** in the international market.
- **Use:**
  - It is used in the perfume market, especially to **create fragrances like musk.**
    - It is believed to be in **high demand in countries like Dubai that have a large perfume market.**
  - **Ancient Egyptians used it as incense.** It is also believed to be used in **some traditional medicines** and as a **spice.**
- **Smuggling:**
  - Due to its high value it has been a target for smugglers especially in coastal areas.
    - There have been **several cases where the coastline of Gujarat has been used for such smuggling.**
  - Since the **sperm whale is a protected species**, hunting of the whale is not allowed. However, **smugglers are known to have illegally targeted the fish** in order to obtain the valuable Ambergris from its stomach.

Sperm Whale

- **About:**

  - Sperm whale, (Physeter catodon), also called **cachalot**, the **largest of the toothed whales**, easily recognized by its enormous square head and narrow lower jaw.
  - The sperm whale is **dark blue-gray or brownish, with white patches on the belly.** It is **thickset and has small paddle-like flippers** and a series of rounded humps on its back.
- **Habitat:**
  They are found in **temperate and tropical waters throughout the world.**
- **Threats:**
  - The greatest threats to sperm whales are those of **habitat impacts including noise pollution and** climate change**.**
  - Other threats include **entanglement** in fishing gear, **collisions with ships**, and proposals to allow for a **commercial hunt** once again.

Source: IE

LiDAR Based Survey of Forest Areas

Why in News

Recently, the Union Environment Minister in a virtual event released the **Detailed Project Reports (DPRs)** of **LiDAR (Light Detection and Ranging**) **based survey of forest areas** in ten states.

The 10 mapped states are **Assam, Bihar, Chhattisgarh, Goa, Jharkhand, Madhya Pradesh, Maharashtra, Manipur, Nagaland,** and **Tripura.**

Key Points

- **Survey of Forest Areas Project:**
  - The project was **awarded to WAPCOS in July 2020** at a **cost of over Rs. 18 crore** for implementation in **26 states** over 261897 hectares.
    - **WAPCOS** is a <u>**Mini Ratna**</u> Public Sector Undertaking (PSU) under the Jal Shakti Ministry.
  - It is **a first of its kind and a unique experiment using LiDAR technology** which will **help augment water and fodder in jungle** areas thereby reducing <u>**human-animal conflict**</u>.
    - LiDAR technology has been found to have **90% accuracy.**
  - States will be given <u>**Compensatory Afforestation Fund Management and Planning Authority (CAMPA)**</u> funds to use in this project.
    - CAMPA is meant to **promote afforestation and regeneration activities** as a way of compensating for forest land diverted to non-forest uses.
    - CAMPA was established to **manage the Compensatory Afforestation Fund (CAF)** and it acts as the **custodian of the CAMPA fund.**
  - **One major ridge inside a forest block** is identified in these states with an **average area of 10,000 ha selected in each State;** the area should have **average rainfall of the state**, and **requires assisted natural generation.**
- **Significance:**
  - Besides reducing **human-animal conflict**, it will help us in **identifying areas** which **need groundwater recharge which will in turn help local communities.**
  - It will **help in catching rainwater and prevent stream run-off**, which will help in recharging groundwater.
  - It will help in **recommending different types of Soil & Water conservation structures** such as Anicut, Gabion, Gully Plug, Mini percolation tank, Percolation Tank, Field bund, Sunken pond, Farm pond etc.

LiDAR

- **About:**
  - It is a **remote sensing method that uses light in the form of a pulsed laser** to measure ranges & variable distances.
  - These light pulses—combined with other data recorded by the airborne system—generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.
  - A LiDAR instrument principally consists of a **laser, a scanner, and a specialized <u>Global Positioning System (GPS)</u> receiver.**
    - Airplanes and helicopters are the most commonly used platforms for acquiring LiDAR data over broad areas.
  - LiDAR follows a simple principle — **throw laser light at an object on the earth surface and calculate the time it takes to return to the LiDAR source.**
    - Given the speed at which the **light travels** (approximately 186,000 miles per second), **the process of measuring the exact distance through LiDAR appears to be incredibly fast.**

- **Applications:**
    - Lidar is commonly used to **make high-resolution maps**, with applications in surveying, geodesy, geomatics, archaeology, geography, geology, geomorphology, seismology, forestry, atmospheric physics, laser guidance, airborne laser swath mapping (ALSM), and laser altimetry.

Source: IE

INS Vikrant: First Indigenous Aircraft Carrier

Why in News

Recently, India's Defence Minister reviewed the ongoing work on the **Indigenous Aircraft Carrier (IAC),** INS Vikrant (IAC-1), which is a part of **Atmanirbhar Bharat.**

- INS Vikrant, is likely **to be commissioned in 2022.** At present, **India has only one aircraft carrier,** the Russian-origin **INS Vikramaditya.**
- Earlier, the **Defence Acquisition Council (DAC)** approved issuance of **Request for Proposal (RFP)** for six advanced submarines for the Indian Navy under **Project-75I.**

Key Points

- **About:**
    - The vessel, to be named Vikrant after the decommissioned maiden carrier of the Navy.
    - It will have **an air component of 30 aircraft,** comprising **MiG-29K fighter jets**, **Kamov-31 airborne early warning helicopters** and the soon-to-be-inducted **MH-60R multi-role helicopter,** besides the **indigenous Advanced Light Helicopters.**
    - It is expected to have **a top speed of 30 knots (approximately 55 kmph)** and is propelled by four gas turbines. Its endurance is 7,500 nautical miles at 18 knots (32 kmph) speed.
    - The **shipborne weapons include Barak LR SAM and AK-630,** while it has **MFSTAR and RAN-40L 3D radars** as sensors. The vessel has a **Shakti EW (Electronic Warfare) Suite.**
    - It has a pair of runways and a 'short take off but arrested recovery' system to control aircraft operations.
- **Significance:**
    - The combat capability, reach and versatility of the aircraft carrier will add formidable capabilities in the defence in the country and help secure India's interests in the maritime domain.
    - It would offer an incomparable military instrument with its ability to project air power over long distances, including air interdiction, anti-surface warfare, offensive and defensive counter-air, airborne anti-submarine warfare and airborne early warning.

- **Current Status of Indian Navy:**
  - As per the **Maritime Capability Perspective Plan, by 2027,** India ought to have about 200 ships but there is still a lot to cover to reach the target.
    - However, the cause is not mainly funding but procedural delays or some self imposed restrictions.
  - The navy **ensures that it has state of the art SONARs and Radars.** Also, many of the ships contain a high amount of indigenous content.
- **Navy's Contribution to Fight against Covid-19:**
  - **Operation Samudra Setu-I**: Bringing back Indian citizens from overseas amidst coronavirus-induced travel restrictions.
  - **Operation Samudra Setu-II**: Indian Navy has launched this for shipment of Oxygen-filled containers to India.

Source: TH