RAJ MALHOTRA'S IAS ACADEMY, CHANDIGARH

Asiatic Lion

Over 85 Asiatic lions have died between January and May 2020 and more than half of the deaths were due to diseases, shows the report submitted by a committee set up by the Union Ministry of Environment, Forest and Climate Change (MoEFCC) recently. At least At least 59 deaths were reported from Gir east division, Dhari, which saw an outbreak of canine distemper virus (CDV) in 2018.

Reasons for death -

The committee that submitted its report to MoEFCC and the Prime Minister's Office lists reasons like "**shock** because of **intussusceptions** and **respiratory failure** (positive for blood protozoa)", "***shock because of respiratory and renal failure***", "***shock because of septicemia due to fracture***", as the cause of death of 44 of the 85 lions. As many as 15 died of ***multiple organ failure, four of rabies and two of pneumonia***, reads the report, which also notes that 112 and 134 lions died in 2018 and 2019.

About Canine Distemper Virus -

- Canine Distemper Virus is **a viral disease** which infects, especially carnivores in animals' gastrointestinal, airborne and central nervous systems.
- The CDV can be transmitted by direct (licking, breathing air, etc.) and/or indirect (bedding, toys, food bowls etc.) touch.
- Its continuity is demonstrated by its predominant inhalation.
- No cure is available and by immunisation, it may be prevented.

Antarctica seabed

A group of researchers discovered the first active leak of seabed methane in Antarctica. which **holds a quarter of Earth's methane**.

The US-based researchers also found that microbes that normally consume the potent greenhouse gas before it reaches the atmosphere had only arrived in small numbers after five years, allowing the gas to escape.

Seabed methane -

- Clathrate hydrates are **solid cages of water containing small non-polar molecules** like carbon dioxide and methane.
- Clathrate hydrates are formed when **a gas such as methane gets trapped in well-defined cages of water molecules** forming crystalline solids. In **terrestrial conditions**, gas hydrates are formed naturally under the seabed and glaciers under high pressure, low-temperature conditions.
- On the Earth, they are **found on the ocean floor or the permafrost region** of the earth.

Pesticide ban

Recently, India took the landmark step towards banning the manufacturing and sale of 27 widely used hazardous pesticides, already discontinued in other countries. However, the draft notification has whipped up a storm with the Ministry of Chemicals and Fertilisers (MOCF) and the industry groups vehemently opposing the ban.

The Union Agriculture Ministry proposed the ban and sought suggestions from the stakeholders within 45 days.

Banned pesticides -

- The list of pesticides include monocrotophos, methomyl and carbofuran, three Class I pesticides that contain ingredients classified as "extremely hazardous" or "highly hazardous" by the World Health Organisation.
- These pesticides have long been banned across several countries—monocrotophos, for instance, is banned in the EU and in 112 countries, including the UK, Brazil, China, Indonesia, Myanmar, Pakistan and Thailand, while carbofuran is banned in 63 countries including the UK,

Argentina, Canada, South Korea and New Zealand. Their use, however, continues heavily in India despite being linked to the death of farmers.
- The other 24 pesticides are being used for a long time in several parts of the country and include chlorpyriphos, quinalphos, thiram and zineb that are known to disrupt the body's endocrine (hormone) system and are categorised as harmful by the EU.

Background -
- The notification is the culmination of a long-pending process that began in 2013 with the setting up of a committee under agricultural scientist **Anupam Verma** to review the use of 66 pesticides in India that have been barred or restricted for use in farming in other countries.
- Based on its recommendation, the Union agriculture ministry banned 18 pesticides, including seven Class I pesticides, in 2018 and has now proposed to ban another 27.

Argument of pesticide industry -
- The agro-chemical industry, however, has been lobbying against the draft order. They allege that the ministry has taken the decision in a haste. Since the 27 generic molecules are used to manufacturer more than 400-500 formulations, they cannot be suddenly banned.
- The industry also stated that generic pesticides constitute 40 per cent of the Indian pesticide market and a ban on them would affect the industry adversely.

Disease of inequality

The late microbiologist and environmentalist, Rene Dubos, famously articulated that every civilisation created its own diseases and epidemics. Into the 8th month of the novel coronavirus disease (COVID-19) pandemic, one is convinced about what ours would be: inequality. It is now being popularly mentioned as the 'pandemic of inequality'.

Pandemic of inequality -
- Recently, global conversations on the pandemic revolved around its impacts on hunger, poverty and inequality, making the world once again slide into a time from where it started talking about various global goals like the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs).
- Recent estimates and analysis show that the pandemic is **impacting the already poor more**, **whether they are in developed or developing countries**.
- Secretary-General of the United Nations António Guterres, while delivering the 2020 Nelson Mandela Annual Lecture, said: "The COVID-19 pandemic has played an important role in highlighting growing inequalities. It exposed the myth that everyone is in the same boat. While we are all floating on the same sea, it's clear that some are in superyachts, while others are clinging to the drifting debris."

Statistical facts -
- **Oxfam**, a non-profit operating across the world, estimates that 121 million more people are on the brink of starvation due to mass unemployment, disruption to food production and supplies. "As many as 12,000 people could die every day from covid-linked hunger," declares Oxfam.
- In 2019, **World Food Programme (WFP)** assisted 97 million people which were a record at that point in time. At present, it assists 138 million people. A severe hunger crisis is precipitating, especially among those who were already surviving on subsistence level or with external support. According to WFP, the number of hungry in the countries where it operates would increase to 270 million by the end of this year. This will be an increase of 82 per cent from the level before the pandemic erupted.
- Spikes in hunger are evident in West and Central Africa, which has seen a 135 per cent jump in the number of food-insecure people, as well as in Southern Africa where there has been a 90 per cent rise.
- An assessment by the **Food and Agriculture Organisation** shows that covid-19 may cause an increase in each country's GINI coefficient by 2 per cent. In this case, the number of poor will additionally increase by 35-65 per cent. In India alone, some 400 million people would slip into poverty due to the impacts of the pandemic. And these people are mostly workers in the informal sector. This again shows how disproportionate has been the pandemic's impacts.

Nature's purifiers

In India, the Ganga is one of the rivers that host a huge population - over 338 million by some estimates - with about 100 cities and many of the country's busiest and largest commercial and industrial hubs situated on its banks.
But these dense urban centres and industries have also been the reason the water quality of the Ganga shows a sharp decline as soon as it leaves Rishikesh in Uttarakhand.

Cleaning Ganga -

- With conventional methods of cleaning river Ganga becoming more expensive, highly energy consuming and less effective in removing all types of contaminants, bioremediation is gaining attention in recent years.
- Studies show **microalgae** - which are typically unicellular photosynthetic plants, can not only remove inorganic and organic pollutants, heavy metals, pesticides and pathogens from the wastewater, they can also be used to generate biofuel.
- The College of Engineering Roorkee (COER) in Uttarakhand has found that two algal species - ***Hydrodictyon reticulum*** **and** ***Chlorella vulgaris*** - are highly effective in accumulating heavy metals and pesticides and in removing pathogens from water. The algae can be found in any type of water or moist land.

What did the study found?

- The efficacy of the two algae species was studied at different pH levels (denoting acidity or basicity) with variable weight and under different environmental conditions. The algal samples (50g per litre) were analysed after 14 days of biosorption and the study concluded that the **algae were able to reduce BOD, turbidity and acidity from a minimum of 55 per cent to a maximum of 81 per cent**.
- The study also found that **the algae raised the pH value (denoting a reduction in acidity), alkalinity and total hardness in some wastewater samples** by utilising organic components like nitrogen and phosphorus as food source during photosynthesis, by consuming bicarbonates and by increasing biomass. Increased algal growth added dissolved oxygen into the treated water, making it suitable for aquatic life. There was also a reduced sludge formation.
- Overall, ***H reticulum*** was found to be more effective of the two algae species.

Conclusion -

While more innovation is needed to turn microalgae into a commercial fuel, they certainly hold a win-win solution towards a clean and sustainable future.

Polio

The fight against polio through massive vaccination efforts since 1988 has helped reduce the number of cases by more than 99 percent worldwide - but there remains a worry.

Concern -

- Instances of **vaccine derived poliovirus (VDPV)**, caused by the virus strains used in the vaccine by regaining their ability to cause the paralytic disease, have seen a spike between 2010 and 2019.
- At least 149 cases of **immunodeficiency VDPV (IVDPV)** had been reported to the World Health Organisation (WHO) between January 1961 and December 2019.
- At least two out of three cases (66 per cent) reported so far were detected between 2010 and 2019. Of these, 59 per cent occurred in children under two years of age. At least 60 per cent cases were reported in males and 64 per cent patients had Acute Flaccid Paralysis (AFP), the most severe sign of polio, as the first symptom.
- During July 2018-December 2019, 16 new IVDPV cases were reported from five countries—Argentina, Egypt, Iran, the Philippines and Tunisia.

Vaccine derived poliovirus -

- Vaccine-derived polioviruses are **rare strains of poliovirus that have genetically mutated from the original strain in the oral polio vaccine (OPV).**

- These **orally administered drops** contain **a weakened vaccine-virus** to activate a protective immune response in the body against poliovirus. It does so by replicating in the intestine.
- When OPV is administered to a child with weak immune system, the virus might, in certain extreme cases, **genetically mutate in the intestine and cause polio**. This is called **IVDPV**. The mutated virus, when excreted by the child, **can lead to community spread, which is called circulating vaccine-derived poliovirus**.

Who are at risk?

IVDPVs are usually observed in children with primary immunodeficiency. Such children are unable to mount an immune response and are, therefore, unable to clear the intestinal vaccine-virus infection. The two major risks that IVDPV pose is that of progression to paralysis and death. Most countries with afp surveillance have detected IVDPV in paralysed children.

Coal is King

Coal is still India's leading source of power and will remain so for a long time to come. The question is: does the country need even more coal, and if yes, why?
On June 18, Prime Minister Narendra Modi rallied the industry asking why India, with the world's second largest coal reserves, should not become the world's biggest coal exporter. But when the world is working hard to move away from coal, indicted as the biggest cause for greenhouse gas emissions, India's decision seems rather unrealistic.

Coal use in India -

- Currently, over 70 per cent of the coal used in India goes into **generating power by thermal and captive power plants**.
- Utility-based coal power plants consumed 608 million tonnes of coal in 2018, of which 62 million tonnes, or 10 per cent, was imported.
- **Captive power used another 92 million tonnes**. So, of the total consumption of 968 million tonnes in 2018-19, power generation consumed 697 million tonnes. Cement, steel and the sponge iron segment are the next big coal consumers.
- Coal-based power accounts for 77 per cent of the country's electricity generation. India is now barely building 5,000-6,000 MW of new thermal power plants annually.

Why coal is not attractive in India anymore?

It is quite clear that despite coal's tremendous use in the energy sector, changes are afoot.

- First, **solar and wind energy** are competing aggressively with coal. In the past few years, the country has witnessed situations when coal power has been asked to ramp down, even shut down, due to surplus power boosted by renewable energy.
- Second, **India is a power surplus country**. The Central Electricity Authority (CEA) admits that power plants are stressed because **they are forced to work under-capacity**. It is also well understood that **power plants that work below capacity end up polluting more**.
- Third, **coal plants have to now shift to cleaner technology** which will **add to cost and shut down** because of non-compliance. Power plants have to adhere to the stringent emission standards set in 2015. But many of them are expected to be non-compliant even with the deadline of meeting the standards extended to 2022. With the Supreme Court monitoring the implementation, power plants are under pressure.
- The Centre has declared it will **phase out older thermal plants—some 10,000 MW** has already been shut down or will close soon. These plants are extremely inefficient in the use of coal to generate power. Clearly, power sector's demand for coal in the future will not grow by leaps and bounds.

Trade of coal -

- Over the past 10 years, from 2008 to 2018, coal imports have jumped five times. Today, as much as a quarter of the coal used is imported, and it has gone up in the past two years.
- In 2019, of the 900 million tonnes of coal consumed, 250 million tonnes was imported. **Indonesia and South Africa** remain the biggest exporters of coal to India with the US inching up.

- In 2018-19, some 15 million tonnes, or 6 per cent of India's imports, were from the US. Australia supplies the more advanced and better quality metallurgical coal used in the steel industry.

How can we restrict coal imports?

- Import of coal is under the **Open General Licence (OGL),** which means **private parties can buy it directly from coal miners in, say, Indonesia and have it shipped to ports and then to their units**.
- This, against the government-controlled Coal India Limited with its rules to sell only for certain uses, makes for easy work. Import of coal can certainly be substituted.
- It would need taking coal import out of OGL, **putting it in the restricted category**, and making the domestic market "open" for sale.

Future of coal in India -

- NITI Aayog forecasts that India's total coal consumption in 2042 will be 1.78 billion tonnes annually, as against 900 million tonnes today. Interestingly, these projections, do not expect coal-based thermal power plants to consume much more—it will be other sectors, from steel to brick-making that will need much more coal to burn. Government also says it needs more coal, because it **will gassify it**—turn it into gas, **which then can be burnt as fuel**.
- CEA, in its draft report on optimal generation capacity mix for 2029-2030, says, that in the year 2030, the non-fossil fuel power installed capacity, including hydropower, is expected to be 65 per cent, up from 36 per cent in 2018. Further, on a maximum solar energy day, that is, when the sun is shining and the plant is working at full capacity, coal-based power generation may need to be curtailed up to 17 per cent, the report says.
- In this scenario it is, therefore, expected that **it will not be the power sector that will drive new growth in coal usage**. Rather, **industry, from steel to brick-making**, instead of basing its fuel requirement on the power sector, will use coal as a fuel in millions of furnaces and boilers.

Way forward -

- To combat deadly and toxic air pollution there are only two big options: **reinvent mobility**, and **change and clean the fuel** we use to fire our economy. So combustion and dirty fuel like coal remains the biggest contributor to local air pollution.
- The answer is to **first clean the emissions of the coal-based power plants**, which are limited in number and so easier to monitor. This is why implementation of the 2015 standards becomes so critical.
- Cleaning power plants also includes shifting to cleaner fuels like natural gas and renewable. To replace the use of coal in the industrial sector, there is **a need to shift industrial fuel usage to cleaner fuels or to electricity from centralised power plants**, which are clean, or as clean as they can be.

People's Biodiversity Register

It has been nearly 18 years since the Biological Diversity Act (BDA), 2002, and Rules, 2004, were enacted.

Empowering the local governance -

- The Act mandates the **constitution of committees by local self-governments** to manage local biodiversity. These committees are called **Biodiversity Management Committees (BMC)**.
- BDA is, by far, one of the rare central environmental legislations which **directly empower locally elected representatives** in biodiversity governance.
- Unlike other committees that have experts as members, BMC members are **farmers, fisherfolk, academicians** and other community members who are nominated by elected representatives.

Issues -

- But even after two decades of its existence, the progress achieved by this law in decentralising biodiversity governance has been far from satisfactory. In fact, there has been a lackadaisical effort in constituting BMCs.
- Consider Kerala. It is the first state to constitute BMCs in all local bodies in 2015. But field research shows lack of interest among local bodies in engaging with the mandates under BDA.

- The Biological Diversity Rules prescribe the preparation of a register called the People's Biodiversity Register, or PBR, as the first priority of BMCs. Unfortunately, these registers have become a mere formality.

Relevance of people's knowledge -

- People's knowledge is now **coextensive with popular terms such as traditional, local and folk knowledge**. This kind of knowledge can be considered different, but not necessarily separate from formal knowledge whose production and validation have different approaches, methodologies and standards.
- People's knowledge is **primarily based on experiences and observations** that range from day-to-day interaction and use of biodiversity. People's knowledge is not confined to existing or inherited knowledge.
- It also includes **innovations made to existing knowledge and to the generation of new knowledge**. This is evident from the language of **Article 8 (j) of the Convention on Biological Diversity**, which deals with not only **traditional knowledge** but also with **innovations and practices of communities for conservation and sustainable use of biodiversity**.

Experiments in India -

Before finding a place within the legal framework, the exercise of recording people's biodiversity through PBR was initiated by the **Foundation for Revitalisation Local Health Traditions and the Indian Institute of Science, Bengaluru, in 1996**. They recorded the medicinal uses of biodiversity with the involvement of local communities.

Significance of PBR -

- Recording biodiversity and related knowledge is important. Take the case of marine biodiversity. **Traditional knowledge relating to navigation is being replaced by modern navigational equipment like GPS**. In Lakshadweep, **fishing communities** traditionally used a star chart that aided in sailing through ocean. But with the advent of highly useful GPS devices, such practices are vanishing.
- The main feature of PBR is that **it records local biodiversity which may be something that is not available at any other place**. This exercise has the potential to familiarise local communities with the vast uses and users of the same and different natural resources and related knowledge in their jurisdiction.
- **Increased awareness enables better governance**. For instance, the green mussel collectors of Kozhikode area complain of water pollution that destroys green mussels. They are reposed with traditional knowledge regarding mussel collection which includes knowledge of rocks, techniques of collection and details of harvesting seasons. BMC members can understand the local biodiversity by listening to them and understanding the issues.
- Another important use of PBR is its potential to **safeguard local and traditional knowledge during bioprospecting**. PBR can be used as **an evidence of traditional knowledge vested with communities**. Another important power of BMC members is to **levy collection fees** on commercial users for the removal of biological resources occurring in their jurisdiction. This means if any person or company is taking biological resources such as fish or medicinal plants for commercial purposes, BMC can levy a fee.

Conclusion -

Therefore BMCs, local-elected bodies and states should effectively use PBR as it is a multifaceted resource. It can be used to increase people's participation in biodiversity stewardship and governance. BMCs and PBRs are ways to gear up local self-governments towards building a resilient local environment.