Prelim Bits 04-06-2023 & 05-06-2023 | UPSC Daily Current Affairs

Kavach System

In the recent happening of Odisha train accident, the KAVACH system is not installed in the mishaped trains.

- It is an indigenously developed Automatic Train Protection (ATP) system by the Research Design and Standards Organisation (RDSO) in collaboration with the Indian industry.
- It is a state-of-the-art electronic system with Safety Integrity Level-4 (SIL-4) standards.
- **SIL Standards** – Safety Integrity Level (SIL) is a measure of the reliability of the safety function performing to specification.
- 4 SILs are defined - SIL 4 the most dependable and SIL 1 the least.
- **Objective** - To provide protection by preventing trains to pass the signal at Red and avoid collision.
- It activates the train's braking system automatically if the driver fails to control the train as per speed restrictions.

Working of Kavach

- Traffic collision avoidance system (TCAS) is equipped with on board the locomotive and transmission towers at stations.
- It is connected with Radio Frequency Identification (RFID) tags, helps in two-way communication between the station master and loco-pilot to convey any emergency message.
- The instrument panel inside the cabin helps the loco-pilot know about the signal in advance without visual sighting, and the permissible speeds to be maintained.
- If a red signal is jumped and 2 trains come face to face on the same line, the technology ***automatically*** takes over and applies sudden brakes.
- Additionally, the hooter activates by itself when approaching a level crossing which serves as a big boon to loco-pilots during fog conditions when visibility is low.
- The system also relays SoS messages during emergency situations.
- An added feature is the centralised live monitoring of train movements through the Network Monitor System.

References

The Hindu | What is Kavach?

Adverse Possession

The 22nd Law Commission has said in its recent report that there is no justification for introducing any change in the law relating to adverse possession.

- It is a legal concept that allows a person who has unlawfully occupied someone else's land for a certain period of time to claim legal ownership of that land.
- In India, adverse possession has been a part of the legal framework for a long time and is rooted in the idea that land must not be left vacant and instead be put to judicious use.
- The law on adverse possession is contained in the *Limitation Act, 1963*.
- **Limitation Act, 1963** - Under the Act, any person in possession of private land for over *12 years* or government land for *over 30 years* can become the owner of that property.

Supreme Court's criticism

- The law permitting adverse possession has been condemned by the Supreme Court of India.
- It observed that the law of adverse possession ousts an owner on the basis of inaction within limitation and is irrational, illogical, and wholly disproportionate.

Law Commission's stand

- The 22nd Law Commission in its 280th report has taken a different stand vis-a-vis the Supreme Court.
- It advocates the preservation of law on adverse possession as they currently exist on the law book.
- The report states that there is also no justification to enlarge the period of 12 years under Articles 64, or 65.
- However, two of its *ex officio* members, filed a dissent note saying that the law promotes false claims and recommended for the law to be struck down.

References

The Indian Express | What is Adverse possession?

Biochar

- Biochar is a carbon-rich material that is made from biomass through a thermochemical conversion process known as ***pyrolysis***.
- **Pyrolysis** – In this process, organic materials, such as wood chips, leaf litter or dead plants, are burned in a container with very little oxygen.
- As the materials burn, they release little to no contaminating fumes and the organic material is converted into biochar, a stable form of carbon that can't easily escape into the atmosphere.

- The energy or heat created during pyrolysis can be captured and used as a form of clean energy.
- **Physical Attribute** - Biochar is black, highly porous, lightweight, fine-grained and has a large surface area.
- Approximately 70% of its composition is carbon.
- The remaining percentage consists of nitrogen, hydrogen and oxygen among other elements.
- It is produced using a specific process to reduce contamination and safely store carbon.

According to the UN's Intergovernmental Panel on Climate Change (IPCC), biochar could potentially be used to capture 2.6 billion of the 40 billion tonnes of CO2 currently produced by humanity each year.

Advantages

- Enhancing soil structure
- Improves soil quality
- Produces energy as a byproduct
- Increasing water retention and aggregation
- Decreasing acidity
- Reducing nitrous oxide emissions
- Improving porosity
- Regulating nitrogen leaching
- Improving electrical conductivity
- Improving microbial properties

One tonne of biochar or bio coal can stock the equivalent of 2.5 to 3 tonnes of CO2

Role of biochar in climate change

- Biochar production is a ***carbon-negative process***, which means that it actually reduces CO2 in the atmosphere.
- In the process, the unstable carbon is converted into a stable form of carbon that is then stored in the biochar.
- When biochar is applied to the soil, it stores the carbon in a secure place for potentially hundreds or thousands of years.
- By heating the feedstocks and transforming their carbon content into a stable structure that doesn’t react to oxygen, biochar technology ultimately reduces co2 in the atmosphere.
- Biochar also contributes to the mitigation of climate change by enriching the soils and reducing the need for chemical fertilizers, which in turn lowers greenhouse gas emissions.
- The improved soil fertility also stimulates the growth of plants, which consume co2.

References

1. The Hindu | Biochar
2. Regeneration International | What-is-biochar

Bima Sugam

IRDAI has set up a 24-member committee to synergise Bima Vahak, Bima Vistaar and the digital platform - Bima Sugam.

- It is a one-stop online portal for all insurance related queries, policy purchase, claim settlement and insurance advice.
- Web aggregators, brokers, insurance agents, bank agents, etc would act as facilitators on this platform for selling insurance policies.
- The portal would provide all such facilities to policyholders having an e-insurance account (E-IA).
- Several insurance companies (both general and life insurers) would become major shareholders of the Bima Sugam platform.

IRDAI's goal - Insurance for all by 2047

Bima Vahak

- It is another initiative by the IRDAI to reach the last mile.
- It refers to a dedicated distribution channel to reach out to every Gram Panchayat.
- Each Gram Panchayat would have a 'Bima Vahak' who would be tasked to sell and service simple parametric bundled insurance products.
- Bima Vahak intends to form a *women-centric insurance distribution* channel.
- The initiative will foster greater trust and build awareness about insurance products in the rural areas of India.
- The activities of Bima Vahak ranges from collection of proposal information, KYC documents and submissions to coordination and support in policy and claims-related servicing.
- However, the insurer will remain responsible for ensuring KYC and Anti-Money Laundering compliance with respect to the policies sourced through the Bima Vahaks.

Bima Vistaar

- It will target the untapped geographies and provide a social safety net for rural population.
- It aims to develop and suggest an affordable, accessible, and comprehensive cover for the rural population.
- It is currently under processing and is going to be launched on the insurance regulator's pet project Bima Sugam.

References

The Economic Times| Bima Sugam, Bima vahak, Bima vistaar

Global Vaccine Research Collaborative

India urges G-20 countries to join the proposed vaccine research collaborative on the sidelines of the 3rd meeting of the G-20 Health Working Group.

- **Aim** - It aims to leverage expertise and resources from various stakeholders to expedite vaccine development and mitigate the impact of future pandemics.
- The Department of Pharmaceuticals is working with a non-profit Program for Appropriate Technology in Health (PATH) and the Coalition for Epidemic Preparedness Innovations (CEPI) to build this collaborative.
- This initiative will focus on addressing major gaps in vaccine R&D before the next pandemic, establishing a structure and principles for better preparedness.
- It will create a mechanism to improve coordination and foster an enabling environment for vaccine R&D.

References

The Hindu| Global Vaccine Research Collaborative