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## Indian Road Congress

- The Indian Roads Congress (IRC) is the apex body of Highway Engineers in the country.
- It was set up in December, 1934 on the recommendations of the Indian Road Development Committee also known as Jayakar Committee (under the Chairmanship of Shri M.R. Jayakar) with the objective of road development in India.
- It works in close collaboration with the Ministry of Road Transport and Highways.
- It is committed to utilise global best practices and promote the use of cutting edge technologies for construction for the maintenance of roads, bridges and road transportation.
- It promotes environmental strategy for promotion of cleaner, less energy intensive and less polluting construction techniques and use of recycled waste.

## Geo Textiles

- These are synthetic including polyester and polypropylene or man-made materials that have varying degrees of permeability.
- Permeability means their surfaces have very small openings that allow liquid or gases to pass through.
- Special characteristics of geo-textiles

1. It has the ability to separate, filter, reinforce, protect and drain when used in association with soils.
2. It drains areas where water pools while keeping soil in place.
3. It serves as effective filters, catching some materials to prevent drains from clogging.
4. It reinforces earthen structures like drains by holding layers in place.
5. It protects against erosion in places like roads and beaches.

- These functions make Geo Textile fabrics useful in many industries, especially construction and civil engineering.

## Coir Geo Textile

- Coir is a 100% natural fiber, obtained from a renewable source – the coconut husk.
- Coir Geo Textile is naturally resistant to rot, molds and moisture, and free from any microbial attack hence it needs no chemical treatment.
- It has a permeable, natural and strong fabric with high durability.
- It protects the land surface and promotes quick vegetation.
- It is totally biodegradable, and helps in soil stabilisation.
- It can dissipate the energy of flowing water and absorb the excess solar radiation.
- The IRC has now accredited coir Geo textiles for construction of rural roads.

## Ecological Sensitive Area

- Eco-Sensitive Areas (ESAs)are located within 10 kms around Protected Areas, National Parks and Wildlife Sanctuaries.
- ESAs are notified by the Ministry of Environment, Forest and Climate Change (MoEFCC) under Environment Protection Act 1986.
- The basic aim is to regulate certain activities around National Parks and Wildlife Sanctuaries so as to minimize the negative impacts of such activities on the fragile ecosystem encompassing the protected areas.
- Recently, the Union Minister of Environment, Forest and Climate Change interacted with Chief Ministers of six states through a video conference to discuss issues relating to notification of Ecologically Sensitive Area (ESA) pertaining to Western Ghats.
- These six states include Kerala, Karnataka, Goa, Maharashtra, Gujarat and Tamil Nadu.

## Western Ghats Ecology Expert Panel

- A committee headed by ecologist Madhav Gadgil also known as the Western Ghats Ecology Expert Panel (WGEEP) in 2011 recommended that all of the Western Ghats be declared as the Ecological Sensitive Areas (ESA) with only limited development allowed in graded zones.
- The panel had classified the Western Ghats into Ecologically Sensitive Areas (ESA) 1, 2 and 3 of which ESA-1 is high priority, almost all developmental activities (mining, thermal power plants etc) were restricted in it.
- It specified that the system of governance of the environment should be a bottom to top approach (right from Gram sabhas) rather than a top to bottom approach.
- It also recommended the constitution of a Western Ghats Ecology Authority (WGEA), as a statutory authority under the Ministry of Environment and Forests, with the powers under Section 3 of the Environment (Protection) Act, 1986.

- The report was criticized for being more environment-friendly and not in tune with the ground realities.

## Kasturirangan Committee

- The Kasturirangan Commission sought to balance the development and environment protection in contrast to the system proposed by the Gadgil report.
- The committees major recommendations were:

1. Instead of the total area of Western Ghats, only 37% of the total area to be brought under ESA.
2. Complete ban on mining, quarrying and sand mining in ESA.
3. No thermal power projects to be allowed and hydropower projects be allowed only after detailed study.
4. Red industries i.e. which are highly polluting to be strictly banned.
5. Exclusion of inhabited regions and plantations from the purview of ESAs making it a pro farmer approach.

## Globally Important Agricultural Heritage Systems

- Globally Important Agricultural Heritage Systems (GIAHS) was started by the FAO to safeguard and support the world's agricultural heritage systems.
- GIAHS are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and a valuable cultural heritage.
- Three recognized GIAHS sites in India:

1. Kuttanad below Sea Level Farming System of Kerala.
2. Koraput Traditional Agriculture of Odisha.
3. Pampore Saffron Heritage of Kashmir.

- Recently FAO has designated 4 tea cultivation sites in China, Korea and Japan as Globally Important Agricultural Heritage Systems.

1. Pu’er Traditional Tea Agrosystem (China)
2. Fuzhou Jasmine and Tea Culture System (China)
3. Traditional Tea-grass Integrated System (Japan)
4. Traditional Hadong Tea Agrosystem, Hwagae-myeon (Republic of Korea)

## Food and Agriculture Organization

- Food and Agriculture Organization is a specialized agency of the United Nations that leads international efforts to defeat hunger and improve nutrition and food security.

- It was founded in October 1945, the FAO is the oldest existing agency of the U.N.
- It helps governments and development agencies coordinate their activities to improve and develop agriculture, forestry, fisheries, and land and water resources.
- It also conducts research, provides technical assistance to projects, operates educational and training programs, and collects data on agricultural output, production, and development.
- Composed of 197 member states, the FAO is governed by a biennial conference representing each member country and the European Union, which elects a 49-member executive council

## Quantum Entanglement

- It is the physical phenomenon that occurs when a pair or group of particles is generated and they interact in such a way that the quantum state of each particle of the pair or group cannot be described independently of the state of the others.
- In this quantum mechanical phenomenon, the quantum states of two or more objects have to be described with reference to each other, even though the individual objects may be spatially separated.
- This leads to correlations between observable physical properties of the systems.
- Albert Einstein dismissed this idea as a 'spooky action'.
- Entangled states are key resources to facilitate many quantum information processing tasks and quantum cryptographic protocols.
- The entangled pairs of electrons can be safely used as resources for facilitating quantum information processing tasks.
- Entanglement is fragile and is easily lost during the transit of photons through the environment.
- Hence, it is extremely important to know whether a pair of photons is entangled, in order to use them as resources.
- Verification of entanglement requires the use of measurement devices, but such devices may be hacked and cannot be trusted fully.

## Device Independent Self Testing (DIST)

- Recently, the scientists from S.N. Bose National Centre for Basic Sciences (SNBNCBS), Kolkata have developed a novel protocol to find out whether a pair of electrons is in an entangled state.
- This novel protocol to measure the status of entanglement is known as Device Independent Self Testing (DIST) method.
- This method can be used to overcome safety concerns in quantum

entanglement as it enables the verification of entanglement in an unknown quantum state of two photons without having direct access to the state, or complete trust in the measurement devices.
- In several practical situations, one of the parties may be fully trusted, whereas, the other may not be trusted like in the case of server-client relationship in banking transactions.

## Sonic Boom

- Sonic Booms are shockwaves produced by planes or other objects that are flying at a speed equal to or greater than the speed of sound (supersonic, >1225 kmph at sea level)
- Recently, sonic boom (a loud sound) was heard in Bengaluru which emanated from an Indian Air Force (IAF) test flight involving a supersonic profile.
- When an airplane travels through the air, it produces sound waves.
- If the plane is traveling slower than the speed of sound, then sound waves can propagate ahead of the plane.
- If the plane breaks the sound barrier and flies faster than the speed of sound, it produces a sonic boom when it flies past.
- The boom is the plane's sound waves combined together propagated at once.
- Air reacts like fluid to supersonic objects. As those objects travel through the air, molecules are pushed aside with great force and this forms a shock wave.
- The bigger and heavier the aircraft, the more air it displaces.
- There are several factors that can influence sonic booms like weight, size, and shape of the aircraft or vehicle, plus its altitude, attitude, and flight path, and weather or atmospheric conditions.
- The direction of travel and the strength of shock waves are influenced by wind, speed, and direction, as well as by air temperature and pressure.

**Source:** PIB, Indian Express, The Hindu

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