# Eco-Sensitive Zones & protests in Kerala
## (GS Paper 3, Environment)

**Why in news?**
- Farmers in Kerala continue to protest across several high ranges of the state against the Supreme Court's recent order to establish 1-km Eco-Sensitive Zones around all protected areas, wildlife sanctuaries and national parks.
- The widespread unrest, which has hit districts like Idukki, Kottayam, Pathanamthitta and Wayanad, is borne out of the fear of farmers losing their livelihood, and has found support from the state government, opposition parties and the Catholic Church.
- Recently, the Union government said that it will hold discussions with the Kerala government and file an affidavit in the Supreme Court on the matter.



**What are Eco-Sensitive Zones?**
- As per the **National Wildlife Action Plan (2002-2016),** issued by the Union Ministry of Environment, Forest and Climate Change, **land within 10 km of the boundaries of national parks and wildlife sanctuaries is to be notified as eco-fragile zones** or Eco-Sensitive Zones (ESZ).
- While the 10-km rule is implemented as a general principle, the extent of its application can vary.
- Areas beyond 10-km can also be notified by the Union government as ESZs, if they hold larger ecologically important "sensitive corridors."

**Why are Eco-Sensitive Zones created?**
- According to the guidelines issued by the Environment Ministry on February 9, 2011, **ESZs are created as "shock absorbers"** for the protected areas, to minimize the negative impact on the "fragile ecosystems" by certain human activities taking place nearby.
- Furthermore, these areas are meant to act as a transition zone from areas requiring higher protection to those requiring lesser protection.
- The guidelines also state that the ESZs are not meant to hamper the daily activities of people living in the vicinity, but are meant to guard the protected areas and "refine the environment around them".
- To do so, the guidelines list the activities prohibited in an ESZ, such as commercial mining, saw mills, commercial use of wood, etc., apart from regulated activities like felling of trees.

- There are permitted activities like ongoing agricultural or horticultural practices, rainwater harvesting, organic farming, among others.

## What is the recent SC judgment that has caused an uproar in Kerala?
- In June 2022, a three-judge bench of the Supreme Court heard a PIL which sought to protect forest lands in the Nilgiris in Tamil Nadu, but was later expanded to cover the entire country.
- In its judgment, the court while referring to the 2011 guidelines as "reasonable", as reported by Live Law, directed all states to have a mandatory 1-km ESZ from the demarcated boundaries of every protected forest land, national park and wildlife sanctuary.
- It also stated that no new permanent structure or mining will be permitted within the ESZ.
- If the existing ESZ goes beyond 1-km buffer zone or if any statutory instrument prescribes a higher limit, then such extended boundary shall prevail.

## Why are people protesting against it?
- Protests erupted across the high ranges of Kerala in response to the apex court's directions. Due to the high density of human population near the notified protected areas, farmer's groups and political parties have been demanding that all human settlements be exempt from the ESZ ruling.
- The total extent of the wildlife sanctuaries in Kerala is eight lakh acres. If one-km of ESZ is demarcated from their boundaries, around 4 lakh acres of human settlements, including farmlands, would come within that purview. This is a matter of sheer survival of lakhs of people.
- Before the SC judgment, the Kerala state government had stated during an expert committee meeting of the Union Environment Ministry in March that all human settlements should be excluded from the buffer zones.
- The Kerala state government had proposed that for some national parks, such as the Thattekad Bird Sanctuary, the extent of the ESZ area should be reduced from the proposed uniform 1-km, to an ESZ ranging from zero to 1 km in the eastern and south-eastern side of the national park.
- This was because the villagers occupying the densely populated settlements in these areas believed that the ESZ would restrict their agricultural and related activities.

## Have similar protests taken place before in Kerala?
- This is not the first time that Kerala has faced such protests. In 2013, hartals first erupted in Idukki and Wayanad after the Kasturirangan committee report recommended that 60,000 km of the Western Ghats, covering 12 of Kerala's 14 districts, be notified as ecologically sensitive areas.
- Similar protests had taken place in Karnataka as well. In December 2021, the Karnataka Chief Minister said he opposed the decision to declare the Western Ghats as an ecologically sensitive zone, because it would "adversely affect the livelihood of the people in the region".

# Excess & deficit rainfall in Assam 2022 monsoon
### (GS Paper 1, Geography)

## Context:
- Assam received **1,891.9 mm of rainfall from March 1 to June 24**, just 347.5 mm less than the annual precipitation the State receives.
- According to the India Meteorological Department (IMD), Assam's annual normal rainfall between 1961 and 2010 has been 2,239.4 mm.
- Many people have died since April. An arterial railway track linking southern Assam, Manipur, Mizoram and Tripura has been washed away, 55 lakh people have been affected across more than 5,000 villages.
- Meteorologists and **climate change** specialists attribute the **high pre-monsoon and monsoon rains to several factors.**

## How has the monsoon been so far this year?
- India **received 2% less rain in 2022** than it usually does between June 1 and June 23 every year.
- The total rainfall was brought down by 34% over central India and 15% over peninsular India compared to the 32% more received by the east and northeast and 7% more by northwest India.
- According to the IMD, the rain deficiency is expected to be overcome by the first week of July.

- During the monsoons, whenever moisture-laden southerly or south-westerly winds from the Bay of Bengal hit the region's east-west oriented mountain ranges, Arunachal Pradesh, Assam, and Meghalaya receive more rainfall in comparison to other States of the north-eastern region.
- Meteorologists said the recent episode of heavy rainfall underlined the **presence of the east-west trough in the lower levels of the atmosphere over the region** and the incursion of large-scale moisture due to strong southerly and south-westerly winds from the Bay of Bengal.



**What are the factors determining rainfall pattern?**
- Assam, which receives rainfall beyond the June-September monsoon phase, **does not always get above-normal or excess rain.** But in 2022, according to the IMD, it received **41% above normal rainfall** during the pre-monsoon season (March to May), and it has received 71% more than normal rainfall up to June 25.
- A 2018 study based on IMD data conducted by Pune-based Indian Institute of Tropical Meteorology revealed that the **State had been witnessing a significant decreasing trend in the average monsoon rainfall since 1870** while experiencing sudden downpour days leading to frequent flooding.
- It found that the average rainfall deficiency was 5.95 mm per decade between 1981 and 2016. Assam's valleys experience both excessive and insufficient rainfall from time to time "due to ecological and climate difference from one place to another".

**Role of climate change & aerosols:**
- Climate change is said to have increased the water and surface temperature of the Arabian Sea and the Bay of Bengal by up to 2 degrees, causing the frequent formation of low-pressure areas and cyclonic circulations, resulting in heavy rains.
- A recent study by the Indian Institute of Technology, Guwahati **said aerosols, including black carbon, released by biomass burning**, influence the western part of northeast India close to the Indo-Gangetic Plain the most.
- Rising black carbon emissions, leads to a decrease in low-intensity rainfall while pushing up severe rain in the pre-monsoon season in northeast India.

**Was the monsoon late this year?**

- The seasonal monsoon winds are an **extremely complex and intricate combination of physical processes** that operate not only in the atmosphere but also involve land and ocean.
- In India, June 1 is regarded as the date of arrival of the monsoon, which accounts for about 80% of the rainfall in the country.
- The monsoon landed early in Kerala, three days ahead of the normal date of June 1, but then it turned sluggish on its western branch's upward journey.
- But if central India suffered a deficit, the east and north-eastern parts battled a diametrically opposite problem leading to widespread floods in Assam and Meghalaya.

**Monsoon rainfall pattern in India:**
- Historically, **June rainfall is patchy and contributes less than 18% of the total monsoon rainfall**. The key monsoon months are July and August and they bring nearly two-thirds of the monsoon rains.
- The most important synoptic disturbances during the monsoons over India are disturbances (lows, depressions, etc.) that form mostly over the Bay of Bengal, move westwards or west north-westwards along the monsoon trough, and produce a large volume of rainfall.
- The other synoptic disturbance which affects monsoon rainfall significantly is the position of offshore trough or vortex along the west coast of India.
- Monsoon rainfall in India is known to be affected by global phenomena such as El Nino or La Nina — large-scale warming or cooling events of the sea surface. Other factors such as the Indian Ocean Dipole and Madden-Julian Oscillation also influence monsoon rainfall.

## Can virtual servers bypass India's VPN rules?
<span style="color:red">(GS Paper 3, Science and Tech)</span>

**Why in news?**
- In April, CERT-In passed a rule **mandating VPN providers to record and keep their customers' logs for 180 days**. It also asked these firms to collect and store customer data for up to five years.
- It further mandated that any cybercrime recorded must be reported to the CERT within 6 hours of the crime. The new directives, if passed, will be effective from June 28.

**Scope:**
- Computer Emergency Response Team (CERT-In) directions are applicable to data centres, virtual private server (VPS) providers, cloud service providers, virtual asset service providers, virtual asset exchange providers, custodian wallet providers and Government organisations.
- Firms that provide **Internet proxy-like services** through VPN technologies also come under the ambit of the new rule. Corporate entities are not under the scanner.

**Response by VPN providers:**
- In response to CERT-In rules, Nord VPN, one of the world's largest VPN providers, has said it is moving its servers out of the country.
- Two other firms, Express VPN and Surfshark, said they will shut down their physical servers in India and cater to users in India through virtual servers located in Singapore and UK.

**What is a virtual server, and what are its uses?**
- A virtual server is a **simulated server environment built on an actual physical server**. It recreates the functionality of a dedicated physical server. The virtual twin functions like a physical server that runs software. It uses resources of the physical server. Multiple virtual servers can run on a single physical server.
- Virtualising servers helps **reallocate resources for changing workloads**. Converting one physical server into multiple virtual servers allows organisations to use processing power and resources more efficiently by running multiple operating systems and applications on one partitioned server.
- Running multiple operating systems and applications on a single physical machine reduces the cost as it consumes less space, hardware. Virtualisation also reduces cost as maintaining a virtual server infrastructure is low compared to physical server infrastructure.
- Virtual servers are also said to **offers higher security than a physical server infrastructure** as the operating system and applications are enclosed in a virtual machine. This helps contain security attacks and malicious behaviors inside the virtual machine.
- Virtual servers are also **useful in testing and debugging applications in different operating systems** and versions without having to manually install and run them in several physical machines. Software developers can create, run, and test new software applications on a virtual server without taking processing power away from other users.

**Can server relocation and virtualisation help VPN providers circumvent the new rules?**
- The FAQs published by the Ministry of Electronics and Information Technology (MeiTY) regarding the cybersecurity directions offers some clarity on the relocation and virtualisation.
- It says the rules are applicable to "any entity whatsoever" in the matter of cyber incidents and cyber security incidents, regardless of whether they have a physical presence in India or not, as long as they deliver services to Indian users.
- The service providers who do not have a physical presence in India but offer services to the users in the country, have to designate a point of contact to liaise with CERT-In.
- Also, logs may be stored outside India as long as the obligation to produce logs to CERT-In is adhered to by the entities in a reasonable time.
- VPN companies, like Surfshark, on the other hand believe that by removing their physical servers to countries outside India they will comply with the laws applicable to their activities.

**How will the law impact India's IT sector?**
- VPN suppliers leaving India is not good for its burgeoning IT sector. Taking such radical action that highly impacts the privacy of millions of people in India will most likely be counterproductive and strongly damage the IT sector's growth in the country.
- It estimated that 254.9 million Indians have had their accounts breached since 2004 and raised its concern that collecting excessive amounts of data within Indian jurisdiction without robust protection mechanisms could lead to even more breaches.
- The Netherlands-based company further said that they have never received a similar directive on storing customer logs from any other governments in the world.

**How does VPN usage work in China?**

- Though not all VPNs are officially banned in China, only government-approved VPNs are officially permitted to function.
- Visitors and Chinese citizens use VPNs to circumvent China's Great Firewall, which has blocked access to many websites, keywords and even IP addresses.
- Government-approved VPNs have to register with the Chinese government and have to comply with data requests during investigations. However, cases of tourists being penalised for using non- government approved VPNs have not been reported.

# Swachh Bharat Mission- Urban 2.0 launches Revised Swachh Certification Protocols
## (GS Paper 2, Governance)

**Why in news?**

- Recently, **Swachh Bharat Mission-Urban 2.0,** being **implemented by the Ministry of Housing and Urban Affairs (MoHUA)**, has launched the Revised Swachh Certification Protocols for ODF, ODF+, ODF++, and Water+ certifications.



**The revamped revised protocol is aligned with SBM-2.0 objectives and is designed to ensure:**

- ➢ No untreated used water or faecal sludge is discharged into the environment and all used water (including sewerage and septage, grey water and black water) is safely contained, transported, and treated, along with maximum reuse of treated used water, in all cities with less than 1 lakh population.
- ➢ To sustain open defecation free status in all statutory towns.
- ➢ It contains provisions to encourage cities to have robust infrastructure with reliable Operation &Maintenance (O&M) mechanisms to achieve the goal of clean urban India.

**Key interventions against each certification are:**

- ➢ **ODF -** Robust monitoring mechanism ensured by increasing the number of survey sample size and location types.
- ➢ **ODF+ -** Focus on functionality of CT/PT and innovative O&M business model for their sustainability in long run.
- ➢ **ODF++ -** Emphasis on mechanized cleaning of septic tanks and sewers. Safe collection & treatment of used water as well as safe management of faecal sludge.

> **Water+** - The focus is on collection, transportation, treatment, and reuse of both used water and faecal sludge to prevent environmental pollution. (1) For towns having population more than 20,000, a minimum of 25% households to be connected to sewerage network. (2) Striving to achieve sustainability. (3) No untreated used water is let out intheenvironment.

**Used Water Management:**
- Swachh Bharat Mission-Urban 2.0, launched by the Prime Minister on 1st October 2022 with the overall vision of creating 'Garbage Free Cities', has introduced Used Water Management as a newly funded component for towns with less than 1 lakh population.
- This showcases the Mission's commitments to improving the overall Used Water Management ecosystem in Urban India by ensuring that no un-treated used water is discharged into water bodies (as per the Water+ Protocol).
- Under the Mission, maximum reuse of treated used water is a key area focus along with eradication of hazardous entry into sewers and septic tanks through mechanization of their cleaning operations.

**Way Forward:**
- The Revised Swachh Certification Protocols is more functionality-oriented and has been simplified for officials and citizens to understand it better.
- The purpose of the protocol is not only to improve rankings of cities but to motivate cities to achieve the spirit of the Mission.